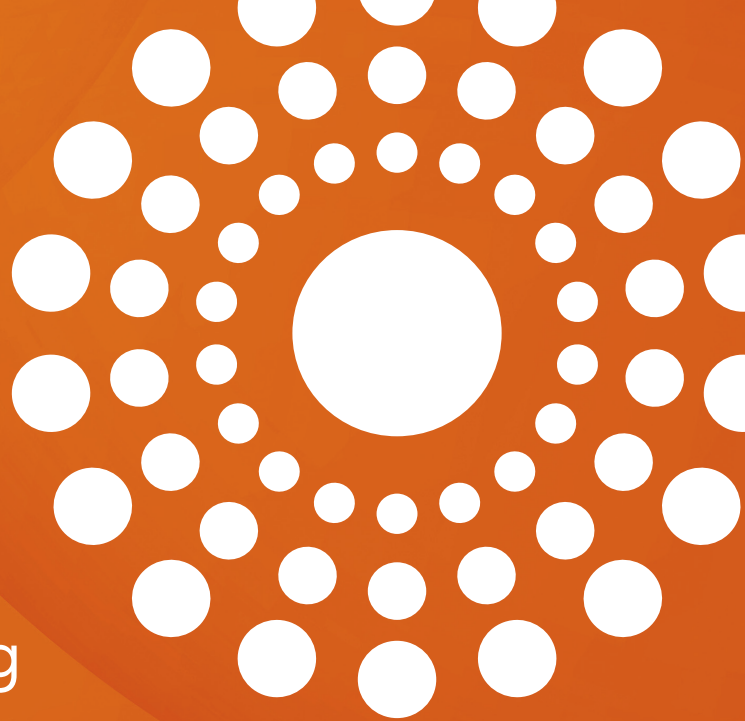


Carnegie African
Diaspora Fellowship
Program Alumni Convening



A Vision for the Future

Summarized Report

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Marriott Marquis
901 Massachusetts Ave NW
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Carnegie African Diaspora Fellowship Program

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About the Convening

The Carnegie African Diaspora Fellowship Program (CADFP)—funded by the Carnegie Corporation of New York and administered by the Institute of International Education (IIE)—connects the African academic diaspora in the U.S. and Canada with higher education institutions in Africa. CADFP Fellows spend time at host institutions in Africa, where they engage in a range of educational activities in their field of specialization, including curriculum co-development/revision, collaborative research, and training/mentoring of graduate students and early-career faculty. Since its launch in 2013, CADFP has awarded more than 500 fellowships at 168 universities across nine African countries. These fellowships have helped in not only achieving specific academic outcomes stipulated in the grant applications, but also enhancing capacities of host institutions and collaborating faculty as well as forming lasting partnerships and networks.

The 2021 CADFP Alumni Convening is organized to offer a space for reflecting on some of these experiences, drawing transferable lessons, and charting possible future pathways for diaspora engagement in African higher education.



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The convening brought together over 60 fellowship alumni with the specific objectives of:



Sharing practices, learnings, challenges and opportunities related to engagement with higher education institutions on the continent.



Identifying policy priorities and recommendations to inform existing policy frameworks in African higher education.



Advancing collaborative projects to expand academic communities across Africa.



Exploring the role of the diaspora in resource mobilization for African higher education.



Generating new knowledge about diaspora linkages through a publication of convening proceedings.

Structure of the Convening

Composed of plenary sessions and parallel breakouts, the day-and-a-half convening was structured to have three major components.

Introductory Sessions

- Welcome messages and opening remarks
- The Multiplier Effect—a video presentation
- Introduction of participants
- Keynote address

Parallel Sessions

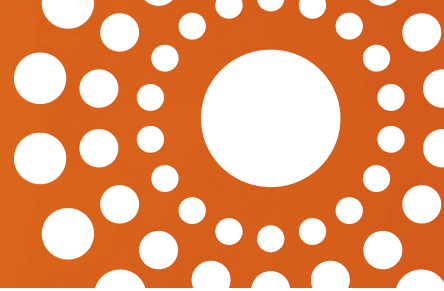
Paper presentations grouped into five thematic areas

- Building and enhancing research, teaching, and service capacity of host universities: What works?
- Mentorship: The next generation of faculty, researchers, and scientists
- Mutually beneficial collaboration
- Online education, virtual collaboration, and mitigating the digital divide
- Policy implications for higher education in Africa: Models for engaging the academic diaspora

Reflections and Discussions

- Reflections on day one
- Future of higher education in Africa
- The future of diaspora engagement programs

Although events were scheduled slightly differently (), the subsequent sections of this report will be structured following the above categorization of events based on their similarity and convergence of purpose.



INTRODUCTORY SESSIONS



Day one started with a welcome message by the event coordinator on behalf of the steering committee. The goal and agenda of the convening were introduced and opening remarks were delivered. Afterward, participants took a round introducing themselves with their names, their institutions, where and when they did their fellowship, and the biggest accomplishment related to their fellowship project.

A video presentation called *The Multiplier Effect* was also shown. The video featured members of the alumni steering committee discussing their fellowship experiences and the multiplying effect of their work under the fellowship. The multiplier effect conceives the notion that the work of a Fellow is likely to have a multidimensional ripple effect that extends beyond the stated objectives of the fellowship. This may include one or more of the following: having a lasting impact on programs or academic practices, building capacity at the departmental or institutional level, forging long-term collaboration with faculty, catalyzing institutional partnerships, reaching broader communities beyond the bounds of the university, and having a positive impact on development or renovation of national policies.

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Opening Remarks: Claudia Frittelli, Carnegie Corporation

Ms. Claudia Frittelli, Program Officer for Higher Education and Research in Africa at Carnegie Corporation of New York, started her remarks by welcoming participants and extending a congratulatory message to the organizing committee. She explained that the committee worked hard and persisted, despite the event being postponed twice due to the pandemic, because it was important to have the convening in person since that is what alumni networking is about.

Ms. Frittelli noted that the convening was taking place in a time of three key transitions. The first is the transition from in-person to virtual to hybrid models. This has been happening in the past year and half, and people were trying to navigate what this means for our work, classes, and so on. She remarked that it is important to think of this in the context of the linkages CADFP Fellows and

alumni have developed with institutions in Africa and encouraged participants to reflect on: what has changed, what we have learned, and what innovations have emerged?

Another transition is that, sadly, Carnegie lost its president, Dr. Vartan Gregorian, in April 2021. The foundation is currently in search for a new leader. This prompts thought about the kind of message that will be delivered to the new leadership regarding the foundation's support for higher education in Africa, including the diaspora fellowship. Does it make sense to continue the current support? What justifies the current approach? Are there any areas that might need reconsideration in the future? Ms. Frittelli stressed her expectation that the convening would inform these discussions.

The third transition concerns CADFP itself. Dr. Paul Zeleza, who has served as the chair of the CADFP Advisory Council since 2013, has recently decided to step away from his role as the vice chancellor of United States International University-Africa, CADFP's key partner in Africa. As it is always important for the program to have an African partner institution, discussions have been taking place with the program steering committee and other stakeholders, which finally led to Association of African Universities (AAU) as a partner going forward. Many of the steering committee members will stay on, and so it is not really a change in the structure of the program. AAU is a pan-African organization with an extensive reach across the continent and a good working relationship with many governments. Hopefully, this new partnership will create opportunities, including better engagement with governments and more countries participating in the program. Ms. Frittelli expressed her hope that the convening would also raise some ideas that will inform this transition.

She also took the moment to introduce the *African Academic Diaspora Toolkit: Preparation for university diaspora academics and hosts*, a document that came out following the policy consultation forum held in Addis Ababa, Ethiopia, in November 2019, through a grant to Carleton University and in partnership with the African Union. One of the workshops in the forum raised issues of intercultural relations as major success factors in the engagement of diaspora academics in Africa. The toolkit draws on those consultations and data collected from reports by Fellows to provide a reference source for both host institutions and new Fellows who are about to embark on a fellowship. It helps them navigate through the different challenges Diaspora and Host Fellows might expect in their engagement, and tools they can deploy to address these challenges. Ms. Frittelli encouraged participants of the convening to take a look at the toolkit, which was distributed at the convening, and offer any feedback they might have: If another edition is to be done in a few years, what should that look like?

Opening Remarks: Allan Goodman, Institute of International Education

Mr. Goodman, Chief Executive Officer of IIE, reiterated the importance of the meeting, not only for the symbolic value of marking the return of in-person gatherings (the convening was the first in-person gathering for many people since the pandemic), but also for its value in creating the opportunity for IIE and Carnegie to listen to the reflections of the CADFP alumni and to learn about their experiences and their thoughts about how to improve the program. He stressed the importance of diaspora communities, which, he noted, are very important to Carnegie Corporation, as the late president Dr. Vartan Gregorian himself was a diaspora scholar.

Dr. Goodman discussed the 102-year-long relationship between Carnegie Corporation and IIE, and how Carnegie Corporation is an important partner to IIE's work. He acknowledged Carnegie's commitment to support the academic diaspora fellowship program, and more broadly higher education in Africa. Under Dr. Gregorian's

leadership, Carnegie Corporation invested \$134.4 million in strengthening higher education and research capacity in African countries. In IIE's work with diaspora communities, Africa is leading the way, as it should be, in the engagement of its academic diaspora. Following CADFP's model, IIE has developed two other diaspora engagement initiatives: the Greek Diaspora Fellowship Program (GDFF) funded by the Stavros Niarchos Foundation (SNF), and the Research Expertise in the Academic Diaspora (READ) Program funded by the Albanian American Development Foundation (AADF).

He also paid tribute to the late Dr. Gregorian, whose legacies—professionally and personally—hold a great place in the heart of IIE and Dr. Goodman himself. He then invited the participants to join him in observing a moment of silence in honor of Dr. Gregorian. Finally, he recognized the work of the alumni steering committee and different departments of IIE in organizing the convening and welcomed everyone to the event.

Keynote address: H.E. Ambassador Hilda Suka-Mafudze, African Union Permanent Representative to the U.S.

In her remarks delivered through her representative, Ms. Seraphine Manirambona, the ambassador started by thanking the organizers for the invitation and congratulating Carnegie Corporation, IIE, and other stakeholders for the successful journey CADFP has had since its inception. She reminded the audience about the mandate of the African Union Mission to the U.S., which is aligned in spirit with CADFP and the very convening she was addressing. The Mission's mandate is to develop, maintain, and consolidate constructive and productive institutional relationships among the African Union and the government of the United States, Africans in the diaspora, the Bretton Woods institutions, and the U.S. private sector and civil society.

Given the increasing flow of people across international boundaries, African countries—as is typical of the developing world generally—tend to lose a greater percentage of highly skilled migrants as professionals emigrate to upgrade their skills in knowledge and technology hubs in the developed world, leaving acute gaps in the local economy, particularly in the skills and investment sectors. The unprecedented size of the diaspora, combined with a greater frequency in transnational movements, means that the diaspora has to be recognized, solicited, and cultivated as a true development partner.

The ambassador underscored that for Africa the choice is clear. The continent “simply can no longer afford to forfeit the vast talent and treasure of its global diaspora if it is to take the necessary next steps in its developmental evolution.” Therefore, African countries need to identify and establish mechanisms that can transform migration from a problem into an opportunity. She stressed that CADFP constitutes one of these mechanisms and urged the participants to keep pushing with the good work, noting that diaspora academics have the tools and intellectual resources to uplift Africa.

Speaking about the U.S.-AU higher education relations, the ambassador outlined a current initiative by the U.S. State Department called the University Partnerships

Initiative, whose purpose is strengthening existing relations and developing new collaborations between U.S. and African universities. This includes such areas of focus as promoting faculty and student exchanges, facilitating joint research, building administrative capacity, and creating public-private partnerships.

Within the broad umbrella of the Continental Education Strategy for Africa 2016–2025 (CESA 16-25), she noted the AU's interest to work with all concerned parties, and she suggested that Carnegie Corporation and other U.S. partners may explore the following areas as potential foci of collaboration:

- a. Faculty training in STEM education, particularly in mechanical engineering and computer science
- b. Telemedicine
- c. Capacity building
- d. Strengthening of health systems
- e. Promotion of entrepreneurship among youth
- f. E-learning
- g. Community development projects to break the cycle of poverty and improve lives and livelihoods in food security, potable water security, sustainable agriculture, and improved economic opportunity
- h. Collaborative research; knowledge-sharing on administrative practices; and fostering university-based entrepreneurship programs
- i. Extension of the existing programs to neighboring countries so that this program can contribute to Africa's integration, in building the Africa we want

Given the impact of the COVID-19 pandemic, however, she identified the more immediate needs as related to digital connectivity, online platforms, teachers as facilitators, safety in schools, and skills-focused learning. The ambassador concluded by thanking all and wishing everyone a successful convening.

PARALLEL SESSIONS

THEMATIC PAPER PRESENTATIONS



The parallel sessions included the presentation of more than 50 papers and subsequent discussions on each. Grouped into five thematic areas, the papers presented different cases from the experiences of the CADFP Fellows with reflections and lessons learned for similar engagements and the overall betterment of higher education in Africa. Despite being classified into the five thematic areas for the purpose of management, there was a great deal of similarity and interdependence in the main aspects of experiences discussed under the different themes.

Theme 1

Building and enhancing research, teaching, and service capacity of host universities: What works?

Theme 2

Mentorship: The next generation of faculty, researchers, and scientists

Theme 3

Mutually beneficial collaboration

Theme 4

Online education, virtual collaboration, and mitigating the digital divide

Theme 5

Policy implications for higher education in Africa: Models for engaging the academic diaspora

The sessions displayed the wide disciplinary diversity of CADFP Fellows' engagement, including those going beyond the traditional disciplinary boundaries: ethno-mathematics, machine learning, consensus management, digital reference skills (using analytics to make better decisions), mental health and well-being, etc. Cases were also discussed demonstrating the innovative and impactful approaches in CADFP-mediated engagements.

For instance, a unique case of introducing mental health and well-being in a military institution by focusing on training of trainers was discussed. The fact that the importance of mental health and well-being, a subject often an area of social stigma, was recognized and addressed in such a context is a huge testament to how far CADFP has made impact. Further, advances on ethno-cultural approaches to STEM curriculum and resources (that make these subject areas relatable, normal, and familiar in the African contexts, instilling rather than negating cultural pride), especially in mathematics, have been tested and introduced into schools in Nigeria. The responses of other alumni suggest that this movement is gradually gathering momentum in sub-Saharan Africa.

Also highlighted was a community-based approach to social work that integrates a diversity of good practices within and outside cultures and leverages alumni expertise to develop virtual platforms and resources for teaching and research. Coordinating initiatives with non-academic stakeholders, particularly nongovernment organizations working in the area of girls' education and empowerment, was also discussed as a good practice. Similarly, another exemplary case showed how resources can be mobilized locally and the buy-in of key government bodies can be secured by aligning programs with the interests of non-university stakeholders (a graduate program in anthropology aligned to serve needs of the police department, supporting forensics, and tap into the resources of national parks administration). Participants discussed the use of online platforms and tools (e.g., using Zoom for online classes on research design, and utilizing MOOCs in teaching). The accessibility challenges relating to the use of online resources was also at the center of the discussions.

These and many more cases were discussed in the parallel sessions. While the papers are being curated for a separate publication, the main takeaways from the discussions are presented in the following section in the form of reflections.

REFLECTIONS ON DAY 1



The first part of the half-day session on day two was reflections on day one (to be followed by the future of higher education in Africa, and the future of diaspora engagement programs). This included a brief summary of the distilled key takeaway points mainly from the parallel discussions on day one. It also highlighted some of the critical questions that needed further interrogation individually or collectively by members of the African academic diaspora, by universities in the U.S. and Africa, by governments, or by institutions involved in academic diaspora engagement—such as IIE and Carnegie Corporation. The following are the main points of reflection from the discussions on day one.

- **Alignment of goals/purposes at all levels is a critical success factor.** At the individual level, often several people show interest in supporting and being part of a project. However, as time goes on and the nitty-gritty details of implementation start to touch the ground, only those who see a real alignment between the project goals and their own career objectives or passion will continue to consistently support or even champion the project. The same can be said at the departmental or institutional levels. The extent to which the project is designed to fit into the strategies and long-term goals of the host department or institution will determine the commitment and availability of support and resources from the latter.

- **Understanding power relations is key for lasting engagement.** If one mantra comes out of all the discussions to encapsulate the success and challenges of engagement, it would be “relationship, relationship, relationship!” Building a reliable positive relationship begins with understanding the power dynamics in the context of the host institution. For example, one of the Fellows spoke about her experience in a higher education institution based in the military, where power is understood not only by academic rank and administrative position but

also by elements rooted in the military culture, such as seniority and chain of command. While this is a unique example, it sheds light on the importance of institutional culture and the diversity in the way power is defined, acquired, and leveraged. It should be noted that Fellows need to be aware of their own power, too. They must take account of the influence they have and articulate their responsibility thereof.

- **Trust is earned and it takes time. Building trust, with faculty at host institutions, responsible local government bodies, and other stakeholders, is another fundamental of a successful working relationship.** Emphasizing this point, one of the Fellows referred to his experience with drug development in his home country. It was evident to him that building on the existing indigenous knowledge—rather than starting from scratch—would leapfrog the process. However, it takes time and deliberate effort to gain the trust of the custodians of this localized knowledge for them to be comfortable enough to share what they know. Indigenous knowledge in this context is kept with few custodians and orally passed through generations. Similarly, relationships with government structures at different levels require a careful approach to build and maintain trust.


• **Resources are not always scarce—sometimes they just need to be reallocated.** Resources are often identified as one of the leading constraints in projects of diaspora engagement. One of the lessons from CADFP is how resource-sharing arrangements can be negotiated with hosting institutions. A more specific and teachable example came from one of the Fellows whose project for the development of a new graduate program struggled to get traction due to limited resource availability. He then restructured the project to appeal to stakeholders beyond the university and approached two influential bodies: the National Parks Authority and the National Police Department. He made the case for them to see all the benefits they could get from supporting the project. The buy-in from these two bodies brought significant resources to the project, along with national attention, which opened so many doors for its successful implementation.

• **Beware: technology bridges the gap, but it also creates gaps.** Even before the pandemic, the use of technology to virtually engage with students and faculty in home countries was emerging in conversations about diaspora engagement. Traveling thousands of miles to teach classes in person or support research and other activities is much more inconvenient and expensive than the virtual alternative, although it is undeniably more effective. The pandemic brought this fact forth in an unprecedented manner. Examples of how online technology has been employed to connect with students back home were presented, and the ease and convenience of these methods were discussed. However, counterexamples of how access to internet and the necessary digital devices creates gaps between students of different backgrounds were highlighted. The bottom line was, technology is a great force in bridging the physical gap between diaspora academics and students in home countries. However, it cannot be assumed that it always works the same way for everyone. Finding ways to reduce this gap is critical. For instance, encouraging and supporting universities (or departments) to have internet-connected devices where students can sit for virtual classes is one solution that appeared to work better, although this has become impractical during the pandemic.


• **Mentorship requires responsible engagement. One of the concepts that frequently came up in the discussions about mentorship was responsibility.** Responsibility was seen from two perspectives. First, mentorship has to be taken as a serious responsibility that requires genuine and continued engagement with the mentee, not just a casual interaction. It is important to understand the context and aspirations of the mentee and help them navigate the professional world so they can make the best of available resources and tools. This requires proper planning and frequent communication. Also, while fellowships might have a short span, mentorship requires longer-term relationships between mentors and mentees. As such, sustaining communication and support even after the end of a fellowship at the host institution is strongly advised.

• **The second aspect of responsibility is the ethics of mentorship.** There is no shortage of examples of unethical activities, from mentors having mentees do their job to mentors doing the work of their mentees in exchange for other benefits. An example where many graduate students were holding senior administrative positions in the same university was presented to demonstrate how the power dynamics in mentoring relationships could be complex, calling for a careful navigation of ethical boundaries. Mentorship is for both professional and personal development, so mentors need to set examples to their mentees on both fronts.

• **Policy advocacy and institutional change can have lasting impacts.** Fellowships are often focused on such activities as teaching, curriculum/program development, and research—mostly limited to what happens within the university. However, some have a broader focus of working with different stakeholders, including government, professional associations, and the private sector. Some Fellows have included policy advocacy as part of their engagement, seeking to have a wider impact. Examples of such efforts were discussed in such areas as drug development, public health, and mining, where Fellows leveraged their position and stature as diaspora academics and prominent scholars in their field to initiate and promote broader conversations on issues that deserve policy attention or changes in general practice. Some projects advocated for policy changes, government



It is also equally important to come into the collaboration with an open mind, respect, and understanding. Fellows acknowledge that things have changed in many ways from how they knew them. They needed to reset their expectations and adapt their approach.



investment, improved institutional infrastructure, etc. Others were considered successful pilots and were implemented across a number of institutions (sometimes at a national level), demonstrating the broad impact of diaspora engagement in higher education, and more specifically that of CADFP—the multiplier effect.

- **Decolonization: from blaming to taking responsibility.**

Decolonization was another concept that came up repeatedly in the conversations. Fellows spoke of their own experience of the colonized education system they went through or their own effort to decolonize education in Africa. Fellows mentioned several examples to illustrate the different manifestations of westernized education that are disconnected with real experiences of students and ultimately fail to address local problems. Within the broader conversations, initiatives that specifically targeted this issue were discussed. Some Fellows boldly acknowledged their own entrapment and the moral obligation that they carry. The key point: Decolonization of knowledge and higher education calls for action, and the academic diaspora is at the forefront. It is high time to move from decrying to taking responsibility and to practical action.

- **Starting with the low-hanging fruits with understanding and an open mind.** Many have big visions and big ambitions for their motherland. Big ambitions are great; they have big impact, but low-hanging fruits are practical, actionable, and immediate. Therefore, starting with what is in immediate reach and building up is more effective in creating momentum, gathering support,

and mobilizing resources. It is worthwhile to begin by analyzing what is within the reach of collaborations to accomplish. Considerations include differing priorities of African governments (higher education, research, and development might not be high on the list); corruption in society and within the ranks of higher education; and the time and investment required to build and sustain partnerships. For example, drug development is highly lucrative and could significantly expand public revenue but takes an average of 10 years; lack of political will, unstable regimes, and a policy vacuum are likely to stifle such initiatives, especially considering the huge investments in infrastructure they would require.

It is also equally important to come into the collaboration with an open mind, respect, and understanding. Fellows acknowledge that things have changed in many ways from how they knew them. They needed to reset their expectations and adapt their approach.

Treating local faculty with respect is a prerequisite to gaining their support. Understanding their circumstances and the multiple challenges they navigate is a key first step to building lasting relationships and turning faculty into allies.

THE FUTURE OF HIGHER EDUCATION IN AFRICA



This session was aimed at drawing on the experience, knowledge, and observation of the diaspora academics at the convening to engage with the possible future of higher education in Africa. Participants were surveyed as to what they think will be the main opportunities and critical issues in the future of Africa's higher education. Participants also were engaged with a hypothetical scenario to try to identify what would be the most important areas of investment in the sector. Participants were divided into groups and asked to discuss the following three questions before sharing their findings with the larger audience:

- What are three opportunities for advancing African higher education?
- What are three critical issues facing African higher education which could be addressed by an investor (foundation, government, etc.)?
- If you had \$12 million per year to invest in African higher education, and three people to manage it, what would be your overall goal, and how would you invest it?

In the two-minute summary presentations, groups shared the outcomes of their discussions around the three questions. The presented outcomes exhibited significant similarities. The following are the top responses to each question.


This session sought to survey the participants as to what they think will be the main opportunities and critical issues in the future of Africa's higher education.

Opportunities for advancing African higher education

Growing population and economy: Africa has a burgeoning young population. With more than half of its population under the age of 25, Africa is dubbed the youngest continent. Having the fastest population growth, the continent is also estimated to double its population by 2050, with about 1 billion people under the age of 25. This bulging young population means more demand for higher education. Africa is also the home of fast-growing economies. While the impact of COVID-19 remains to be seen, in the pre-pandemic years Africa had been consistently registering promising economic growth.

As economies grow and household income increases, there will be more demand for higher education. The growing population and economy also create greater opportunity and responsibility for higher education to engage with societal issues more meaningfully, through its functions of teaching, research, and community services.

Technology as enabler: African higher education has been enormously challenged by the COVID-19 pandemic. However, it has also learned a critical lesson about the potential of deploying technology in



facilitating the teaching-learning process. The current challenge has awakened higher education institutions and governments to the reality of the state of their technological infrastructure and to the critical force of technology in enhancing their efforts in improving higher education. It is reasonable to anticipate that there will be improvement in the level of attention given to technology as an enabling force in higher education. This creates opportunities for Africa's higher education to bolster its capacity and efficiency in its undertakings, and to expand access, which currently stands far behind the global average.

Potential for research: Africa accounts for a negligible portion of global research production. This is not due to the lack of potential. Researchers from elsewhere often come to Africa to do their field work and publish their results, but the continent itself hardly benefits. However, there is a growing interest among higher education stakeholders—including individual scholars, institutions, governments, and funding agencies—toward improved research productivity on the continent. On the other hand, the university-industry partnership in funding research is very limited. The growing interest in research can translate into better resource mobilization from different sources, mainly from government and private companies.

Diaspora resources: There is a growing recognition of the current and potential impact of the African diaspora, beyond their economic contribution in the form of remittance. This is expressed in numerous ways, including the growing number of countries developing diaspora policies and strategies and establishing responsible agencies or ministries, the level of emphasis international organizations and development partners place on the role of the diaspora, and the increasing number of initiatives supported by different parties. In

higher education, this can be seen in the nascent practice of both higher education institutions and concerned government agencies formally recognizing the academic diaspora as resources and strategic partners. Similarly, an increasing level of motivation can also be seen among the academic diaspora who are engaged individually and through institutionalized initiatives. The success of the CADFP can be noted as a witness of this potential. In sum, these developments present a considerable opportunity in the advancement of higher education which can be translated into better networking and enhanced capacity.

Solidarity in purpose and coordination: There is an overall positive spirit about higher education in Africa. Deviating from its ill-advised policy of deemphasizing, the continent is bringing higher education to center stage. This is visible in the activities of all major stakeholders, internal and external. Higher education has become a prominent subject in the politico-economic discourse. It is gaining priority as a policy agenda, attracting investment, and being emphasized by private foundations, multilateral organizations, and development partners. This mutual recognition of the importance of higher education is what one of the groups called "solidarity in purpose." This direction is further strengthened by the emergence of continental coordinating bodies such as the African Union and the AAU. Among others, the two institutions are playing increasingly critical roles in coordinating goals and efforts, such as in the 10-year Continental Education Strategy for Africa (CESA)—a broad continent-wide strategic initiative covering multiple aspects of education, including at the tertiary level.

Critical issues facing African higher education

Poor infrastructure: During the pandemic, African institutions were faced with the state of their technological infrastructure, which struggled to support virtual learning. Most were caught unprepared for the kind of transition the time demanded because of, among other things, insufficient investment in infrastructural development. Considering that: (a) access to higher education remains low across most of the continent, (b) access to lower-level education is improving, and (c) there is a growing demand due to changing demographic and economic factors, it is critical that higher education in Africa bolsters its capacity by enhancing its infrastructure. Without this critical investment in infrastructure, higher education would be challenged to progress at the expected pace to meet the demands of the continent.

Capacity of faculty: Another aspect of capacity both at the institutional and systemic level is the non-physical one: the qualification and competence of faculty. Many institutions in Africa suffer from limited human capacity for different reasons. First, many countries have been undertaking considerable expansion programs that were not matched with a similar pace of faculty development. Therefore, the number of faculty with terminal degrees and the appropriate experience is limited. Second, those faculty members with

better potential often leave seeking opportunities abroad or transition to the private sector, where they get better pay and working conditions. Third, many institutions have faced a mass retirement of senior faculty without the appropriate mechanism in place for their replacement. Fourth, faculty are generally constrained by different factors from using their potential to the fullest. Therefore, capacity of faculty, in both teaching and research, is a critical issue in the current state of higher education in Africa.

Decolonization: By and large, higher education in Africa has its roots in colonial times. Instituted by colonial powers, higher education remains disconnected with local realities (apart from traditional and religious schools, which have very limited intake and applicability to the labor market). Practically, this means the teaching-learning process pays no attention to the wealth of centuries-old indigenous knowledge. Instead, it relies on concepts and examples that are foreign to students' lives. As a result, the education system fails to address local problems, neglects local resources, and produces graduates with limited ability to bring about real change in their communities. The emancipation/decolonization of the education system is, therefore, a key step in making sure that any investment into the sector will produce the desired result in both economic and social areas.


Areas of potential investment

Given the details of the hypothetical question, the results of this part of the discussion related to tapping into the opportunities and addressing the issues identified earlier but constrained by the boundaries set. The following are the main areas of investment identified by the groups.

Raising more resources. The argument here is that \$12 million is not really a lot of resources to meaningfully impact such a vast higher education landscape. Therefore, the wise move would be leveraging the current resources to support initiatives that will raise more resources from different sources and directed to different activities. Besides investment by governments, creating schemes

for more private investment, encouraging the work of private foundations, and soliciting and encouraging African philanthropy have been proposed. The last idea was passionately advanced for its massive potential and its possible contribution in the decolonization effort.

Improving research and development. At the center of this plan is strengthening university-industry partnership, which is seen as a sustainable way of supporting research and development activities. This idea also encompasses the development of research ecosystems, which comprises research-oriented graduate programs as elemental components.



Investing in centers of excellence. Building on current experiences with centers of excellence in different parts of the continent, focusing on different disciplines, this plan emphasizes the contextualization of knowledge as its primary purpose. With innovative and entrepreneurial programs, the centers of excellence will focus on translating knowledge into practical solutions relevant to their localities. Equally important are the development and integration of indigenous knowledge into the formal and informal curricula.

Support for students with disabilities. While this is an important subject, it is largely deemphasized in both policy dialogues and areas for potential investment. Sometimes, it is blended with the overall conversation about improving the learning experience for students from marginalized backgrounds, but that fails to do justice to the subject.

Building digital resources. Investment in technological infrastructure and building digital resources is key in improving both teaching and research.

Knowledge remittance. One of the great resources for the improvement of higher education in Africa lies in its diaspora. Making a concerted effort to create the institutional mechanisms through which members of the academic diaspora engage with African institutions and academics is an important area of investment. The experiences of programs such as CADFP are highlighted as a basis to justify further investment.

Facilitating collaboration. International collaboration with like-minded institutions is identified as another key area of investment that could produce long-term benefits. In this regard, collaborations with Historically Black Colleges and Universities (HBCUs) and land grant institutions are noted to have greater potential. The former institutions are considered to have a sizable number of African-born faculty and share the same overarching spirit with the African diaspora, which translates into an interest to have stronger links with Africa and its institutions. This interest is frequently expressed in internationalization strategies and other documents, and members of the academic diaspora—especially those who work in HBCUs—are called to encourage the articulation of such interests. Land

grant institutions are sought for their (historical) focus on technical and vocational education.

Capacity building. Admittedly, capacity building is a broad term that can apply to several areas. It has been discussed that African higher education institutions and systems suffer from limited capacities in various areas. This broad proposal presumes specific focuses in the following areas, and more, depending on the circumstances and priorities for the respective institution/system:

- Faculty development
- Leadership and management of academic institutions and units
- Strengthening of professional associations and their role in higher education
- Government and independent agencies concerned with quality and relevance
- Building of networks and consortiums of institutions

Overall, it is underscored that while the exercise is meant to survey opinions of the CADFP alumni at the convening, where to invest is always highly context-dependent. It is equally important that setting priorities for investment must come from the local stakeholders of the respective higher education institution/system.



With innovative and entrepreneurial programs, the centers of excellence will focus on translating knowledge into practical solutions relevant to their localities. Equally important are the development and integration of indigenous knowledge into the formal and informal curricula.



FUTURE ENGAGEMENT

AREAS OF DIASPORA ENGAGEMENT IN AFRICA



Another discussion used a similar format to explore potential areas of advancement in diaspora engagement in Africa. Participants were asked to discuss in smaller groups and share their findings with the larger audience. Prospects are discussed in various areas reflecting on who can play what role to enhance diaspora engagement programs in higher education in Africa. The different points discussed can be summarized as follows, based on the potential contribution of major actors.

Governments

The role of government is duly stressed for its direct multidimensional influence. First, governments make policies and establish institutions that enable diaspora engagement in all areas. In this regard, encouraging trends have been observed by attendees in recent years as many African countries have come out with diaspora engagement policies and strategies, with specific institutions identified to lead and coordinate efforts. Second, governments also allocate resources for different initiatives. Besides the direct public funding governments can put into concerned institutions and their initiatives, it is suggested that earmarking a certain percentage of remittance income can be a potentially significant and sustainable way of resourcing diaspora engagement in higher education and research. This can be a promising source, given that many African countries have seen steadily growing remittances in the recent past. Funding from such sources can also be matched by the government.

Third, governments can use various instruments to encourage private foundations, companies, and members of the diaspora to invest in promoting knowledge remittance. For instance, governments can use tax

considerations to encourage private companies to invest in this area. Public-private partnership platforms can be used to complement resources and coordinate efforts. Government support for private sector companies whose services are directly related to the engagement process—such as banks and telecom—can be another consideration. Competitive funding can also be used to encourage higher education institutions to take a more strategic approach toward diaspora engagement.

Earmarking a certain percentage of remittance income can be a potentially significant and sustainable way of resourcing diaspora engagement in higher education and research.

Private foundations and companies

In the meantime, a stronger push and a more coordinated engagement is also expected from private bodies. Philanthropy and corporate donation are rarely known in the African higher education space. However, there is massive potential for resource mobilization with multinational companies, domestic private companies, and wealthy individuals. These parties can participate in academic diaspora engagement in different ways, including creating endowments, developing fellowship programs, and matching resources in the efforts by universities, government, or private foundations. Private foundations such as the Carnegie Corporation can also help by sharing their experiences and supporting local institutions in replicating the foundations' successful programs.

Continental bodies

Multilateral organizations, development agencies, and associations, as well as continental and regional bodies, are potential contributors to the future of diaspora engagement. With their broad reach and influence, these institutions can promote diaspora engagement in higher education. The African Union is acknowledged for its efforts in recognizing the role of the diaspora as a major development partner of the continent and incorporating a designated unit in its structure. Participants encouraged others to follow the example. Participants also commended the collaboration between the African Union (AU) and the Association of African Universities, as mentioned in the keynote address on Day 1 of the convening. On the other hand, the African Development Bank has a broad mandate to support development of the continent, so the Bank can do more by investing in relevant initiatives.

The African diaspora

Participants of the convening emphasized the irreplaceable role of the African diaspora, and the CADFP alumni in particular. For decades many academics in the diaspora have been trying, with varying levels of success, to connect with and support African institutions, even in the absence of a convenient policy environment or any meaningful support from government or other bodies. With recent developments in the interest of governments and support by various actors, such as the CADF, the level of motivation and participation among the diaspora is also seeing an increase. Members of the diaspora are encouraged to bolster their engagement by taking practical actions. The creation of an umbrella diaspora organization focused on higher education can be a major step in the right direction. Such an organization would have a critical role as interlocutor between the diaspora and African institutions, but it could also:

- Coordinate activities among the diaspora and with other organizations focused on higher education in Africa
- Raise funds to support initiatives (this would require formal registration as a nonprofit)
- Identify and engage champions
- Devise mechanisms (e.g., organizing cultural events and cultural tourism) to ensure the continuity of engagement among subsequent generations of the diaspora
- Advocate for policy changes at different levels in host and home countries
- Represent the interest of the diaspora in different arenas

CONCLUSION



Overall, the convening concluded on a positive note, with acknowledgments of the potential for diaspora engagement in higher education. Participants commended Carnegie and IIE for their accomplishments through CADFP and their multiplier effects. The two organizations were strongly encouraged to continue their engagement with African higher education.

Broadly, participants argued for continued engagement of CADFP alumni—with the fellowship or otherwise. Alumni are urged to ethically engage and inspire the next generation of academics, both at home and in Africa. They are encouraged to leverage their positions in their home institutions and their other affiliations to the cause of advancing higher education in Africa. They are also called upon to work in a more organized and self-sustained manner, not only in their work with universities and academics in Africa, but also engaging with concerned government bodies at different levels and professional associations for a wider and deeper impact.

Alumni are urged to ethically engage and inspire the next generation of academics, both at home and in Africa.





Acknowledgements

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To CADFP Host and Fellow Alumni whose collaborations have made this Folio possible.

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Carnegie African
Diaspora Fellowship
Program Alumni Convening

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Abstracts for conference papers were submitted to the Institute of International Education in 2020 as part of an open call to all Carnegie African Diaspora Fellowship Program (CADFP) Diaspora Scholars. After a review of abstracts, the Alumni Steering Committee selected 53 for development into papers for presentation and workshoping at the CADFP 2021 Alumni Convening from October 21-23, 2021, in Washington, D.C. Following The Convening, 38 submissions were reviewed and approved for publication in this Folio.

When citing this Folio, use *Carnegie African Diaspora Fellowship Program (CADFP) Alumni Convening Folio (Fall 2023)*.



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Building and enhancing research, teaching and service capacity of host universities: what works?

Building Sustainable Partnerships Between Historically Black Colleges and Universities (HBCUs) and African Universities (AUs): The Case of Virginia State University and University of Lagos

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Virginia State University
Fellow at the University of Lagos, Spring 2016, Fall 2017, and Fall 2019

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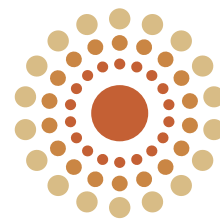
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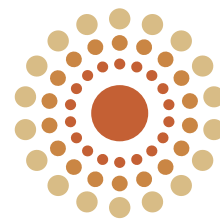
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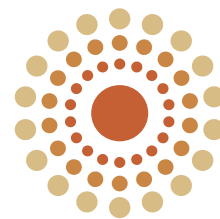
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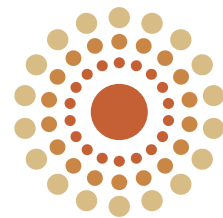
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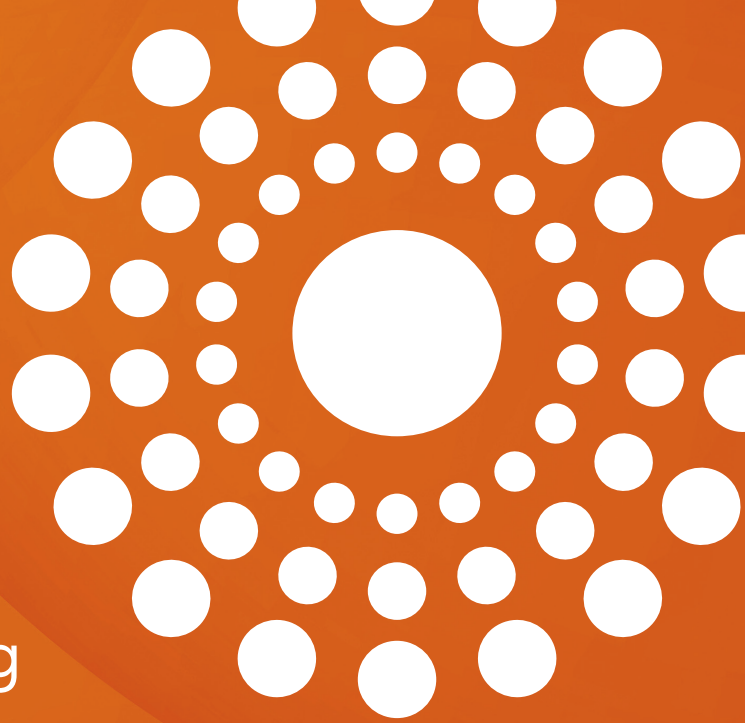
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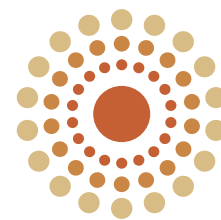
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A Vision for the Future

Building and Enhancing Research,
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Building and Enhancing Research, Teaching
and Service Capacity of Host Universities:
What Works?

Building Sustainable Partnerships Between Historically Black Colleges and Universities (HBCUs) and African Universities (AUs): The Case of Virginia State University and University of Lagos

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ABSTRACT

The Carnegie African Diaspora Fellowship Program (CADFP) has provided enormous growth opportunities for select African universities (AUs) by midwifing a two-way partnership between them and American and Canadian universities, in the last several years. By all accounts, the CADFP has been adjudged as being fairly successful. The laid out qualifying criteria for participating in the program are, in part, that a fellow from a sending university should have been born in Africa and must hold a faculty position in their home university. As to be expected, faculty from Historically Black Colleges and Universities (HBCUs) were engaged in the program, whereby they contributed their quota to the development of AUs. This paper proposes a model that draws essentially from the CADFP experience by prescribing a one-to-one matching between HBCUs and AUs, to be sponsored by the Institute for International Education (IIE) or its designee. It is our considered opinion that the “Carnegie” in the original appellation should be superseded by “H,” with the resultant name of HADFP. Given that people of the African diaspora at HBCUs have always shown interest in AUs’ affairs, it is reasonable to assert that the proposed engagement between HBCUs and AUs is long overdue. The potential dividends to be derived by AUs will be timely and fill real needs that several AUs are grappling with.

Introduction

The leadership role HBCUs have played and continue to play in the overall growth and development of the education of African-Americans and other American minorities has never been in question. What is not clear is whether these historically Black institutions can also serve as necessary incubators and as agents of change for a sustainable and firm foundation for academic partnerships with African universities (AUs). Through a time-honored CADFP grant, a fellow from Virginia State University (VSU) won a traveling grant to visit University of Lagos (UNILAG) thrice; much has been achieved that could serve as a model for developing future sustainable academic partnerships across the Atlantic.

This paper examines and proposes how AUs through the sponsorship of IIE can draw on the gains of the VSU and UNILAG collaboration to primarily impact their research, teaching, co-curriculum development and tackle other teething problems facing their institutions. Moreover, other areas of campus life that hitherto have been neglected can be looked into and given the serious attention they deserve. It is envisaged that IIE fellows from HBCUs can create a coaching community focused on sharing lessons learned, best practices, techniques, and resources with their African counterparts, and ultimately, assist in establishing bold, transformative partnerships with AUs.

This paper addresses the challenges and problems facing AUs in today’s higher education space, exacerbated by the COVID-19 pandemic. It is envisaged that CADFP would be

replicated in part, in shape and form, to form a new entity to be known as HADFP. Some evidence-based solutions to the identified problems are explored. The strategic importance of long-range planning to be implemented and the thorough reengineering of AUs cannot be overemphasized.

Current Higher Education Issues in Africa

Higher education in Africa at this time is faced with a slew of problems that have sufficiently been discussed in the literature (Igwe et al., 2021; Singh, 2010; Maringe & Ojo, 2017; Katundu, 2020; Samoff & Carrol, 2004; Aina, 2010). As with many other human endeavors, the current educational enterprise—particularly in the majority world—is contending with modern-day realities at this time. These issues that have prompted a rethinking of how the educational enterprise should be reorganized and managed in the developing communities of the world, particularly in Africa, include but are not limited to:

- Limited human and financial resources
- Lack of necessary physical infrastructure
- Lack of robust IT infrastructure
- Lack of adequate access to academic programs by regular and non-traditional students
- Inadequate access to information, library resources
- Shifting student demographics
- Explosive growth and advances in information and communication technologies

Also of relevance is the observation made by Nakazwe-Masiya et al. (2021), who interviewed 15 African biomedical scientists from around the world. The research delved into pertinent questions such as: (a) What is preventing African biomedical scientists based abroad from increasing their involvement with African research institutes and local African scientific talent? (b) What are the potential solutions to overcoming these barriers? (c) What roles can the UK Medical Research Council (MRC) and other funders play in removing these barriers? It is not hard to suppose that these questions could be extrapolated to almost every academic discipline in Africa. Connecting HBCUs and relevant think-tanks could provide ready answers to these thorny questions. The overarching question that readily comes to mind is this: If HBCUs cannot come to the rescue of their sister universities in Africa, then who will?

Level of Participation of HBCUs in CADFP

There exist roughly 100 HBCUs in the continental United States, representing 3% of the 3,500 higher education institutions in the country. About two dozen of this number have participated in CADFP since its inception in 2015. It is difficult to estimate exactly how many CADFP fellows from HBCUs have actually participated. The subject expertise of these fellows is rich, wide, and divergent, including the Humanities, Pure and Applied Sciences, Human and Natural Sciences, and Business. The academic offerings of HBCUs fellows follow similar patterns.

Anecdotal evidence suggests that HBCUs have contributed in no small way to the vision and purpose that informed the establishment of CADFP. It is therefore intuitively obvious that HBCUs have added and can continue to add value to the development of AUs; hence, this proposal to substitute CADFP with HACFP. For African-born HBCU professors to offer assistance to AUs is an idea whose time has come. Drawing a parallel to the Jewish diaspora academics is apt here, as they have assisted and continue to support Israel in a variety of ways, including providing knowledge expertise and more at various tertiary institutions.

VSU/University of Lagos Partnership Experience: A Model

The evolution of international engagement at VSU started serendipitously when a Fulbright scholar named Professor Abdurafioye Omotosho of the University of Ilorin (UNILORIN) visited VSU in the 2005-06 academic year. It was a successful visit that laid a solid foundation for the VSU/UNILORIN future academic partnership. That relationship endured and led to the signing of our respective MoUs in 2010 and 2012. Many more MoUs were subsequently signed, including VSU and University of Lagos (UNILAG) MoUs. This marked the beginning of a formal academic relationship between VSU and UNILAG in 2012. I became

the first VSU faculty member to visit UNILAG (my alma mater), under the auspices of CADFP.

Like myself, there exist other African-born professors at HBCUs who have shown similar interest in their alma maters in Africa. The Provost at VSU and the Office of International Education were on top of the application process. Not only did they support the idea with vigor, but they did everything possible to bring the process to fruition, as well. Similarly, the leadership at UNILAG has been very encouraging of my travel fellowships. In short, management support turns out to be a major factor in promoting VSU/UNILAG ongoing academic collaboration.

The monetary endowment by Dr. George H. Bennet to establish the Office of International Education at VSU in 2005 helped to lay a good and sustainable foundation for all the great things that occurred at the university. Since alliances are the backbone of academic partnerships, it became fairly easy for VSU to enter into partnerships with a lot of institutions of higher learning abroad. It must be pointed out that at the last count, VSU had signed more than 100 MoUs with international universities and colleges. Moreover, the American Council on Education's (ACE) "Creating Global Citizens: Exploring Internationalization at HBCUs" project grant in 2011 was helpful. It helped to advance internationalization on our campus. Not only did the grant make it possible for us to audit our campus international activities, but we also used data gathered to develop strategic comprehensive internationalization plans. Ultimately, our students benefitted tremendously by being exposed not only to the need to embrace an international perspective, but also to become internationally astute. All in all, forming friendships and elements of social interaction have been critical to the successful implementation of our internationalization efforts.

A Fellow's Experience at the University of Lagos

I am a three-time participant, starting in 2017, then 2018 and most recently, in 2021. Three of my colleagues from VSU have also been selected as CADFP fellows in the recent past. For me personally, forming friendships and networking prior to the application process made a world of difference to the successful outcomes of our joint application to CADFP. As I had kept in constant touch with my graduate school classmate at the university, Professor C.O. Uwadia, he knew my work and research, and I knew his. Moreover, we kept the progress of the department close to our hearts. It was therefore, an easy match for us to collaborate on cybersecurity projects ab initio! Visiting UNILAG for me has been a very fruitful endeavor. The last three CADFP site-visits at the Department of Computer Sciences, in the summers of 2017, 2018, and 2021 were, overall, resounding successes, impactful, and truly transformative, as adjudged by the

host institution, my home institution, and myself. Anecdotal comments by the Computer Science faculty and students support this conclusion. For example, the chair of the department remarked, “There is no way we could have been able to accomplish this so quickly, but for your assistance and leadership on cybersecurity.”

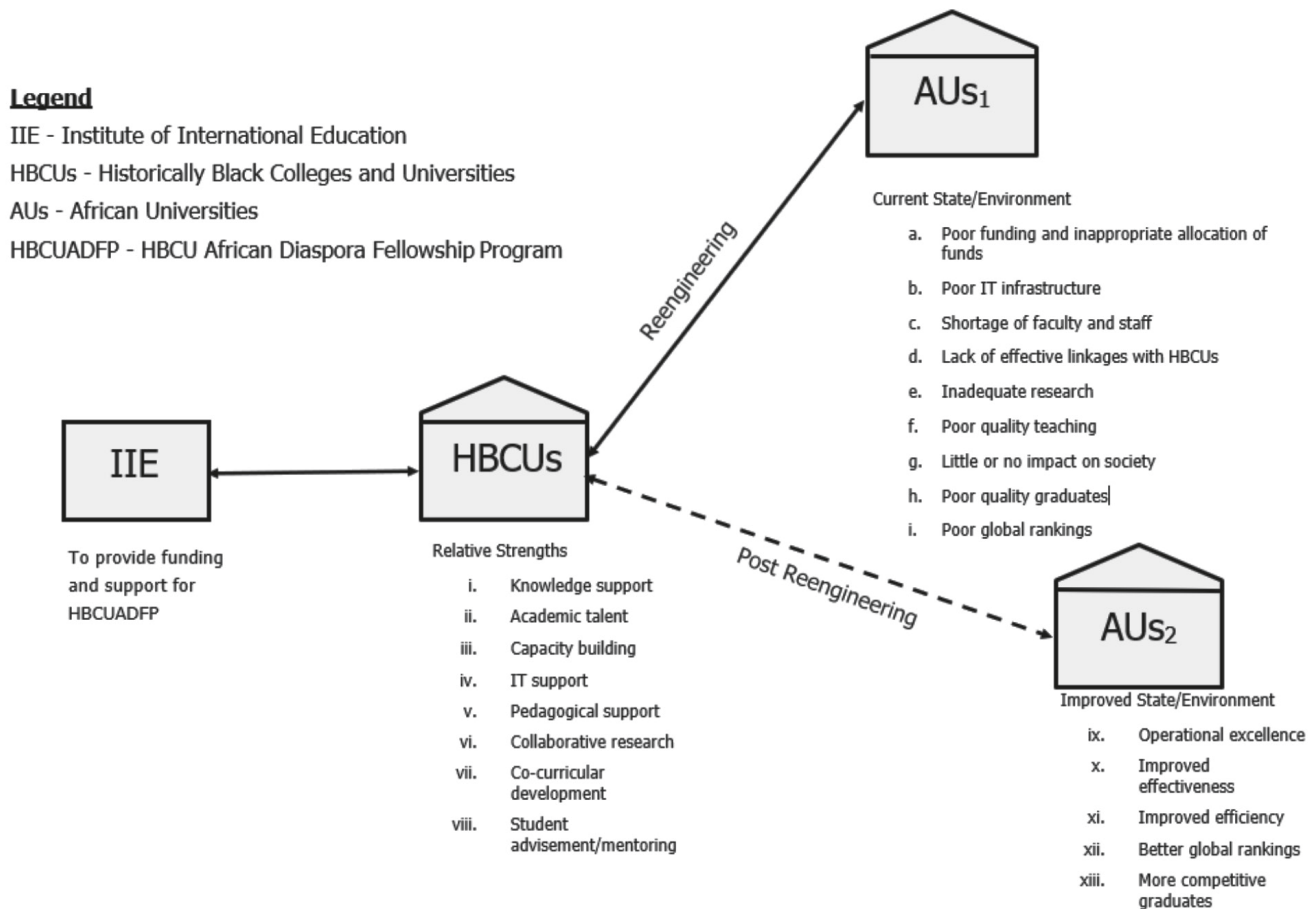
Much was achieved aside from the prescribed co-curricular development, graduate students’ teaching, training and mentoring, as well as collaborative research. More specifically, this fellow was able to publish two journal articles that were co-authored with faculty at the site university, submit a comprehensive report on the establishment of a Master’s degree in Cybersecurity, and assist in graduating the first PhD in Cybersecurity. Through my personal experience and supported by published research, the institutionalization of information/cybersecurity education, governance and practices can only become a reality through social integration of routines and systemic integration of relevant technologies (Nasution, 2012). Our understanding is that factors such as habitualized security routines, information stewardship, and institutional

relationship in the information-security context guided our approach to introducing the subject matter at UNILAG.

Different strategies have been advanced to ameliorate these thorny problems, as enumerated in the literature (Igwe, 2021), including a call to internationalization that encourages the strengthening of local capacity and the discouragement of long-standing asymmetries of power in international partnerships. Some authors have rightly pointed out that there is a deep-seated cultural imperative at the heart of the internationalization agenda. The debate on reengineering African higher education is gaining momentum among observers of the declining state of AUs in the first quarter of the 21st century (Maringe & Ojo, 2017). Reengineering is defined as “the rethinking and “redoing” of processes of an organization to simplify organizational complexity, that is, to optimally deploy resources including information infrastructure to reduce many steps, documents, and redundant personnel that clutter up many aspects of organizational and institutional life.” All things considered, reengineering appears to be the

FIGURE 1

Schematic showing the dynamics between IIE, HBCUs, and AUs in the proposed HBCUADFP



most appropriate and suitable strategy for the resolution of present-day challenges facing several AUs.

It must be pointed out that while reengineering was developed in the business arena, it has since migrated to other spaces of human endeavor. There is no reason for it not to be applicable in the case of AUs. Therefore, its application to the AUs' transformation agenda is expected to be a game-changer. The proposal to involve HBCUs in the rescue of AUs seems to satisfy all the criteria laid out as panacea to the prevailing malaise. This paper will therefore, emphasize this approach.

The need for International Linkages in AUs and Higher Education

IIE over the last several years (circa 2015) birthed a vision and embarked on a rescue mission of AUs. The CADFP was charged with the responsibility to help AUs avail of African-born faculty from American and Canadian universities, to serve as frontline stakeholders in the resolution of identified problems. Unlike CADFP, we are proposing a much scaled-back program to be made exclusively available to African-born HBCU faculty.

The emergence of much-improved AUs of the future, as depicted in Figure 1 below, is the goal. A timely intervention by HBCUs in the affairs of AUs can herald significant outcomes reflective of truly transformed 21st century institutions of higher education.

To continue to partner with AUs given the prevalent challenges is not incontrovertible. However, a new day is dawning on the subject. As stated by Teferra (2021), "a new discourse and approach to mobilize intellectual diaspora communities to enhance the continent's social, economic, and intellectual progress without relocating them physically is gathering momentum."

Teferra goes further, making the point "that the need to mobilize this potentially powerful force goes beyond the oft-cited economic benefits as it plays a considerable role in stimulating and catalyzing home-based academic and scholarly institutions."

The main thrust of this paper is a call for HBCU/AU engagement through IIE sponsorship. The rationale is fairly simple and straightforward. According to the simple laws of human social interaction, humans tend to gravitate toward and are more likely to interact with their own kind. One would, therefore, expect African-born fellows from HBCUs to want to readily go back to their roots, and more so, to their alma maters, for this time-honored assignment. Commitment to countries where the fellows originated should rise to the top over other considerations. The dividends of such an arrangement and engagement for both parties can only be imagined, and then experienced. We share a common future, and we have a common responsibility to work together to achieve our goals. We are confident that with HBCUs and

AUs working together in a collegial spirit and a shared vision, we will ensure the success of our common efforts. Ultimately, HBCUs individually and collectively can through this endeavor become true champions of change.

COVID-19 and its Impact on AUs: The "New Normal"

Dictionary.com defines a "new normal" as a "current situation, social custom, etc. that is different from what has been experienced or done before but is expected to become usual or typical." Thesaurus.com gives the synonyms for a "new normal" as: "strange routine," "unusual standard," and "an unfamiliar order." In the context of this paper, the new normal comes with enormous challenges and requires a paradigm shift for all stakeholders in the education system. This cannot be truer for AUs. It must be pointed out however, that the post-COVID-19 pandemic era has offered new and unique opportunities for universities to attain the expected status of a "global communities of scholars," with faculty and students drawn from various parts of the world.

Improvements in virtual interaction occasioned by the lock-down and travel restrictions of COVID-19 have created opportunities for global linkages that can strengthen research collaborations, improve teaching, and attract sponsorships and major grants. Now that "geography is history," it is possible for faculty to teach and make other contributions from any part of the world. Universities, particularly those in Africa, must therefore review and strengthen their strategies for attracting foreign faculty, students, and renowned researchers from HBCUs. It is incontrovertible that faculty from HBCUs, particularly those of African ancestry, have the will and capacity to positively impact AUs. Many African-born academics at HBCUs have individually and collectively expressed their willingness to give back to their alma maters.

It is therefore not surprising that the remark below was made during the just-concluded UNDP Africa and CPG-OHBCUD side event at the 76th session of the United Nations General Assembly:

"... a significant proportion of Africa's diaspora is hosted in over 200 Historically Black Colleges and Universities (HBCUs) and Predominantly Black Institutions (PBIs) of higher education in the United States, alone. Scholarly research in the HBCUs and PBIs has contributed to creative approaches to address the massive pandemic-related financing gap. This landmark and international collaboration will provide a platform to consider a wide range of innovative ideas from national leaders, noted scholars, leading entrepreneurs and civil society representatives, thereby creating unparalleled synergies for the achievement of the 3 SDGs, particularly advancing innovative financing mechanism solutions for all persons of African descent."

Conclusion

This paper uniquely identifies HBCUs as potential catalysts in the effort to literally give AUs a new lease on life. The proposed program would also be invaluable to HBCUs. AUs that wish to be active participants can easily enroll, to their own advantage. The charge to faculty and students alike at AUs is challenging them—in spite of seemingly unsurmountable obstacles—to pursue their professional paths, continue to develop their talents, and strengthen their programs within a dynamic and ever-changing global academic world. In order to realize the best elements of the vision described above, we must make careful decision about our partnerships, as we press for a steady evolution toward the future. Again, HBCUs now have a singular opportunity—indeed, a responsibility—to come to the rescue, lifting AUs from their current deplorable academic hiatus.

For me, personally, to be a part of this initiative would not only be fulfilling but will allow me to work alongside people who are engaged in a life's work devoted to scholarship, creativity, the love of learning and praxis. Moreover, putting such a program in place will be a part of assisting in solving the problems of today as well as of tomorrow. The bold and transformative impact that HBCUs could have by properly intervening in the affairs of AUs will definitely rewrite the history of AUs, and indeed, of education in the African continent. My CADFP experience goes a long way toward substantiating the saying that one's destination in life is never a place, but a new way of seeing things!

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Building and Enhancing Research, Teaching
and Service Capacity of Host Universities:
What Works?

Reflections on Carnegie African Diaspora Fellowship Program (CADFP) Sponsorship to Enhance Geospatial Technologies for Social Science Research in Africa

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Introduction

Application of geospatial technologies to social, human, and associated science programs in African universities is hampered by unavailability of academic professionals experienced in the field of geographic information science, or what is commonly referred to as geo-informatics. The use of cutting-edge and state-of-the-art technologies to teach and conduct research in issues pertaining to human-environment interaction are lacking in most African universities. Lately, research in the social and human sciences is being strengthened by using geographic information systems (GIS), remote sensing of the environment, and associated technologies (Asami & Longley, 2012; Janell & Goodchild, 2011; National Research Council, 2008). The availability of geospatial data, enhanced visualization tools, and advanced spatiotemporal methods has led to the promotion of innumerable applications in human and social science research (Janell & Goodchild, 2011; Cromley & McLafferty, 2011; Longley et al., 2011). Undoubtedly, geospatial technologies provide a unique and powerful lens through which to understand human, social, and environmental relationships. Institutions of higher education that deliver geospatial technology and related courses are often ill-equipped in terms of curricula and faculty to deal with the swift change in GIS science, technologies, and analysis techniques (Prager, 2012; DiBiase et al., 2006).

Despite unpreparedness in faculty and staff, courses involving the analysis of spatial information continue to grow in number and diversity at universities (Wikle & Fagin, 2014), and African universities are no exception. Researchers have expressed the need for capacity building in GIS, remote sensing of the environment, global positioning, and surveying techniques (i.e., geospatial technologies) in Africa (Taylor, 2004). Notwithstanding the fact that GIS and related analyses may not be a panacea, the integrative nature of GIS's links with spatial, temporal, and spatiotemporal analyses offer important means of better understanding the most pressing problems of our generation. GIS, remote sensing, and spatiotemporal analyses provide valuable tools for researchers and policy makers (Matthews et al., 2009). Research indicates that spatiotemporal perspective can be an incubator for interdisciplinary research (Goodchild & Janelle, 2004; Adu-Prah et al., 2019). The United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) promotes the development and use of global geographic information to address key global challenges (United Nations Committee of Experts on Global Geospatial Information Management, 2015). African universities' capacities to use geospatial technologies at a higher-level need improvement. According to Okafor (2011), there are positive reports about geospatial technologies education in several African universities. Research conducted by Coetzee

and Eksteen (2012) indicates that geospatial technology education at tertiary institutions in Africa is cloudy; they suggested capacity building to meet its application in current and future challenges.

The Carnegie African Diaspora Fellowship Program (CADFP) is designed to increase Africa's skilled labor, build capacity at the host institutions, and develop long-term, mutually beneficial collaborations between universities in Africa and the United States and Canada. The program is funded by Carnegie Corporation of New York and managed by the Institute of International Education in collaboration with United States International University-Africa in Nairobi, Kenya, which coordinates the activities of the program's Advisory Council. With its many natural resources, quickly increasing population, and accelerating economic development (Williams, 2008; Davies, 2010), Africa needs academics in the diaspora to strengthen and bridge the knowledge gap between universities in the diaspora and African universities. Geospatial technology programs continue to expand both in teaching and research in African universities. The challenge for faculty is to maintain currency and significance of the curricula to meet the changing needs and demands of the industries and governments in respective countries. Research in African universities using GIS, remote sensing, and related spatial technologies continues to be hampered due to lack of capacity.

At the core of the CADFP-sponsored project between Texas fellow Sam Houston State University and host university Kwame Nkrumah University of Science & Technology (KNUST), Ghana are training, curriculum development, and enhancement in geospatial technologies to support social science teaching and research. The project used curriculum design and improvement techniques along with summer workshop offerings to achieve the project objectives. The project to date has created avenues for master's and doctoral students' supervision, a signed memorandum of understanding (MOU), a new geospatial computer laboratory, a shared database for faculty and students, an online geospatial technology workshop, and publication opportunities through the *International Journal for Applied Geospatial Research*, *African Geographical Review*, and related journals. The shared experiences and challenges in meeting the project objectives and outcomes included: (1) fitting programs into already busy academic schedules of the host university, (2) incentives for host faculty to participate in programs, and (3) lack of state-of-the-art geospatial technology computer labs to support teaching and research. Most African universities face these challenges, but the methodology and lessons learned from this project can serve as a model for African universities pursuing programs in geospatial technologies to support social science teaching and research.

Project Initiative and Objective

The project initiative emanated from the need to fill the gaps and strengthen faculty and staff in research, teaching, and student supervision at the host university, KNUST. It was envisioned that the project initiative would provide a conduit for a long-term partnership between the diaspora university, the Department of Environmental and Geosciences at Sam Houston State University in the United States, and the Department of Geography and Rural Development at the host university, KNUST in Ghana. To address the knowledge gap in faculty and the capability to teach and supervise the increasing number of students at master's and doctoral levels in the field of geospatial technologies at KNUST in Ghana, the project sought to address the following integrated objectives: (1) enhance the geospatial technology curriculum in the Department of Geography and Rural Development at the host university; (2) organize and teach a six-week summer course for graduate students and faculty in geospatial applications for social science research; (3) identify potential faculty to collaborate on applied geospatial technologies research.

Methods and Approach

The Department of Geography and Rural Development at KNUST offers Bachelor of Arts programs in Geography and Rural Development, and Culture and Tourism. At the postgraduate level, the department offers Master of Philosophy and PhD degrees in Geography and Rural Development. GIS and remote sensing courses are offered to support the degree courses. At the core of this project is training and enhancing curriculum in geospatial technologies to support social science research in the host university. The project used curriculum design and improvement techniques and summer classes to achieve the objectives. A virtual meeting with faculty responsible for teaching related courses was held to discuss possible improvement and enhancement in the curriculum. The instructional approach was used to provide a four- to six-week course at KNUST. Lectures, hands-on computer laboratory exercises, and group projects were used for the summer training workshop. Faculty with research foci related to the application of geospatial technologies were identified through face-to-face discussion and dialogue.



FIGURE 1

CADFP Fellow Dr. Samuel Adu-Prah (third from left) meets with the current vice chancellor of the Kwame Nkrumah University of Science and Technology, Professor Rita Akosua Dickson (right).

The areas identified for potential application included rural community development and sustainability, urban studies, social vulnerability and hazards, land use and land cover change, climate change, public health, and tourism.

Project Outcomes

Figure 1 shows a meeting of CADFP Fellow Dr. Samuel Adu-Prah with the vice chancellor of the host university, KNUST, Professor Rita Akosua Dickson. During the meeting, the vice chancellor was briefed about the CADFP initiative in enhancing higher education, specifically at KNUST. Professor Dickson was excited to learn about the ways Africans in the diaspora are contributing to the growth of African universities. She promised to assist in all capacities to see to the long-term success of the collaboration.

Figure 2a shows the host collaborator and the CADFP Fellow in front of the KNUST Department of Geography and Rural Development, Faculty of Social Sciences, College of Humanities and Social Studies building. Figure 2b is a picture of the resource persons for the training workshop with the identified key geospatial technology faculty, Dr. Gift Dumedah. A series of intensive, four- to six-week training workshops in geospatial technologies was organized for faculty and graduate students (PhD and master's) during the project periods. As part of the project outcome, a thorough review of the GIS and remote sensing courses offered at KNUST was conducted with the faculty responsible for teaching the courses. It was also agreed that all geospatial technology-related courses will have accompanied computer lab exercises to provide students the needed skills for research and the job market.

Figure 3 shows one of the presentations during the workshop. The participants came from diverse disciplines, including geography, tourism, history, architecture and planning, information technology, and electrical engineering. To support the teaching of the courses, I agreed to provide the requisite hands-on materials currently used in teaching similar courses in the diaspora institution. Recently published textbooks on geospatial technologies were provided to KNUST. Topics covered in the training workshop included: Introduction to ArcGIS Software; GIS: A Unique Way of Understanding, Visualizing, and Exploring Our World; GIS Data Collection and Model; GIS Workflow and Major GIS Operations; Creating and Maintaining Geographic Databases; Cartography and Map Production; and the Remote Sensing Process. In addition to the lecture materials, each topic covered had associated hands-on exercises. A fully functional, one-year student version of Environmental Systems Research Institute (ESRI) ArcGIS 10.x software was given to all workshop participants. This was made possible through the collaboration of ESRI in California and Sam Houston State University in Texas. Workshop participants also were awarded certificates for completing the training (Figure 4).



FIGURE 2a

Host collaborator Dr. Divine Odamé Appiah of KNUST and CADFP Fellow Dr. Samuel Adu-Prah of Sam Houston State University in Texas stand in front of the Department of Geography and Rural Development at KNUST.



FIGURE 2b

Summer workshop resource persons, including the key GIS remote sensing faculty, Dr. Gift Dumedah (second from left).



FIGURE 3

Dr. Samuel Adu-Prah (standing) leads one of the training workshops.



FIGURE 4

Summer workshop participants hold their geospatial technology certificates after completing a six-week workshop.



FIGURE 5

CADFP Fellow Dr. Samuel Adu-Prah (left) gives a closing remark to workshop participants (right) during a visit to the host university, KNUST.

Figure 5 shows a closing remark presentation attended by students and faculty of the College of Humanities and Social Studies at KNUST. The faculty who participated in the workshop promised to use geospatial technologies in their respective research areas. Among the faculty research areas identified included, land use and land cover change; environmental hazards; environment, water and sanitation; climate, agriculture and food security, health and development, and tourism.

Reflections on Outcomes: Lessons Learned

The projects sponsored by CADFP have created avenues for master's and doctoral students' supervision and a gateway for collaboration. I continue to review master's and doctoral dissertations for students from the host university, KNUST. Some of the students have also had the opportunity to pursue further studies in related geospatial technologies through my recommendation and facilitation. KNUST's Department of Geography and Rural Development now has a dedicated GIS remote sensing computer laboratory with donated computers to be upgraded by the university. The MOU between the two universities is strengthened through the exchange of ideas and the possibility that the KNUST vice chancellor will visit Sam Houston State University in Texas. A shared database has been created to be

accessed by host faculty and students for research articles to support research at the host university. The workshop participants continue to have access to the one-year ESRI ArcGIS software license, which can be renewed annually, in collaboration with ESRI and Sam Houston State University. Faculty continue to publish in the *International Journal for Applied Geospatial Research* and the *African Geographical Review Journal*. Both academic and professional networks have expanded through the fellowship.

The geospatial technology curriculum at KNUST has been improved and enhanced. A new master's program—GIS and Remote Sensing—has been added to the university curriculum. This was achieved by bringing together key faculty involved in teaching geospatial technology-related courses and allowing them to have input in the curriculum design. With the recent visit to the host university, an online version of the geospatial technology workshop has been developed to be fully functional on an open-source learning management system. This will be implemented by the host university and the department and will run quarterly during the year, supported by the fellow.

Some challenges were encountered in executing the project objectives at the host university. Among the key challenges were: (1) fitting the project activities into already busy department schedules, (2) the need for incentives

for host faculty to participate in programs, (3) lack of GIS computer laboratory and network issues, and 4) finding the key faculty to collaborate with. Some of these challenges are often reminiscent of African universities collaborating with diaspora scholars and developing geospatial and related programs. The challenge of fitting the project activities into department schedules was overcome by crafting the project with input from the department chair and the key resource person—in this instance, Dr. Gift Dumedah, a geospatial faculty member in the host department. In addition, challenges related to host faculty participation can be resolved by keeping them well informed of the project's objectives and the mutual benefits. Finding the key faculty to work with on the project and having the department chair provide administrative oversight is often the best approach.

Despite the challenges, the outcomes and lessons learned for this project can be duplicated in other African universities pursuing programs in geospatial technologies and related applications. The continued summer training workshops with CADFP sponsorship is helping to close the gap that exists in Africa higher education and in this case sustaining the initiatives started at KNUST. As a continuing effort, the host university is setting up a university-wide Center for Geospatial Technology in collaboration with Sam Houston State University. The center will serve as an incubator for teaching, research, and community outreach in geospatial technologies.

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Building and Enhancing Research, Teaching
and Service Capacity of Host Universities:
What Works?

Advancing Faculty and Clinical Preceptor Skills: Opportunity for African Diaspora Skill-Transfer

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Background

Preceptors are experienced clinical practitioners who teach and role-model clinical skills to students, novice practitioners, or new graduates and new employees. Preceptors help students and new practitioners transition from novice to expert practitioner (Benner, 1982; Ebu Enyan et al., 2021). Preceptorship is an evidence-based strategy to enhance clinical learning and clinical competencies for faculty and preceptors are crucial to a positive pedagogical environment. With growing globalization of the health workforce, competent and confident preceptors are in high demand, and the need for professional development for clinical preceptors remains crucial to ensure effective transfer of knowledge and skills to students (Bengtsson & Carlson, 2015). In the past decade, the growing complexity of healthcare delivery has given rise to an increased demand for graduates of health professional institutions to be practice-ready when entering the job market (AlMekawi & El Khalil, 2020). In Nigeria, the Nursing and Midwifery Council requires nursing and midwifery schools to develop strategies to strengthen clinical preceptors' capacity to effectively supervise students (Suleiman, 2020). The ability to implement the required strategies differs between institutions. In 2019 and 2020, the Nursing and Midwifery Council of Nigeria launched a regional and zonal clinical preceptor capacity program (Suleiman, 2020). Even with these steps, there is a tremendous gap to fill to ensure wide and rapid coverage. While professional health institutions must comply, they have to invest in sustainable strategies to ensure that students receive effective support and supervision to achieve clinical learning outcomes and objectives. The current need is an excellent opportunity for African health professionals in the Diaspora to engage with schools for skills transfer. It is a known fact that inadequate preparation and support for

preceptors undermines the effectiveness of clinical learning environments (Ebu Enyan et al., 2021).

The purpose of this paper is to discuss strategies used through the Carnegie African Diaspora Fellowship Program to develop and pilot a clinical faculty and preceptor competency program at a nursing institution in Imo state, Nigeria. The curriculum objective was to strengthen the preceptorship and clinical teaching partnership to maximize learning outcomes for students. An overview of the gaps, challenges, and lessons learned will be presented, and possible solutions will be proffered. This project is an exemplary opportunity (among many others) for future diaspora clinical and educational research collaboration.

Method

Prior to project submission, an initial needs assessment conducted by the host institution's department of nursing revealed gaps in coordination of clinical rotations and concerns about inadequate supervision of students. Once the project was approved, the fellows identified a curriculum for local adaptation. The fellows completed an initial language adaptation while the final adaptation was conducted with a core group of clinical faculty from the host institution to ensure contextual appropriateness for Nigeria. The faculty adopted six out of the original seven modules of the curriculum. They covered: (a) Preceptor Roles and Responsibilities, (b) Assessing Learner Needs and Learning Styles, (c) Clinical Teaching Strategies, (d) Facilitating Critical Thinking and Clinical Decision-Making, (e) Managing Learning Experiences with Culturally and Generationally Diverse Students, and (f) Communication and Conflict Resolution. The hosting school administrator and CADFP fellows conducted advocacy visits to the university and clinical site administrators to facilitate buy-in and increase staff participation. The fellows also conducted



two focus groups with the clinical preceptors and clinical faculty at the school of nursing for further needs assessment. Using the preceptorship and clinical teaching partnership models (Atakro & Gross, 2016; Billings & Halstead, 2009), the curriculum was implemented by incorporating a Train-the-Trainer (TOT) strategy over seven weeks from July through August, 2017.

Analysis

The focus group recording was transcribed verbatim and analyzed using an iterative process to identify common themes and subthemes.

Findings

Several gaps were identified at university, department, and hospital levels. These were similar to those reported in the literature (Ebu Enyan et al., 2021; Ball et al., 2021) and included:

- (a) There was leadership and academic politicking that negatively affected teamwork at the school.
- (b) There was no memorandum of understanding or policy guiding clinical placement.
- (c) Clinical evaluation tools were unavailable.
- (d) There was little or no communication between clinical faculty and preceptors, hence learning objectives and expectations were not communicated.
- (e) Scheduling and preceptor notification were inconsistent; the preceptors did not have enough time to plan clinical experiences because “students just showed up.”
- (f) Poor working relationships were reported by the hospital staff.
- (g) Both faculty and preceptors reported lack of preparation for their roles; the “clinical instructors were not visible,” therefore student supervision by faculty was minimal and sometimes missing.
- (h) Preceptors lacked support from the faculty and felt disempowered. “Most infractions reported to the school were not followed up; there [was] no outcome or feedback,” so the preceptors lacked control over the students. They also reported that “the students dictated their own schedules and assignments,” “they come and go,” and “[a] majority of the students are not serious.”
- (i) Both school and hospital teams reported that inadequate staffing hampered their roles. These gaps highlighted the importance of clinical faculty and preceptor role development, as well as the need for structured clinical rotation plans.

Project Outcome

The participants expressed better understanding of the preceptor concept; roles and responsibilities of both the faculty and clinical preceptors; importance of better communication with students; and need to plan for precepting before students’ arrival. They expressed full comprehension of the need to plan daily activities when precepting. They became more aware of the required competencies of good preceptors and understood the need for preceptors to have teaching skills. They expressed improved understanding of evaluation methodologies (i.e., formative and summative assessments) and how to use alternative learning strategies. They appreciated the need for student orientation to the unit, resources, and policies. The participants identified strategies to address some of the gaps, including plans to institute new faculty orientation and annual refresher courses for faculty and preceptors. They planned to discuss nonfinancial incentives to motivate preceptors and to continue advocacy with school and hospital management to mitigate infrastructural challenges.

Recommendation Conclusion

This project was identified as “timely and enlightening” by the participants and was well received in Nigeria. The TOT strategy promulgates knowledge/skills and facilitates sustainability. This is an opportunity for skills transfer by African health professionals in the diaspora. Partnership with Nursing and Midwifery Councils will enhance scale-up of the curriculum to more states. Its adoption, and encouraging schools to implement the curriculum over a given period of time as part of accreditation requirements, will further ensure sustainability. This project is suitable for collaborative implementation research to measure its effects on nursing and midwifery education. Incorporating a leadership workshop as part of advocacy may help minimize the negative effects of institutional politics.

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Building and Enhancing Research, Teaching
and Service Capacity of Host Universities:
What Works?

Enhancing Research Productivity Through Institutional Culture and Internal Policy Changes in Sub-Saharan African Universities

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ABSTRACT

Universities in sub-Saharan Africa face challenges in enhancing research output for faculty and doctoral students. Some of these challenges are rooted in the colonial legacy (in which most universities were established), brain drain, and institutional cultures and internal policies. These challenges are roadblocks to innovation and sustainable practices that have the potential to boost productivity among faculty members and provide a competitive edge for doctoral students in the job market. This paper proposes institutional culture and internal policy changes that sub-Saharan universities can adopt to increase research productivity for their faculty and doctoral students without undue stress to available resources. These changes include (a) moving away from the traditional five-chapter monograph as the only assessment tool in doctoral education to manuscript embedded dissertations. Producing at least three publishable manuscripts under the mentorship of a committee not only gives an edge to the doctoral students in the job market, but increases research output for the institution; (b) developing a publication writing course as part of faculty workload, with a culminating activity of a manuscript submission to a peer-reviewed journal; (c) institutionalizing writing as part of responsibilities apportioned to faculty by designating writing time within working hours; and (d) providing incentives for collaborative writing teams; for example, valuing collaboration more in personnel decisions.

Research Productivity in Sub-Saharan Africa Universities

In summer 2018, I was awarded the Carnegie African Diaspora Fellowship Program (CADFP) award to teach qualitative methods and mentor doctoral students in dissertation writing at a private university in Kenya. I learned during this visit that doctoral students were mandated to publish at least three peer-reviewed articles in academic journals in addition to their dissertation before graduation, as recommended by the Commission of University Education, Kenya. I witnessed firsthand the pressure these doctoral students felt as they struggled to write for publication even though they worked full time, had young families, and endured long commutes to and from the college. Yet there was no support system in place to assist the students with obtaining the skills to write for publications. The consequence was that most manuscripts they submitted were rejected, even though the data produced may have had significant implications for policy development that would improve the livelihood of the local population. Inability to publish in academic journals made the doctoral students stagnate in their career trajectory, increased their time to graduation, or caused them to eventually drop out of the program (Wairungu & Maina, 2021). Some had fallen victim to predatory journals that charge exorbitant publication fees, even though the work was not peer-reviewed. A more serious consequence was

that Kenya is unable to produce enough PhD holders to work in the 70-plus institutions of higher learning.

The challenge of writing for publication in refereed journals is not limited to doctoral students in Kenya. During a visit in 2011 as a Fulbright scholar in a public university, I had witnessed similar struggles experienced by early-career professionals in writing research for academic journals. These young professionals were pressured to publish a certain number of papers in peer-reviewed journals before they could seek promotion or merit pay, yet the institution offered little or no support to facilitate academic writing. The consequence was that few early-career professionals, especially women, published in academic journals, and even when some eventually got published, their research was already dated. Most manuscripts were rejected. The young academics stagnated professionally, with a more serious consequence that Kenya not only becomes a nation of knowledge consumers but undermines its ability to be a producer of knowledge.

The story of two Kenyan universities mirrors that of many universities across sub-Saharan Africa. Research output coming from universities in sub-Saharan Africa is extremely low and the continent remains largely a consumer of knowledge, “depending on others (usually west) for knowledge production, appropriation and dissemination: a situation that undermines the continent’s ability to maximize its democratic potential and development agenda”

(Mbadlanyana, et al 2011, p. 78). As in most universities around the globe, publication in peer-reviewed journals is an index used to measure a scholar's productivity for determining promotion and merit pay. Collectively, it is used for institutional rankings, as well as citations for impact value. Unfortunately, highly developed countries top all the rankings, with developing countries occupying the lowest ranks. Indeed, sub-Saharan Africa ranks lowest in knowledge economy, studies of academic publications, patents, citations, and innovation systems (Ojanperä et al., 2017). Similarly, the number of academic articles, which offers a relatively uniform measure of knowledge-intensive output as the "process of peer-reviewed publishing and the way in which it constitutes permanent scientific record" (Ojanperä et al., 2017, p. 37), is low.

According to Okemwa (2016), scholarly publishing is generally associated with "scholars that teach and/or conduct research in institutions of higher learning and other research institutions" (p. 3). Since a university education is critical for the generation of knowledge, scholarly publishing should be expected to serve the purpose of disseminating knowledge. Scholars seeking promotion are evaluated on the number of scholarly articles they have published and the reputations of the journals in which they are published. Journal rankings are regularly used by university authorities to gauge the progress of the individual faculty and the impact the knowledge is making in the field. World university rankings also consider the number of articles each faculty has produced. It is, therefore, in the best interest of sub-Saharan Africa universities to boost capacity for knowledge production and research output if it is to remain relevant and a player in the global market.

A few organizations have tried to boost sub-Saharan Africa research output. For instance, in an effort to strengthen the institutional basis of scholarly publishing and knowledge production, the Council for the Development of Social Science Research in Africa (CODESRIA) posits that "publishing is an economic activity capable of contributing to a country's wealth" (Bgoya & Jay, 2013, p. 33). CODESRIA has provided opportunities for African scholars to publish in scholarly journals, increasing "citations of articles in African published journals" (Bgoya & Jay, 2013, p. 27). Likewise, CADFP has, in the past few years, linked African academics in the diaspora and those on the continent in an effort to enhance sustainable knowledge production (Fongwa, 2018). But even with these interventions, research productivity in sub-Saharan African universities has remained low, contributing the smallest share of academic articles globally (only 1.1%) even though Africa has 12% of the world's population (Ojanperä et al., 2017). The question to ask, then, is "What barriers are the sub-Saharan Africa universities facing in regard to research output in scholarly publishing, and how can those barriers be removed?"

Barriers to Research Output and Scholarly Publishing in Sub-Saharan Africa

There is no doubt that sub-Saharan Africa universities face enormous challenges in research output as measured through academic publishing. Those challenges include (a) colonial legacy, (b) brain drain, and (c) institutional cultures and policies.

Colonial Legacy: According to Assié-Lumumba (2011), the "African university in the 21st century reflects essentially a colonial legacy and ongoing channels of skewed relations at the global level" (p. 179). Many sub-Saharan Africa universities were established to produce knowledge to entrench the colonial powers, and as Nel (2015) argues, much of the knowledge produced "entrenched White supremacy" (p. 137). While sub-Saharan Africa universities in the recent past have struggled for self-determination with a public mission in the production of relevant knowledge, proxies of colonialism such as the World Bank, World Trade Organization, Structural Adjustment Programs, and General Agreement on Trade Services have crippled productivity in universities and visibly destroyed "Africa's intellectual community" (Assié-Lumumba, 2011, p. 186). Much of the research funding coming from these institutions has stringent conditions, so the knowledge produced reflects the values of the funders rather than knowledge that can inform policies for improving the livelihoods of the African people. Consequently, the sub-Saharan Africa universities' ability to unlock solutions for the continent is largely diminished, even though universities are the key vehicles through which knowledge is produced and disseminated and articles published serve as the manifestation of knowledge diffusion. Indeed, "African governments have been dependent on policy solutions that are not rooted on and are not informed by African realities" (Mbadlanyana, et al 2011, p. 81). This practice has continued to be a major challenge in unlocking post-independence growth, international development, sustainability, and innovation across the continent. Indeed, a change of mindset in the colonial mentality in regard to indigenous knowledge production is needed for the scholarly and literacy output in Africa to increase. A question in some scholars' minds is whether European languages, in particular English, should be the only languages of publishing (Assié-Lumumba, 2011; Mbadlanyana, et al 2011; Nel, 2015).

This is not to say that sub-Saharan Africa universities have avoided attempts to "eradicate the spirit of perpetual servitude and replace it with spirit of self-respect" (Assié-Lumumba, 2011, p. 186). Our failure to develop indigenous modes of theory to meet the needs of the African people has "robbed us of the opportunity to engage African partners in [problem solving], not [just] recipients of

solutions” (Mavhunga, 2018, p. 39). The sub-Saharan African universities should, therefore, seek transformative autonomy as a “condition of knowledge production and dissemination” (Nel, 2015, p. 143). Knowledge produced should be in the service of “societal improvement with explicit transformative aims” (Nel, 2015, p. 143). Sub-Saharan Africa must decolonize by strengthening and empowering universities to produce enough doctoral students, equipping them with adequate training to comprehend challenges facing the African people, and responding to them appropriately so they may build the knowledge economy. To accomplish this task, the doctoral students must be supported by strong innovative systems and knowledge production infrastructure geared toward unlocking the potential of Africa’s knowledge economy. Therefore, revitalization of African higher education to produce knowledge and high-quality graduates requires a paradigm shift away from “reliance and importation of ideas and development models towards endogenous knowledge production” (Mbadlanyana, et al 2011, p. 81). Mavhunga (2018) argues for revamping doctoral program designs so students understand how to “reflect local condition [and] use local resources in response to local problems” (p. 42). The dissertations should reflect real-life situations and graduates capable of solving regional problems.

Brain Drain: There is no doubt that sub-Saharan Africa has suffered “brain drain,” defined as a loss of advanced professional and technical skills (Langa, 2018). Unlike other continents that have sought partnerships with their diaspora as a means of “brain circulation,” many sub-Saharan African countries have had dysfunctional relationships with their diaspora. Some of that dysfunction comes from the unfounded beliefs that migrants are unpatriotic and are viewed as a “political threat to the status quo” (Langa, 2018, p. 58). Fongwa (2018) argues that many African diasporas have established vibrant, albeit informal, engagement with individuals and institutions across Africa. The challenge facing these partnerships is that they are often lopsided, such as when the African diaspora comes with a donor mentality or the partnership is coerced so there are no benefits for the African partner. The diaspora partner may also not fully comprehend the local conditions for which they are seeking solutions. Based on that premise, sub-Saharan African universities should devise “systematic methods to attract the skills and human capital of [the country’s] diaspora” and challenge “certain traditions and practices in academic management” (Langa, 2018, p. 61). The engagement of the African diaspora results in intellectual and academic remittances, which can increase publication output. While many sub-Saharan Africa countries, such as Kenya, have effectively harnessed diaspora financial remittances, little has been done to understand and harness the equally important

human and intellectual capital that the diaspora possesses (Otiso & Maina, 2018).

Institutional Cultures and Policies: The organizational culture in sub-Saharan Africa universities has emerged as one of the biggest impediments to effective knowledge production. Like other universities across the globe, many sub-Saharan Africa universities peg personnel decisions regarding promotion and merit pay on the number of publications in peer-reviewed journals. The publications are subjected to another hierarchy based on authorship, with single-authored publications given the highest premium in remuneration and recognition. This hierarchy is often followed by first author in a co-authored publication, which sends a clear signal that individualism and competition are the only acceptable norms at these institutions of higher learning. This leads to a culture in which researchers are reluctant to share knowledge for fear of being penalized when personnel decisions are made.

Muzondo (2015) argues that most of the knowledge produced in sub-Saharan Africa universities is not shared even though “knowledge sharing is the most important part of effective knowledge production” (p. 10). Further, Muzondo (2015) posits that intellectual products produced and consumed in research-oriented institutions owe their legitimacy to institutional standards and academic values such as peer review. However, many sub-Saharan Africa universities have a “silo mentality” (Muzondo, 2015, p. 15) and few incentives for sharing knowledge, “useful internal knowledge that people could benefit from” (p. 16). Another reason for lack of sharing, Muzondo (2015) posits, could be the fear of scrutiny in the way university academics write, produce, and present knowledge, “a tradition which has taught people to hoard knowledge in order to advance” (p. 17).

Second, many researchers in sub-Saharan Africa universities are well grounded in the quantitative research paradigm, which claims objectivity and neutrality and researchers are not fully equipped to use qualitative approaches in data collection. This often limits them in accessing quality data and contributes to situations where most research findings end up on library shelves because the language of dissemination excludes the sensibilities of the intended beneficiaries. In addition, Grobbelaar and Harber (2016) argue that many sub-Saharan Africa universities lack intermediary structures to encourage dissemination of research for the benefit of local consumption. This problem is exacerbated by the “lack of trust in local researchers” (Grobbelaar & Harber, 2016, p. 158), especially where international partners are involved. Moreover, “career structures and incentive mechanisms do not support research uptake activities” (Grobbelaar & Harber, 2016, p. 178). It is therefore important for the sub-Saharan African universities to harmonize research policies

so co-production of knowledge between researchers and target consumers is encouraged, as is “development of stakeholders’ engagement and communication skills of the researcher” (Grobelaar & Harber, 2016, p. 161).

Removing Barriers to Research Output and Scholarly Publishing in Sub-Saharan Africa

Despite these barriers, sub-Saharan Africa universities have the potential to contribute to world knowledge and establish new standards of reference and knowledge to improve the livelihood of the African people; indeed, the key to Africa’s development lies in knowledge production (Langa & Fongwa, 2018). However, researchers in this region often face many challenges exacerbated by institutional culture and internal policies, including inadequate motivation and time, insufficient research funding, lack of incentives, heavy teaching loads, and lack of strong research cultures with little community engagement and outreach. To address some of these challenges, some institutional culture and internal policy changes could boost knowledge productivity and dissemination without undue stress on the available resources. These changes include (a) moving away from the traditional five-chapter monograph as the only assessment tool in doctoral education to manuscript embedded dissertations; (b) developing a publication writing course as part of faculty workload, with a culminating activity of a manuscript submission to a peer-reviewed journal; (c) institutionalizing writing as part of responsibilities apportioned to faculty by designating writing time within working hours; and (d) providing incentives for collaborative writing teams.

Publication-Based Dissertations: Doctoral programs around the globe are increasingly embracing the publication-based dissertation as a way to give their doctoral candidates a competitive edge in the academic job market (Jackson, 2013; Kamler, 2008). Publication-based dissertations consist of several articles the student publishes in refereed journals before or right after graduation. Thus, they become a clear indicator to prospective employers that new PhDs have significantly contributed new knowledge to the field and are proof that the researcher is independent (Horta & Santos, 2016). This approach has many benefits. Because the doctoral candidate is still under the mentorship of faculty, they enjoy feedback from their committee members as they develop and work on their manuscripts in a safe and supportive environment. They are able to transition from being a student to being an independent researcher, developing a healthy balance of confidence and perseverance during the dissertation process (Mason & Merga, 2018). The doctoral candidates who complete a publication-based dissertation rather than a traditional

single-monograph dissertation disseminate their results more rapidly; the peer review process provides them with impartial feedback; and the candidates build their scholarly reputation. The added benefit of the publication-based dissertation is that the committee members gain authorship of the published papers, boosting their own productivity portfolio.

Peer Writing Groups: Many universities are entrenched in a culture that views the problem of writing as remedial, “propositioned as an individual skills deficit” (Aitchison, 2009, p. 906) and far removed from institutional responsibility. However, research has shown that the pedagogy of writing groups offers powerful opportunities for learning, as it embraces a broader range of literacy practices and understanding pertaining to the academic environment, including speaking, reading, critiquing, and writing (Aitchison, 2009). Pedagogies that embed learning to write within a relevant scholarly context are more effective, especially because talking provides an opportunity for group members to engage in a “reflexive practice that connects reading and writing for the building of meaning” (Aitchison, 2009, p. 907). Writing groups can be a particularly valuable means for institutionalizing writing as a legitimate component of research education and for encouraging the development of a writing culture by providing rewarding opportunities for engagement and participation (Aitchison, 2009). For a sub-Saharan Africa university with scarce resources, writing groups would be beneficial because peers give and receive feedback, a “valuable tool for learning” (Aitchison, 2009, p. 912). The key is to provide designated times for group members to meet and write as part of their duties within normal working hours, similar to how department meetings are conducted. For the past four years, I have been a facilitator for a writing group on my campus. The writing group was proposed by a group of women faculty and was supported by the university administration in recognition that women faculty bear more responsibility in service duties than their male counterparts. Specifically, the university president urged department heads to release women faculty from teaching and service duties for at least three hours a week. This designated time allows groups of women (maximum of 10 per group) to meet in a designated space where they write and support each other. The women’s productivity has increased exponentially since the program was started.

Writing for Publication Course: Many doctoral programs, especially in the social sciences, have developed writing courses with the primary purpose of supporting PhD students in preparing and submitting publishable papers (Mandell et al., 2015). These courses are designed to offer support “in an environment conducive to their learning

and productivity” (Mandell et al., 2015, p. 211). Having students complete a writing for publication course has several advantages. It equips the students with writing skills pertinent to academic publishing. They gain a competitive edge in the job market, given the high expectations for job candidates by hiring committees in research institutions. Most importantly, it sends a strong signal to the PhD student that publication in peer-reviewed journals is part of their responsibility if they pursue a career in academia. The papers published raise the profile of the institution. As a Fulbright scholar in 2011, I taught a course in “Research, Writing & Dissemination for Academics & Professionals” to 15 early-career professionals. The course addressed topic selection and conceptual frameworks, data sources and methods of analysis, and dissemination of findings. When this course ended, 11 participants had each produced a full-length manuscript, which we published in an edited volume (Maina, 2014). Similarly, I have regularly taught a writing publication course for my department as part of my regular load assigned.

Collaborative Research/Writing Teams: Collaborative research teams are necessary and desirable components of any discipline (Cheruvelil et al., 2014) and according to Coffey et al. (2017), “benefits of collaboration are broadly recognized” (p. 148). In collaborative research and writing teams, members produce drafts with direct support from the team, starting with idea formation, conceptualization, and general outline, providing opportunities for discussion, motivation, and feedback as a pedagogical tool (Coffey et al., 2017). Sub-Saharan Africa universities can institutionalize incentive structures for promotion and assessment criteria to include collaboration in research and writing. According to Langa (2018), “academic collaboration involves a free sharing of ideas and the possibility of co-production of new knowledge of mutual benefits” (p. 67). It is therefore necessary that a cultural shift be established to create a knowledge base of common interests, a process of sharing information and experiences with the group that other members of the profession can learn from, and an opportunity to develop personally and professionally with clear incentives for collaborative writing (Muzondo, 2015).

For example, faculty should be encouraged to seek membership in a research group and actively participate in international networks, which will enhance publication productivity and the quality of research (Langa, 2018). This will lead to increased collaboration with colleagues, and the ability to give informed advice to peers in different departments, research institutes, and industry, as well as establishments in other countries. Fongwa (2018) advocates for an increased knowledge producing capacity by “adopting a reflexive approach to partnerships between academics in diaspora and those in developed

economies” (p. 116). Therefore, collaboration and partnering in knowledge producing efforts become a vital avenue for developing global solutions (Fongwa, 2018). Accordingly, “[the] African diaspora has a significant role to play in supporting and promoting development through knowledge generation and application” (Fongwa, 2018, p. 117). However, for the partnership to work, it must be structured efficiently and sustainably so that it generates research and teaching capacity, “empowering universities as economic drivers and agents of knowledge transfer” (Fongwa, 2018, p. 122). In short, the African diaspora can be a possible player in enhancing knowledge production in sub-Saharan Africa, increasing quantity and quality of knowledge production through sustainable collaboration.

Conclusion

The state of scholarly publishing and research dissemination in sub-Saharan Africa is complex, spanning a myriad of sociopolitical, economic, and cultural issues, and unique in every country. The issue emanates from the colonial legacy and the subsequent proxies of colonialism, brain drain, and the inability to tap intellectual remittances from the diaspora as a way of knowledge circulation. Needless to say, institutional cultures and policies have become the biggest impediments to knowledge production and research output. This paper has offered ideas that could reverse the trend of low productivity without undue pressure on available resources. First, including a manuscript-based dissertation, especially in the social sciences, as an acceptable assessment tool has the potential to boost productivity for the doctoral student, faculty mentors, and the institution. Second, developing a writing for publication course to support doctoral students in a conducive environment sends a clear signal that research productivity is expected from those who pursue academic careers. Third, institutionalizing writing as part of faculty responsibility and providing support through writing groups would increase productivity and send a clear message that writing is valued, that institutions have a responsibility to support it, and that writing is not an addendum, but integrated into the faculty workload. Finally, like in many organizations, collaborative team research and writing have the potential to change the cut-throat, individual competition mindset to incentivize co-operative partnerships and become a catalyst for sustainable research productivity and increased output.

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Building and Enhancing Research, Teaching
and Service Capacity of Host Universities:
What Works?

Capacity Building at the Federal University of Technology, Minna, Nigeria: Enhancing the Chemistry Undergraduate and Postgraduate Curricula, and Improving Research Capabilities

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ABSTRACT

Many universities in Nigeria lack state-of-the-art instrumentation and laboratory facilities for conducting teaching and research. This paper will discuss the outcome of two visits made by the presenter to engage in capacity-building efforts at the Federal University of Technology, Minna (FUTM), Nigeria. The thrust of the visits was two-fold: to incorporate computational chemistry into the undergraduate and postgraduate curriculum, and to improve the research capability of the academic staff. Computational chemistry was introduced into the undergraduate and postgraduate curricula because it is now an essential and integral component of the curricula. WebMO, a web-based interface that allows students and non-specialists to run state-of-the-art computational chemistry programs from the web browser on their computer, was introduced. The research capabilities of the academic staff were enhanced by workshops on proposal and manuscript writing. Collaborative linkages, which have resulted in publications, were developed between the academic staff at FUTM and faculty at the presenter's institution to analyze samples on instruments that were not available at FUTM.

Introduction

Chemistry is defined as the study of matter. It is a central science interwoven with other fields of science. It has contributed immensely to many areas of human development and advances in knowledge (Jones & Mulvaney, 2019). It is one of the programs of studies accredited by the Nigerian National Universities Commission (NUC) on Nigerian university campuses. NUC has prescribed a series of requirements that must be satisfied for programs to be accredited. Among the benchmark and minimum academic standards are admission and graduation requirements, learning outcomes, course structure, and resources requirements for teaching and learning (NUC, 2007). The chemistry program at the Federal University of Technology, Minna (FUTM), Nigeria, is accredited by NUC, having met all the benchmark minimum academic standards.

FUTM is one of 45 universities controlled by the national government of Nigeria, as of August 2021. It was established as a specialized university on February 1st, 1983 to offer degree programs in science, engineering, and technology. Currently, the university offers 100 bachelor's, master's, and doctoral degree programs in science, technology, engineering, and mathematics (STEM) fields with applications to agriculture, the environment, entrepreneurship, and education. FUTM occupies the top position among Nigerian Universities of Technology, based on a NUC ranking.

The Department of Chemistry at FUTM was established in 1983 as one of the pioneering departments of the university. Students in the department enroll in two five-year Bachelor of Technology (B. Tech) degree programs: (1) chemistry with polymer and (2) industrial chemistry. Enrollment in both

programs over the past five years averages 450 students. The department also provides foundation chemistry courses to students in other STEM degree programs such as biology, biochemistry, education, and engineering. During every academic year, about 3,000 students take ancillary chemistry courses in the department.

Currently, the department is in a one-story block of buildings on the old campus. There are 10 offices, which are shared by 21 full-time faculty and 5 laboratory/technical staff. There are two 60-seat laboratories. These labs are used in rotation by the 500 students who take general chemistry labs every semester, and they are also used by students conducting experiments for the required undergraduate project. There is a central laboratory dedicated to research where advanced experiments for master's and doctoral students take place. The department is equipped with the following working instruments: Shimadzu UV-Vis Spectrophotometer, Nicolet FTIR Spectrometer, PG Atomic Absorption Spectrometer, Ostwald Viscometers, and a host of others. These instruments are housed in the instrument rooms attached to the two 60-seater labs.

The five-year curriculum plan for students in the two bachelor's programs at FUTM comprises 183 units of courses in chemistry, science, and general education. It includes 107 units of chemistry courses and 6 units of industrial training. Students take most of their general education and basic science and math courses in the first two years of the program. The chemistry courses cover all the traditional areas of chemistry including analytical, biochemistry, inorganic, organic, and physical chemistry.

Teaching and Learning

During the summers of 2017 and 2019, Professor Abdul K. Mohammed visited FUTM as a participant in the Carnegie African Diaspora Fellow Program (CADFP) to work on curriculum development related to mentorship and training in student-centered active learning. This included the consolidative development of a curriculum in key areas of molecular modeling, as well as a computational and forensic chemistry curriculum. He also worked with FUTM academic staff on the incorporation of Process-Oriented Guided Inquiry Learning (POGIL) into the chemistry curriculum.

To boost the performance of students, an approach of student-centered active learning pedagogy has been proposed. POGIL is effective: It has been shown that in the POGIL classroom, students are actively engaged in developing their understanding. They are required to take responsibility for their understanding and feel less intimidated about telling their peers that they do not understand something.

In the typical lecture classroom where there are some active learning components, the students may still be passive and isolated from one another. They merely watch the “expert” at the front of the room, with a limited understanding of the concept and ideas because they have not processed the ideas in their minds.

One of the reasons cited for the diminishing interest in chemistry is the teaching methodologies that rely on passive learning, in which lecturers dictate lecture notes (Nkiko, 2021). However, many teaching activities can be classified as active learning. Prince (2004) defined all of these activities as “any instructional method that engages students in the learning process. In short, active learning requires students to do meaningful learning activities and think about what they are doing.” Some student-centered active learning strategies have been proposed to arrest this reduced interest in chemistry. These strategies include POGIL, Peer-Led Team Learning (PLTL), and Problem-Based Learning (PBL), among others.

POGIL was introduced in a seminar presented to lecturers in the Department of Chemistry at FUTM. By using POGIL in classes in which he served as a guest lecturer, Professor Mohammed demonstrated how he has implemented this approach in teaching chemistry. The talk was well-received by faculty, who were keen on implementing such an approach in their classes. In particular, while he was a guest lecturer in CHM 223, Structures and Bonding, for the entire six weeks of his visit in 2017, during which he had the opportunity to show how he has implemented this approach over the years.

Computational Chemistry

Professor Mohammed worked with colleagues at FUTM on the course content for a new course on computational chemistry, “Introduction to Computer-Aided Chemistry, Nano Chemistry, and Forensic Chemistry.” As a new course must go through an extensive approval process, it was decided that key computational chemistry concepts could be introduced into the undergraduate and postgraduate curriculum before the development of a standalone course. The major concepts that were introduced include an introduction to computational software, computational techniques, molecular modeling, computing spectroscopic and thermochemical properties, and simulations. The long-term goal is to make computational chemistry an essential and integral component of curricula of both undergraduate and post-graduate chemistry studies. Many recent scientific publications employ data analyzed with computational models that are often ancillary to the main thrust of a paper. Thus, computational chemistry has moved into the mainstream as an analytical method to interpret data. Students graduating from a chemistry undergraduate or postgraduate program should be equipped with the expertise in computational chemistry to remain current and relevant in modern-day research and industry needs. Therefore, it is of the utmost importance that the training of the next generation of scientists be enhanced, with greater exposure to computational chemistry (Alam et al., 2010).

WebMO, a web-based interface that allows students and non-specialists to run state-of-the-art computational chemistry programs from their computer web browser, was introduced to the academic staff and students at FUTM. This is a convenient way to introduce computational chemistry because it eliminates the need for the university to install and maintain computational chemistry software on local computers. Users can also access WebMO on their mobile phones and tablets. This ease of access should make the use of the software accessible very widely, as a majority of the users have mobile phones, even if they do not have access to computers.

To introduce the academic staff at FUTM and other neighboring institutions to computational chemistry and molecular modeling that can be implemented in their undergraduate and postgraduate chemistry courses, a training workshop was organized as a one-day pre-conference workshop on 24 June 2019, before the official opening of the second Biennial International Conference of the School of Physical Sciences of FUTM. By arranging the workshop to coincide with the conference, we had a satisfactory level of participation.

The workshop emphasized hands-on, simple computational molecular modeling and calculations. Freeware available online as web-based software and

standalone software that is important for incorporating computational chemistry into the undergraduate chemistry curriculum was also introduced. The workshop was well-received by the participants. The 37 participants at the workshop included postgraduate students as well as academic instructional and technical staff at FUTM and other institutions. A pre-workshop survey was administered to the participants to gauge their interest in new teaching methodologies and computational chemistry. The survey is shown below in Table 1.

The results of the pre-workshop survey indicated that the majority of the participants are willing to implement new teaching strategies in their classes. They are also open to implementing computational exercises learned from the workshop. Some of the comments made by participants are the following: "There is need for periodic training on simulations and computational chemistry," and "Important skills needed are the ability to tailor computational chemistry to different disciplines."

FIGURE 1

The author at an Introduction to Computational Chemistry workshop

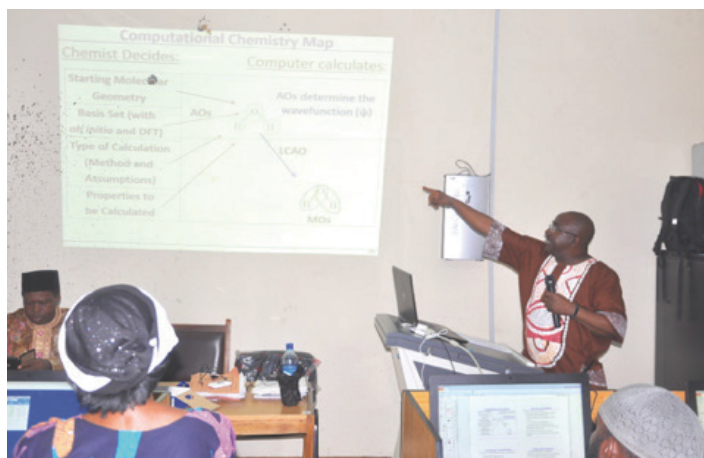


TABLE 1

Introduction to Computational Chemistry — Pre-workshop Survey

Please rate various aspects of the workshop by circling the appropriate number from 1 through 5.

| RATING SCALE | STRONGLY AGREE | AGREE | NEUTRAL | DISAGREE | STRONGLY DISAGREE |
|---|----------------|-------|---------|----------|-------------------|
| 1. Teaching with new instructional methods takes more preparation time than lecturing. | 5 | 4 | 3 | 2 | 1 |
| 2. I am interested in learning new approaches for explaining difficult concepts in my courses. | 5 | 4 | 3 | 2 | 1 |
| 3. Well-designed group work is an effective way for students to learn. | 5 | 4 | 3 | 2 | 1 |
| 4. I am interested in implementing other strategies than lecturing in my class. | 5 | 4 | 3 | 2 | 1 |
| 5. I plan to implement the computational exercises that I learn in this workshop in my courses. | 5 | 4 | 3 | 2 | 1 |

OTHER SUGGESTIONS & COMMENTS

TABLE 2

Introduction to Computational Chemistry — Post-workshop Survey

Please rate various aspects of the workshop by circling the appropriate number from 1 through 5.

| RATING SCALE | STRONGLY AGREE | AGREE | NEUTRAL | DISAGREE | STRONGLY DISAGREE |
|---|-------------------|-------|---------|----------|----------------------|
| 1. The objectives of the workshop were clearly stated at the beginning of the workshop. | 5 | 4 | 3 | 2 | 1 |
| 2. The objectives were achieved at the end of the workshop. | 5 | 4 | 3 | 2 | 1 |
| 3. The instructor(s) was/were responsive to participant needs. | 5 | 4 | 3 | 2 | 1 |
| 4. Appropriate opportunities for discussion were provided during the workshop. | 5 | 4 | 3 | 2 | 1 |
| 5. The workshop materials were informative. | 5 | 4 | 3 | 2 | 1 |
| 6. Demonstrations or hands-on experiences were organized effectively. | 5 | 4 | 3 | 2 | 1 |
| 7. Demonstrations or hands-on experiences can be easily implemented in my courses. | 5 | 4 | 3 | 2 | 1 |
| 8. This workshop covered topics that were up to date. | 5 | 4 | 3 | 2 | 1 |
| 9. I plan to implement what I have learned in this workshop in my courses. | 5 | 4 | 3 | 2 | 1 |
| 10. The time duration for this workshop is appropriate. | 5 | 4 | 3 | 2 | 1 |
| 11. As a result of this workshop, I am inspired to use computational exercises as a teaching tool to explain concepts. | 5 | 4 | 3 | 2 | 1 |
| 12. This workshop has motivated me to begin/continue research in the area of computational chemistry/molecular modeling. | 5 | 4 | 3 | 2 | 1 |
| 13. The interdisciplinary interactions at this workshop have encouraged me to work with others outside of my perspective on projects. | 5 | 4 | 3 | 2 | 1 |
| 14. Overall, I found this workshop useful and beneficial to my future professional development. | 5 | 4 | 3 | 2 | 1 |

OTHER SUGGESTIONS & COMMENTS

Results of the post-workshop survey showed that participants found the workshop to be beneficial for how to implement computational activities in their courses. Many of the participants commented that they would like to attend more workshops to deepen their knowledge of computational chemistry. One of the participants commented, "More workshops should be organized for better understanding of the topic."

The major weakness, per the post-workshop survey, was that there was not enough time allotted for the workshop. Many of the respondents indicated that a one-day workshop is not sufficient to impart the knowledge required for a better understanding of computational chemistry. After the workshop, one of the participants invited Professor Mohammed to facilitate the computational chemistry workshop at another institution.

The outcome of the workshop showed that there is room for the introduction of computational chemistry into the curriculum. The majority of the participants were very enthusiastic about the workshop and demonstrated interest in implementing the demonstrated exercises in their courses. A train the trainer model could be adapted to widely disseminate information about infusing chemistry courses with computational chemistry topics.

The introduction of computational chemistry will be done as a supplement to help increase student understanding of materials already covered in various courses. Students will learn the basics of computational chemistry and how to choose the appropriate tools for their needs. For example, in organic chemistry, students will be introduced to software for drawing and viewing organic compounds. In physical chemistry, students will learn how to compute spectroscopic and thermochemical properties. Several courses that could be infused with computational chemistry were identified. Among these courses are the following undergraduate courses: Physical Chemistry I (3 Units); Inorganic Chemistry (2 Units); Organic Chemistry I (3 Units); Physical Chemistry II (2 Units); Inorganic Chemistry II (2 Units); Organic Chemistry II (2 Units); Structures and Bonding (2 Units); and a postgraduate course on the Use of Computers in Chemistry & Research (3 Units).

Through supplemental funding from the Carnegie African Diaspora Program, single-user licenses for Solo Chemometric software and Spartan Computational Chemistry software were purchased by Professor Mohammed for installation on computers in the Department of Chemistry at FUTM to allow students to have access to these software programs for classwork and research.

Capacity Building and Research Collaboration

There were several research focus areas that the academic staff of FUTM was working on, including natural products elucidation and phytochemical analysis, analytical/environmental chemistry research as it relates to the deleterious effects of gold mining, and water contamination in certain areas of Niger State in Nigeria. Professor Mohammed engaged with faculty conducting ongoing research in zinc-titanium nanocomposites in the treatment of wastewater as well as photocatalysis. This was in addition to the collaboration on consolidative research in Chemometrics applications, especially on food nutrient analysis.

In 2017 during his first visit to the university, Professor Mohammed and several academic staff and post-graduate students discussed the collection of data for their research. This has resulted in many students sending samples to Professor Mohammed in the U.S., and he has assisted in collecting data for many of these students who have completed their thesis and graduated. Most of the samples analyzed were those of nanocomposite materials for the removal of pollutants from wastewater and natural products compounds that were extracted from plants with medicinal properties. The samples were analyzed on Fourier Transform Infrared (FT-IR) Spectrometer, Ultraviolet/Visible (UV-Vis) Spectrophotometer, Nuclear Magnetic Resonance (NMR) Spectrometer, High-Performance Liquid Chromatograph, Gas-Chromatograph/Mass Spectrometer (GC-MS), and Scanning Electron Microscope (SEM).

These collaborations have continued during Professor Mohammed's second visit to FUTM, during which his host Dr. Rasaq B. Salau arranged a series of meetings with various research groups in the department to discuss progress on current collaborations and future research activities. These research collaborations have resulted in the publication of eight papers in peer-reviewed journals on which Professor Mohammed is a co-author. The papers are listed below:

Mustapha, S., Jimoh, T., Ndamitso, M., Abdulkareem, S. A., Shuaib, D. T., Mohammed, A. K., & Amigun, A. T. (2021). The occurrence of N-nitrosodimethylamine (NDMA) in swimming pools: An overview. *Environmental Health Insights*, 15, 1–12. <https://doi.org/10.1177/11786302211036520>

Mustapha, S., Tijani, J. O., Ndamitso, M. M., Abdulkareem, S. A., Shuaib, D. T., & Mohammed, A. K. (2021). A critical review on geosmin and 2-methylisoborneol in water: Sources, effects, detection, and removal techniques. *Environmental Monitoring and Assessment*, 193, 204–237. <https://doi.org/10.1007/s10661-021-08980-9>

Mustapha, S., Tijani, J. O., Ndamitso, M. M., Abdulkareem, S. A., Ajala, A. O., Mohammed, A. K., & Oke, O. (2021). Fabrication of porous ceramic pot filters for adsorptive removal of pollutants in tannery wastewater. *Scientific African*, 11, e00705. <https://doi.org/10.1016/j.sciaf.2021.e00705>

Mustapha, S., Tijani, J. O., Ndamitso, M. M., Abdulkareem, S. A., Shuaib, D. T., Mohammed, A. K., & Sumaila, A. (2020). The role of kaolin and kaolin/ZnO nanoadsorbents in adsorption studies for tannery wastewater treatment. *Scientific Reports*, 10, 13068. <https://doi.org/10.1038/s41598-020-69808-z>

Mustapha, S., Ndamitso, M. M., Abdulkareem, A. S., Tijani, J. O., Shuaib, D. T., Ajala, A. O., & Mohammed, A. K. (2020). Application of TiO₂ and ZnO nanoparticles immobilized on clay in wastewater treatment: A review. *Applied Water Science*, 10, 49. <https://doi.org/10.1007/s13201-019-1138-y>

National Universities Commission. (2007). Benchmark minimum academic standards for undergraduate science programmes in Nigerian universities.

Mustapha, S., Ndamitso, M. M., Abdulkareem, A. S., Tijani, J. O., Mohammed, A. K., & Shuaib, D. T. (2019). Potential of using kaolin as a natural adsorbent for the removal of pollutants from tannery wastewater. *Heliyon*, 5, e02923. <https://doi.org/10.1016/j.heliyon.2019.e02923>

Mustapha, S., Ndamitso, M. M., Abdulkareem, A. S., Tijani, J. O., Shuaib, D. T., Mohammed, A. K., & Sumaila, A. (2019). Comparative study of crystallite size using Williamson-Hall and Debye-Scherrer plots for ZnO nanoparticles. *Advances in Natural Sciences: Nanoscience and Nanotechnology*, 10, 045013. <https://doi.org/10.1088/2043-6254/ab52f7>

Salau, R. B., Bisiriyu, M. T., Zalihat, A., Alheri, A., Aremu, M. O., Olushola, I. O., & Mohammed, A. K. (2020). Evaluation and chemometric analysis of the mineral profile of locally prepared soups in Minna, Niger State, Nigeria. *Journal of Chemical Society of Nigeria*, 45(1), 21–28.

Professional Development Activities

The author, Professor Mohammed, also served as a resource person to assist in the university's quest to develop the department's capacity to write successful research grant proposals. He delivered a presentation attended by approximately 100 faculty, staff, and postgraduate students of the School of Physical Sciences. The presentation covered identifying sources of funding, the importance of following requirements in the Request for Proposal document, formatting of the proposal, and budget. At the end of the presentation, there was an informative question and answer session during which additional information was provided to the participants. Aspects of post-award administration and the implementation of the grant were also addressed,

FIGURES 2 & 3

The author gives a presentation on "Collaborative Approach to Writing Award-Winning Grant Proposals"



as the receipt of renewal or future awards depends on past performance. It is therefore important for the award recipient to endeavor to deliver on the promises made in the proposal. The deliverables may include publications in peer-reviewed journals, training of students, or the delivery of a report. Many grants also expect periodic reports to be made on time.

Related to success on proposals is developing skills to write manuscripts of research results for publications international peer-reviewed journals. In the future, if the opportunity arises, Professor Mohammed would deliver seminars or workshops on writing manuscripts. During his last two visits to FUTM, he reviewed and edited several manuscripts that were to be submitted for publication.

Summary and Conclusions

The two summer visits to FUTM were successful because many of the intended outcomes of the visits were achieved. A framework was developed for revision of the undergraduate and postgraduate curriculum to incorporate active learning and computational chemistry into selected courses. Professional development activities for academic staff and postgraduate students on the introduction of computational chemistry into the chemistry curriculum provided a strong basis and improved comfort level for lecturers to consider implementing computational exercises in their classes. The long-term goal of the project, which is ongoing, is the development of a standalone course on Introduction to Computational Chemistry and Chemometrics. Dr. Rasaq B. Salau of FUTM, who was Professor Mohammed's host, is still working on this project.

Research collaborations that center around providing assistance for samples analysis for postgraduate students and academic staff was very successful because it has led to several students acquiring the necessary data to write their master's and doctoral theses and complete their degree programs. It has also resulted in the publication of eight manuscripts. This type of research collaboration involving assisting with sample analysis is currently ongoing and will likely continue for the foreseeable future.

There are other types of linkages that have resulted from the two visits to FUTM under the CADFP. The author, Professor Mohammed, delivered a keynote speech at an international conference held at a neighboring institution to FUTM, Ibrahim Badamasi Babangida University, Lapai, Nigeria: the 1st International Chemistry Conference IBBUL-CHEM 2021 on June 8, 2021. Professor Mohammed is also scheduled to deliver another address at the 3rd FUTM School of Physical Sciences Biennial International Conference taking place from October 25 to 28, 2021.

Dr. Ruth Araga-Lafia, a Senior Lecturer at FUTM, was a Visiting Fulbright Scholar at Michigan State University in 2019, and she was invited by the author to deliver two

presentations at North Carolina Central University. This visit has resulted in an ongoing conversation with one of Professor Mohammed's colleagues at NCCU to develop a joint project on polymer chemistry research that would involve student and faculty exchange between the two universities. A long-term goal of this collaboration will be the establishment of a Memorandum of Understanding between FUTM and North Carolina Central University.

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Building and Enhancing Research, Teaching
and Service Capacity of Host Universities:
What Works?

Promoting an Infrastructure of Trust among Trainers: Implications on Academic Best Practices in Nigerian Universities

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ABSTRACT

In many public and privately owned Nigerian universities, a great disconnection in academic best practices and standards persists. The lingering challenges bedeviling academic integrity are not exclusively restricted to classroom conduct and lecturer–student relationships. They stretch to the horizons of researchers, academic and non-academic staff, and the entire university community. Although economic and noneconomic incentives can motivate people to join the teaching profession, lecturers are service providers, while students are the clients. Not many lecturers are cognizant of this reality. Thus, in some universities, the teaching, learning, and research environments are overtly fraught with intimidation, harassment, exploitation, extortion, and physical abuse of students. In addition, misappropriation of research grants, academic dishonesty, and mistrust between academic and non-academic staff are common practices.

This paper analyzes the challenges associated with inadequate infrastructure for encouraging academic best practices and quality service delivery in Nigerian universities. Scoping literature review, participant observation, and narratives captured in six training of the trainer (ToT) workshop sessions organized at two different universities in Nigeria as part of the Carnegie African Diaspora Fellowship Program (CADFP) are adopted in this paper. This paper aims to highlight some challenges affecting academic best practices in Nigerian universities and suggests an alternative approach for promoting academic integrity and best practices, which is a huge issue in the Nigerian higher education system.

To better equip graduate students who will later take up the teaching profession, most universities in the Western world continue to implement strategic policies and programs that foster academic best practices and research integrity. They periodically review and update these programs and policies to reflect current realities in a dynamic world. For instance, graduate programs in higher education teaching, designed to highlight innovative teaching techniques and a better teachable point of view, are available for graduate students in various Canadian universities.

Contrariwise, most lecturers in Nigerian universities neither pass through higher education teaching programs nor engage in periodic training to sharpen their skills. Apart from local or international academic conferences and workshops, other infrastructures to enhance innovative service delivery in the classroom and the research environment are visibly absent. In some other professions, policies, and programs are often implemented to promote constant retraining, performance evaluation, reassessment, quality assurance training, and feedback. These are periodically conducted to enhance best practices. Most Nigerian universities have not implemented periodic student evaluation feedback at the end of the semester to account for improvement on trainers' service delivery.

This paper suggests that higher education regulatory bodies like the National Universities Commission should introduce programs and policies mandating that Nigerian universities focus on promoting academic best practices. Furthermore, each university should develop internal structures, mechanisms, and policies that enhance academic and research integrity. Infrastructure to support and encourage students and staff to reject academic misconduct and report such without attracting any form of backlash should be promoted.

“Destroying any nation does not require the use of atomic bombs or the use of long-range missiles. It only requires lowering the quality of education and allowing cheating in the examinations by the students.” — NELSON MANDELA

Introduction

Education is among the fundamental basic rights of every human being and is one of the criteria for measuring the human development index (HDI). As a component of human capital development, education is a considerable indicator for determining socioeconomic development and the well-being of individuals and societies (Habib & Nauman, 2021). Education and educational institutions contribute substantially to the gross domestic product (GDP) of nations (Goczek et al., 2021). As a significant public good (du Plessis, 2014), education is crucial to global sustainable development in a world fraught with several predicaments and needing meaningful solutions (Golub, 2015).

The importance of education in reducing socioeconomic inequalities and poverty and creating stable opportunities for individuals to reach their potentials informed the declaration of January 24 as International Day of Education by UNESCO. Developed countries with higher percentages of educated people and better infrastructure for quality education delivery processes and standardization are known to have increased human capital accumulation, greater productivity per capita, better standards of living, lower mortality rates, and other subcategories of the HDI that contribute to a healthy economy (du Plessis, 2014; Sulisworo, 2016; Botev et al., 2019; Bruneau & Girard, 2021; Ziberi et al., 2022; Bartak, et al., 2023; Friderichs et al., 2023). The centrality of education to the development of other sectors of any economy, including environmental sustainability and democratic processes, is undeniably evident.

The neoclassical economics concept of human capital supports the view that education improves human capital stock and hence productivity and well-being of individuals and societies (Ranis et al., 2000; Sulisworo, 2016; Bruneau, 2020; Amin et al., 2023). Bruneau (2020) reasoned that increasing the level of education among the labor force will have a positive impact on labor productivity. Friderichs et al. (2023) revealed the connection between income inequality reduction and increasing quality educational attainments, while Amin et al. (2023), in decomposing labor productivity between firms in upper income and high income countries, suggests that the gap in labor productivity among the two categories is linked to structural effect which included educational attainment. Quality education reduces skill mismatch, often affecting labor wage, job satisfaction, and productivity (Ziberi et al., 2022).

The United Nations Sustainable Development Goals (SDGs),

rectified in 2015 by the 193 member states, prioritized education as number four on the list of conditionalities for achieving sustainable development by 2030. The focus, however, is on not just education but quality education. By incorporating the adjective quality to envision the type of education that will propel sustainable development globally, the United Nations SDGs draw attention to the distinction in educational systems across nations (Van den Bor & Shute, 1991; Damon et al., 2016; Suresh & Kumaravelu, 2017; Zaki Ewis, 2020). The SDGs' emphasis on quality education also underscores the need to prioritize academic excellence to accelerate socioeconomic development and reduce global poverty and inequality (United Nations, 2020).

Quality education provides the requisite skill sets for improved human capital development, which drives higher GDP (Sulisworo, 2016). As drivers of a nation's competitiveness, Sulisworo (2016) emphasized not only quality education but also an excellent education system, a rigorous training environment, robust school management principles, research integrity, and better training facilities as incentives for quality education. A culture of academic integrity is crucial for better performance of the education system so that it has more positive effects on sustainable development.

Is Systemic Public Sector Corruption Stalling the Benefits of Increased Investment in the Educational Sector?

Increasing investment in quality education correlates with higher GDP and other indicators of socioeconomic development based on available evidence (Bloom et al., 2006; Otieno, 2016; Hanushek & Woessmann, 2010; Goczek et al., 2021). The perception that education is significant to individual and societal development has provided:

- The impetus for governments of different countries to invest in education,
- Heightened anticipation that better education can inspire innovative approaches to several problems and challenges faced by any society, and
- Concerted and specific attention and efforts in addressing the local challenges in the host community.
- Strategic planning and consultation initiatives to improve education service by some institutions.

Although available evidence in the literature suggests a strong association between sustained investment in education and economic growth (Organization for Economic Co-operation and Development [OECD], 2006; Hanushek & Woessmann, 2010; Liao et al., 2019; Oketch, 2016 Shobande & Asongu, 2022; Esen et al., 2023), some developing countries especially in sub-Saharan Africa have witnessed an uneven relationship between investment in education and economic growth (Van den Bor & Shute, 1991; Konadu-Agyemang, 2000; Mashamba et al., 2022). Such disparity is attributed to fundamental structural challenges relating to the paucity of stable and robust national educational policy and weak institutions (Van den Bor & Shute, 1991; Konadu-Agyemang, 2000), warranting suggestions to revamping the educational policy and curricula in some African countries (Mashamba et al., 2022). The suggestion to revamp the education policy and curricula in some African countries is critical in positioning the education sector to provide the requisite cognitive skills and knowledge relevant to specific employment requirements (Ziberi et al., 2022).

The submission about institutional weakness does not suggest fragility but rather indicates that enforcement of policy instruments to guarantee quality education is often flawed. This reasoning is evident where corruption is prevalent at the institutional and government levels (du Plessis, 2014; Dridi, 2014; Senadjki et al., 2021; Fomba et al., 2022). Many developing countries are saddled with corruption challenges (Transparency International, 2013) that trickle down from the top echelon of the society, the public sector, and public or private educational institutions to the average person and the way the society at large functions (Rumyantseva, 2005; Heineman et al., 2008; Nadeem et al., 2021; Xu et al., 2021).

Theoretical and empirical proofs indicate that in every society where corruption is prevalent at the institutional (governmental) level, economic performance, and sustainable growth face drawbacks. Such drawbacks negatively affect school enrollment, the institutional infrastructure that promotes quality education, human capital growth, innovative approaches to school administration, confidence in the education system, and overall national development (Dridi, 2014; du Plessis, 2014; Page, 2018; Nadeem et al., 2021; Mthiyane & Mudadigwa, 2021; Jansen, 2023). Endemic systemic corruption in the public sector of any nation implies that resources necessary for promoting quality and efficient educational services will be compromised, thereby eroding public confidence in the educational sectors (Mumuni & Sweeney, 2013; du Plessis, 2014).

The Nigerian government, like the governments of many other developing countries, especially in sub-Saharan Africa, has been heavily criticized for high-level endemic systemic corruption, which continues to jeopardize the country's desire to maximize its human and material resources' potentials for

socioeconomic development and greatness (Agbiboa, 2012; Makpor & Akpede, 2014; Page, 2018; Igiebor, 2019). Nigeria's Independent Corrupt Practices and Other Related Offences Commission (ICPC) investigated the level of corrupt practices in the education sector.

The outcome revealed that between 2005 and 2006, more than USD 21 million was squandered through the "illegal and unauthorized utilization of funds." The net effect of this fraudulent embezzlement of public funds meant for infrastructural investment in the education sector is that millions of children were denied access to basic education (Mumuni & Sweeney, 2013, p. 307). This dishonest practice and other reasons explain why more than 54% of Nigerians believe that the education sector is heavily corrupt and is probably the reason why the Nigerian government was indicted for "contributing to the denial of education" access to children (Mumuni & Sweeney, 2013, p. 307).

Complete Autonomy Is Often Absent, Especially In Appointments and Award of Contracts

Appointment of university vice-chancellors and council members for federal universities in Nigeria is heavily influenced by the Minister of Education or even the presidency (a partisan position controlled by the ruling party in power). Similarly, the appointment of vice-chancellors for state-owned universities is overly influenced by the governor of such state and other influential stakeholders, rendering the universities and higher education institutions not entirely autonomous. Levy (1979, p. 113) previously revealed how a military administrator "showed a university vice-chancellor a gun" to intimidate him into resignation.

In such scenarios, the preferred candidate is appointed not meritoriously but on the degree connectedness, loyalty to the power brokers, and or monetary inducement on the selection committee members (Omotola, 2013; Akpakwu & Ojowo, 2014; Alabi, 2016; Afolabi et al., 2020; Olukojun, 2021; Celik & Razi, 2023). The multiplier effects of such flawed interference in the administration of the university system in Nigeria are also felt in the hiring and appointment process of academic and non-academic staff, including professors.

The controversial professorial appointment of a serving Federal Minister of Communication and Digital Economy by the governing council of the Federal University of Technology Owerri, Nigeria, in 2021 generated a lot of tension and controversies (Alabi, 2021).¹

Some stakeholders in the education sector regard this shoddy appointment as one among numerous testaments of

¹ The Federal University of Technology Owerri, Nigeria appointed Isa Ibrahim as the Vice Chancellor of the institution though he was a serving Minister of Communication and Digital Economy. His appointment generated several controversies and conflicting alignments.

how undue government and institutional dysfunctions affect academic integrity and best practices (Jansen, 2023). Like other service sectors, certain infrastructure or policies, tools, skills, ethical conducts, best practices, periodic training, and evaluation are necessary assets to be a successful service provider. Infrastructure can be categorized into physical, ethical, and nonphysical. In some professions, skilled experts are required to undergo periodic training, performance evaluation tests, recertification, and reassessment to retain their license to practice or serve their clients.

The Nigeria Federal Ministry of Education has been pushing to implement guidelines that will require trainers in higher education to at least undergo some teaching training programs to equip them with skills and pedagogical ethics for effective and efficient teaching. These guidelines are scarcely implemented, and only a few universities in Nigeria allow student evaluation of professors at the end of any course.² To enhance confidence and build trust in the Nigerian university system, it is necessary to promote relevant infrastructure and enforceable policies that can guarantee research and academic integrity.

According to the updated OECD (2013) Program for International Student Assessment (PISA) 2021, a school with greater operational autonomy that has implemented the guidelines for feedback from students tends to have better quality assurance and performance improvement. Lack of complete autonomy affects resource allocation and unhindered decision-making on how the institution is run. The few universities in Nigeria with foreign affiliations, such as Nile University of Nigeria, African University of Science and Technology, and American University of Nigeria, tend to perform better because they enjoy more autonomy in contrast to universities with no foreign affiliations. Nevertheless, some private universities still score low in terms of academic integrity because they exhibit high-level academic misconduct and corrupt practices or deviant behaviors (Obalade & Arogundade, 2019).

In this paper, we present the challenges of academic best practices in Nigerian universities attributable to the dearth of appropriate infrastructure that can promote academic and research integrity.

This paper used the ethnographic design method of participant observation and focused group discussions during ToT workshops organized in two universities in Nigeria as part of the CADFP between 2015 and 2019. The ToT workshops formed part of the continuum of the CADFP project titled “ValueCabS: Strengthening Capacity for Promoting and Facilitating Value Chains in the Agri-food Sector to Reduce Food Insecurity and Low Income.”

The first section of this paper is devoted to introducing the problem statement and challenges. In the second section, we conceptualize the keywords of the paper and aggregate relevant literature to situate the challenges of academic and research best practices. In the third section, we present some empirical findings that dampen academic integrity and fuel mistrust in the Nigerian higher education system. The fourth section is the conclusion, including recommendations.

“A good education is a foundation for a better future.” — ELIZABETH WARREN

Literature

At the XVII International Academic Conference on Economic and Social Development, Andreas Schleicher, the author of PISA and the OECD Director for the Directorate of Education and Skills, suggested some factors that can be used to measure success in the educational system. Among the conditionalities are learning from best practices, exchange of experience between teachers, and cancellation of system monitoring (HSENews, 2017). In a previous publication that assessed the OECD 2009 PISA results to address the issue of what makes a school system successful, the authors focused on resource availability, policy environment, and practices in different countries.

Assessment results among OECD member nations suggest varied outcomes in terms of education system performance (OECD, 2010). The report notes that a successful education system is possible when students, regardless of socioeconomic or sociocultural background, are provided with unique learning opportunities, respected, and treated with fairness; schools are autonomous in decision-making in terms of appointments, curricular development, and assessment criteria; the entire education system has coherence; trainers are paid higher salaries, even with smaller class sizes; and the government invests a higher proportion of the country's GDP into the education system in the “form of building, infrastructure, salaries paid to teachers, and administrators and support” (OECD, 2010, p. 84).

Educational systems' performance standards have been a source of major inquiries and concerns (Moss, 1994; Fry & Bi, 2013; Mujiono et al., 2022), often leading to policy reforms

² Veritas University Abuja has started to implement this guideline as part of the recommendation and deliverable of the ToT workshops.

targeting improvement standards and infrastructural upgrades (Moore & Lackney, 1993; Darling-Hammond et al., 2020) and a push for increased public investment in the educational system (Mugaju, 1991; Fry & Bi, 2013) because it is widely asserted that higher performance of the educational system will inevitably translate to an increase in labor productivity and economic growth (Levin, 1998; Kang et al., 2010; Bloom et al., 2014; Oketch, 2016; Kromydas, 2017; Mahmudah & Cahya, 2020).

Public or private investment in the infrastructures that promotes academic excellence undoubtedly produces positive societal externalities. When individuals also consciously and honestly invest in education, the benefits are not only personalized but also can positively impact society and lead to “higher economic gains” (Habib & Nauman, 2021, p. 129). The reverse, and more severe, is the case where investment in the infrastructure that promotes academic excellence and best practices is abysmal or where students are trained in an educational environment that is indifferent to academic integrity.

Academic integrity is related to a shared “internal value system,” which provides a “sense of coherence on core values” to drive excellence and best practices in any higher institution (Jansen, 2023, p. 9). Moreover, an educational workforce trained in a system lacking the necessary pedagogical principles, core value system, and practices will be highly indifferent to academic integrity without additional exposure and provision of infrastructure that will redirect their orientation (Brimble, 2016). The educational system exhibits a direct influence on human capital acquisition. Human capital, on the other hand, is a determinant of variables closely associated with other “drivers of growth including innovation and political and economic institutions” (Botev et al., 2019, p. 5).

Thus, clamor for improvement in standards to reflect public confidence in the system is often a consequence of perceptions that the educational system is underperforming (Mugaju, 1991; Van der Berg et al., 2011; Darling-Hammond et al., 2020; Ogunode et al., 2022; Ogunode & Akimki, 2023), has credibility issues that place a burden on the integrity of the system’s output (Morris, 2018), or needs to transform and modernize because it is an archaic system “based on factory-model conceptions” (Darling-Hammond et al., 2020, p. 133). When the academic integrity of an educational system is questionable, Morris (2018, p. 3) suggests that “a review of existing institutional policy and procedures” to restore public confidence and foster academic integrity becomes inevitable.

Whether at the primary, secondary, or tertiary levels, academic dishonesty weakens the educational system. Habib & Nauman (2021) correlated the productivity of nations to improvement in human capital, which is a byproduct of the education system, noting that the education system “produce[s] responsible citizens of society” who will contribute to economic advancement locally or globally (Habib & Nauman, 2021, p. 129). Emphasis on the education system creating the

type of human capital that can be trusted as being honest or “responsible citizens” is vital.

For example, when the current COVID-19 pandemic became a global health challenge, the world started paying more attention to scientific practices and looked up to infectious disease experts, medical doctors, and the scientific community in the medical field to come up with urgent and lasting solutions to the pandemic (Lavazza & Farina, 2020). Although there were, and still are, several conspiracy theories surrounding the pandemic or spontaneous protests against COVID-19 vaccines (Fleming, 2020), public confidence and uptake of the vaccines are on the rise. Part of the initial cynicism was based on the perception of mistrust or dishonesty by people who are wary of how the disease emerged and the process of vaccine production and clinical trials (Jennings et al., 2021; Cooper et al., 2021). However, as the scientific community and policymakers continue to provide evidence of honest academic practice in research and clinical trials, most conspiracy theories are debunked, and public confidence in the products of the educational system (i.e., vaccines and other medical products to fight infectious diseases) will continue to increase (Funk & Tyson, 2020; Daly & Robinson, 2021; Daly et al., 2021).

Moreover, during an inflationary period, economic crisis, or recession, government people often consult economists for possible policy alternatives to steer the economy away from collapse. Families want medical doctors they can trust to serve their health needs. The public is desirous of engineers they can trust to design and construct roads, bridges, and buildings that will not collapse. The public is yearning for uncorrupt and unbiased electoral umpires that can conduct credible elections in electing government officials. Academic institutions are inclined on recruiting scholars who can conduct research and publications to enhance the institution’s image and reputation. A good education system that produces honest, responsible, and ethically sound citizens provides the rationale for further investment in the education system (Goczek et al., 2021; Ogunode et al., 2022). The net positive externalities of a good education system permeates the entire economy, including the electoral and judiciary systems.

Invariably, public reluctance in adopting or accepting the byproduct of the education system can be construed in part, as questioning the validity and integrity of the entire system. An education system that attracts public confidence and trust is successful because the political class, social class, trainers, students, and other stakeholders “have persuaded their citizens to make the choices needed to show that they value” academic integrity and best practices “more than other things” (OECD, 2010, p. 5). Some of the requisite factors necessary for judging an educational system as successful were outlined during the XVII International Academic Conference on Economic and Social development. Of key interest are the cancellation of system monitoring, the exchange of experience between

teachers, and learning from best practices (HSENews, 2017).

During discussions on the cancellation of system monitoring, it was suggested that trainers must embrace a culture of continuous learning and self-development to maintain quality service and remain relevant as an educational system service provider. But in developing countries like Nigeria, the fact that higher education trainers are paid lower salaries may impede the desire for self-development. Besides, the lack of suitable infrastructure heightened corruption among public office holders, and faulty bureaucratic processes (OECD, 2010; Makpor & Akpede, 2014; Dridi, 2014; Sahnoun & Abdennadher, 2018; Orim & Glendinning, 2023) can greatly affect trainers' incentive for continuous learning to improve the teaching and learning experience. Corruption in the education system that fuels academic dishonesty is said to be connected to the "high stakes of educational opportunity and the large sums allocated to fund it" (Transparency International, 2013, p. 4).

Academic dishonesty triggered by corrupt practices can negatively impacting "the economic rate of return on higher education investment by public institutions and individuals" (Heyneman, 2013, p. 102). According to the OECD (2010, p. 31) report, trainers reported apathy in motivation to improve their service delivery or use innovative approaches to improve their teaching experience because they will "receive no recognition for improving quality of their work." A better salary package and a conducive work environment are among the factors that motivate and retain the best trainers (OECD, 2013). In the case of an exchange of experience between teachers, trainers are encouraged to learn from their colleagues while also pursuing independence in serving their clients.

Learning from colleagues or peers can be a source of maintaining a culture of academic integrity in a school system that has an infrastructure of mentorship and role models. However, the challenge of finding the right mentor or role model in many Nigerian higher education systems is obvious, especially in a school environment fraught with harassment, intimidation (Ladebo, 2003; Agbaje et al., 2021), strife in departmental positions, and other forms of academic dishonesty. McKay et al. (2008) revealed that worker turnover and reduced employee engagement are common features in an educational workplace environment where harassment and intimidation are allowed to thrive. Many universities in Africa, especially Nigeria, are experiencing the exodus of young scholars to developed countries due to a harsh, unfriendly work environment and poor working conditions (Benedict & Ukpere, 2012; Odhiambo, 2013).

Theoretical evidence supports the assertion that an educational system burdened with poor or unsuitable working conditions and dishonesty will be devoid of academic best practices. Yet, "learning from best practices" is one of the factors that can significantly contribute to education system success (HSENews, 2017). Achievement of this goal, however, requires a review of the existing institutional framework,

determination of priority areas of need, and available infrastructure that can support the adoption of academic best practices. Availability of infrastructure and other resources is reckoned as an important determinant of academic performance or equity; a lack of infrastructure can make an educational system perform abysmally (OECD, 2010; Benedict & Ukpere, 2012). Education system infrastructure is construed as the components of physical assets and other facilities connected directly to an efficient and effective teaching and learning process (Abdullahi & Yusoff, 2018).

The OECD (2010) publication omitted a clear indication of what infrastructure is, but it was listed under a theme that explained the systematic organization of a school system that can guarantee student performance and academic excellence. The authors used the term "physical" to indicate the type of infrastructure they envisaged as necessary for better learning performance outcomes. The authors also listed investment in educational resources, which included relevant and current textbooks, better wages for trainers, well-organized non-academic staff, school buildings, availability of transportation facilities, meals for students, and other resources as being of great importance in determining better performance of the system. The authors noted that "the absence of such resources is likely to have adverse effect on learning" (OECD, 2010, p. 83).

The term "infrastructure" was used four times in the paper in connection with learning performance outcomes. In the Transparency International, (2013) publication on global corruption and how it affects the education sector, the term "infrastructure" was used about 24 times in the 499-page document, where majority of the usage equated it to physical structures. Some authors listed infrastructure among other resources that play significant roles in education outcomes. The list includes training, organizational capacity, human resources, teaching and learning materials, curriculum, extra-curricular activities, ToT, pedagogical supports, institutional capacities, investment in the sector, and relevant technology, like communication resources for improved student engagement and overall school system operation (Lapper, 2013; Hyll-Larsen, 2013; du Plessis, 2014).

Heyneman (2013, p. 105), on the other hand, added another layer of conceptualization to understanding educational system infrastructure and how that underscores academic and research integrity, noting that "98% of world-class universities ranked by the Times Higher Education magazine across 40 countries listed an average of nine ethical infrastructure elements like codes of conduct for faculty, students, and administrators" as determinants of academic best practices. In contrast, Lapper argued that all forms of corruption could potentially hinder access to quality education which, in turn, impedes economic development (Vivien et al., 2023). The submission by Lapper is reechoed in a recent publication (Fomba et al., 2022) which connected a mismatch in school completion and educational quality to corrupt practices in government institutions.

Lapper (2013, p. 17) indicated factors such as corrupt admission processes, awards of favorable grades for financial or in-kind incentives, misappropriation of public funds intended as investment for educational infrastructure, fraudulent hiring, staff promotion or unethical appointment procedures (Adamu, 2019; Fomba, 2022; Niemczyk & Rónay, 2022; Ogunode & Akimki, 2023).and failure to screen trainers adequately for fake certificates or academic paper publications. All these anomalies tend to result in “unskilled teaching” staff and subsequent poor service in the education sector. Lapper further stressed that “failing to address corruption [which induces academic dishonesty] and to provide an effective remedy [infrastructure that promotes incentives for academic best practices] to victims constitutes violations of the right to education.”

Conversely, Heyneman (2013, p. 106) advises that notwithstanding the contextual, cultural background (relative to the level of corruption in the government) of any university whose administrators desire to attain world-class academic integrity status and best practices, there must be a conscientious determination to promote ethical infrastructure. If this is not enforced, the likelihood for that university to achieve its mission is “essentially zero.”

Irrespective of the educational system level (primary, secondary, or tertiary), adequate and appropriate infrastructure is crucial to academic performance. According to Pardee (2011, p. 37), “building an infrastructure for quality is a critical piece” of a “strong commitment to high-quality education, beginning in early childhood” because it also influences the performance of trainers and learners. Cuyvers et al. (2011) conducted a survey to determine whether infrastructure is significant in the well-being of students. The authors drew the conclusion that infrastructure (good or bad) will have a potential effect on the well-being of students, which can affect academic performance. In their study, participants responded to the following variables:

Perception of the classroom and the school; involvement in the classroom; contact with teachers; the learning process; infrastructure and facilities; action plans; school atmosphere; regulations; involvement; contact with other members of staff; how the school deals with problems; study pressure; school curriculum and content, the marking system, pupils’ behavior at school, contacts with friends at school; general well-being; perceptions of study pressure; and the curriculum (Cuyvers et al., 2011, p. 3). In other research carried out by Aithal & Aithal (2019) to explain the type of infrastructure necessary for a university to attain the status of a world-class institution, they categorized such essential infrastructure into six groups: academic, physical, emotional, intellectual, digital, and network. The authors noted that when these six infrastructure categories are fully implemented, they can propel an education system to universal academic excellence.

Based on the foregoing, and to avoid ambiguities, we categorize infrastructure as physical, social, and nonphysical. The physical and social infrastructure are tangible structures like

buildings, public roads, communication equipment, multimedia, and information technology devices that can promote quality research, teaching, and learning. Nonphysical infrastructure is intangible and includes the academic policy environment, implementation, and enforcement; mechanisms to promote ethical conduct in research, teaching, and learning; and resources for performance improvement, such as feedback mechanisms from students, mentors, and role models, ToT, reassessment, quality assurance training, and continuous performance improvement (Orim & Glendinning, 2023). Another categorization layer is the ethical infrastructure, such as the value system that regulates academic conduct, culture of excellence, and best practices at the individual and institutional levels (Arar & Saiti, 2022; El-Amin & Marks, 2023; Spiteri, 2023).

Objectives of This Paper

In developing and developed countries, several factors motivate people to pursue a teaching career. Some are inspired by the passion of producing future virtuous intellectuals who will pass the mantle to the next generation. As with other professions, the motives differ but include economics, prestige, emulation, role models, subject matter expertise, inability to get employment in other professions, and even frustration. Regardless of the motivation, teachers are service providers, and students are their clients. It is irrefutable to assert that without the students, teachers would be out of job, excluding researching or consulting. Unfortunately, not every teacher understands this fact. Thus, there is contention in the literature as to whether the marketization of the higher education system is proper (Wong & Chui, 2019; Nixon & Scullion, 2022).

The norm in both developing and developed countries is that some graduate students at many universities end up as academic or non-academic staff. To provide support to graduate students who will later become part of the university workforce, most of the universities in developed countries have designed programs that will help graduate students succeed and maintain the academic and research reputation of the school whether or not they choose to be part of the institution’s workforce. Some universities, like the University of Manitoba and the University of Winnipeg, have designed certificate programs on higher education teaching, apart from requiring strict adherence to academic integrity and mandating that graduate students complete academic and research integrity tutorials (Stoesz & Los, 2019; Eaton et al., 2019).

Also, at the end of each course, students complete course evaluation materials to provide feedback to the teachers for performance improvement. These types of nonphysical infrastructure are seldom available for lecturers and graduate students in most Nigerian universities. Besides, most Nigerian university teachers are unwilling to allow their institution to introduce course evaluations at end of the semester. Bearing in mind the external and internal institutional challenges,

including endemic corrupt practices in the country that contribute to academic dishonesty in many Nigerian universities, the objectives of this paper are to:

1. Present and share experiential lessons gained from several sessions of ToT workshops organized between 2015 and 2019 as part of an international two-university CADFP collaboration.
2. Motivate cooperation and collaboration within the Nigerian university community and between African diaspora scholars to cultivate a culture of academic integrity, excellence, and best practices.
3. Encourage periodic ToT workshops in all the universities by leveraging the expertise of diaspora scholars and other stakeholders.
4. Pave the way for an in-depth empirical study to unravel more academically dishonest practices and make recommendations on how they can be redressed.

Material and Methods

During the first phase of the CADFP partnership, several unprecedented incidents of academic misconduct related to the absence of an operational physical and nonphysical infrastructural framework was observed among academic and non-academic staff and students. The severity of some incidents could have attracted punitive punishments in an academic environment where ethical infrastructure is enforced. In one instance, a second-year engineering student was slapped in the face and pushed out of the office. Upon thorough interaction with the student, it was found that the victim had genuine issues that required a compassionate approach, but the lecturer insisted without any modicum of remorse that students are habitual liars and fraudulent. In another example, a young female academic staff's research grant was misappropriated by the dean of the faculty, who was the "principal applicant."

Though the female staff (a fresh PhD graduate) did a major part of the grant proposal, the research funds were lodged in the personal bank account of the dean of the faculty—a practice that is uncommon in Canadian universities (research funds are lodged in the university bank account, not individual bank accounts). Based on the aforementioned personal experiences and other observed academic dishonesty and misconduct, we initiated collaborative discussions with our host institution to organize ToT workshops. The methodology was based on the collaborative need-based approach (CNBA) or need-based approach (Barry & Santarelli, 2000; Roy & Rangnekar, 2007; Timmis & Williams, 2013). The CNBA framework encourages innovative solutions to collective problematic issues, aimed at improving a status quo that impinges productivity and performance.

The CNBA approach is grounded in the social innovation theory (Farmer et al., 2018; Logue, 2019). Ghosh (2014)

suggests that proper adoption of the need-based approach will result in the gradual integration of innovative problem-solving among the target group. This method of generating problem solutions is achievable through the involvement of all stakeholders in defining the problem, setting SMART (specific, measurable, achievable, relevant, and time-bound) goals, analyzing resource availability for solution sets (alternatives), and learning new perspectives for addressing other socioeconomic or sociocultural challenges in their immediate environment. Our host institution accepted the proposal and, jointly with our collaborators, we started ToT workshops and personalized mentoring of young scholars and graduate students.

The first was carried out at the Federal University of Technology Owerri with academic and non-academic staff and graduate students as participants. Subsequently, we initiated and completed similar activities at the University of Abuja and Veritas University Abuja. Workshop keynote speakers included scholars from other universities and public servants who previously worked in the university environment as professors. Keynote speakers were collaboratively drawn based on a track record of academic excellence, mentoring, and role modeling attributes. The workshop format was usually interactive, with presentations and breakout sessions to discuss case studies.

Case study materials (see appendix) were drawn from the observed incidents and crafted in a story format to veil the identity of victims or offenders. We also incorporated personal experiences from our home universities. The workshop presentations typically included presentations and discussions on academic excellence, academic best practices, academic and research integrity, preparing and writing grant proposals, student-lecturer relationships, building trust among students and academic and non-academic staff, use of innovative smart learning tools, and the importance of student evaluation and feedback mechanisms, among other topics that keynote speakers were inclined to present. The focus of every workshop targeted the provision of ethical infrastructure and tools for developing a better teachable point of view, teaching philosophy, appropriate pedagogical dynamics, good classroom conduct, and mentoring and role model attributes—all necessary for the improvement of service delivery in the academic environment.

Cases Of Academic Misconduct in Nigerian Universities

Academic dishonesty and poor performance ratings in the education sector resulting from corruption is a huge challenge in developing countries. The scale of intensity is also heightened in developing countries compared to developed countries. For example, while only 19% of Germans believe that their education system is corrupt, most believe that academic best practices and integrity are strongly upheld by most German universities and research institutes (Wolf, 2013, p. 178). In contrast, 72% of Cameroonians regard their

education system as corrupt, with high teacher absenteeism that reduces the quality of educational services provided to the students (Ngwe, 2013, p. 74). Corruption in the management of investment funds for educational infrastructure is more complicated in developing countries because offenders are not often appropriately prosecuted.

For instance, the Nigerian Joint Admissions Matriculation Board, a federal government institution with the oversight function of higher education admissions in Nigeria, was rocked with an embarrassing embezzlement saga in 2018 totaling over USD 100,000. The staff accused of misappropriating of this fund alleged that the money was “swallowed” by a snake that

sneaked into the office where the money was lodged (Page, 2018; Elekwa, 2022). Other documented cases of academic misconduct and dishonesty involve professors and students.

In the following section, we present documented cases of academic dishonesty, misconduct (ADM), and harassment in Nigerian higher education institutions. The cases presented here have been published in academic journals or national and international news media or are ongoing cases that are being prosecuted at the relevant courts of law in Nigeria. Selection criteria for research articles was based on whether the paper was referenced more than 10 times and published in a reputable journal.

AUTHOR/DATE: LADEBO (2003) CITATION RATE: 62 (FEBRUARY 24, 2023)

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|----------------------|---|
| Study Purpose | The author was motivated by the statement of the former Nigerian president, Olusegun Obansajo, who chided Nigerian university professors for being unproductive and using female staff and students for pleasure gratification. The comment by the former president generated mixed reactions in academia and the public. The aim of the study was to conduct an empirical survey to determine whether the claim was true and, if so, how widespread. |
| Methodology | The study was based on an empirical case study of three tertiary institutions to answer some research questions about whether sexual relationships among staff and students were consensual, voluntary, and widespread. Data were grouped into three separate case studies (Case I, II, and III). |
| Main Findings | <p>Case I: Detailed findings from a private university established in 1958 initially focused on theological education degree and certificate programs. Later, the university gained accreditation to award degrees and certificates in nonreligious related disciplines. Based on its mission, the university’s staff and students are required to have some religious backgrounds. At the time of this study, the university had 2,150 students and 120 staff.</p> <p>Findings:</p> <ul style="list-style-type: none"> • Widespread sexual harassment was uncommon for Case I (probably due to the university’s religious background). • There were cases of consensual sex between students and staff. • Female students who were academically weak exchanged sex to get better grades. <p>Case II: Based on evaluation of a federally funded university established in 1988 with 3,778 students and 258 staff. The university had no ethical infrastructure to deal with sexually related academic dishonesty and misconduct (ADM), but that does not imply that such fraud was endorsed.</p> <p>Findings:</p> <ul style="list-style-type: none"> • Between 1998 and 2000, two cases of sexual harassment and exam malpractices between staff and students were documented. • Extortion of money and demands for sexual relationships for better grades were reported. • ADM connected to sexual misconduct for grades or other incentives with students traversing the sphere of academic and non-academic staff. • Sexual coercion existed but was less common than consensual sex. Two academic staff faced disciplinary action and were eventually dismissed upon conviction. • Cases of sexual harassment and other forms of intimidation were often underreported for various reasons. |

Main Findings (continued)

Case III: Empirical analysis based on a state government-owned university established in 1983 with 18,000 student enrollment and 481 staff. The university had no official ethical infrastructural policy to punish sexual harassment offenders, but victims could lodge complaints with the student affairs department.

Findings:

- Sexual harassment between staff and students was widespread, leading to the termination of two faculty staff within the last six years.
- Two staff, a male boss, and a female subordinate, engaged in a physical fight based on alleged coercion for sexual gratification. Sexual trading for better grades was widespread, initiated by both the staff and female students.
- Students who identified themselves as “cult members” sexually assaulted others.

Comments

Although this research was published long ago, the situation has not abated; , it has become more complicated. This research captured academic dishonesty and misconduct (ADM) at public, private, and faith-based universities. It is important to note that cases of sexual harassment are grossly underreported. With the advancement in communication technology, however, some recent cases have been captured on video and disseminated via social media (Akpambang, 2021). Incidents of ADM academic relating to sexual misconduct is common even at faith-based higher education institutions. In 2018, a faculty member at one of the institutions where we collaborated was fired after facing the Senate Disciplinary Committee due to sexual harassment and extortion of money from students for higher grades. There were also cases of selling academic resource materials, like handouts, which are prohibited by the school.

AUTHOR/DATE: MEZIE-OKOYE & ALAMINA (2014)

CITATION RATE: 28 (FEBRUARY 25, 2023)

Study Purpose

Investigate the prevalence of academic dishonesty and misconduct (ADM) related to sexual violence on female undergraduate students and unpack the dimensions of such abuses and the physiological, psychological, and health impacts on victims.

Methodology

The study was based on a cross-sectional survey of respondents at the University of Port Harcourt, Nigeria, a school with 24,034 students. At the time of the survey, 48.3% of the students were female. The cohort were mainly females who resided at the university's hostel and had spent at least one year in the hostel. The author opined that living in the school hostels made them more prone to harassment than those living off campus or coming from their parent's homes. The survey's sample size was 430 respondents, but the data analysis was limited to 412. Statistical bivariate analysis was done using Epi Info v6.04d.

Main Findings

The survey was conducted in 2010, the mean age of the respondents was 22.10, and the respondents were mainly in the first and second years of their studies. This factor can place them in more vulnerable and compromising situations because they are young, new to the system, and may be struggling with the challenges of transitioning from high school to university.

Findings:

- Sexual violence was widespread, perpetrated by male students and university lecturers, and grossly underreported.
- Those who were less than 22 years of age experienced sexual violence (53.3%), and students in their first year of the study experienced more sexual violence (60.9%) compared to students (40.2%) who have stayed more than two years at the institution.
- Prevalence of sexual violence in Nigeria was compared to that of other African countries and the United States. The pervasiveness in Nigeria was higher.

Main Findings

- Lecturers constituted significant perpetrators of sexual violence. This finding conforms with other research findings across the country and in other African countries.
- The health impact was present but varied among victims. Cases of sexually transmitted diseases were reported, including physical injuries, depression, a sense of guilt, trauma, and mental health.

Comments

This study focused on sexual violence. Nevertheless, other forms of academic dishonesty and misconduct were prevalent. While female students were coerced into sex for better grades, male students were subjected to other extortion, bullying, and abuse of trust.

AUTHOR/DATE: ARCHIBONG (2013)

CITATION RATE: 21 (FEBRUARY 25, 2023)

Study Purpose

The author deviated from what was viewed as a conventional practice, which was to investigate academic dishonesty by Nigerian students only without extending it to lecturers. The goal was to enrich knowledge on cases of academic dishonesty and misconduct by academic staff by probing the forms of dishonesty, prevalence, and strategies to mitigate against the threat of academic dishonesty and its effect on performance.

Methodology

The case study was of one university and one college of education in Rivers State, Nigeria. The survey instrument was an open-ended questionnaire that solicited a response from lecturers across different disciplines. The sample size was 200, with a completion rate of 52%, covering 66 male and 39 female staff. Respondents included assistant lecturers, lecturers I–III, senior lecturers, principal lecturers, chief lecturers, associate professors, and professors.

Main Findings

Various forms of academic dishonesty were reported, including unethical research conduct, plagiarism, and “swamping” student research papers or theses of those they supervised to gain promotion. Swamping is a dishonest practice where a supervisor intentionally submits a student’s term or research papers for publication without the student’s consent or given credit for the publication (Archibong, 2013, p. 41).

Findings:

- Lecturers forced students to buy shoddy textbooks/handouts by bonding such to graded assignments, extorted money, and sex for better grades. Lecturers also indulged in writing projects, seminar papers, or theses for students for monetary gain or sexual gratification.
- Lecturers released exam questions for money or sex, claimed authorship in papers without any reasonable input, manipulated data and results (swamping), held dual full-time academic positions in more than one institution, practiced absenteeism, administered exams without teaching or covering the course outline, and provided avenues and incentives for students to cheat during exams and assignments.
- Lecturers abated exam malpractices, allowed students to grade exams and assignment papers, victimized students, and unduly delayed the grading of student exams and assignments.

Comments

The completion rate was low, which is understandable because academic staff may have been reluctant to complete the survey. The survey questions were extensive, which might have made lecturers uncomfortable, especially if they were culpable in some of the areas. It is interesting to note that the challenge of academic dishonesty is prevalent even at colleges of education institutions that train teachers.

The findings in this paper conform with similar research reporting cases of academic dishonesty.

AUTHOR/DATE: NKANG (2013) CITATION RATE: 12 (FEBRUARY 26, 2023)

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|----------------------|---|
| Study Purpose | <p>Investigate physical and ethical infrastructure availability that can promote quality service (academic excellence) in Nigerian universities.</p> <p>Determine the perception of quality assurance between male and female professors and suggest ways of improving quality education service in Nigerian universities.</p> |
| Methodology | <p>Empirical data were collected from 225 male and female professors. The survey instrument was a structured questionnaire meant to gather data for testing a set of hypotheses. Confirmation of the hypotheses was done using t-test statistics.</p> |
| Main Findings | <p>External and internal factors contributed to the challenges experienced in the Nigerian university system in terms of physical and nonphysical infrastructure.</p> <p>Internal factors correlated to management and performance competency, while external factors were associated with a lack of motivation for quality service and accountability to academic best practices necessary for education system performance. This challenge can be connected to the dearth of physical, nonphysical, or ethical infrastructure.</p> <p>Findings:</p> <ul style="list-style-type: none">• Improvement of quality assurance, academic excellence, and mechanisms to enforce academic integrity requires a holistic approach and institutional change.• Poor quality assurance and academic best practices are common among Nigerian universities, placing them at a deficient rating globally.• In Nigerian universities, the physical, nonphysical, and ethical infrastructure is inadequate to guarantee and sustain quality service.• Sound ethical work culture is deficient, which affects academic and research conduct as well as relationships with students and other staff members. |
| Comments | <p>The paper focused on the mechanisms to improve quality assurance or academic best practices in Nigerian universities. The perspective of this paper is significant because it underscores the importance of quality service in the education sector and how it correlates with performance and productivity. The author rightly noted that it is impracticable for a nation to attain sustainable development without substantial improvement of the intellectual capabilities of the teachers/professors who provide the service needed to grow human capital.</p> |

Discussion

Universities are generally established to provide quality education to students who are focused on acquiring academic knowledge that can potentially position them for a decent career so they can become useful to themselves and society. Apart from contributing to improvement of human capital stock, universities are expected to provide sustainable solutions to the challenges of their immediate environment. Local demand for knowledge for solving human problems should push the demand for creativity in the education sector. As such, the university environment is supposed to promote and support a teaching and learning environment that will enhance productivity and ethical conduct. As an instrument of human capital development, the education system is crucial for a healthy economy in all ramifications. For the education system to fulfill the critical role of human capital development, however, certain infrastructures are inevitably necessary.

These infrastructures range from physical to ethical. The professors/teachers coordinate the physical, nonphysical, and ethical infrastructures to derive human capital formation and development. The perspective provided by the human capital formation theory provides the impetus to understand why the cost of education is high, and investment in the sector is sometimes a priority. It can also explain why the teaching profession is viewed as a noble or prestigious career that attracts many people for several reasons. The nobility of the teaching career is evident in this widely held view in Nigeria that “teachers’ reward is in heaven.” Understandably, many people are attracted to the teaching profession for various reasons, including prestige, contribution to human capital improvement, and producing future leaders. Thus, teachers are service providers. However, to provide a service that can serve the needs of the students requires dedication to excellence in service and quality assurance, devoid of personal interest and all forms of dishonest, fraudulent practices. Unfortunately, the Nigerian education system continues to suffer from the effect of corrupt practices.

Does The Educational System Require Decolonization?

Some have suggested that the type of educational system bequeathed to Nigeria and other developing countries is flawed and faulty from inception due to colonial parochial interest. This perception has led some authors to demand the decolonization of the African educational sector (Uleanya et al., 2019; van der Poll et al., 2020; Abdullahi, 2021). A study by Uleanya et al. (2019) that investigated academic performance among undergraduate students in a South African university suggests that poor academic outcome is a byproduct of flawed educational policies and curriculum design. The study recommended decolonization of the education system to overcome the challenges.

Abdullahi (2021) used the term “academic imperialism” to mirror the effect of colonialism in the education sector, using it to make a case for the decolonization of the education sector. Isiorhovoja (2021) alluded that colonialization has produced a dysfunctional education system that needs decolonizing. The author suggested infusing indigenous knowledge into the education sector to solve local problems. A dysfunctional educational sector ostensibly lacks the infrastructure to promote a learning environment and academic integrity among lecturers and students (Fomba et al., 2022). Poor academic performance can compel students to seek ways of improving their grades. Female students can be tempted to lure male lecturers, while others can resort to offering money to lecturers. Corruption in Nigeria’s education takes cues from systemic corruption in the public sector.

The scenario in Nigeria mirrors similar challenges in other African countries (Mugala et al., 2022). We have presented four peer-reviewed research papers that documented evidence of academic dishonesty in Nigerian higher institutions of learning. Most were focused on sexual harassment (Ladebo, 2003; Owoaje & Olusola-Taiwo, 2009; Taiwo et al., 2014; Mthiyane & Mudagigwa, 2021). Research papers that discussed other forms of academic dishonesty and misconduct were focused mainly on the students. Only a small proportion of papers discussed the problems of academic misconduct among trainers. Extortion, intimidation, and harassment for financial gain are other forms of academic dishonesty among trainers. In one instance, the head of a department in one of our collaborated universities forced students of his department to transfer their common funds into his personal account.

The students who acted under duress had no other option than to do as mandated because failure to comply would result in severe repercussion on their academic grade. Anecdotal evidence suggests that colonial structures in the education sector contributed to academic misconduct (Konadu-Agyemang, 2000; van der Poll et al., 2020; Mthiyane & Mudagigwa, 2021). However, some authors have argued that colonialism should not often be blamed for all the endemic systemic corruption in the public and private sectors in Nigeria and other African countries because it appears like corruption predates the colonial era (Ogbeidi, 2021), just as Rose-Ackerman (1999) stressed that both the person who offers a briber in return for any benefit and the person who takes the bribe are all corrupt.

Incidents of sexual harassment in the workplace, especially between professors and students in the education sector, have recently become widespread (Wamoyi et al., 2022; Orfan et al., 2022; Wayomi et al., 2023). A previous study by Owoaje & Olusola-Taiwo (2009) revealed that about 70% of female respondents in their study experienced a form of sexual harassment from either lecturers or male colleagues. Of this figure, 48% were physically harassed, while the rest (32%) were subjected to other forms of sexual exploitation in return

for academic favors. In another study conducted by Taiwo et al. (2014) that involved 2,500 respondents with an average age of 22 years, 97% of respondents indicated knowledge of sexual harassment occurring. Victims of sexual harassment are mostly female students (98%) in the hands of male lecturers, according to Taiwo et al. (2014).

A recent study by Mthiyane & Mudagigwa (2021), however, suggests that sexual harassment by lecturers is also prevalent among male students. With the advancement in communication technology and social media, cases of sexual harassment are now being reported (Akpambang, 2021). However, due to the lack of clarity as to what constitutes sexual harassment (Wayomi et al., 2022), especially in developing countries like Nigeria, actual cases of sexual harassment are rarely documented (Orfan et al., 2022; Mousa & Abdelgaffar, 2022). Other compelling reasons for nonreporting of sexual exploitation are linked to fear of victimization or stigmatization (Lubale et al., 2023). Unfortunately, the offenders are seldom punished (Orfan et al., 2022; Mousa & Abdelgaffar, 2022), while the victims are affected by health, psychological, and emotional problems. Addressing the challenges of academic dishonesty and best practices will require inter- and intra-institutional level changes. It will also require additional infrastructure dedicated to ToT. Between July 2018 and June 2019, we organized six sessions of ToT workshops, all focused on promoting an infrastructure of trust among trainers. This conscientious effort in organizing ToT workshops is essential because it can contribute to filling the nonphysical infrastructural gap.

Should Systemic Public Sector Corruption Take All the Blame for Academic Dishonesty?

It might seem legitimate to blame systemic public sector corruption for academic dishonesty and lack of best practices (Fomba et al., 2022), but individual universities (private and public) are marred with corrupt tendencies or deviant behaviors (Okonta & Rossouw, 2023; Obalade & Arogundade, 2019). Okonta & Rossouw (2013) documented a high rate (69%) of academic misconduct and dishonesty among scholars at some point in their careers. Obalade and Arogundade's study on the ethical environment and how it contributes to deviant behaviors revealed that both private and public universities experienced academic dishonesty.

Academic dishonesty and lack of best practices promote sexual inducement for academic grades, falsification of results, plagiarism, and all forms of malpractices in the education system (Githaiga et al., 2023). Hiring of academic and non-academic staff, payment for student admission processes, award of contracts, and utilization of research grants are among the many areas affected by internal corrupt practices in several universities (Mugala et al., 2022; Githaiga

et al., 2023; Jansen, 2023; Orim & Glendinning, 2023). Arguably, external government officials interfere with the autonomy of the universities. However, the education system is ostensibly projected as an emblem of the national asset (van den Bor & Shute, 1991) required for building a robust and progressive nation.

Thus, it ought to be the moral beacon of ethical conduct, values, and virtues in every civilized society. This assertion is intuitively plausible because the education system is exclusively responsible for producing medical doctors who respond to the health challenges of the citizens, engineers who design and construct infrastructural needs of the nation, economists who formulate development policies, and trainers who train these and other professionals. Universities are, therefore, service providers with a mandate to serve the academic needs of the public directly or indirectly, locally, nationally, or internationally (van den Bor & Shute, 1991; Scott, 1999; Kindlein & Schwaiger, 2015; Kardoyo et al., 2019).

Although specific economic or noneconomic incentives can motivate individuals to join the teaching profession, only a handful of trainers consciously understand that they are service providers and students are their clients or customers (du Plessis, 2014; Kardoyo et al., 2019; Latif et al., 2021). Some trainers may presumably imagine that being a subject matter specialist is all that it takes to be a successful service provider in the teaching and learning environment. This worldview is erroneous because unless the trainer sincerely understands the process of communicating academic or technical knowledge to students in an ethically appropriate manner, the outcome will be flawed (Holt-Reynolds, 1999), and it compromises the education system as well as erode trust and confidence (Mthiyane & Mudagigwa, 2021; Mugala et al., 2022).

Conclusion: Implication on Academic Best Practices

African students who acquire their basic foundational academic training from African schools contribute significantly to the number of international students at higher education institutions in North American, European, Asian, and Australasian countries. The standard of education in many African countries like Nigeria is quite low compared to developed countries like Canada and the United States, where students from Africa usually apply for international student admissions. Education is among the fundamental basic rights of every human being and forms part of the criteria for measuring HDI.

As a component of human capital development, education is a considerable indicator for measuring socioeconomic development and the well-being of individuals and societies. Education and educational institutions contribute substantially to the GDP of nations, and it is crucial to global

sustainable development. Individuals in developed countries with higher GDP are reckoned as experiencing higher standards of living, lower mortality rates, higher educational standards, and other subcategories of the HDI and a healthy economy. Professors and teachers are important drivers for human capital growth.

A faulty system and process will produce faulty output. For instance, many teaching and learning environments in most Nigerian universities suppress any effort to achieve academic integrity and best practices. Sometimes students are crammed together during examinations, providing incentives for exam malpractices. Some lecturers only appear in the classrooms to teach when examinations are getting closer because they are engaged in other careers or teaching at more than one university. In some instances, students are given “marathon” lectures.³ It is important to initiate and sustain collaborative efforts that can promote academic excellence in Nigerian higher institutions of learning through sound and implementable physical, ethical, and nonphysical infrastructure.

Recommendations

- All tertiary institutions of education should institutionalize policies against sexual harassment and abuse. For universities with existing academic and research integrity policies, enforcement of such policies should be pursued,⁴ along with constant reevaluation and improvement to reflect current behavioral changes.
- Tertiary education regulatory organizations in government, such as the National Universities Commission, should make it compulsory for any prospective applicant for a license to open a new university to show evidence of having put in place enforceable regulations for academic best practices, particularly as it concerns teachers/professors, students, staff, contractor relationships, and morals in the educational system.
- Universities in Nigeria should leverage the expertise of diaspora scholars and collaborate with them in designing robust research policy frameworks and other nonphysical infrastructure that promotes world-class academic best practices.
- African diaspora scholars should collaborate with domestic scholars to build platforms for mentorship, role models, supervisory roles coaching in grant proposals, and other areas that promote academic integrity. Periodic ToT workshops should be organized in collaboration with diaspora scholars to enable trainers to retool, and lecturers should be comfortable receiving feedback from students in the form of evaluations.
- Universities should organize periodic townhall meetings or workshops with major stakeholders, including the host community, to enlighten them on the policies, efforts, and other infrastructure in place to curtail academic dishonesty and misconduct (ADM). When stakeholders discover that the university is making genuine efforts to promote an infrastructure of trust, their trust can be reinforced.

³ In one of the universities where we collaborated, some lecturers are known to give students lectures of more than seven hours, sometimes running into late nights.

⁴ Between 2016 and 2021, the university senate of the Federal University of Technology Owerri passed the sexual abuse and harassment policy, which set penalties and punishment for staff and student offenders, including contractors and their staff. It included research and plagiarism policies to prevent incidents of abuse, which the university council approved and made operational. However, enforcement is always stalled, mainly due to other forms of corruption.

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APPENDIX

PRESENTS: 2019 TRAINING OF THE TRAINER WORKSHOP
THEME: BUILDING AND PROMOTING AN INFRASTRUCTURE OF TRUST AMONG THE TRAINERS

Case Study 1: Handling Grant Money

Introduction: Universities all over the world depend on research grants and internally generated revenue to meet research-based financial obligations and other expenditures. Therefore, research grant writing is a significant integral of any university wishing to remain competitive and relevant in our dynamic world. Moreover, research grants are meant to fund specific primary or secondary research, which contributes to personal and institutional growth and development. Hence, every university places substantial attention on encouraging the academic staff to seek and apply for research grants.

Scenario: In this case study, we present a case that happened in a university with respect to research grant money. A young lecturer, a recent PhD graduate, applied for a research grant meant for a study in infectious disease. The research grant amount was USD 60,000. Part of the criteria for the award of the funding was that the principal applicant must be in the rank of a professor with about 10 years of experience. The young graduate did not meet that criterion, and she was advised by the faculty to make the dean of the faculty the principal applicant and herself the co-applicant. The young scholar developed the research proposal, completed the application, and submitted all the required documents for the application.

The application was successful, and the fund was released; however, the fund was supposed to be lodged in a domiciliary account. Because the dean of the faculty was the principal applicant and he operated a domiciliary account, the money was deposited into his account.

A few days later, the dean bought a new car and a new house, and his wife changed her wardrobe. Meanwhile, the young scholar waited for months after the fund was released, and there was no word from the dean. Upon inquiry, the dean became hostile. After the young lecturer consistently approached the dean for the release of the research grant, she was threatened by the dean. Subsequently, she started receiving calls from the dean's wife, who warned her to stop bothering her husband or she would not be around to tell the story. The young scholar was afraid for her life and career future, and she was at a crossroads as to what to do next. She could not report to other colleagues or take up the matter because the dean was influential in the university.

Task: Evaluate the scenario critically, identify the problems, and discuss the main pitfalls of the process and what you think should have been done differently.

- If you were this scholar, what would you do?
- What advice can you give this scholar?
- How could this situation be avoided?
- If you were the director of the funding agency, would you grant additional research funding to this university?
- Was the dean's wife justified in defending her husband?
- If this research was not carried out, does this influence the economy and the populace?
- What other problems do you see in this scenario?

Case Study 2: Misplaced Research Funding Utilization

Scenario: This happened at a university of technology. A young lecturer who completed his PhD in the UK had just returned to continue his lecturing job at the university in Nigeria where he obtained his first degree in electrical and electronic engineering. With the network he developed in the UK, he liaised with his doctoral supervisor to attract research funding for his university. His university signed the memorandum of understanding for this research funding; however, at the last minute, the university reconstituted a committee for the research funding.

The management decided that senior professors from the department of humanities should head the committee, meaning professors from departments that were unrelated to the main research became members of the committee in place of the young lecturer. This incident was not the first time that the young scholar was undermined in this type of scenario. The young scholar became discouraged and started considering going back to the UK to pursue his career.

Task: Discuss this case study and come up with some solutions.

- Are there some problems that you can identify in this second case study?
- Do you think this type of scenario will improve the fortunes of this university in terms of additional research grants?
- Do you think that young scholars will be motivated to write research grant proposals based on what happened in this case study?
- What recommendations can you come up with in terms of this situation?
- If this happens at Veritas University and you are asked to head the committee, though the research topic is not in your area of expertise, would you oblige, especially as the research funding is over 80 thousand Pounds?
- What other suggestions can you make to correct this type of situation from occurring?

Case Study 3: Student–Lecturer Relationship

Introduction: As service providers, we have been taught that we need to treat our clients (the students) with the utmost respect and compassion. We are also instructed to treat students with discretion, giving them the opportunity to gain our trust and respect.

Scenario: A student in your class has just asked you to “friend” them on Facebook.

Task: Discuss what you should do in this situation.

- As the student’s professor/lecturer, how should you respond?
- What are the implications as a teacher of the younger generation?
- What are the considerations that you need to keep in mind?

Case Study 4: More on the Student–Lecturer Relationship

Scenario: A student in your class has just traveled to the UK with their parents on holiday. This student is among the top/bottom in your class. The student returns with a gift they bought for you, which happens to be something you have wanted to get.

Task: Discuss what you should do in this situation.

- As a professor/lecturer who has been taught about conflict of interest, how should you respond to this gift?
- Should you accept this gift? Have you had a situation where students offered you gifts before?
- What are the implications of accepting the gift?
- What are the considerations you need to keep in mind?
- Is it proper to accept unsolicited gifts from your students?

In many public and private Nigerian universities and among many lecturers and researchers, a great disconnection in academic best practices and standards persists. Economic and noneconomic incentives motivate people to join the teaching profession. Notwithstanding, lecturers are service providers, and students are their clients. Not many people are cognizant of this reality. Thus, in some universities, the academic environment is still overtly fraught with intimidation, harassment, exploitation, extortion, physical abuse, misappropriation of research grants, and suspicion among academic and non-academic staff. Coupled with a lack of mentors and role models in some cases, young scholars often waver between maintaining the status quo, doing things differently and becoming targets for harassment, or seeking a better work environment abroad.

For service providers to be successful, certain policies, tools, and skills are mandatory. In some professions, policies are implemented to promote constant retraining, retooling, performance evaluation, reassessment, quality assurance training, reexamination, and feedback mechanisms to enhance best practices. Such policies are intended to guarantee that the service provider is systematically equipped in our dynamic world of technological advancement. Universities in Nigeria and Africa deserve such innovative policies, in addition to participating in academic conferences, to make the teaching and learning environment appealing.

Building and Enhancing Research, Teaching
and Service Capacity of Host Universities:
What Works?

Practicum as Signature Pedagogy: Nigerian Apprenticeship Model for Building Institutional Capacity for Professionalizing Social Work Teaching and Research

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ABSTRACT

In 2018, the University of Lagos established a Department of Social Work to train social workers. Lecturers, seconded from the Department of Sociology, identified knowledge gaps in social work education, particularly in practicum, the signature pedagogy of the profession. In 2019, on the host university's invitation, I undertook a 90-day fellowship focused on practicum. Professional disciplines require practical skills development and practice ethics. I facilitated curriculum design, field integration seminars, and practicum workshops for over 200 students, faculty, field instructors, and practicum staff. The trainings culminated in the publication of a field education handbook to document agreed-on roles, responsibilities, processes, and procedures to promote effective practicum placement, supervision, and learning evaluation. Practicum is a mandatory component of the requirements for the award of social work degrees but valuing and incorporating indigenous knowledge, customs, and traditional helping relationships has potential for equipping future social workers to address local social problems. Similarly, qualitative research has salience for understanding local complex human development, mental health, and sociocultural determinants of health. African diaspora dual understanding is beneficial in contextualizing, honouring, and critically interrogating culture to enhance sustainable higher education. Therefore, I plan to return with a cohort of African diaspora scholars to collaboratively build capacity for conducting qualitative practice-informed social action research, promote research ethics, and facilitate online and in-person research institutes for graduate student mentorship, grant writing, and research exchanges that benefit Nigerians.

Introduction

My 2019 fellowship at the University of Lagos was built on the Social Work in Nigeria project (SWIN-P), an international collaboration between Nigeria and Canada. Like the SWIN-P project, this fellowship focused on building institutional capacity by helping the new Department of Social Work train social workers using a train-the-trainer model for sustainability. The practicum, also known as field education or a practice internship, is the signature pedagogy of the social work profession and was identified as a huge gap by non-social work-trained lecturers seconded to the new department. As a fellow of the Carnegie Foundation, which promotes African diaspora connections with higher education institutions on the continent, I worked with the host liaison on professionalizing social work teaching and learning by training lecturers and practitioners to equip students to address social problems through practicum placements.

The University of Lagos participated in the SWIN-P 2009 roundtable "Educating for Social Change: (Re)Visioning Social Education in Nigeria for the 21st Century" and the 2011 launch of the Nigerian Association of Social Work Educators (NASWE). The aims of NASWE included biannual conferences, regulatory legislation for the profession, and more social work programs

across Nigeria. Although the conferences have not been held as planned and an enabling legislation has not been passed, universities are recognizing the economic potential of social work programs and have begun creating or expanding them at their institutions. University of Lagos created a social work unit in 2014 despite there being few social work-trained lecturers and practitioners, and by January 2018 the unit attained departmental status, but it lacked active training of the lecturers, and no field education staff were hired. This reflects the global proliferation of universities and new programs globally, which Preston et al. (2012) note is driven by an entrepreneurial agenda, and makes the lack of training and resources concerning, further highlighting the need for the fellowship.

Undoubtedly, this program has tremendous potential, being in Lagos state, with a population of over 15 million. Nigeria itself has a population of 214.9 million people (Worldometer, 2022), and is the gateway to the rest of Africa. Such massive size has population health implications—including mental health, which remains stigmatized in sub-Saharan Africa—so social work programs have huge needs to address. The lecturers with non-social work backgrounds were challenged, as practicum had not been understood or integrated thus far, leaving a gap. Social work is both an academic and professional discipline

and practicum is the signature pedagogy; therefore, future social workers need experiential field education. Workers help clients navigate social emotional, medical, and mental health challenges exacerbated by rapid population growth; urbanization; discovery of oil, which heightened poverty; corruption; substance dependency; gender role reversals; displacements; domestic violence; and child maltreatment. To align with this profession, Nigerian social workers must be equipped with professional ethics and ethos to alleviate oppression and promote equity meaningfully within the local context (International Federation of Social Workers, 2020). There is immense opportunity to infuse classroom and field education with Africa's rich communal culture and indigenous helping structures previously devalued by colonizers (Ugiagbe, 2015; Chilisa, 2012). As social workers support children, youth, seniors, families, and groups through uncertainties, crisis, and trauma, starting with the known to navigate the unknown rather than imposing Western hegemony is imperative.

Consequently, the African Union recognizes the need for African diaspora scholars to help develop permanent, relevant, and sustainable higher education. The host liaison and I collaboratively conceptualized a fellowship to professionalize social work by addressing the dearth of social work-educated lecturers and practitioners. My background in sociology at both the bachelor and master levels, from universities of Ife and Ibadan respectively, enabled me to resonate with the social work educators with sociology backgrounds. However, I also had my master's and PhD social work degrees and had directed the social work field education program at a Canadian university. My goal was to harness Nigerian realities and faculties prior learning in other disciplines (e.g., nursing, which has clinical education components), to help the lecturers in these fields understand social work practicum (Tsang & Yan, 2001) as reflected in my scholar's application statement:

As a Nigerian-born Canadian educator, having received teaching awards for contributing to transforming and decolonizing Canadian social work terrain, nothing would be more fulfilling than giving back to Nigeria. Professionalizing Nigerian social work and establishment of accreditation standards motivates me. I desire to help develop culturally relevant indigenous responses not replicating western norms. I believe in "nothing about us without us" and recognize the politics of identity and representation, therefore curriculum development must be representative, decolonizing, and framed by cultural appreciation.

Education in Africa remains colonized, even though Africa has rich epistemology waiting to be harnessed for curriculum, research, and practice. Even in Canada, my teaching is infused with Afrocentric world views, proverbs, symbolism, music, and wholistic communal practices. Social work in Nigeria must value the cultural capital of the people to engage them and incorporate African ethics, demystifying the profession and disrupting its constant striving for legitimacy through the white,

Euro-Western gaze. The fellowship aimed to do this through workshops for current lecturers and practitioners drawn from government, social services, nongovernmental organizations, churches, and mosques to cocreate a model of social work that works for Nigeria.

Understanding the role of family, religion, elders, relationships, community resources, and other existing sociocultural systems enables perspective-taking and contextualization that broadens Western knowledge and practice models. The training in social work theories, practice models, and ethics that non-social work-trained lecturers and practitioners sought had to be contextualized to be sustainable (Tsang & Yan, 2001). When facing sensitive issues, people will accept help that they trust, believe in, or consider credible, as Alexander (2020) found in her study of women impacted by sexual violence; otherwise, they merely tell researchers or practitioners what they want to hear. African history, teachings, symbolism, proverbs, and values are important in cocreating therapeutic relationships. These components and other indigenous best practices can build local capacity, enhancing the reputation of social work in Nigeria and strengthening NASWE's ability to build a community of practice through regular conferences. Pastors, imams, elders, and other community leaders have roles to play in building the future of learning in Africa, which is a key priority of Carnegie Corporation of New York and is particularly important in social work, which is a community-oriented discipline.

Professionalizing Social Work

Nigeria's 21,279,253 population (Worldometer, 2022) needs qualified social workers to address pressing social problems and build tomorrow's new humane social order. Curriculum that reflects anti-colonialism legitimizes Afrocentric epistemologies (Ugiagbe, 2015; Chilisa, 2012). Against this backdrop, this paper contributes to African diaspora literature by highlighting practicum as social work's signature pedagogy and emphasizes the importance of context and indigenous knowledge, or the cultural capital of the people. I outline the needs assessment strategies, the activities carried out during the fellowship, and the achievements accomplished. We trained over 200 students and almost 100 practitioners over the course of this fellowship. I also contributed to graduate student development and curriculum design during this fellowship through funding provided by the Carnegie Corporation of New York. I donated books, which led to establishing the first social work departmental library at University of Lagos, and after the fellowship, the host liaison and I continued working and coauthored a practicum handbook for the department. The fellowship was successful in meeting the needs identified by current lecturers in the department, but it was not without its challenges. Therefore, this paper offers recommendations for mitigating barriers and then articulates future directions to build on the success of this rewarding and impactful fellowship.

Needs Assessment

The needs assessment was organic through informative interviews with the head of the social work unit before the trip, participant observations, interviews, and brainstorming with faculty members upon arrival, as well as focus groups with students and stakeholder consultations during the fellowship. The multipronged assessment approach highlighted the gaps and the prospects of the emerging social work program. It also illuminated the challenges otherwise brilliant academics with non-social work terminal degrees were having in teaching social work practice or supervising practicum. One lecturer said:

Maybe we ourselves should have had the opportunity to do it before coming to teach what you have not yourself undergone. But no training was provided, so we just continue teaching what we know from sociology and nursing where most of us come from.

The assessment further showed that tested traditional helpful support practices like kinship care, extended family, and communal and social supports were relegated under the guise of development, even though valuable Afrocentric practices are now being appropriated in Western child welfare systems. It is common to hear the African proverb, "It takes a village to raise a child," touted by organizations as they adopt African extended family and kinship care practices. We acknowledge the need to situate clinical assessments of psychosocial development, social policy, and macro practice within the cultural context and not make Western responses to grief, mental health issues, depression, and loss the global standard. Analysis of stakeholder reports showed that social work has an important role in community and mental health, which is highly stigmatized in sub-Saharan Africa. We therefore commenced a series of training activities for various stakeholders to work toward change.

Activities

Activities implemented during the 90-day fellowship included curriculum review and brainstorming, field supervisor and faculty training, student practicum seminars, and practicum design processes. Topics covered include features of the profession, traditional helping relationships, the apprenticeship model, micro/macro supervision, placement matching processes and procedures, appointment of practicum agencies and supervisors, learning goals, site visits and evaluation of student learning, and community-based practice research and practice-informed research.

Globally, social work is not well appreciated (Dhembo et al., 2020). Many countries lack the appropriate legislative framework for the training and practice of social work, which often results in social work being conflated with other courses (Akeon et al., 2021). During pre-seminar focus groups held with four cohorts of Social Work and Social Development Studies students to assess baseline knowledge, many struggled to articulate the distinguishing features of social work. It is therefore hardly surprising

that the public, too, does not understand the role of social work (Dhembo et al., 2020), even though it has a unique and crucial role in the well-being of families, groups, and communities. Students' responses included "social work is the same as sociology," or that it is just "a branch of psychology and sociology." Another student asserted, "Social workers are the ones advising single mothers or delinquent children to stop bad behaviour," while several first-year students admitted they were only there "because my cut off mark was too low for the course I wanted, so they gave me social work." I adopted the seminar style of teaching to build rapport, trust, and a relationship with the students by asking them questions like "What brought you to social work?" Listening to them and having them debate the differences between social work and sociology led them to ask many questions that revealed their current knowledge, insights, and thoughts. Disclosing to them that I also studied sociology in Nigeria at both the bachelor and master level made me more relatable, and discussing social work interventions piqued their interest. They subsequently said, "I can make a difference, so it is that important. You are saying I can work with mental health people. I used to think I cannot do mental health because it means working with somebody who [is] mad." I further explained social work's role in advocacy, social change, and promoting equity and self-determination to help combat stigmatizing social, cultural, and religious views that inhibit access to help. These seminars galvanized the students' passion and newfound desire to make a difference as social workers.

Similarly, brainstorming with lecturers included interactive activities reflecting African culture, rather than white supremacist ways of doing, knowing, and being (Chilisa, 2012; Dhembo et al., 2020; Ugiagbe, 2015). We extensively discussed becoming comfortable with not knowing or being the expert in a climate that deifies titles, degrees, and recognizing the rights and agency of clients in their own lives. Students were increasingly aware of personal bias as the risks of social workers doing clients further harm generated much dialogue.

The International Federation of Social Workers (IFSW) standards include practicum that is contextualized to ensure social workers gain hands-on skills to intervene in pressing local social issues, domestic violence, child abuse, women's empowerment, human trafficking, and mental health, which all require informed assessment through motivational interviewing, effective case planning, case management, group facilitation, etc. Lecturers asked questions about how to facilitate practicum seminars, integrate theory and practice, and conduct site visits to evaluate hands-on learning in placement setting under the supervision of seasoned qualified practitioners. As Wiebe (2010) points out, "[T]he field education experience ought to provide students with the opportunity to go beyond analysis to active engagement

in social justice work” (p. 70). These discussions generated questions about funding and resources in the new department.

Social Work in Nigeria

Nonetheless, social work is not totally new. Before the advent of colonialism, indigenous helping practices were carried out through the extended family, traditional and community leaders, elders, local religious leaders, philanthropists, and others in the community. They served the social welfare, religious, security, legal, and financial needs of children, the elderly, the sick, the unemployed, the poor, and strangers (Ogundipe & Edewor, 2012). In Northern Nigeria, the introduction of Islam brought about the “Zakat” system of social relations, which caters to those in need (Mbah et al., 2017). Colonialism, westernization, urbanization, and “progress” exacerbated modern social problems that have overwhelmed the traditional informal social supports systems (Nwanna, 2010). Formal social work was imported, as Nigeria’s first foreign-trained social workers practiced social work that was not relevant to Nigerian local social contexts upon their return (Mbah et al., 2017). To indigenize the curriculum, we redeveloped the undergraduate social work curriculum using an adult education model, recognizing that learners are not blank slates (Freire, 2006): They have valuable life experiences and prior learning. Eurocentric curricula and models had been imposed, ignoring both tested and locally evolved practices from the Global South (Tsang & Yan, 2001; Mathebane & Sekudu, 2017; Ugiagbe, 2015) and elevating hegemonic Western epistemologies over the cultural capital (teachings, concepts, ways of knowing, and systems of learning) of the African people (Chilisa, 2012; Ugiagbe, 2015). I therefore upheld Nigeria’s apprenticeship program (Ekekwe, 2021) as a model for integrating traditional reciprocal helping into the practice of social work.

Carnegie African Diaspora scholars’ contributions to higher education align with calls for a resurgence of indigenous knowledge and cultural practices that align with local needs but were discarded under the guise of progress (Ugiagbe, 2015). Eurocentric hegemony cannot be universalized and normalized in a country like Nigeria, where there is tribal/language and religious plurality. Social work, however, often unwittingly perpetuates colonialism by ignoring these realities (Anucha, 2008). Nigeria’s rich cultural and collectivist traditions of helping, parenting, peer support, and mutual aid must inform our grief support, play therapy, storytelling, music therapy, and child/women empowerment. As the pitfalls of individualism are being realized, and there are calls for more frontline workers globally (Akeson et al., 2021), the spirit of ubuntu, omoluabi, and ajobi that is traditionally characteristic of Nigerians must inform their training.

Members of the African diaspora undertaking immersive visits demonstrate they are not practicing voluntourism

or white saviours rescuing Black people who are deemed inferior. As fellow Africans we give back, promote African epistemology and its potential to broaden the plurality of experiences and knowledge. Our exposure enhances our appreciation of African indigenous potential, helping us work with colleagues in moving toward sustainable curriculum development and practice that disrupts white supremacist focus on pathologizing Black people based on an assumed proclivity to criminality and deficiency.

It is important to not obfuscate helping relationships and practices already in place across Nigeria (Ugiagbe, 2015; Tsang & Yan, 2001). In Nigeria, religious leaders are often the first responders; the goodwill and followership they enjoy must therefore be recognized to ensure their integration into professional helping. They should first be equipped for the roles they currently play, often without training (Alexander, 2020). Elders, youth leaders, clan, and family heads also occupy roles that interplay with social work and must be integrated, similar to the role of Indigenous band leaders in Canada. Furthermore, police officers, lawyers, and probation officers can follow pathways to certifications in domestic violence, addictions, crisis interventions, mental health first aid, youth work, and child welfare. These certifications impart robust transferable skills that include local practices and ethical values.

Research-Informed Practice

Colonialism also manifests in the research enterprise. I reviewed proposals and papers for a research colloquium in the Faculty of Social Sciences and provided feedback on dissertations and research presentations. I observed a limited repertoire of theories, use of quantitative designs when qualitative approaches were more salient for accessing nuanced findings on sensitive complex phenomena, and an absence of social action research that involves in-depth explorations. We outlined how research can inform practice and promote client-driven and timely responses for wholesome social work education (Anucha, 2008). It is key to integrate research into field work, allowing for connections between theory and practice (Oba, 2017, 2019) using qualitative approaches to understand complex phenomena and explore cognitive, emotional, mental health, and social needs in specific populations (Creswell, 2013; Akeson et al., 2021). Qualitative designs are not about numbers (Creswell & Poth, 2018) but investigate the roots of issues (Dominelli, 2002). They promote in-depth understanding of social work and practicum rooted in anti-oppressive practice, which Preston et al. (2014) defined as “a set of politicized practices that continually evolve to analyze and address constantly changing social conditions and challenges.” Relatedly, the penchant for titles and a belief that BSW or MSW is not an academic degree was illuminated by the

department's insistence on awarding BSc or MSc degrees through the sociology department. The department argued that BSW or MSW would not be as academic, thus perpetuating hegemonic narratives about what counts as scientific or academic and therefore valuable knowledge.

Lack of awareness of the value of qualitative research among overworked, underfunded agency staff and directors hindered their capacity building. Social work students can help social service practitioners in program/patient/client satisfaction evaluation, group facilitation, grant writing, community outreach, and compilation of resources. The lecturers have to be aware of these benefits to equip future social workers to add value to practitioners overwhelmed with heavy caseloads. Illuminating obscured Afrocentric indigenous practices and knowledges can challenge habituated generalizations of masculine or white urban experiences (Dhembo et al., 2020; Oba, 2019) by honoring African thoughts, teachings and ethno-cultural philosophies. Focusing this fellowship on practicum as the signature pedagogy of social work highlight the need to integrate theory and practice to address pressing social problems contextually. The activities we implemented yielded many benefits, and those strategies are outlined in the next section.

Activities and Strategies

This fellowship provided a major boost to an academic program in the making. As a Nigerian-born social work professor educated in both Nigeria and Canada, I supported the institutional capacity-building process through activities including designing and delivering student seminars, field supervisor training for the growing rank of non-social work-trained practitioners, and brainstorming/training sessions with lecturers. It was exciting to create a new field education program from the bottom up as we focused on the characteristics of the profession, which include formal education, accreditation, practical skills acquisition, a code of ethics, and licensing by a professional society (Ford & Gibbs, 1996) while also situating the practicum within the Nigerian context. The IFSW maintains that regulating social work requires all social workers to be licensed under an enabling bill that would ensure social workers do no further harm to vulnerable people as they navigate physical, mental, emotional, spiritual, sexual, and systemic oppressions. This requires completing a practicum under the supervision of a qualified professional (Burke & Ngonyani, 2004).

Field Supervisor Training

With the generosity of the Carnegie Corporation of New York, we trained 60 practitioners from human service agencies, including the Lagos State Chapter of the National Association of Social Workers, the Ministry of Health, the Lagos State Ministry of Youth and Social Development, the University Teaching Hospitals in Lagos, community service organizations,

and nongovernmental organizations. The training covered professional roles, ethics, supervision, learning goals, evaluation of learning, and qualifications for field agencies. We deliberated on ethical practice, supervision, learning goals, and qualifications for field supervisors in the Nigerian context. The very engaged practitioners expressed interest in accelerated master's degree programs, acknowledging social work uniqueness and value within their practice settings.

Student Seminars and Graduate Development

We held practicum seminars on integrating theory and practice for over 200 students across all cohorts of students in the Social Work and Social Development Studies programs. Students found the idea of being involved in their own learning novel, but by the end of the fellowship, they were beginning to reconceptualize their social work education as experiential and engaging. Many had useful insights, radiating a sense of pride in belonging to a noble profession. They asked interesting questions as we used the seminar style, rather than traditional didactic learning, to promote engaged learning, role-playing, perspective-taking, and case studies as learning tools.

I customized and delivered the practicum seminar to varied cohorts over the course of the term and helped graduate students see the linkages between models like cognitive behavioral therapy and narrative therapy and African conceptualizations. The belief in connections between the spirit, soul, and body mirrors ideas about linkages between thoughts, emotions, and behaviors and understanding mind-body connections for self-regulation and individual, family, group or social change through understanding their roots.

During the trip, I continued to supervise my Canadian MSW students who were concluding their major research or practicum reports. I provided feedback on their work by email despite the time difference and scheduled committee meetings and two defense presentations using Zoom technology. This was in 2019, before Zoom became a household name, so we were apprehensive. The defense presentations took place midday on campus in Canada at 7:00 p.m. Nigerian time. Some Nigerian colleagues and graduate students attended the presentations but not the committee deliberations. They described the presentations as eye-opening, complimenting the knowledge, confidence, and self-efficacy of the students as well as the support and validation provided by the committee. The fellowship was rewarding and contributed to strengthening international connections with my host liaison and other colleagues in the home country. As part of an excellent program which paired 51 African diaspora scholars' higher education institutions and collaborators across Africa, we made great strides in curriculum co-development, training, mentoring, and research, particularly field education. We also focused

on incorporating African indigenous knowledge to create meaningful, relevant social work intervention.

Faculty Training

My fellowship lasted three months, which enabled me to be fully immersed, interacting organically with lecturers in informal settings as well as formal situations, including scheduled brainstorming and training sessions. The informal discussions individually and in pairs and pods illuminated how many faculty were motivated to join the new department for faster advancement. They expressed appreciation for the training. Expressing a new appreciation for the field of social work, one said, “Social work is really different. It became even clearer when your student defended their work, talking about what they did during their practicum—that opened my eyes.”

The community engagement opportunities and use of practical metaphors in the training were also appreciated, as aptly expressed by a lecturer: “It was good that we had joint sessions with the community because everyone can be on the same page, so much is new. But relating it to apprenticeship, it is not so strange, we all get it; we’ve always had apprenticeships in Nigeria.”

Both practitioners and lecturers were struck by how much the practicum can contribute to student learning and stated: “Students just going to get their logbook signed will end, but we need more placements and supervisors because ... they cannot just do a few weeks’ orientation here and there. With this, they will have learning goals, stay in one place, and actually work with clients.”

The Ministry of Health was cited by fourth- and third-year students as a setting where their learning was enhanced. However, the Ministry representatives at the training said they were assigned more students than they could handle, which impacted the quality of supervision they could give. This demonstrated the need for all supervisors to be trained. It also showed that given the opportunity, students are committed to learning and will attend practicum sites regularly if there are strategies and meaningful activities to support their quest for learning.

Site Visits

Based on the above, I stressed the importance of lecturers visiting placement sites to get familiar with different settings, mandates, and populations served and to assess the gaps students can address. Accompanied by some lecturers, I visited placement sites where we were given tours and introduced to their processes, problems, and prospects. The agencies ranged in size, outlook, and clarity of vision. None had students placed with them at the time, as the school year had been disrupted by the strike action that ended just before I began my visit; therefore, I could not model how evaluation visits are conducted. We problem-solved with an organization where social work students had been given

tasks that did not contribute to their learning and consulted with others on issues of governance, funding, research, staffing, and other concerns. I donated vetted books to the agencies we visited and commended the work being done with limited resources. The visits also provided a learning moment to discuss processes of selecting, evaluating, and / or terminating agencies if the need arose.

I was a discussant in a university event hosted by the Faculty of Law on public law, where I added some perspectives to the discussions on public good, human rights, the spirit of law, ethics, and social and moral responsibility. Connecting to Nigerian traditional systems where communities pulled together to farm, harvest, build barns, raise children, and generally ensure no one was left behind, I emphasized holistic approaches in our respective but interrelated disciplines to ensure we engage the whole person in context in pursuit of the common good. It was gratifying to see panelists applying the interdisciplinary lens to conceptualize collaborations that interrogate social determinants of health, social justice, and human rights for the health and well-being of the populace.

Social Work Library

A major highlight of the fellowship was the opportunity to donate about 200 textbooks to the department to establish a social work library, which was nonexistent at the time of my visit. We determined that books on theory, group work, and field education activities were relevant and transferable. The process was fraught with challenges, but the chief librarian was incredibly supportive, providing space at the main library, overseeing transportation from the port, and cataloguing and stamping the books to prevent pilfering. Another highlight of this very successful fellowship was the publishing of the co-authored field education handbook, which I describe below.

Practicum Handbook

The host liaison, Professor Chinwe Nwanna, and I continued to collaborate. In 2021, we successfully published the practicum handbook, documenting practicum roles, policies, procedures, processes, and responsibilities to ensure continuity and consistency. It will also enhance sustainability and enable effective onboarding of new practicum lecturers, staff, supervisors, and agencies. We included the history and evolution of social work and incorporated transformative ideas generated throughout the fellowship. The placement forms, learning goals, and evaluation forms contained in this handbook will enable students’ input into their learning and professional development. The handbook is integral to the train-the-trainer sustainability model, and it will promote community engagement as practitioners and lecturers will co-facilitate training, fostering reciprocal relationships between the university and the community, to the benefit of students.

The fellowship was rewarding. It contributed to strengthening international connections with my host liaison and other colleagues in the home country. As part of an excellent program which paired 51 African diaspora scholars' higher education institutions and collaborators across Africa, we made great strides in curriculum co-development, training and mentoring, research, and particularly field education, where we focused on incorporating African indigenous knowledge to create meaningful relevant social work intervention.

Challenges

The fellowship exceeded expectations: We trained hundreds, established a library with 200 volumes, and published a handbook, but this huge success was not without challenges, some of which I briefly outline below.

Lack of Transition Strategy

The lecturers were disillusioned by the lack of resources and social work training before or even after their secondment to teach a subject area most had not studied and general lack of strategy for the transition. Lecturers were paying for basic needs, including stationery and internet data, while on campus. This contributed to the lecturers hardly using email at the time, which slowed down communication and the pace of work. However, this predicament also evoked empathy as I saw the conditions under which Nigerian colleagues work.

Lack of Transportation for Field Visits

The lack of funding also bothered lecturers who questioned how midterm evaluation site visits would be conducted if they had no way of getting around and would not be reimbursed for their expenses. I found out there was a departmental car, but faculty members did not have permission to use it for placement visits, as varied bureaucratic challenges ensued each time the issue was raised.

Need for a Field Office

The department has no designated field office with dedicated staff. The current situation—in which clerical staff who have other duties assign students in bulk to agencies without follow-up or further action—does not communicate an understanding of the importance of practicum.

Orientation and Onboarding

Onboarding of fellows should be at the institutional level to remove inconsistencies in planning and engaging diaspora scholars and expectations. This would demonstrate upper-level management support for the project, the host, and the diaspora scholar and reduce the risk of sabotage through withholding basic resources such as an office space. Heads of departments must be accountable to the university administration and the goals of the fellowship. Additionally, no fellow should be

oppressed because of gender, age, title, status, tribe, race, or other identity marker, which some scholars (mostly female) disclosed they faced during the alumni convening conference where selected projects were showcased.

Respect

Observing that a lack of respect for staff, students, and junior colleagues was hindering collegial relationships and cross-fertilization of ideas, I organized a coffee hour attended mostly by students and junior faculty, many of whom I also held consultations and intellectual dialogues with. There was a need to equalize and balance power, as well as create a safe space for cocreating a humane climate that facilitates creativity, co-ownership, and reciprocal accountability. I received respect back from the students, staff, and lecturers as all gave me valuable insights that ensured the success of the project as I gained a panoramic view of the department. I found it advantageous being a diaspora scholar, as I could relate to how much the department mirrors the larger society of which I was also a product.

Another barrier was how underpaid staff and lecturers were, which evoked my empathy, but I ensured food was served at meetings and training sessions to help colleagues, students, and staff stay engaged by alleviating some of the concerns sensitively. I also gave out souvenirs and little gifts for participation, presentations, making unobtrusive contributions thus not making colleagues feel they were getting handouts.

Systemic barriers include the drive for high student enrolment without commensurate infrastructure or resources, which impacts the students, staff, junior faculty, and the vulnerable populations they aim to serve.

Recommendations

Access, quality, and consistency are key challenges to building academic bridges, encouraging interdisciplinary collaborations, and maximizing the potential of diaspora scholars to contribute to mental health interventions, malaria eradication, provision of potable water, digital learning, and qualitative research. Diaspora engagements must be institutional to maximize synergy and promote continuity. The university's international office must be involved in conducting orientations. Institutional engagement can enhance strategic planning as well as mobilization of resources locally and globally. The university must demonstrate upper-level management support for the project and the results, making heads of departments more accountable to the university's goals for the fellowship.

Diaspora can best add value by not focusing on who takes the credit, but rather focusing on the ultimate good, and staying flexible and adaptable. Having cohorts of diaspora fellows working with several departments can promote synergies, interdisciplinary projects, and high-level buy-in beyond the departmental level. It also exposes fellows

to other departments, thereby avoiding generalizing the experience in one department to all others.

Pre-fellowship orientation should extend to the hosts in Africa to understand what Carnegie funding covers and what is excluded. The belief that the Western knowledge and practices are best and can be imported wholesale must be disrupted at the orientation to make the visits and projects collaborative, re,“ rooted in colonialism and inimical to intentionality in sustainable engagement, that can forestall a return to status quo once the scholar leaves. During this fellowship we combated the “tell us” mentality and got to a place of comfort with collective brainstorming, which is mutually beneficial.

Gatekeeping, empire building, and turf protection are coping mechanisms that reflect deeper systemic and structural issues rooted in colonialism and imperialism which are implanted, embedded, and ingrained everywhere. The diaspora scholar must be patient and nonjudgmental while advocating for more robust critical thinking and decolonizing of a curriculum that accesses international support but honors local cultural capital.

Social work does not criminalize social problems, but rather interrogates the systemic roots, upholding the dignity of every human being, which is a foundational principle (Canadian Association of Social Workers, 2005a, 2005b). These values are also apparent in African cultures (e.g., the belief that no child is illegitimate in Nigeria). There is tremendous philosophical wisdom encapsulated in African proverbs such as “it takes a village to raise a child.” Therefore, we removed borrowed words like “retarded,” “delinquent,” “unwed mothers,” and other stigmatizing labels from the course outlines to avoid reproducing sexism, ageism, and other isms. The goal is to ultimately craft Nigeria’s social work code of ethics within both the IFSW guidelines and the Nigerian context and worldviews of mutuality and reciprocity to champion social work that works for our people, works in our nation, and works to enable us to tell our own stories.

Future Directions

Future fellowships will build on the success of this visit by mentoring graduate students in grant writing for social action research, whereby findings from practice-informed research will shape policy and practice directions and vice versa.

It is hoped that the University of Lagos will build on its involvement with SWIN-P and NASWE to innovate socially responsive indigenous social work especially now that the enabling laws that regulate the profession have been passed in Nigeria, affording the profession formal recognition, social protection laws, and funds to train adequate numbers of social workers by targeted dates.

It is imperative to evaluate the number of social workers needed for the country’s teeming population and articulate plans and timelines to achieve the target number of

practitioners at certificate, diploma, postgraduate diploma, and degree levels. Those with prior degrees in other disciplines would qualify for fast-track or advanced standing pathways based on assessment of their previous learning. Intermediate-level professionals would also be licensed to support social workers in roles such as social service, gang prevention, child and youth work, as well as addiction / disability counselors. This would facilitate development of needed human resources, allowing professional practitioners to chart their own course to fulfilling careers at varied levels.

Additionally, to increase qualified practitioners through certificate courses, emphasis will be placed on the prospects of certificate courses that can harness prior learning of experienced community practitioners. These practitioners, such as pastors, may continue in their current callings but with the needed certifications in domestic violence prevention counseling, marriage therapy, addictions counseling, suicide prevention, and teen-parent mediation, which Nigeria now needs due to the social media intergenerational divide. Their advanced standing pathways can lead to licensing as social workers or as allied health workers, peer support, or community outreach workers. These certifications can mitigate the dearth of trained social workers by focusing course offerings on the country’s urgent needs.

Education that builds collaboration between the town and gown can raise a workforce capable of addressing local pressing needs meaningfully and contextually. This can also help all future social workers integrate theory and practice into their practice regardless of their varied pathways. These are ways the department can develop connections and community-based opportunities to support students in placement (Nwanna,2010).

Despite African traditional communality, Nigerian academics had imbibed neoliberal individualistic values of competition, hierarchies, and separation of the academy from the community, who are regarded as unintellectual and having nothing to offer without any self-reflection about the power and colonial views that privilege, competition, and individualism, instead of reciprocity (Oba & Zerafa, 2023, Akeeson & Oba, et al., 2008). Universities must eschew governmentality, (Foucault, 1977/78) and colonialism by thinking outside the box to assess, fast-track, and proactively license cultural helpers who can promote the balance between theoretical, ethical, and practice skills by harnessing their existing goodwill and community engagement skills. These helpers should use the apprenticeship model to integrate instruction, demonstration, observation, and role-modeling of Nigerian or African best practices.

The social work library which I donated is situated within the main library. The chief librarian took personal interest in seeing the project come to fruition. She was instrumental to getting the last set of books released from the ports into the safety of the library to avoid pilfering. As COVID-19 has

shown, an online library is imperative so field practitioners and students can access resources to improve critical thinking and practice. I gave books to some agency directors, but it is more sustainable for the department to include online access to library resources as an incentive to attract qualified field supervisors.

COVID -19 has shown us that we are capable of online learning, teaching, knowledge production and dissemination (Nwanna, Oba, Ayobade, Busari-Akinbode, forthcoming). For my next visit, I shall work with the already-trained lecturers and practitioners to train more agencies, but also record the training, making it available online for new lecturers, field supervisors, and students to continue to incorporate critical, anti-colonial, Afrocentric practices into the class and field education curriculum. We also hope a functioning field education office will be in place and field education staff will have been hired who can also be trained to automate practicum processes, as there are prospects of using the matching, placement, and evaluation data for continuous improvement and training. We can collaboratively access funds for the field office, the counseling center that the department established after my visit in response to heightened incidences of suicide, physical and sexual violence, and mental health issues in the university.

Finally, a key future goal is to contribute to promoting qualitative social action research, which we have discussed earlier in this paper. A systemic outcome would be the strengthening of the newly established research ethics board, by promoting the importance of qualitative research designs and the ethics of research with vulnerable populations on sensitive topics. Access to research funding and international collaborations will be enhanced when faculty and student researchers complete ethics protocols before conducting research. We plan to hold a summer research institute in 2023 and encourage researchers to pitch relevant research ideas. We can work with the researchers, community partners/agencies, and international collaborators to develop research proposals and grant applications to attract funding. The process will be hands-on, providing graduate student training as well as facilitating knowledge sharing from the global South to the North, thereby, disrupting hegemonic notions of what is knowledge and who can produce it.

Thereafter, annual summer research institutes would be held online to continue the North- South partnership through mutual reciprocal teaching, learning, and application of contextualized research to local, national community issues. I am on the steering committee of the Faculty of Community Services international speaker series at the Toronto Metropolitan University. Our aim is to invite international scholars, learn from them, disrupt white supremacy, interrogate power and foster reciprocity. These are common threads across my teaching, scholarship and community/professional / national and international service as an African born scholar

who lived, schooled and worked in Nigeria before moving to Canada. I brought with me skills, Afrocentric knowledge, philosophical wisdom encapsulated in witty proverbs and rich culture but had to start afresh as Canada disdained my non-Canadian education and work experience. I have however excelled as a celebrated social worker and now as an award-winning teacher scholar and Associate Professor. Whether in my child welfare/ domestic violence practice spanning fifteen years or my scholarship, I have proved that my elders' Afrocentric teachings work to protect children, to meditate conflict and to teach and research anti-oppressively.

I must now give back to the land that bequeathed me the gems I have used to design, teach / implement anti-black racism courses, and research studies, training and mentoring of graduate students, international summer interns, and post-doctoral professionals. It is preposterous to believe Africans must become Western to succeed or usurp our cultural capital without due appreciation. African indigeneity resurgence and Afrocentricity broadens Eurocentric and other epistemologies for an equitable humane, socially just world where social work, works with and not against people. As social work is now a burgeoning discipline across Africa, teachings and practices must value and honour socio-cultural capital to address real-life issues for meaningful societal outcomes, avoid positivistic research, and promote wholistic population health approaches to local issues (Denzin & Lincoln, 2011; Oba, 2019).

Conclusion

Working with the University of Lagos to develop field education as signature pedagogy in its new Department of Social Work was eye-opening. During the fellowship, I helped develop field integration seminars and field instructor training using a train-the-trainer model. Being adaptable, being open to learning, and focusing on the goals are at the core of both hosts' and diaspora scholars' success. The collaboration was mutually enriching and culminated in the production of a practicum handbook to serve as a training/reference guide on the roles, responsibilities, policies, and procedures for students, faculty, field education staff, and supervisors.

Follow-up visits will assess how the department is taking ownership and customizing the manual to train new field supervisors, lecturers, and faculty. The fellowship created awareness of the unique features of the social work profession and enhanced pride in the profession. As a cohort, we will connect with NASWE to ensure it reconvenes via Zoom technology, so training webinars can be recorded and shared amongst members. This will allow regular meetings and training to contribute to a community of practice among social work educators, practitioners, and Africa diaspora partners. Sustainability through indigenous methods, knowledge, and practices can transform the social work terrain to produce social work that works for Nigeria and Nigerians locally and globally.

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Building and Enhancing Research, Teaching
and Service Capacity of Host Universities:
What Works?

Benefits and Challenges of CADFP Fellows in Host Communities: An Experiential Exposition

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Introduction

The Carnegie African Diaspora Fellowship Program (CADFP) in African institutions is laudable and very helpful to the host universities in Africa. It allows for exchange of ideas, mentoring, teaching, and research collaboration with colleagues in the host universities. The program will be more beneficial if the host communities, and the CADFP Fellows can develop a unified perspective. They need to have trust in each other, believe in themselves, cooperate, and be ready to learn something from each other. The Fellows should also respect the perspective and point of view of the host communities' faculties and students. The Fellows should be regarded as friends and patriots who come to give back to the communities they left for other countries. It should be clear that the Fellows still believe that they are extensions of their home communities in Africa and are ready to share and give part of the experience they have gained in these foreign universities to African institutions. The Fellows should see the host faculty as colleagues with equal but perhaps different academic experiences. The Fellows should not believe that their views are better than those of the host faculty. Tasks should be approached in a cooperative manner, not as a superior toward subordinates. This will make the cooperative work between them a success story. I will now proceed to illustrate my theoretical perspective of the issue at hand.

Theoretical Perspective

We can begin our analysis by considering the logic in Plato's allegory of the cave. Plato is concerned with how people who are in the same situation could be of help to each other, especially if some members of that group had an opportunity to gain alternative knowledge that could elevate and make the situation of the people, who are still in the position they were before, better. The aim is to elevate and free those who are still trapped in the former situation. The allegory described the plight of some prisoners who were chained together and were unable to see the sunlight but could only see a shadow of reality from a fire which imperfectly lit the cave. Shadows were cast on the walls of the stony cave, and that was the only perception of real people the chained prisoners ever saw. A number of these prisoners escaped and saw the real world, then came back to the cave to report what conditions outside the cave looked like. However, their former co-cave-dwellers did not trust them and believed they were not telling the truth. They did not believe that their colleagues came back to help them because their picture of reality was still fixed on what they saw on the side of the cave, which was lit by an imperfect fire instead of the original light from the sun. They were content to remain in the position of ignorance rather than accepting the account of reality from those who had seen it in the real world.

This allegory can explain part of my experiences as a Fellow in Nigeria but cannot apply perfectly to the entire experience. The following are, however, in line with the allegory. The Fellows and the host faculty were in the same situation and had or were exposed to the same experience in the host countries before the Fellows migrated. The Fellows have alternate experiences and have added them to the shared experience the host faculty and the other Fellows had while in Africa. The host faculty are still living with the former experience and knowledge but might have some knowledge of what the Fellows do. However, they have not been engaged, in most cases, in the activities brought by the Fellows (except the host personnel who have been abroad in the past and relocated back home). The real experience brought by Fellows comes from comparing their home experience with the additional experience they have acquired in their places of sojourn. The Fellows can be regarded as helpers in the kind of activities we are supposed to do in the host institutions. There is a bond binding the Fellows and the host, which is like those who had been inside the cave together and had the same experience. Fellows, therefore, should have the same emotional attachment and eagerness to perform the helping activities given in their contract with the CADFP. The problems faced by the Fellows can be likened to the cave dwellers' rejection and sometimes inability to achieve the level of excellence the Fellows expected when pursuing their fellowship. Many problems are responsible for this, and they may be traced to several factors: the Fellows themselves, the host personnel, and the general environment. We should also not overlook the huge benefits accruing to both the hosts and the Fellows from the program. However, there are many benefits based on my experience, and this marks an important difference from Plato's allegory analysis of the relationship.

The Setting

I served at Crawford University, Faith City, Igbesa, Ogun state, on the outskirts of the city of Lagos. It was a small university compared to major Nigerian universities, as it has a population of less than 3,000 students. It is a private Christian university, but admission is open to students of all faiths. There is no gender, state, or religious discrimination in admission policy or in faculty and staff recruitment. It has all the characteristics of any Nigerian university. The governance of the university is supervised by a council headed by a chairman who might not even come from the church. The chairman is chosen based on their experience in higher education management. The council has a final say on the policy of the university subject to the final approval of the chancellor, who is the head of the church in West and Central Africa. The university, though a private institution,

operates based on the federal government's regulations on higher institutions. Like all universities, it must be accredited by a panel set up by the Nigerian Universities Commission. This is where the university benefited a lot from my experience. I was able to be involved in the preparation for the accreditation and sat with the panels to answer questions about the university. I was able to contribute to the sociology department's accreditation preparation as well as that of the university's graduate school.

Students

The students in the university are mostly Nigerians from the southwest area of the country. Most are Yoruba, the dominant group in the locality where the university is located. There is a degree of diversity, as most major Nigerian ethnic groups were represented in the student population. There was not much diversity by religion. Most students were Christians, and the students are, by university regulation, required to obey Christian principles and live a Christian life, at least on campus. This enhances discipline and prevents deviancy among the student population. The university is residential, and there are separate women's and men's dormitories. All students are required to attend the university church on Sunday, when special church officials usually came from church headquarters to officiate and teach the students. Most of the faculty and staff also officiate in the university church. This is significant, as it helped my mentoring activity and helped me establish a network of students whom I still interact with today. Some have even been admitted for graduate work due to their perception of the American system based on our discussions. Most of the students live on campus and are fed in the university's cafeteria. This is different from most other universities, where students are responsible for their own meals and either cook their food or purchase it from independent cafeterias around the campus.

The university has a library with an internet connection that is not strong enough to support the academic and social functions of faculty, staff, and students adequately. Some of the academic departments have local libraries/reading areas. However, there is a need for up-to-date materials, journals, and faculty and student support. This created an impediment to mentoring in research methods and statistics, which was one of my major reasons for going to the university. Background information here is necessary to help us understand the benefits the university and I derived from the program. It will also help us understand the challenges that both the Fellow and the community face. It will also enhance our recommendations of what is required to improve the situation.

My Activities

The university received me very well when I arrived on campus on May 6, 2017. In fact, they had been expecting me, and my coming was announced at a convocation held shortly before my arrival. The Vice Chancellor of the university was my point person. A place was prepared for me in the university's guest house, which was close to the Vice Chancellor's residence. Food from the university's cafeteria was sent to my residence every day by university cooks. There was also a driver who took me to my office and back daily. The atmosphere was friendly. The Dean of the college and the Chair of my department were very nice. We met several times to plan my work. I gave them my prepared work plan, and they contributed to what would make it workable.

I planned to do the following:

1. Holding weekly workshops for methodology enhancement for the lectures
2. Developing curriculum and expanding the scope of the department's current program
3. Jointly working on creating a Center for Peace, Terrorism, and Ethnic Studies
4. Working on the department's accreditation activity
5. Mentoring graduate students who are university lecturers while completing their graduate work in Nigerian universities
6. Advising and mentoring lecturers on graduate education, admissions, and teaching methods
7. Holding public lectures to sensitize the university community on current pertinent academic and public issues
8. Establishing a peer-reviewed journal, which will be coordinated jointly by faculty in the host department and my U.S. university.

The journal and the center are projects we hope to make long term, establishing collaboration between my university in the United States and the host university. We also discussed the possibility of a student and teacher exchange program.

In addition, the dean of the graduate school requested that I advise graduate students on research methods and dissertation writing. This was very rewarding, and I enjoyed it, as most of the students have now graduated and are still in contact with me. It should be noted that this is a practical breakdown of the activities I engaged in at the university. They can be seen as the components of what was in the contract of the fellowship program.

Benefits and Challenges

The faculty of the university benefited from my presence, but there were challenges. The chair of the sociology department set up workshop days for research and methods. The workshop was designed to acquaint teachers with the latest methods in both qualitative and quantitative research, especially how to use statistical packages and other new methods in the latter. There was much enthusiasm for this workshop. Some of the lecturers who were completing their doctoral studies at other universities were especially interested in the workshop. Many graduate students also attended. At first, we were using data from my research for demonstration. Later, we started using original data from the participants at the workshop.

Eventually, however, unavoidable challenges arose. These insurmountable problems came from many sources:

1. Institutional. The university administration did not integrate our workshop into the general time allocation of the university. Despite the fact that the administration was eager to see me, my activities had to be sandwiched between available free time, which normally would be used by lecturers to prepare for their next lesson. The administration was prepared for me but had no plan as to how I would perform my functions. Free time differs from teacher to teacher and student to student. It was therefore difficult for them to find a common time for my meeting. This problem is evidence of a larger problem in the relationship between the administration and academic staff of universities. The administration is very powerful, and the chairs and deans of colleges could not exercise power that was not approved by the central administration. As a visiting Fellow, my case was handled by the administration, which dictated what the chairs and deans must do. They were mostly concerned with my welfare in terms of having a good office, chairs, and the like. However, the nitty-gritty of my activities were not discussed; they were taken for granted. The university timetable was centrally prepared, but administration overlooked this. Hence the problem. In addition, the accreditation panel being awaited by the university meant all the teachers' free time was used for preparation. The authorities made it clear that they must work hard to see that the university is accredited. This affected all my work at the university. We worked together to expand the sociology program and to create concentrations. We even attempted to rename the department to include security studies. We did a good job attracting new students and helping graduates from the department fit into the ever-shrinking job market. The governance of the university was different from American universities, where an academic committee on curriculum development usually approves academic changes. In Nigeria, the change was taken to the senate, where the arguments were sometimes not only about

the academic importance but about other things, such as conflicts of personalities, which affected approval. The changes were in the process of being approved before I left, but it seems that some more powerful interests blocked it and it reemerged in another form in another department. I also worked to create a center for the study of peace, terrorism, and ethnicity. This was well received, and the department was happy with it. However, some department faculty members argued that the university would take it up and would not give them the credit they deserved for creating it. They were also worried about how the money that might accrue from the venture would be shared. It was argued that the university would take the money and give the department peanuts from the proceeds. We completed the structure and organizational design of the center, and I presented it to the authorities. The department's fears came true, as the university opined that the center cannot be owned by a department but should be a university affair. It was not presented for approval by the time I left. Future contacts show that the university has downgraded the department based on low enrollment, and most of the lecturers I interacted with have left for new jobs. The department still exists and the ideas are still there, but they have not yet been established.

2. Technological. There were significant problems with equipment. I needed computers, internet, and some applications to do my work. In fact, there were no computer labs. Some teachers who brought their own computers to work had no internet connection. The university internet was not really working. We could not access websites needed for explanation and data. The university had no data analysis packages, such as the Statistical Package for the Social Sciences (SPSS). Most teachers use their computers as word processors or get internet on them through the data from their phones. There was no powerful internet. When we bought some data packs, a single download from a website use up all the money loaded onto them. My computer happened to be the only one with the data analysis packages. I was fortunate that I could assess the packages offline without internet. However, this created a problem and discouraged most attendees. There were no smart teaching podiums, and we used my computer hooked to a projector without a screen. We were using the wall as a screen. This was exacerbated by the next problem: power instability. I was very successful with mentoring the graduate students—their dissertation writings and course works progressed well. But we had problems with technology, especially in data analysis. The computers were not well equipped with relevant data analysis programs, and most of the books were outdated. Because of internet problems, we could not browse much, as our internet pack finished quickly. We overcame this by getting my friends in the United States to

send large downloaded materials to us by mail; we then used them offline. I benefited a lot by learning how to work with limited resources. I also continue to enjoy a large network of students in Nigeria.

3. Environmental. Problems arose from the infrastructure of the society. Issues like power outages, transportation, and bad road conditions on the way to the university made things difficult in Nigeria and negatively affected workshop attendance. Most of the time there was no power to use the computer. I had to use the chalkboard to illustrate my analysis, and relevant books were not available. As a result, interest in the workshop decreased. The road to the university was very bad; a journey which should normally take 30 minutes can take 5 hours, and there was no good security. The Vice Chancellor narrowly escaped being kidnapped on the road and lost his official car to thieves. The lecturers were therefore eager to leave the campus to get home before it was dark. They usually left after their classes.

4. General security. Difficulty developed in doing our work beyond a certain time, as the teachers were clamoring to leave the campus before it got dark to avoid being attacked by criminals. This was a societal problem that could be tackled by the state and federal governments.

5. Opposition. Some established lecturers did not agree with the enhanced methods. Most in this group were senior teachers who were glued to their method. Some of them seldom engaged in new research. Information that came to me was that they refer to this workshop and even the fellowship program as the “new” academic imperialism from the United States. The group never came to the workshop and would not encourage others to come. However, their places were filled by the postgraduate students who were allowed to participate later and were eager to learn what is regarded as a “new” approach. (It was not new but just refreshed and enhanced their understanding of method.)

My other projects had problems similar to those I enumerated above.

Conclusion

We can conclude that the program has a lot of benefits for the host universities, the Fellows, and their home institutions. The Fellows gain experience and know the problems faced by people in Africa, which helps when dealing with situations in their home university. What could have been regarded as a problem before going on fellowship will now be seen in new dimensions and be tolerated. The program also enhances Fellows’ productivity after returning and creates a network by which they can continue to collaborate and help the host universities.

The host universities gain a lot from interaction with the Fellows. My experiential approach shows that the benefits to the host university exceeded what was written in the

contract. There were some issues which manifested only after I arrived and my expertise was sought for solution. The host university might even value the “new” issue more than the issue that was originally addressed in the contract. In my own case, the issue of accreditation took precedence over a lot of my activities in the host institution. It happened that I came at the moment when the university was preparing for accreditation, and my experience as a former dean in a Nigerian university and my work in the United States were well utilized. The accreditation preparation and visitation span the entirety of my almost three-month stay in the university. In that case I had to concentrate on my contractual requirements and the accreditation issue, which was then the pressing issue for the university. It was also a blessing to me because I was able to create a strong network of academics not only in the university I served but in other universities. I was even invited to present public lectures to staff and students at two other Nigerian universities. The lectures were free for the attendees.

We were able to suggest that the benefits and challenges of this experience go hand in hand. The benefits are the high expectations of the Fellow, which the hosts also cherish. To achieve this benefit, there are some situations in the host environment which should not be overlooked. However well-thought-out your mentoring or curriculum development or even research proposals are, they must be acceptable to the standards of the host. That brought the critical question of whose standard is supreme and who is helping whom. This is where our earlier theoretical perspective of Plato’s allegory of the cave becomes relevant again. The host society appreciates the presence of the Fellows, but their own standards should be considered. The Fellows should not think that whatever they brought, which they truly believe is good, must be tested by the standards and tradition of the host. It is not easy or even possible to change the governance system or the rules governing academics in the host university. Sometimes, the majority of the host faculty may even support one’s proposals, but they have to be approved by the university’s higher authority. Some members of the higher authority have their own “best way,” which your own explanation cannot change. This can be seen among the lectures and with regard to some academic issues. It showed in graduate mentoring, where some supervisors forbade their students from using any method besides the one the supervisor understands. That then raised a critical question: Does the host institution regard Fellows as helpers or just people carrying out the instruction of the Institute of International Education (IIE)? There is no simple answer to this question. The answer is situational and depends on the activity and the department in question. The host will regard our activities as helping, depending on the interactional style of the host and the benefits to be gained by the individuals with whom we interact.

Whatever method or state-of-the-art delivery method you want to create, it will have no impact if the university's technology cannot support it. I remember one of the attendees in my workshop said, "We are blessed with this method of analysis. It looks easy now when you are explaining it, but it will become ineffective if not impossible to use after your departure." When I asked him to explain what he meant, he explained that:

- 1) The first problem was power. He said the university went to length to buy diesel oil to power the generator for me to run my workshop, which might not happen after my departure
- 2) The university has no working internet.
- 3) All the packages I was using for analysis were not available to them. They cannot afford them individually, as they claim their remuneration was too small to even sustain them. (A full professor in Nigeria earns less than \$1,000 in a month. Lecturers in lower cadres receive even less). One professor told me that they had to take on extra work to make ends meet.
- 4) The universities do not give computers to lecturers to use in their offices. (I believe the older and wealthier universities may be doing that.) The computers some individual teachers bought are mostly used or cheaper ones which do not have the capabilities to perform the work they want them to do.

The most annoying issue to me was that the trainings and mentoring I did with the lecturers cannot be imparted to students. This was because most of the students lacked all these essentials (internet access, computer, appropriate books). Some computer lessons were taught in theory alone without students having a computer to practice what they were taught. A full professor then gave his opinion that, "Carnegie should commit some support material to the university that the Fellows are posted to." Materials such as computers with adequate programs, projectors, and books should be requirements, that the Fellows bring with them to the host institution and leave in the libraries of the department when their fellowships end.

The university will also regard the fellowship as a help if they perceive immediate gain. For example, my host counted my accreditation activities as more of a help than my academic mentoring, center creation, and curriculum development. Unlike the cave dwellers of Plato's allegory, the host agrees that the Fellows have been in the same situation with them before; they believe that their going away and coming back should not be seen as if the hosts are inferior and need more help. This conclusion can be derived by seeing how careful the hosts were in adopting most of our activities that called for change. Finally, I suggest that if the Fellows and IEE consider this critical evaluation here, the program will be a benefit, as it has done a lot for Africa already.

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Building and Enhancing Research, Teaching
and Service Capacity of Host Universities:
What Works?

Leveraging e-Learning Technologies to Address Institutional Challenges at University of the Sacred Heart Gulu

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ABSTRACT

In today's competitive and globalized environment, quality education remains a necessity and priority in developing countries such as Uganda. However, academic institutions experience limitations in research (capacity to attract research grants, staff expertise and experiences, and limited collaborative research); limitations in teaching (pay disparity; resources [e.g., availability of textbooks/resources]; facilities [e.g., classroom arrangements]; and technology [e.g., technical aid to students and teachers]); and limitations to service (schedule challenges, resource challenges, and institutional/personnel commitment). The remedies of these challenges would require the host institutions, fellows, and community to participate and assist the higher educational establishments fully. We suggest leveraging technology such as Google apps for education, to support and address the limitations on effective research, teaching, and service. In addition, fellows can use platforms such as Zoom and Skype to train and lecture online, work on grant proposals and manuscript preparations, and teach students. Experiences during the global COVID-19 pandemic also underscore the power of informational technologies as a solution to these challenges.

Introduction

The internet is one of the most transformative technologies with great impacts on education (Bostrom, 2003). The pandemic-stricken world has exposed vulnerability in the areas inclusive of education. Therefore, this is a crucial moment to critically reflect on the direction that the education sector should take in the future and to determine the powers of control of its future, for technological choices are neither neutral nor do they affect only their immediate contexts of application (Selwyn, 2010). Globalization and technology are two of the many drivers that impact today's education, locally and internationally. Numerous universities are implementing innovative online strategies to ensure the success of e-learning for academic success but three issues that are critically important for the success of these initiatives relate to the design of learning tasks which is not well instituted in many universities that lead to variation in academic performance of the students, support in the learning environment, and reorganization of methods of communication and mode of delivery of instructional materials. The inconsistency of these three issues brings a negative impact on academic performance (Lim, 2004). While information and communication technologies (ICTs) have been introduced in education systems in most African countries, ICT expansion and adoption remain slow due to a lack of effective ICT policies and a long run supporting ICT infrastructure (e.g., electricity, Internet, software, and hardware devices), teacher capacity, and financial resources. As such, the introduction of ICTs in education and the overall transformation of Africa's Education Systems (AES) in science, technology, engineering, and mathematics using ICTs, especially in a minority of African

schools, have the potential of widening the digital divide based on several factors, e.g., sex/gender, location, and socioeconomic status (Barakabitze, et al., 2019).

E-learning is on the increase across university education all over the world. Currently, many universities worldwide conduct e-learning in different forms. Despite this widespread adoption of e-learning in university education, research suggests that e-learning adoption has not yet reached its full potential (Lockias et al., 2008). The global academic programs vary according to the techniques, mode, and approaches used in delivering instructional materials in e-learning-based education. There has, however, been consistent progress made in online teaching and learning among some universities in developing countries over recent years, because of gradual improvement of ICT facilities and other e-learning technologies, which are the backbone of e-learning education. It is noted that students perform better in a good ICT environment; as pointed out by Stepp-Greany (2002), technology helps weak students by "redistributing teacher and classmate attention so that incapable students can become more active participants in the class."

The articulation and mapping of different pedagogic processes, tools, technologies, and techniques that provides a pedagogic approach to e-learning platforms is more reflexive and consistent with practitioners' theoretical perspective on learning and teaching processes. It is noted that the organizational structures and processes that constitute the educational environment have a significant impact on how teaching and learning is conducted in a virtual learning environment (VLE), for the academic performance of students. Consequently, we suggest that the way a particular VLE is

designed and constructed for the purposes of management might have a profound impact on how likely it is to facilitate the use of a variety of pedagogical approaches in e-learning academic programs (Conole, 2004).

The use of ICT has gained a prominent role in teaching and learning. ICT has been proposed to enhance students' learning in a problem-based learning (PBL) environment. Technology-based distance learning is becoming popular throughout the world. In sub-Saharan Africa, advancements in communication technology more than two decades ago raised much hope, as technology-based distance education was seen as a promising, cost-effective and cost-efficient answer to expansion of access to education. These high hopes in technology-based distance education have, however, turned into disillusionment because of the challenges relating to digital infrastructure affecting most of sub-Saharan Africa (Mukuni, 2019). Mbarika, et al. (2002) concede that the great strides that Africa is making toward improving internet diffusion do not tell the whole story. One part of the story is that internet diffusion is largely restricted to the major cities. The rural populations are generally outside coverage areas. Other parts of the story have been presented by several writers. For example, Intsiful & Osae (2003) and Mukuni (2019) list the following constraints to effective and efficient use of ICT: prohibitive subscription costs, inadequate promotional strategies, inadequate relevant user information, poor quality of internet services, unfriendly regulatory framework, and ineffective network traffic and infrastructure management.

The opportunities and challenges discussed by the authors of this paper apply to the University of the Sacred Heart Gulu (USHG) in Uganda. For example, USHG has had a private internet service provider (ISP), with shared bandwidth, that provided very low internet speed with only 10% of the specified bandwidth guaranteed. However, the university has managed to connect to the National Backbone Infrastructure, and this has improved the internet speed.

Current Knowledge About e-Learning

The number of different e-learning technologies available to support teaching and learning is growing exponentially. A major issue for faculty and educational developers in higher education, including USHG, is to determine which e-learning technology is most appropriate to support their teaching needs and provide optimum learning opportunities for students. Over the last few years a vast amount of literature has been published on e-learning technologies and how they are used in education. Therefore, the decision to use a particular technology should be based on sound research and clear evidence. The papers review many of these e-learning technologies and provide information regarding their use and the opportunities afforded by them. As pointed out by Craig et al. (2012) e-learning is supported by many related but different e-technologies. They identify 14 e-technologies,

implemented in different platforms, that can be used in e-learning: assessment and survey tools, asynchronous communication, digital repositories, management and administration tools, photo sharing, podcasts and streaming, shared documents, social bookmarking, social networking, subscribed content delivery, synchronous communications, virtual worlds, weblogs and microblogs, and wiki.

Education reform is occurring throughout the world, and one of the tenets of this reform is the introduction and integration of ICT in the education system. USHG is currently planning to conduct most of its teaching and learning processes online using the Google Classroom platform, and a blended approach. As duly recommended by Jhurree (2005), the successful integration of any technology, e.g., ICT, into the classroom warrants careful planning and depends largely on how well policymakers of an institution understand and appreciate the dynamics of such integration. Up until now, higher education has, for the most part, been evolving its way forward—sometimes enthusiastically, sometimes hesitantly—in its adoption of online and blended course models. But the pandemic delivered a seismic jolt that greatly accelerated this evolution, forcing higher education to become inventive and create an array of new course models to cope with a truly unique situation (Pelletier et al., 2021). USHG might experience hesitancy—given the apparent advantage of small numbers in comparison to large spaces/facilities that would allow for full compliance with SOPs. Therefore, a blend of virtual and campus-based interaction would go some way in providing scaffolding for more dependent learners, to move them toward increased independence (Donnelly, 2009). Despite the attention that has been paid to documenting the online tutor's role, there is still a need for us to understand the impact of increased use of technology more fully on teachers' roles in higher education today (Sharpe & Pawlyn, 2009).

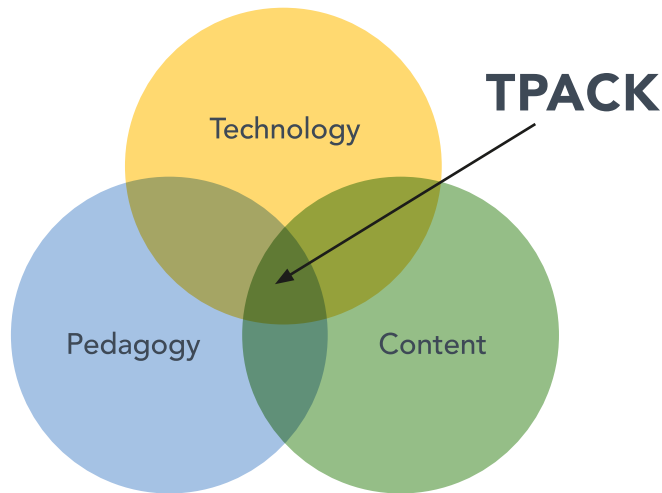
e-Learning Conceptual Framework

The Technological Pedagogical Content Knowledge model (TPACK) is a useful framework for explaining the transition to e-learning. It encapsulates the knowledge and skill demands of contemporary instructors (Archambault & Barnett, 2010). Figure 1 (Turnbull et al., 2021) displays TPACK's triad of interrelated teaching knowledge of pedagogy, content, and technology. Pedagogy often refers to the teacher-focused approach to educating children and contrasts with adult learning principles embedded in andragogy (adult education), which ideally involves the voluntary commitment of learners to pursue knowledge for its essential value (Pew,

2007). The second element of the model, content, encompasses specific knowledge domains of education such as health, engineering, or law. Technology includes all the tools, software, and hardware necessary to facilitate online learning. These three fundamental elements in this framework best explain transition experiences of e-learning in different countries.

FIGURE 1

Technological Pedagogical Content Knowledge (TPACK) model



Technologies Used in e-Learning Platforms

E-learning technologies are primarily communication technologies that facilitate learning and feedback. While Craig et al. (2012) identify at least 14 technologies used in e-learning platforms, these technologies are integrated in the most used e-learning technologies (Google, Moodle, and Zoom) in Uganda.

Google education platform

Google Workspace for Education (Google, 2021) is a set of Google tools and services tailored for schools and homeschools to collaborate, streamline instruction, and keep learning safe. Google Workspace for Education offers multiple options to meet organization's needs. Google Workspace for Education Fundamentals provides tools to aid teaching and learning, such as Classroom, Google Meet, Google Docs, Google Forms, and Google Chat. Google Workspace for Education Standard provides the same tools as Education Fundamentals but with advanced security features and enhanced administration controls. There is a provision for Teaching and Learning Upgrade that adds enhanced video-communication capabilities, Classroom add-ons, and other features and tools to the Education Fundamentals or Education Standard edition. Google Workspace for Education Plus includes all the features in Education Standard and Teaching and Learning Upgrade with additional features for certain services, such as attendance tracking in Google Meet. Education Fundamentals is free to all qualifying institutions. Education Standard, Teaching and Learning Upgrade, and Education Plus are all paid subscriptions.

Moodle education platform

Moodle is a free, online Learning Management system enabling educators to create their own private website filled with dynamic courses that extend learning, anytime, anywhere (Moodle, 2021). Moodle learning platform provides educators, administrators and learners with a single robust, secure and integrated system to create personalized learning environments. The software can be download onto a web server of an organization. In addition, Moodle is provided freely as Open Source software, under the GNU General Public License. Anyone can adapt, extend or modify Moodle for both commercial and non-commercial projects without any licensing fees and benefit from the cost-efficiencies, flexibility and other advantages of using Moodle.

Zoom platform

Zoom (Zoom, n.d.) is a video-conferencing service that is used virtually to meet with others either by video or audio-only or both, all while conducting live chats. It also allows recording sessions for viewing later (Castelli & Sarvary, 2021). A Zoom meeting refers to a video-conferencing meeting that is hosted using Zoom. A student can join these meetings via a computer, phone, or tablet. Meanwhile, a Zoom Room is the physical hardware setup that lets universities schedule and launch Zoom meetings from their classrooms. Zoom's main features include:

- **One-on-one meetings:** Host unlimited one-on-one meetings, even with the free plan.
- **Group video conferences:** Host up to 500 participants (if you purchase the "large meeting" add-on). The free plan, however, allows you to host video conferences of up to 40 minutes and up to 100 participants.
- **Screen sharing:** Meet one-on-one or with large groups and share your screen with them so they can see what you see.
- **Recording:** You can record your meetings or events, too.

Zoom offers four pricing tiers. The basic Zoom tier is free, with an unlimited number of meetings, but each meeting is capped at 40 minutes in length, and meetings cannot be recorded; Zoom Pro costs \$14.99 per month, allows hosts to create a personal meeting ID, and allows meeting recording in the cloud or on your device; Zoom Business for mainly small and medium business tier costs \$19.99 per month, offers transcripts of Zoom meetings recorded in the cloud and provides dedicated customer support; Zoom Enterprise for large business costs \$19.99 per month and per meeting host (100 minimum) and is meant for businesses with 1,000+ employees. It offers unlimited cloud storage for recordings, a customer success manager and discounts on webinars and Zoom Rooms.

The University of the Sacred Heart Gulu has access to Google Workspace for Education fundamentals but would

need to upgrade in order to optimize the benefits of the workspace for e-learning. USHG could also consider the Zoom Pro package.

Challenges

Challenges in online education

During the COVID-19 pandemic, the theory of broken education among universities, including USHG, offers an opportunity to education technology companies to sell untested solutions that sometimes have little to do with proper teaching and learning philosophies. Some education technology companies are now generously offering their services and products for free, with the prospect of further sales. As these tools become rooted in teaching practice, it becomes difficult to go back, as a result of escalation of commitment. In addition, and more disturbingly, some of these tools employ login requirements and tracking cookies to capture and gather data that can be monetized in the future. This is a rising business model in technoscientific capitalism, where the development of useful technological products and services is less important than the ownership and control of assetized personal data (Birch & Lewis, 2020).

Information technology (IT) tools and other infrastructure used to support e-learning in higher education are basically classified into asynchronous and synchronous (Larasati & Santoso, 2017; Lim, 2004). It is well known that asynchronous learning systems are built on communication platforms that do not require time-sensitive interactions between stakeholders in the education process (Larasati & Santoso, 2017). Learning management systems (LMSs) such as Moodle and Blackboard are examples of well-established distance learning platforms that are structured to facilitate stakeholder interactions based on a “request-response” framework only, and these are unconstrained by time limitations, which can cause inconveniences at USHG and any other higher learning institutions. On the other hand, synchronous online learning involves the real-time interchange of information, which is usually conducted via video-conferencing tools such as Zoom and Skype (Janghorban et al., 2014; Kohnke & Moorhouse, 2020). These have been pivotal to the efforts of most higher education institutions (HEIs) to recreate classroom environments online. However, a combination of the two modes of engagement is necessary to replicate all face-to-face (F2F) instructional activities in a purely online environment (McDaniels et al. 2016). A study conducted by Romero-Ivanova & Shaughnessy (2020) on digital practice during COVID-19 indicated that synchronous tools such as Zoom are invaluable in sustaining a sense of connectedness in an otherwise isolated situation. USHG and other learning institutions must carefully consider the capacity of ICT tools to support both modes of communication before integrating them into course delivery systems. This will also require technical support inclusive of

instructor-student support as well as university support to address issues that arises with the technologies (Watts, 2016).

As blended learning becomes embedded into the practices of higher education, many more staff are involved—some of whom have not made an active choice to adopt technology, have not been involved in the pedagogical redesign decisions, and are not all sharing the same responsibilities (Sharpe & Pawlyn, 2009). Further issues involve the specific skills required of the role, such as constant repositioning of context from project to project, fast acquisition of knowledge related to such context both at the subject and pedagogical level, and the requirement to stay abreast with technological developments in the field (Donnelly, 2009). There is further evidence of a blurring of roles between the academic developer and more traditional academia (Donnelly, 2009). For USHG, there is a need to reinforce and clearly define the role of lecturers as developers of online content/modules.

Institutional challenges

Some of the institutional challenges among students and staff at universities are access to devices, access to the internet, cost of data, and access to electricity (Czerniewicz, 2021). Elsewhere in the world, the shift to emergency remote teaching, physically distanced teaching and hybrid models has led to pedagogical changes that many argue should continue, in order to improve the quality of the student learning experience.

Challenge for educators

The popularity of emerging digital technology presents new opportunities and challenges for educators. Farnan et al. (2008) argue that educators need to familiarize themselves with advances in digital media, not only to take advantage of the educational opportunities they provide, but also to encourage safe practices and professional behavior by students using these technologies. Armatas and Holt (2003) warn, however, that a constant challenge will be “to integrate the possibilities of the emergent [technology] with ongoing commitments to the established corporate technologies.”

Methods

This paper draws upon desk research (literature reviews), virtual group discussions and communication exchanges. The virtual group discussions were conducted through Zoom, Google Meet, and WhatsApp. In addition, the authors contributed to the writing of the paper through Google Drive and emails.

Findings

In the effort to establish a functional technological infrastructure on its campus, the USHG set up a modest local area network (LAN) to connect key faculty offices, computer laboratories, and some classrooms. The university has also been recently connected to the National Backbone Infrastructure/Fiber by the National Information and Technological Authority

(NITA) Uganda. This connection provides the university with some stability in internet connectivity accessed both through the local area network and wireless network. While these developments provide some stability, they are insufficient and do not address the needs of students who may have to access their classes remotely from their homes.

In 2016, USHG subscribed to Google apps for education. The platform provides access to most classroom features, including a platform to present course content, as well as manage student and teacher communication, students' assessments and grading. The platform also provides opportunities to network through emails. The university also uses Google Meet to hold virtual meetings and trainings.

Although not yet fully explored by the university, USHG has considered the adoption of Zoom as an alternative platform for enhancing e-learning. However, the resource limitations and challenges that the university faces have hampered this development.

Another platform used at the university is WhatsApp, a mobile phone- and web-based application that is used by both teachers and students to send text and voice messages, make voice and video calls, and share images, documents, user locations, and other content. Although the platform requires the internet, WhatsApp has been particularly helpful due to its significantly low internet consumption and lower cost compared to texting.

The university also uses e-signatures, which has facilitated formalization of collaborative engagements in research. In particular, the USHG is currently undertaking joint research with the Royal Holloway College of the University of London and with other universities in South Africa and Uganda.

The challenges the USHG faces with using these technologies include:

- Students' comfort level with using these technologies
- Students' familiarity with the technologies
- Limitations of e-learning materials
- Skills and resource persons, as these are new areas for USHG
- Cost of equipment
- Cost of education in Uganda
- Power accessibility and reliability for equipment
- Internet connectivity
- Safety and security of the properties
- Quality of online content and examination. Currently, the technological infrastructure and expertise do not allow for conducting examinations on line, even though some assignments can be conducted using the online platforms. There has also been a restriction on universities conducting online examinations.

- Stress experienced by teachers in having to deal with technologies. Most instructors have been used to traditional education methods and now must deal with new methods of e-learning. This can bring stress, discomfort, and hesitancy, and these can be tied to mental health issues.

Opportunities for collaborations with USHG

- E-learning will make greater collaboration possible. This has been clearly shown in the continued collaboration between the Carnegie African Diaspora Fellowship Program (CADFP) fellow and USHG.
- Increased possibility of arranging for and doing multidisciplinary research with USHG that involves multiple countries; research done both online and in person. For example, USHG is working in research with two universities in South Africa, Kyambogo University and Royal Holloway, University of London. In addition, USHG is collaborating with Dr. Opiyo, a CADFP fellow, in setting up a Data Science Center.

Opportunities to use other platforms at USHG

USHG is currently using only the Google platform. USHG should take advantages of other available e-learning platforms such as Zoom, Skype, and Moodle. For example, Moodle is a free open source platform that is being used by teachers around the world and is easy to learn.

Discussion

In this study, we conducted desk research and virtual group discussion on e-learning in the context of how it can be applied to the USHG. We identified several challenges that USHG must overcome to succeed with e-learning. To mitigate some of the challenges, the USHG has done the following:

- Engaged consultants to train its key faculty and teaching staff in the use and application of Google apps for education. The training encompassed course development and implementation, classroom management, and students' assessments. Challenges still exist around the hesitance of teaching staff to adopt the platform (e-learning) as a suitable replacement for physical classrooms.
- The university has also organized similar trainings for its continuing students in order to ensure that they gain the skills and confidence in using Google apps for learning. A key challenge that has hampered the adoption of this platform remains the unreliable and low internet speeds, coupled with limited access to computer devices.
- The USHG has also developed community outreach programs aimed at helping students at the university as well as external students in lower secondary schools to familiarize themselves with e-learning technologies.

This outreach program has become very useful during COVID-19 within the communities.

- We have also identified some areas where USHG needs to work with the government, donors, collaborators, stakeholders, and well-wishers to provide support and services to help with challenges. These include access to computer devices, access to the internet, subscriptions for premium versions of learning management systems, ensuring honesty and integrity in the learning process, data safety and security, and changing the traditional mindset of educators.

Recommendations

USHG is ready for e-learning; however, there are challenges that should be addressed to ensure the optimization of effective and efficiency in e-learning at the university. USHG needs funds to be able to get the infrastructure needed for e-learning and the expertise to advise lecturers and administrators, and to train students. We need to increase capacity building for lectures on the ground.

The University of the Sacred Heart Gulu also needs to partner and benchmark with experienced individuals, corporations, and universities in other parts of the world that have succeeded in the efficient adoption and use of e-learning technologies. This shall help the nascent university to appreciate the adoption of e-technologies, make continuous improvements, and implement changes in education processes.

Conclusion

This study has highlighted the opportunities and challenges that USHG, as a young university, particularly, has faced during the COVID-19 pandemic and the move to greater utilization of technology in the education sector. There are significant available e-learning technologies and platforms that USHG can leverage to promote and further academic collaboration that will, in turn, address its institutional challenges; this will thereby build and strengthen its capacity for research and teaching and for service to the community. As the university embraces e-learning in continuing its educational mission, it will also need support in using the greater opportunities available.

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Building and Enhancing Research, Teaching
and Service Capacity of Host Universities:
What Works?

Experiential Epistemology: A Proposed New Pedagogical Direction for Nigeria's Educational System

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Introduction

Nigeria, like many countries of Africa, is a former colony of colonial Britain. One of the relics of that relationship, which has survived and persisted to date, is Nigeria's educational system. Even though post-independence Nigeria has implemented a wide range of major reforms of its educational system, one critical aspect of that system that has survived post-colonial reforms is the fundamental relationship between the teacher and the student. It is a relationship that privileges the teacher, not just as master and expert of knowledge, but also as the exclusive source of knowledge. It is a top-down relationship of pedagogical power that sees and treats the student as a blank slate without any form of active agency in knowledge construction. In that relationship, the student approaches the teacher as an empty container to be filled at the teacher's knowledge fountain. The student is infantilized and treated as lacking any experience to draw from and contribute to his or her own learning.

This has major philosophical and practical implications along epistemological and pedagogical dimensions. One such implication is didactic pedagogy, which results in rote learning. With the student's experience completely devalued and discounted, the student engages learning as an uncritical, mechanical, and repetitive exercise in content consumption without any meaningful effort at critical processing and analysis. For a country that has the highest number of its citizens, relative to other African countries, studying in European and American colleges and universities where rote and didactic pedagogy is replaced with constructivist, experiential, and andragogical models, Nigerian international students face major learning style challenges.

In highlighting this challenge, this paper presents an alternative pedagogical approach, one that honors, encourages, and invites the student's lived experience as an essential element of knowledge construction. Three major learning theories—Lev Vygotsky's (1978) social constructivism, Malcolm Knowles' (1978) andragogy, and David Kolb's (1984) experiential learning—will form the basis for this proposed new approach. For historical context, this paper will also present, as part of the theoretical architecture, colonial theory and how Western intervention in Africa worked to undermine and devalue authentic African indigenous knowledge and experience, thus imposing a culture of didactic and rote learning.

Theoretical Framework

Constructivism

Constructivism, as an epistemological philosophy, is a rebel philosophy. It arose out of dissatisfaction with the traditional objectivistic epistemology of Western theories of knowledge (Yilmaz, 2008). It rebelled against traditional objectivist and positivist epistemology that scaffolded the

notion of objective truth and meaning detached from, and independent of, human consciousness (Grotty, 1998; von Glasersfeld, 1995; Hendry et al., 1999). In contrast, constructivism asserts that knowledge cannot exist outside and independent of human minds; that truth is relative, not absolute; and that "knowledge is not discovered but constructed by individuals based on [their] experiences" (Yilmaz, 2008, p. 162; Grotty, 1998; Fosnot, 1996). To the extent that truth is variable and relative to the observer, constructivism's central argument, therefore, is that "knowledge is not passively received from the world or from authoritative sources but constructed by individuals or groups making sense of their experiential worlds" (Yilmaz, 2008, p. 162, citing Maclellan & Soden, 2004). As Maclellan and Soden (2004) suggest, meaning making based on previously constructed knowledge means that:

1. Learners are intellectually generative individuals (with the capacity to pose questions, solve problems, and construct theories and knowledge) rather than empty vessels waiting to be filled.
2. Instructions should be based primarily on developing learners' thinking.
3. The locus of intellectual authority resides in neither the teacher nor the resources, but the discourse facilitated by both teachers and learners.

Philosophically, constructivism holds the position that knowledge is best acquired through reflective and active construction in the mind (Mascolo & Fischer, 2005). It views knowledge as an intersubjective interpretative process where the learner engages new information from past experiences and cultural background to construct an interpretation of the new information. Pedagogically, it is an approach to learning that "holds that people actively construct or make their own knowledge and that reality is determined by the experiences of the learner" (Elliott et al, 2000, p. 256).

Initial instructional approach in the West followed the behaviorist, nativist model, reflecting such classic writings as those of Thorndike (1906). Thorndike's central argument is that learning occurs through "the differential strengthening of bonds between situations and actions" (Palinscar, 1998, p. 346). This involves direct instruction teaching, where the teacher assumes an active and direct role and maintains complete control of the content of learning, pace of learning, and sequence of content of what is learned. According to Baumann (1988):

The teacher, in a face-to-face-reasonably formal manner, tells, shows, models, demonstrates, and teaches the skills to be learned. The key word here is teacher, for it is the teacher who is in command of the learning situation and leads the lesson, as opposed to having instruction "directed" by a worksheet, kit, learning center, or workbook (p. 714).

Apart from its effectiveness in teaching factual content, there is little evidence that direct instruction is effective in the development of higher-order cognitive skills (Palinscar, 1998; Peterson & Walberg, 1979). Interest in higher-order cognitive skills, such as reasoning and problem solving, resulted in a revolutionary shift from behaviorist direct instruction pedagogy to cognitivism (Bruner, 1990). The cognitive pedagogy goes beyond being just an improvement on behaviorism; it focuses on meaning making as a fundamental goal of learning and knowledge (Bruner, 1990). It is in this realm of meaning making in cognitive pedagogy that constructivism finds abode.

Constructivism is not one unified theory. Between the polar extremes of the broader constructivist continuum lie its several versions, which, in varying degrees, reject the very notion of positivist objectivity that undergirds direct instruction. Matthew (2000) observes that educational literature identifies 18 versions of constructivism, but Yilmaz (2008) notes that all such versions fall under three broad categories: (1) sociological, (2) psychological, and (3) radical constructivism (p. 163). Cognitive constructivism, at one end of that continuum, recognizes the individual as constructing knowledge, while radical constructivism, at the other end, “rejects the notion of objective knowledge and argues instead that knowledge develops as one engages in dialogue with others” (Palinscar, 1998, p. 347). Cognitive constructivism, derived from the work of Jean Piaget, argues that knowledge is the product of active construction by learners from their existing cognitive structures (schemas). Learning, therefore, reflects learners’ stage of cognitive development. The pedagogical focus in cognitivist constructivism is helping learners assimilate new information and making necessary modifications to their existing cognitive structure to accommodate the new information (Piaget, 1985).

As an adjunct of constructivism, social constructivism is a social learning theory developed by Lev Vygotsky (1978), a Russian psychologist. Even though Vygotsky was a cognitivist, he rejected the assumption that learning could be separated from its social context. Accordingly, he maintained that all cognitive processes originate in social interactions and not just in the assimilation and accommodation of new knowledge by learners. The central claim of the theory is that individuals are not just active agents in the creation of their own knowledge, but that this knowledge construction takes place in social and cultural interaction with other members of their environment.

Social constructivism views learning as a collaborative process where knowledge is forged in learners’ interaction with their culture and society (Vygotsky, 1978). In rejecting Piaget’s (1985) assumption that it was possible to separate learning from its social context, Vygotsky (1978) insists that “every function in the child’s cultural development appears twice: first, on the social level and, later on, on the individual level; first between people (interpsychological) and then inside the child (intrapsychological)” (p. 57). Radical constructivism, developed by Ernst von Glasersfeld, maintains that all knowledge is

constructed rather than products of sensory perceptions. Put differently, knowledge is invented, not discovered. According to Ernest (1994), “the humanly constructed reality is all the time being modified and interacting to fit ontological reality, although it can never give a ‘true picture’ of it” (p. 8).

Social constructivism maintains that meaning is personally constructed by the learner through experience, and that the meaning so constructed is the product of the interaction between prior knowledge and new information (Arends, 1998; Fox, 2001). It is the prior knowledge that not only provides the foundation for, but also influences, the new or modified knowledge that an individual constructs from a new learning interaction (Phillips, 1995). In the absence of that prior experiential foundation, there is no sustainable basis for a true cognitive engagement in new learning experiences.

Learning, in social constructivist epistemology, is more a rather active learner-driven process than a passive process of assimilation and absorption of teacher-generated information (Fox, 2001).

In the passive teacher-driven tradition of learning, the learner is viewed as an empty vessel to be filled with teacher-produced knowledge. On the contrary, active constructivist learning posits that learners construct knowledge and meaning only through the process of active interaction with the world (Vygotsky, 1978). It is an interaction that results in meaningful connections between prior knowledge, new knowledge, and the pedagogical process, so that even when information is passively received, the process of its understanding (meaning making) is active.

Another major claim of social constructivism is the sociality of learning. Dewey (1916) argues that learning is a social activity, something that takes place in social interaction, instead of abstract concepts. Cognitive meaning making is both relativist and interactional, involving the learner’s community and environment (Vygotsky, 1978). Therefore, as is the case with everything social, teaching and learning is the process of sharing and negotiating knowledge in a social space. But, even as learning is a social activity, all knowledge is personal, reflecting each individual learner’s distinctive stance, which itself reflects the learner’s existing knowledge, socialization, value, culture, and general body of experience.

Constructivist Pedagogy

Despite its relatively recent emergence as an epistemological theory, constructivism has gained vast interdisciplinary pedagogical popularity. It has informed new teaching, learning, and research approaches in such fields as psychology, philosophy, anthropology, sociology, and more (Yilmaz, 2008). As a pedagogical orientation, constructivism is the creation of learning environments, learning activities, and learning methods that are rooted in constructivist philosophy. Its central goal is student-centered learning, empowering the student to develop personal and independent understandings in the subject matter of learning (Richardson, 1997). The role of education is

to “assist individuals within a society to understand their lived reality” (Ezeanya-Esiobu, 2019, p. 12). Unless individuals learn by experiencing real life, they will not be able to develop freely and contribute to the development of society. Or as Ezeanya-Esiobu (2019) puts it, “memorization, abstract learning, drill and the ‘learning of fixed subject matter’, ... will not be very beneficial to the individual seeking to explore and understand the realities of his own lived experiences” (p. 12). Citing Dewey (1916), Ezeanya-Esiobu (2019) notes:

The curriculum should be conceived, therefore, in terms of a succession of experiences and enterprises having a maximum of likeness for the learner with a view to giving the learner that development most helpful in meeting and controlling life situations. ... The method by which the learner works out these experiences, enterprises, and exercises, should be such as calls for maximal self-direction, assumption of responsibility, of exercise of choice in terms of life values (p. 12).

Fox (2001, p. 24) summarizes the key claims of constructivist pedagogy thus:

- Learning is an active process.
- Learning is an adaptive activity.
- Learning is situated in the context in which it occurs.
- Knowledge is constructed by the learner, rather than innate, or passively absorbed or invented.
- All knowledge is personal and idiosyncratic.
- All knowledge is socially constructed.
- Learning is essentially a process of making sense of the world.
- Experience and prior understanding play a role in learning.
- Social interaction plays a role in learning.
- Effective learning requires meaningful, open-ended, challenging problems for the learner to solve (see also Boethel & Dimock, 2000).

A key premise of constructivist pedagogy is that education will, at every point in time, be built around “the human experience of the learner” (Ezeanya-Esiobu, 2019, p. 11). Therefore, unlike training, which is modeled around repetitive tasks that are devoid of philosophical understanding, education must focus on empowering the learner to think clearly without depending on abstract images. It must reflect the learner’s life, or, as Ozmon and Craver put it, education serves to “direct, control, and guide personal and social experiences” (1986, p. 114). Nothing about the human experience, which education explores, is objectively preset. Ezeanya-Esiobu (2019) captures it even more succinctly, arguing that education should not be based on “some perfected system of truth, but should strongly encompass a system of knowing that is rooted in experimentation, existing and emerging reality” (p. 11). When education deviates from that,

it takes attention away from the content of the learner’s own experience and places it instead on subject matter (Ezeanya-Esiobu, 2019; Dewey, 1916).

Teaching in constructivist tradition reflects a conscious effort to jettison the objectivist, didactic, and memory-oriented transmission models of learning to a more intersubjectivist, interpretivist, and student-centered model (Cannella & Reiff, 1994). Knowledge and truth are not absolute, just the individual’s interpretation of them based on their past experiences, personal views, and cultural backgrounds. Thus, the student builds (constructs) their own meaning by drawing on their knowledge and experience. In this learning approach, the learner matches newly acquired information against already existing knowledge and constructs new or modified knowledge to understand and make sense of the world. So knowledge is acquired through the learner’s involvement with content, rather than rote and robotic imitation and repetition (Kroll & Laboskey, 1996).

To serve as the vehicle that fosters innovative spirit and unleashes development, constructivist epistemology deemphasizes any approach to learning where knowledge is presented as “abstract, universal, and independent of the learner’s surroundings and existing realities” (Ezeanya-Esiobu, 2019, p. 16). Or, as Freire puts it, constructivist epistemology results in “the emergence of consciousness and critical intervention in reality” (Freire, 1968, p. 68). Therefore, rather than acting as a “dispenser of knowledge,” the teacher in constructivist learning serves as a guide, facilitator, and co-explorer who “encourages learners to question, challenge, and formulate their own ideas, opinions, and conclusions” (Abdal-Haqq, 1998, p. 2). Learners so encouraged become empowered learners who, in turn, become “inquisitive, reflective, enthusiastic, and autonomous” (Cannella & Reiff, 1994, p. 28; Fosnot, 1989; Zeichner, 1983). Here is how Cannella & Reiff (1994) captures those attributes of the empowered learner:

The inquisitive learner is continuously learning, questioning, and investigating. The individual places him/herself in new situations, taking risks and exploring unknown circumstances and interactions. The reflective individual analyzes, evaluates, and tests concepts. This reflective disposition is also used to examine oneself as a learner, how contradictions in thought are generated and resolved, the shared perspectives and differences in thought between self and others, and the sociocultural impacts on one’s own learning. The enthusiastic learner finds pleasure in learning. The individual has either retained or recaptured that intrinsic “joy in learning” experienced by all human beings as young children. The individual chooses to explore and experience and is always open to new possibilities. Finally, the empowered learner is an autonomous individual, self-governed, yet one who recognizes multiple perspectives and takes into account the effects of decisions on all concerned (p. 28).

Andragogy

In making the case for a new approach to adult learning, Malcolm Knowles (1975) draws a distinction between pedagogy, which he describes as “the art and science of teaching children,” and andragogy, “the art and science of helping adults learn” (p. 32). The thrust of Knowles’ theory of andragogy is that adults, as mature students, should not be infantilized with dependent, didactic, teacher-driven, disempowered, and nonreflective epistemology. Instead, the adult learning process should focus on and honor all sources of knowledge and insight, including “intuition, artistic experience, introspection, analytical case histories, action research, and controlled experimentation” (p. 32). Like constructivism, Knowles’ andragogy is a repudiation of the epistemic absolutism of scientism, which dominated teaching and learning in the 1950s and 1960s, according to Knowles (1975):

We can no longer afford the luxury of enjoying such multi-million-dollar fads as programmed instruction, packaged didactic learning systems, and airborne canned television instruction programs, as we did in the 1950s and 1960s. We have finally really begun to absorb into our culture the ancient insight that the heart of education is learning, not teaching, and so our focus started to shift from what the teacher does to what happens to the learner (p. 33).

In proposing andragogy, Knowles (1975) calls into question the traditional pedagogical model, which he describes as “progressively regressive” (p. 33). Here is Knowles’ case for a new order of teaching and learning:

The best education—the procedures for helping people learn which are most congruent with what we now know about the learning process—takes place in the nursery school and kindergarten, and it tends to get progressively worse on climbing up the educational ladder, reaching its nadir in college. This because the forces at work on learners from about the second grade on have very little to do with learning. Most of them have to do with achieving—passing tests, scoring high on SATs, getting into college (or graduate school), or qualifying for a job (p. 33).

Origin of Pedagogy

Knowles (1975) traces the emergence of the pedagogical orientation to some assumptions developed in the Middle Ages. Before the emergence of monastic schools in the Middle Ages, there existed earlier traditions of teaching and learning, which fell with the fall of Rome. Knowles mentions great teachers of ancient times, such as “Lao Tse and Confucius in China, the Hebrew prophets, Jesus, Socrates, Plato, Aristotle, Euclid, Cicero, Quintilian” (p. 33), who were teachers of adults, not children. Their instructional assumptions and learning procedures, such as learning being a process of discovery by the learner, dialogue, and learning by doing, were dismissed as

paganistic and forbidden when monastic schools came onboard in the seventh century (Knowles, 1975).

The novices who were admitted into the monasteries to prepare them for monastic life needed to be taught how to read and write so they could use and transcribe the sacred books. For the teaching monks, therefore, instructional approach was modeled on the assumptions about “what would be required to control the development of these children into obedient, faithful, and efficient servants of the church” (Knowles, 1975, p. 33). That, according to Knowles, was the origin of pedagogy. It was a teaching and learning model that was intended for children but had, unfortunately, been extended to the education of adults.

To underscore his claim, Knowles (1975) offers the etymology of the word pedagogy, pointing out that it comes from the same stem as pediatrics—the Greek word “paid,” meaning child, and “agogus,” meaning leader of (p. 34). In literal terms, therefore, pedagogy means the art and science of teaching children. Knowles’ essential argument, therefore, is that to speak of “‘the pedagogy of adult education’ is a contradiction in terms” (p. 34). To overcome that contradiction, people involved in adult education have begun to embrace a new learning orientation that comports with the needs of the adult learner. That orientation is the theory of andragogy, or as Knowles (1975) puts it, “the art and science of helping adults learn” (p. 32). Etymologically, andragogy is derived from “the stem of the Greek word ‘aner,’ meaning man (as distinguished from boy)” (Knowles, 1975, p. 34).

Assumptions of Andragogy

Four main assumptions undergird the andragogical claim:

1. Changes in self-concept

The adult learner is a learner whose self-concept has grown from one of total dependency (consistent with being an infant) to one of increasing independence and self-directedness. The assumption here is that the point at which individuals gain self-concept is that point in their development when they psychologically become adults. It is at that point that the individual “develops a deep psychological need to be perceived by others as being self-directing” (Knowles, 1975, p. 34). From that point on, any experience that such individual perceives as infantilizing only impedes their learning (Knowles, 1975; Cross, 1981).

2. The role of experience

The adult individual is assumed to have accumulated a rich reservoir of experience, which also serves as vital reference resource to relate and test new learnings. Andragogically, therefore, there is a decreasing use of transmittal teaching techniques and an expanding use of assistive experiential techniques that recognize and tap into the learner’s experience while involving the learner in analyzing the experience

(Knowles, 1975). This sees the replacement of lectures and assigned readings with discussions, field experience, team projects, laboratory simulations, and other action-learning models of learning.

3. Readiness to learn

As individuals mature into adults, motivation for learning ceases to be due to biological development and pressure, and becomes about the acquisition of developmental tasks necessary to meet the individual's evolving roles in society. According to Knowles (1975), it is a distinction between a teaching approach that assumes that "children are ready to learn those things they 'ought' to learn" and a learning approach that assumes that "learners are ready to learn those things they 'need' to learn." (Knowles, 1975, p. 35)

4. Orientation to learning

Children, in pedagogical tradition, have been conditioned into a "subject-centered" orientation to learning, while adults, consistent with andragogic philosophy, engage in a "problem-centered learning orientation" (Knowles, 1975, p. 35).

5. Motivation to learn

As a person matures, the motivation to learn becomes internally driven, rather than externally imposed (Knowles, 1984, p. 12).

Experiential Learning

Even though the theory of experiential learning has come to be associated widely with David Kolb, Kolb himself will be the first to admit that it is a theory that draws from the foundational work of notable 20th century scholars—John Dewey, Kurt Lewin, Jean Piaget, William James, Carl Jung, Paulo Freire, Carl Rogers, and others (Kolb & Kolb, 2005). Kolb (2015) acknowledges that he "noticed the dimensions" (p. 56) of the theory in the pioneering works of those twentieth-century scholars, and attempted to "integrate the common themes of their work into a systematic framework that can address twenty-first century problems of learning and education" (p. xvii). These prominent pioneers of experiential learning helped to develop "a holistic model of experiential learning process and a multilinear model of adult development" (Kolb & Kolb, 2005, p. 194; Kolb, 1984). Kolb's (1984) experiential learning traverses the vast fields of higher education, human resources development, and management education (Matsuo & Nagata, 2020; Illeris, 2007; Yamazaki & Kayes, 2004; Kisfalvi & Oliver, 2015; Tomkins & Ulus, 2016).

Kolb's model remains the most referenced and influential model in the field of experiential learning theory (Seaman et al., 2017; Fielding, 1994; Robotham, 1995). According to Kolb (1984), learning is "the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience"

(p. 38; Kolb, 2015, p. 49). For Kolb (1984), experiential learning is a "holistic integrative perspective on learning that combines experience, cognition, and behavior" (p. 21). This definition redefines the act of learning from a teacher-centered, outcome-oriented, passive reception of information to a student-directed process of active exploration. In other words, students learn not by accumulating facts and concepts, but through a dialectical process of experience and analysis. In Kolb's own words, "knowledge is continuously derived from and tested out in the experience of the learner" (1984, p. 27). Kolb also states that his theory of experiential learning is predicated on the following six assumptions that are equally shared by prior scholars:

- Learning is best conceived as a process, not an outcome. This means that the key goal of higher education is to engage students in "a process that enhances their learning" (Kolb & Kolb, 2005). Or as Dewey (1938) put it, education should be viewed and approached "as a continuing reconstruction of experience" (p. 79; Kolb & Kolb, 2005).
- All learning is relearning. Effective learning occurs when it follows a process that "draws out the students' beliefs and ideas about a topic so that they can be examined, tested, and integrated with new, more refined ideas" (Kolb & Kolb, 2005, p. 194).
- Learning requires individuals to resolve dialectically opposed modes of adaptation to the world. It is these dialectical tensions that drive the learning process. Learning is the back-and-forth movement between "opposing modes of reflection and action and feeling and thinking" (Kolb & Kolb, 2005, p. 194).
- Learning is a holistic process of adaptation to the world. Learning goes beyond the cognitive realm. It involves the "integrated functioning of the total person—thinking, feeling, perceiving, and behaving" (Kolb & Kolb, 2005, p. 194).
- Learning results from synergistic transactions between the person and the environment. It is a dynamic interplay between the person and the environment. Or, to borrow Piaget (1985), learning takes place through the equilibration of the two dialectic processes of assimilating new experiences into existing cognitive structures and accommodating existing concepts into new experiences.
- Learning is the process of knowledge creation. It is a constructivist theory of learning whereby "social knowledge is created and recreated in the personal experience of the learner" (Kolb & Kolb, 2005, p. 194). It is this constructivist character of experiential learning theory that separates it from the transmission model of traditional learning process, where "fixed ideas are transmitted to the learner" (Kolb & Kolb, 2005, p. 194).

Although many experiential learning models exist, Kolb's (1984) model has the distinction of being well developed and researched (Armstrong & Mahmud, 2008). Kolb's research offers a strong and well-reasoned theoretical base, something that is missing in the work of many other writers (Holman et al., 1997). Or as Zuber-Skerritt (1992) puts it, Kolb (1984) provides "a comprehensive theory which offers the foundation for an approach to education and learning as a lifelong process and which is soundly based in intellectual traditions of philosophy and cognitive and social psychology" (p. 98). It is a theory so influential that it has been extended and applied to many other disciplines. In human resource development research, Chang (2017) explores Kolb's (1984) model from a neuroscientific perspective. Yeo and Marquardt (2015) propose an integrated framework that combines action learning with experiential learning (Matsuo & Nagata, 2020). Kolb's (1984) theory proposes a systematic way of structuring and sequencing a learning curriculum to improve student learning. It makes the bold claim that learning is a cyclical process. At the heart of Kolb's model is a four-stage learning cycle that explains how experience is transformed through reflection into general concepts, and how those general concepts are used as guides for active experimentation, which results in new experiences (Healey & Jenkins, 2000). This four-stage learning cycle results in the following four key learning modes:

- Concrete experience (CE), the mode of experiencing
- Reflective observation (RO), the mode of reflecting
- Abstract conceptualization (AC), the mode of generalizing and conceptualizing
- Active experimentation (AE), the mode of testing existing experience, which results in a new order of experience

A key claim of Kolb's (1984) model is that effective experiential learning occurs only when all four modes in the learning cycle are completed (Brooks-Harris & Stock-Ward, 1999; Cowan, 1998). Specifically, individuals engage themselves in new experiences (concrete experience); using diverse perspectives, observe and reflect on these new experiences (reflective observation); develop general conceptual frames from which generalizations and new theories can be developed (abstract conceptualization); and test the implications of these general theories to concrete situations (active experimentation) (Kolb, 1976, 1984). The four learning modes follow each other in a learning cycle. The cycle may be entered and initiated at any of the four points, but the clockwise sequence of the cycle must be followed (Kolb, 1984; Healey & Jenkins, 2000). When the cycle is followed, there is a feedback effect that informs new action or, in Kolb's (1984) language, new concrete experience. This new concrete experience becomes the basis for a whole new

cycle of learning. It is this recursive learning cycle that results in effective experiential learning (Kolb & Kolb, 2005).

A major feature of the theory is that the different stages of the learning cycle are matched with distinct learning styles. As Kolb (1984) explains:

There are two primary dimensions to the learning processes. The first dimension represents the concrete experiencing of events at one end and abstract conceptualization at the other. The other dimension has active experimentation at one extreme and reflective observation at the other (pp. 30–31).

McCarthy (1990) names these orthogonal dimensions as (1) perception, vertically anchored by CE at one end and AC at the other end, and (2) processing, horizontally anchored by AE at one end and RO at the other end (Brooks-Harris & Stock-Ward, 1999). Individuals have different ways of perceiving new information and experience, ranging from immersing themselves in the particular experience, using their senses and feelings in a "concrete" way, to thinking in abstract modes, using logic and reason (Healey & Jenkins, 2000, p. 187). The same predilection attends the way individuals process or transform perceived information. Some prefer processing information by doing or through active experimentation, while others prefer watching or through reflective observation (Healey & Jenkins, 2000; Fielding 1994). Kolb (1984) argues that learners develop a primary preference for learning in a particular way but may adopt different learning styles in different learning situations and environments.

With these orthogonal dimensions of perception (how learners perceive or grasp new information or experience) and processing (how learners process or transform perceived information), four individual learning style quadrants emerge (Smith & Kolb, 1986). Kolb (1984) identified four groups of learners, based on their preferences for different modes of learning, as divergers, assimilators, convergers, and accommodators. He related these learning styles to the ideas of Jean Piaget and John Dewey (Brooks-Harris & Stock-Ward, 1999). McCarthy (1990) relabels the categories correspondingly as imaginative learners, analytic learners, common sense learners, and dynamic learners. Divergers (imaginative learners) perceive new information primarily through concrete experience, and they process or transform the perceived information primarily through reflective observation. They approach new situations from many perspectives. They possess strong imaginative ability and rely heavily on brainstorming. They learn best when they are allowed the freedom and the opportunity to reflect on their own personal experience and construct personal meanings as a critical aspect of engaging in the learning process (Kolb, 1984; McCarthy, 1990). Assimilators (analytic learners) perceive new information primarily through abstract conceptualization and transform new information primarily

through reflective observation. They deploy inductive reasoning and are able to create theoretical models by integrating their reflections and observations into their existing experience. They do well in learning environments that promote reflection, conceptualizing, hypothesizing, and critical analysis (Kolb, 1984; McCarthy, 1990).

Convergers (common sense learners) perceive new information primarily through abstract conceptualization and process information through active experimentation. They are heavily oriented toward deductive reasoning. Their strengths lie in problem-solving, decision-making, and practical application, as they are able to integrate theory and practice, learning by testing theories and applying common sense in the process. Their learning goal is to put new experience to immediate practical use. They do well in learning environments that allow direct involvement, practice, and active experimentation (Kolb, 1984; McCarthy, 1990). Accommodators (dynamic learners) perceive new information primarily through concrete experience and process information through active experimentation. They are able to get involved, carry out plans, and take actions, and they are easily adaptable to immediate circumstances. By way of trial and error, they are able to integrate their experience and application, as they are eager to apply any new information they learn to real-life situations. Their learning goal is to take knowledge and experience with them and learn on their own. They do well in learning environments designed to connect learning to application so they can actively use learning to further their personal experience (Kolb, 1984; McCarthy, 1990). Honey and Mumford (1986) adapt Kolb's learning style, using simpler everyday language: pragmatist, reflector, theorist, and activist, for divergers, assimilators, convergers, and accommodators, respectively.

The logical implication of the differential learning preferences is the need to keep this in view as a foundational step in creating a meaningful learning experience. Not only should learners be assisted in developing awareness of alternative learning approaches, but they should also be encouraged to be more flexible in meeting the different demands and challenges of new learning situations (Gibbs, 1988). Kolb's (1984) theory also requires that teachers are aware of their own individual learning styles, as effective experiential learning may be jeopardized if there is a manifest mismatch between the learners' style and the teacher's approach (Fielding, 1994; Matsuo & Nagata, 2020). The choice of learning style reflects the learner's abilities, environment, and learning history (Nulty & Barrett, 1996). Learners do better when subject matter is presented in a form that reflects their preferred learning style (Kolb, 1984; Healey & Jenkins, 2000). Kolb (1984) argues that teachers should encourage students to engage in all four stages of the learning cycle, and strong evidence shows that student learning and retention are enhanced when more learning styles are used (Stice, 1987).

It is important to note the different understandings of experiential learning, which have, in turn, generated some confusion and criticisms of Kolb's (1984) model. Brown (1980) observes that when and where such confusion exists regarding what is meant by experiential learning, the writer and the reader may have different understandings of the term. According to Brown (1980), while most people view experiential learning as learning by experience, there does not seem to be a common understanding beyond that. He contends that there are at least three possible interpretations of experiential learning:

learning how to perform a specific act or operation by doing it ("how to" learning); learning the complexities of a professional role by experiencing the milieu in which the role is performed and attempting to perform parts of the role (role socialization); or an individual's conscious and focused use of the rich experience of life, including formal learning settings, to further a largely self-constructed learning agenda (learner managed experiential learning) (cited by Rydell, 1985, p. 52–53).

In the frame of that last meaning, the learner-managed experiential learning, Kolb's (1984) model offers a clear critique of very theoretical academic programs and courses that do not recognize the already-existing experience and knowledge of students. It is also highly critical of learning activities that do not give learners the opportunity to reflect upon their prior experiences to be able to relate them to their present learning situations in their theoretical aspects (Jenkins, 1997).

Healey and Jenkins (2000) offer a summary of the strengths of Kolb's (1984) model and state that according to them, the model:

- provides ready pointers to application;
- directs [educators] to ensure that a range of teaching methods is used in a course;
- provides a theoretical rationale for what many [educators] already do ... and then offers suggestions on how to improve on that practice (in particular ensuring effective links between theory and application);
- makes explicit the importance of encouraging students to reflect and providing them with feedback to reinforce their learning;
- supports [educators] in developing a diverse, aware classroom;
- makes [educators] aware of the way in which different learning styles have to be combined for effective learning;
- can be readily applied to all areas of the discipline ...;
- can be used by individuals and course teams; and
- can be applied widely from a single classroom session to an entire degree program (p.186).

Colonization Theory

Historically, this theory can be placed in the context of “early European conquest, domination, and colonization of various countries in Africa, Asia, and the Americas” (Subreenduth, 2010, p. 120). Colonialism is the “expansion of a sovereign nation to other territories and sovereign nations” (Cheng, 2008, p. 317). It is a theory that critically presents a system of domination and value that is based solely on the erroneous belief that the dominated and subjugated populations are inferior to their European colonizers (Cheng, 2008, p. 317). But colonialism was not just an isolated accident. It debuted at the same time as the development of social Darwinism, ethnocentrism, and racism, which were all used to “justify White European domination over non-White European populations” (Cheng, 2008). It is a theory of power, and one of the tools used in creating, maintaining, and enforcing the structural power and control of colonial establishment was educational curricula and content (Subreenduth, 2010). Colonialism relied on the indoctrination of the colonized into a “certain mind-set that elevated the superiority and power of the colonizer” (p. 120).

To appreciate the role of educational curriculum in the dynamics of classical colonialism, Franz Fanon’s four phases of the colonial process is most instructive. Here is how Subreenduth presents it:

The first phase was one of forced entry into foreign lands and exploitation of the natural resources of the colonies. The second phase entailed the establishment of a colonial society that denigrated indigenous culture, practices, and knowledge while elevating that of the colonizing nation. In order to cement the difference between the superior colonizer and inferior colonized relationship, the third phase had to portray the colonized peoples as savage, inhuman, and in need of being civilized via colonial impositions. The first three phases resulted in a race-based system that was established during the fourth phase of colonization. This race-based system permeated the political, social, cultural, economic, and educational systems of the colonies and was designed to privilege the colonizer and to ensure the subjugation of the colonized. Hence, education became a powerful tool to propagate this superiority–inferiority complex (2010, p. 120).

An obvious major casualty of colonial epistemology is indigenous knowledge and experience, which has been derogatorily described in words and terms like “primitive,” “backward,” “savage,” “rural,” “unscientific,” lacking in “universality,” etc. (Kiggundu, 2007, p. 49). Even academia has not spared indigenous knowledge systems. Ezeanya-Esiobu (2019) points out that scholars have dismissed indigenous knowledge systems as “archaic, old and symptomatic of backwardness,” and “indigenous people’s way of life ... as simplistic, naïve and even primitive, ‘reflective of an earlier, and therefore, inferior stage in human cultural progress’ and consequently of no relevance to the

highly advanced and technologically oriented needs of modern society” (p. 7; citing Knudston & Suzuki, 1992, p. 1). Colonialism devalued, denigrated, and denied the colonized populations’ systems of knowledge and experiences, both about themselves and of their world. Ezeanya-Esiobu (2019) captures it more bluntly:

Western intervention in Africa brought with it a repudiation of Africa’s originality, and a belittling of the continent’s authentic experiences, which ipso facto, meant that the Africans’ environment, lived experiences, way of life, their cultural values, belief systems, and educational structure and curriculum (among others) were considered backward, unscientific, and barbaric. Following this misconception was concerted effort aimed at a superimposition of the European psyche over that of the African, often strategically orchestrated through the colonially established, or post-colonially controlled education systems. Indigenous knowledge systems, which are a product of the environment and should ideally form the foundation upon which the formal education system of any society is constructed, has been consistently and intentionally relegated to an inferior position (p. 1).

In that inferiorized state, colonial education failed to accomplish what Ezeanya-Esiobu expects education to accomplish, which is to “empower the learner to ask historical questions and examine assumptions and ‘accepted meanings and appearances’” (Ezeanya-Esiobu, 2019, p. 13, citing McLaren, 2003, p. 62). Ezeanya-Esiobu maintains that in the absence of emphasis on critical thinking and interrogation of accepted meanings in education, the school only serves more as a tool for the perpetuation of the ideas of the dominant class. Educational curriculum and pedagogical approach in the colonial and neocolonial systems have only functioned to advance the epistemological biases of the colonial power. In debunking the privileging of one epistemological claim over others, Ezeanya-Esiobu (2019) argues that:

[t]he existence of one single, universal and supposedly objective yardstick for validating all knowledge, comes into question since what is referred to as knowledge is founded upon the linguistic, environmental and ‘other meaning-making resources of a particular culture, as different cultures view the world in very different ways, all of which work in their own terms’ (p. 4; citing Foucault, 1969, p. 45).

Oguamanam (2006, p. 19) puts it even more succinctly, describing “the Western culture as a local tradition, which has been spread worldwide through intellectual colonization.”

A discussion of colonial pedagogy calls to mind Freire’s (1968) “banking concept of education,” by which he means that education has been used for “the maintenance of the oppressive status quo; knowledge is a gift bestowed

by those who consider themselves knowledgeable upon those whom they consider to know nothing. Projecting an absolute ignorance onto others, a characteristic of the ideology of oppression, negates education and knowledge as processes of inquiry" (p. 58; Ezeanya-Esiobu, 2019). Colonial pedagogy infantilizes learners by turning them into mere passive recipients of knowledge from those who possess such knowledge. This is the *modus operandi* of colonial education, because, as Freire puts it, it suits the "purposes of the oppressors, whose tranquility rests on how well men fit the world the oppressors have created, and how little they question it" (Freire, 1968, p. 63; Ezeanya-Esiobu, 2019). Yet, in all of this, indigenous knowledge simply means:

culturally informed understanding inculcated into individuals from birth onwards, structuring how they interface with their environments. It is also informed continually by outside intelligence. Its distribution is fragmentary. Although widely shared locally on the whole than specialized knowledge, no one person, authority or social group knows it all. ... It exists nowhere in totality, there is no grand repository (Sillitoe, 2002, p. 9).

Attempts at decolonizing curricula, by countering Eurocentric epistemology and repositioning indigenous epistemologies and experiences, have not fared well due to the intricate entanglement of neocolonial mentality with global and Western politics (Subreenduth, 2010). As Cheng (2008) puts it, with the increasing intensity of the global order and globalization process, "colonial power continues to be firmly rooted in the former colonies" (p. 318). As such, the present form of education that still pervades formerly colonized territories does not encourage creativity, as it "attempts to maintain the submersion of consciousness" (Freire, 1968, p. 68; Ezeanya-Esiobu, 2019, p. 16). Colonial epistemology denies representation to the colonized learners who do not see themselves in the thematic situations under examination, so that "they can easily recognize the situation (and thus their own relation to them). ... It is inadmissible to present pictures unfamiliar to the participant" (Freire, 1968, p. 107). But a liberated, decolonized, and experiential epistemology makes learners feel like "masters of their own thinking by enabling them the freedom to analyze their own world experience and not that of another" (Ezeanya-Esiobu, 2019, p. 16). This is the same sentiment that Gandhi was alluding to when he lamented that "the curriculum and pedagogic ideas which form the fabric of modern [Indian] education were imported from Oxford and Cambridge, Edinburgh and London. But they are essentially foreign, and till they are repudiated, there never can be [Indian] national education" (Gandhi, 1956, p. 26).

Today, even though colonialism in the form of trans-sovereignty is almost extinct, as most formerly colonized nations have regained self-rule, the legacy of colonialism is hardly extinct. Its effect lingers in the new phenomena of

neocolonialism and postcolonialism. These twin phenomena refer to the historical impact, legacy, and continuing influence of colonialism on the formerly colonized states (Said, 1979, 1994). Said (1979) has stridently shed light on the existential struggles of formerly colonized nations coming to terms with their colonial pasts as they forge a future. It is a decolonization struggle, because even as formerly colonized nations want to move on, they "continue to be under the influence of colonialism" (Cheng, 2008, p. 318). Their indigenous knowledge and experiences continue to be devalued, discredited, and discounted in epistemological and pedagogical philosophies and praxis—even till this day.

Experiential Epistemology and Criticisms of Kolb (1984)

Simply stated, experiential epistemology refers to a source and nature of knowledge that is forged, nurtured, and sustained in the learner's experience. It is a knowledge process that honors the subjective experiences of the learner. This is the definition of knowledge that is consistent with the third sense in Brown's (1980) definition of experience in experiential learning. According to Brown (1980), there does not seem to be a common understanding of what constitutes experiential learning beyond the rather simplistic circular definition of learning by experience. The problem with that approach is that experience in that frame of meaning is solely constituted in learning by doing.

Much of the criticism of Kolb (1984), argues Kayes (2002), centers around two main fronts: "(a) empirical validation of the theory and its instrumentation in the Learning Style Inventory (LSI) and, (b) its theoretical limitations" (p. 140). Regarding the LSI, criticisms have focused on its psychometric properties (Kayes, 2002; Freedman & Stumpf, 1980). The theoretic criticisms have centered on the argument that experiential learning theory "decontextualizes the learning process and provides only a limited account of the many factors that influence learning." (Kayes, p. 140). For this class of critics, "emphasis on individual experience comes at the expense of psychodynamic, social, and institutional aspects of learning" (Kayes, 2002, p. 141; Holman et al., 1997; Reynolds, 1999; Vince, 1998). Kayes (2002, p. 142) presents strong responses to these criticisms in what he terms "critique of the critics." Given that the term "experiential learning," within the framework of this paper, is used and understood as defined by Brown (1980), it is not my intention to engage in any of the criticisms of Kolb (1984).

Nigeria's Educational System

The educational system that colonial Britain bequeathed to Nigeria at the latter's independence was, essentially, a colonial educational system. Ibukun and Aboluwodi (2010) argue that not only was the colonial educational system "too theoretical to be able to make meaningful impact on the

life of Nigerians" (p. 9, citing Akinlua, 2007), but subjects, contents, and curricula reflected the taste, values, and agenda of the British colonial establishment. Ezeanya-Esiobu (2019) laments that colonial rule actively served to repudiate much of Saharan Africa's own indigenous knowledge across sectors. Rather than education functioning as an "independent and growth centered enterprise with adequate and well-trained personnel," it became an institution "where untrained or ill-trained personnel were hired to depend on external forces for directions and strategy" (p. 107). Consequently, Africa's post-independence education policy makers "continue to advance the colonially bequeathed foundations of education across the region" (p. 107). Regrettably, this has continued to be the case in Nigeria, 61 years after independence, even with a series of reforms of the education sector.

The National Policy on Education (also referred to as the 6-3-3-4 system) was announced in 1982 as a major national reform and became a guiding policy for Nigeria's education (Nwagwu, 1983). The policy rationale was to address the continued dependence of Nigeria's educational system on colonial legacy (Ibukun & Aboluwodi, 2010). It was widely believed and lamented that Nigeria's post-colonial education system "was exotic, bookish and consequently insensitive to Nigeria's immediate social and community life" (Ibukun & Aboluwodi, 2010, p. 10; Akinlua, 2007). Ibukun and Aboluwodi (2010) go further and are blunter in their assessment:

The curriculum at all levels of the education system was more in tune with European environment than to the African setting. The content of subjects like Geography emphasized the studying of capes, bays, fjords and several other foreign features not experienced in the Nigerian or African landscape. History program of study was stuffed with stories and analysis of European wars, reigns of monarchs and national treaties that had very little meaning and bearing to African mind. The trend was equally observed in the nature of the colonial educational system where emphasis was placed on the production of an elite group that shunned manual and practical work available in their immediate communities (p. 10)

Akinlua (2007) echoes these same sentiments, insisting that Nigeria's colonial period had an educational system that was "totally irrelevant to the needs and aspirations of developing nations" (p. 94). Citing several authors, Akinlua (2007) dismisses the colonial educational system thus:

The content of education offered was said to be bookish (Castle 1972; UNESCO 1974), irrelevant (Cameron & Dodd, 1970; Arasteh 1966) and incoherent (Castle, 1972). Ashby (1964) and Sinclair (1976) together with Murray (1967) summarized the content of the colonial education as the "3R's" which they believed was merely training the African beneficiaries to be shopkeepers, interpreters for the

whitemen and village catechists... These scholars saw the intervening period of colonization as the 'mason' that laid the very bad foundations and precedents in educational practice that would for a long period overshadow and retard genuine efforts at national development via school education (p. 94).

With the poor foundation laid in the colonial era, the content and practice of Nigeria's education continues to be irrelevant and unrealistic to the needs and realities of the Nigerian people. A bookish educational model for a predominantly agrarian society is a total disservice to that society (Phelp-Stokes Commission, 1923). Colonial education alienated Nigerians from their long and rich traditions and values of manual labor and the dignity of labor that characterized their pre-colonial past (Akinlua, 2007). Akinlua (2007) points out that university education in the colonial era was, essentially, producing white-collar job-seeking elites "rather than assisting the development of creative self-reliant people that are much needed to consolidate meaningful economic and technological development in the countries" (p. 95).

It was these structural shortcomings that have informed every post-colonial reform in Nigeria's education sector. However, Akinlua (2007, citing Ehindero, 1986) laments that even with these post-colonial attempts at reforming and improving the educational system, not much progress has been made, as all efforts have tended to be the metaphorical new wine in an old bottle. The National Policy on Education (6-3-3-4 system) has been generally adjudged as a colossal failure (Akinlua, 2007; Ehindero, 1986; Ajayi, 2007; Oluwatelure, 2007). Citing reports and conclusions of various research work, Akinlua (2007) presents the following as reasons major curricular reforms have not succeeded:

1. Most curricular content and practice since the colonial period to the present are deeply seated in European cultures and hence are very alien to the traditional African culture. The salient ingredients that can make them work are conspicuously missing in the African context.
2. Curricular changes and adjustments have been generated and driven by extraneous and selfish motives ranging from attempts to pacify critics of alien friendly policies of selfish colonial governments to the spirited maneuvering of thoughtless and visionless parasitic indigenous governments trying to create impression of being serious to home crowds.
3. Many curricular adjustments and innovations were merely 'ink and paper' masterpieces but mere 'shadows' and 'ghosts' in execution. To this end many changes and innovations in paperwork were never accompanied by concrete physical adjustments, constructions and changes in the school system. Thus, the school building, the teacher and the time-tables that operated the grammar schools of fifty years ago are still the same set of instruments that are offered to operate the new systems.

4. Government policies on education and the functioning of it are not sincerely dynamic over the years. Illegitimate new governments keep destroying previous governments' creativity in order to win supports from antagonistic environments. The little inadequate monies meant for educational development constantly disappear into private pockets (p. 95).

Indigenous Knowledge

Indigenous knowledge, in the context of this paper, is an alternative knowledge system to the so-called "mainstream, Western-styled, or modern understanding of knowledge" (Ezeanya-Esiobu, 2019). It is the knowledge system that recognizes the unique and shared knowledge of a culturally bound group of people or community, which is the source and basis of the way they see the world (Ellen & Harris, 2000). Greiner (1998) sees it as "the unique, traditional, local knowledge existing within and developed around specific conditions of women and men indigenous to a particular geographic area" (p. 1). Kiggundu (2007) defines it by reference to its development from a people's interactions with their environment. However approached, one thing is constant, and that is the fact that cultures and societies amass their indigenous knowledge base as part of their efforts to master their environment and survive in it. And because indigenous knowledge is a product of society's interactions with their environment, and the environment is constantly changing and evolving, indigenous knowledge does not hold rigid epistemological claims (Ezeanya-Esiobu, 2019).

With the definitions of indigenous knowledge, one thing that is obviously missing in Nigeria's colonial and post-colonial education system is indigenous epistemology. And with everything colonial being about power dynamics, McLaren's (2009, p. 63) observation that "some forms of knowledge have more power and legitimacy than others" cannot be any truer. Educational curriculum in Nigeria, as in other Africa states, is still largely determined by the colonially mediated question of what qualifies as proper education. Within the frame of that inquiry, indigenous knowledge is considered an inferior system of knowledge to so-called Western scientific knowledge. Expressing this power asymmetry, Ezeanya-Esiobu (2019) laments that indigenous knowledge is "often dismissed as lacking in legitimacy, such terminology as 'non-quantitative, out of date, and amethodological' are often used to describe the concept of indigenous knowledge, while arguments are presented, stating that it is bereft of scientific rigor and objectivity" (p. 108). Yet even the World Bank admits that research has shown that when people's prior knowledge and experience is recognized and made part of current teaching and learning, their retention capacity for taught content increases (Ezeanya-Esiobu, 2019).

And because indigenous knowledge is devalued and discounted, indigenous curricular content and pedagogy are

also devalued and discounted, as curricular designers and operators go for foreign contents and curricula dictated by the wishes and interests of sponsors and donors. Or, as Ezeanya-Esiobu (2019) puts it:

In sub-Saharan Africa, education and research have mostly taken the form of an outside-in approach whereby the agenda of what is to be researched is set by the donors or development partners. This is also the case with curriculum of teaching and learning. Very few efforts, transformative in approach and content, has been put into modifying the curricula of teaching and learning across the continent of Africa, in order to make for independent, environmentally generated and sensitive teaching, learning, and research (p. 108).

When one considers that the difference between the Western form of knowledge and indigenous knowledge is simply one of approach that is philosophical in essence and a result of different experiences, the continued glorification and privileging of Western knowledge at the expense of devalued indigenous knowledge is simply as mind-boggling as it is inexcusable. This is how Oguamanam (2006) presents some of the key differences between these two knowledge forms:

1. The transmission of indigenous knowledge is mostly orally based, that is, through folklores and legend, or through imitation and demonstrations. Western science transmits knowledge through writing.
2. Indigenous knowledge is gained by observing and participating in simulations, real-life experiences and trial and error. Western knowledge is taught and imbibed in abstraction.
3. Indigenous knowledge is founded on the spiritual; the notion that the world and its components have life force and are infused with spirit, and this includes both the animate and inanimate objects such as fire and trees. Western knowledge severs the animate from the inanimate and treats all as physical entities.
4. Indigenous knowledge views the world as interrelated; it does not necessarily subordinate all other life forms to mankind as they are all interrelated and interdependent parts of one ecosystem. Western science views mankind as superior to nature and "authorized" to exploit it maximally.
5. Indigenous knowledge is integrative and holistic in nature, rooted in a culture of kinship between the natural and supernatural. Western science is "reductionist and fragmentary, reducing and delineating boundaries to the extent that every relationship is treated as a distinct whole."
6. Indigenous knowledge values intuition, emphasizes emotional involvement and subjective certainty in

perception. Western science thrives on logic and analysis, abstracted from the observer, and the replication of measurement to determine results.

7. Indigenous knowledge is based on a long period of close interactions with the natural environment and phenomena. Western knowledge thrives on the mathematical and quantitative (pp. 15–16).

Sadly, the consequence that attends this needless devaluation of one knowledge system at the gain of the privileged other is huge. Not only does a Nigerian educational curriculum that is not Nigerian by content and delivery result in the production of Nigerians who are disconnected and detached from their indigenous roots, experiences, and realities, but it also affects the design of development strategies (Ezeanya-Esiobu, 2019). Development thinking and conceptualization in post-colonial Africa generally (not just Nigeria) “is not the direct descendant of, or an adaptation of the principles of the indigenous communities over which the new nation states have imposed their rule” (Ezeanya-Esiobu, 2019, p. 109). To get Nigeria where it needs to be developmentally, indigenous knowledge and experience will need to drive research and development planning. Or, as Ezeanya-Esiobu puts it:

research agenda, curriculum, and ‘given’ conceptual frameworks should be continuously reexamined by researchers, teachers and students, with the aim of eschewing all manifestations of neo-colonial underpinnings and emphasizing indigenous ideas and addressing Africa’s peculiar realities and challenges (Ezeanya-Esiobu, 2019, p. 109; Ezeanya, 2011).

Nigerians have to tell their own stories and articulate their own developmental needs. Such stories and needs must freely reflect the unique experiences of the people. Perspectives matter, and perspectives will draw from indigenous experience. Mkabela (2005) lays it out more elegantly, arguing that research has to embody the examination of indigenous realities from the perspective of the indigenes, and that research should recognize indigenous experience and place it at the center of inquiry, as well as honor and affirm indigenous voice and cultural experience as the starting point for any meaningful multicultural approach to inquiry. The people’s history and lived experiences can no longer be severed from research that affects them. The ugly effect of this severance is one that UNESCO (2002) has acknowledged. According to UNESCO findings, development efforts have not attracted people’s participation in research when they do not use research instruments and mechanisms that allow and empower them to use their own knowledge. There is a great need to develop research plans and procedures that allow and promote the participation of indigenous people and the interface of scientific activities with indigenous knowledge.

To achieve this interface, Nigerian scholars and researchers need to merge their acquired foreign knowledge in research methodologies with the realities of their home culture and

experience, especially when they are engaged in research impacting their local environment (Nsamenang, 1995). This aligns with the United Nations (2015) Agenda for Sustainable Development, which acknowledges that the indigenous knowledge system possesses useful knowledge on sustainable living. But it goes on to lament that formal education systems have systematically disrupted indigenous knowledge and replaced it with “abstract knowledge and academic ways of learning,” so that, “today, there is a grave risk that much indigenous knowledge is being lost along with its valuable knowledge about ways of living sustainably” (cited in Ugwu & Diovu, 2016, p. 23). Sifuna (2008) insists that “the failure to integrate indigenous learning and Western education was partly a deliberate effort to eradicate African education” (p. 20).

Education and research can no longer be a binary between acquired Western knowledge and local realities. Gandhi (1956) addressed this binary relative to the claims of Western universal subjects that dominated India’s so-called nationwide curricula such as physics, chemistry, and mathematics but completely disregarded India’s national industry of “spinning and weaving” (p.23). Rather than insist on India’s education to become one of mere “spinning and weaving institutes,” Gandhi maintains that “such indigenous knowledge and industry must be combined with the universal courses in order to produce creative, innovative and well-grounded citizens who are in touch with their environment and the wider society” (Ezeanya-Esiobu, 2019, p. 17).

Ezeanya-Esiobu (2019) has identified the following as six challenges that Nigerian and other African researchers, seeking to incorporate indigenous knowledge into their research, must address:

1. The unwillingness of custodians of indigenous knowledge to part with it for fear of loss of economic, social, and political power that come with the possession of such knowledge.
2. Local fear and skepticism among custodians of indigenous knowledge about the usage of such knowledge in the hands of foreigners and their local research partners. These fears are not unfounded as Western pharmaceutical corporations have been known to have patented and profited from procured indigenous knowledge to the complete exclusion of the indigenous custodians and communities from whom the knowledge was obtained.
3. The effectiveness of some indigenous knowledge is environment specific. Thus, some indigenous knowledge cannot be functionally and effectively transplanted to other locations where they have not been tried and tested.
4. Care must be taken to identify genuine indigenous knowledge holders and avoid pretenders and quacks who also parade as indigenous knowledge custodians and experts. So, due diligence is required.

5. The line that separates indigenous knowledge from general indigenous culture can sometimes be blurry. This results in the conflation of indigenous knowledge, which is a distinct body of knowledge, with general local culture, especially for Westerners who already approach non-Western culture with ethnocentric attitudes. This can result in misinterpretation of indigenous knowledge and experiences.
6. The issue of intellectual property rights for the use of indigenous knowledge is one that researchers and scholars deal with. It is not just procuring and protecting intellectual property right over indigenous knowledge, it is also crafting a unique shelf life clause for indigenous knowledge that makes it proprietarily timeless. Ezeanya-Esiobu (2019) observes that “new legal alternatives are to be considered to protect indigenous pharmacology, in order to stem the tide of ‘illegal’ patenting and economic exploitation by the West” and recommends “a sui generis approach that provides for the nature of indigenous intellectual property to be defined in accordance with the cultural values of the indigenous communities” so that “unlike the IPR regime that provides a shelf life for inventions, the sui generis provision should recognize the timeless nature of sub-Saharan Africa’s indigenous pharmacology and should be devoid of the provisions for originality and material form, which the global IPR regime upholds” (p. 110).

India, like Nigeria, is a former colony of Britain. Like Nigeria, India’s indigenous knowledge system was also devalued, debased, and discounted during its colonial era. Unlike Nigeria, however, India’s post-independence reform of its educational curriculum was driven primarily by an active and conscious understanding of the deeply devastating effects the harm of colonialism had on India’s indigenous knowledge system. If any person would know the extent of this harm, it was Mahatma K. Gandhi, credited as the father of India’s independence from Britain. Gandhi was unapologetic in his condemnation of British colonial education policy in India, primarily because it was a policy that was deliberately crafted to advance British interest and values at the expense of India’s indigenous education system. Gandhi (1956) decried the focus of British colonial education policy in India, which encouraged mechanical learning, as opposed to character formation, and lamented that “we become lawyers, doctors and school masters not to serve our countrymen, but to bring us money” (p. 22).

As in Nigeria, British colonial education policy was not geared toward the building of a true and authentic Indian society. Instead, it was designed to produce British-oriented Indians (Ezeanya-Esiobu, 2019). Gandhi’s (1956) account of the Indian village of Baroda can easily be the story of any Nigerian village. Here is how Gandhi captures the miserable state of Baroda:

The sanitation of their villages is as primitive as in the other parts of India. They do not even know the value of manufacturing their own cloth. Baroda possesses some of the richest lands in India. It should not have to export its raw cotton. It can easily become a self-contained State with a prosperous peasantry. But it is bedecked in foreign cloth—a visible sign of their poverty and degradation. ... The fact is the education in Baroda is an almost slavish imitation of the British type. Higher education makes us foreigners in our own country. ... There is no originality or naturalness about it. It need not be at all original if it would only be ab-original (Gandhi 1956, 5; Ezeanya-Esiobu, 2019).

When curriculum and pedagogy fail to embody indigenous knowledge, the educational system as a whole fails to promote a sense of pride and continuity among the local population. As Gandhi (1956) argues, education should be about intergenerational continuity and no society should lose its cultural investments, history, and knowledge bank due to an educational policy and system that is designed for disruptions and discontinuities. Any policy, colonial or post-colonial, that allows and promotes such disruption and discontinuity of the indigenous system should, in Gandhi’s (1956) words, be “scrapped.” Here is how Gandhi puts it:

The system must be scrapped; enquiry must be made promptly as to what constituted the elements of education before Indian Universities were constituted, before Lord Macaulay wrote his fatal minutes. Promptness is essential, because the race of old teachers is nearly extinct and the secret of their methods may die with them. The resuscitation of those curricula may mean the disappearance of political history and geography. ... [W]e dare aver that they strike us as infinitely more efficient and satisfactory than the latest thing to come out of Europe” (Gandhi 1956, 28; Ezeanya-Esiobu, 2019).

Eyong (2007) echoes a similar sentiment about the harm that colonialism has done to indigenous knowledge systems in Africa:

IKS [Indigenous Knowledge System] has suffered for decades from several strategies of disinformation embedded in westerncentric, colonial, and post-colonial education, and western religion, science, and technology. Today, these systems form a bulk of selective omission of non-European achievements, inventions and technologies in academic works. Often, data on IKS are distorted to confirm the hypothesis of non-Africanist scholars (Eyong, 2007, p. 131).

The harm of an educational system and policy that fails to recognize local knowledge cannot be overemphasized. When

such a system ignores indigenous experiences, education is reduced to mechanical and robotic consumption of information to which the learner cannot relate. Gandhi (1956) lamented the disconnect between textbooks that local learners were required to read and the learners' own real-life experiences. The colonial learner of foreign texts cannot be expected to have a sense of pride in their history, identity, and indigenous experience. And this could result in a learner who becomes estranged from his own surroundings, and who feels "no poetry about the home life, the village scenes are all a sealed book to him, his own civilization is presented to him as imbecile, barbarous, superstitious and useless for all practical purposes. His education is calculated to wean him from his traditional culture" (Gandhi, 1956, 29). Gandhi (1956) could have been writing for the Nigerian society and experience.

Epistemological and Pedagogical Reset

Nigeria's epistemological and pedagogical traditions need urgent reset. Her educational system continues to be a relic of colonial legacy, even though it is a legacy that dishonors, devalues, disavows, and discounts Nigeria's indigenous knowledge system. A constructivist-oriented educational culture will help achieve this needed reset. Nigeria, indeed Africa, should do away with an educational culture that surrenders its authentic indigenous knowledge to the ethnocentric and objectivistic epistemology of the colonizing West. With the intersubjective and interpretative process of a constructivist-oriented educational system, the Nigerian learner is offered the opportunity to engage new learning from past experiences and background. In the collaborative philosophy and practice of social constructivism, the Nigerian learner will become an active cocreator of his own learning experience, and no longer will his indigenous knowledge and realities be repudiated and relegated to the footnotes of the epistemological traditionalism of the West.

Pedagogically, a reset Nigerian educational system will dump the objectivistic, didactic, rote, and memorization model of learning that has taken hold in it. In its place will be a teaching and learning tradition that encourages and empowers learners' critical engagement from an experiential standpoint and advantage. Rather than have teachers act as dispensers of knowledge to an infantilized learner, teachers will serve as guides, facilitators, and co-explorers of knowledge who encourage critical learning (Abdal-Haqq, 1998). Put differently, the Nigerian learner, especially the adult learner, can no longer be treated like a child learner. Instead, in the growing and expanding tradition of andragogy, the Nigerian adult learner's self-concept, experience, readiness to learn, problem-centered learning need, and motivation to learn are constitutive of the design of his learning.

The net outcome of a reset Nigerian educational system is a new system that is grounded in, and driven by, Kolb's (1984) theory of experiential learning. The new system will engender a "holistic integrative perspective on learning that combines experience, cognition, and behavior" so that education in Nigeria becomes "the process whereby knowledge is created through the transformation of experience" (Kolb, 1984, p. 38). No longer will education in Nigeria be teacher-centered, outcome-oriented, and inclined toward passive reception of information. Instead, it will become a student-driven and -directed process, allowing knowledge to be "continuously derived from, and tested out in, the experience of the [Nigerian] learner" (Kolb, 1984, p. 27). Kolb's (1984) four-stage learning cycle will become an integral part of Nigeria's pedagogical system that will result in the transformation of experience through reflection, the use of general concepts for active experimentation, and the emergence of new experience. The new Nigerian educational system will seek to empower indigenous knowledge as a core curricular goal, and the benefit of such empowerment is one that Ezeanya-Esiobu (2019) has eloquently captured:

Empowering indigenous knowledge as part of the education curriculum will demystify knowledge to Africans who have been conditioned since colonial times to not identify their culture and learning with science, technology, the humanities, and arts. The effect will be that education will become "easy" and accessible to many and can be readily applied to real-life situations. The outcome will be unprecedented innovation and creativity and accelerated scientific and technological advancements across Africa" (p. 111).

Implementation Challenges

To achieve this new pedagogical paradigm, a range of practical challenges that have perennially beset the Nigerian educational system need to be overcome. Two of these challenges bear specific mention: (1) poor funding, and (2) poor teacher training.

Poor funding

For several decades, the funding of education in Nigeria has remained notoriously low and inadequate (Nwachukwu, 2014; Nwagwu, 2010). Education has continued to receive very miserly yearly budgetary allocations, way below UNESCO's (2015) recommendation of between 15 and 20 percent of yearly national budget. Even with the gyrations in education budget between fiscal years 2000 and 2021, Nigeria's highest allocation to education as a percentage of its total national budget remains way below the UNESCO recommendation. From 8.7% in 2000; 5.2% in 2004; 10.6% in 2014; and 4% in 2016 to 6.3% in 2021, the funding of education remains a major concern. Without adequate

funding of education, policies and initiatives to move the education system in new directions are almost guaranteed death on arrival. Little wonder UNESCO (2012) notes that Nigeria has some of the worst education indicators in the world. Nigeria can overcome this perennial scourge of poor funding in the education sector, which makes it difficult to implement innovative ideas and reforms of education, by committing to a sustained 2% yearly increase in its budgetary allocation to education.

Teacher Education

Apart from inadequate funding of education in Nigeria, there is also the challenge of finding the right breed of teachers to implement the proposed epistemological and pedagogical paradigm. MacKinnon and Scarff-Seatter (1997) see it as the formidable task of translating a learning theory into a theory of teaching, which raises questions about “what teachers need to know and be able to do” (Abdal-Haqq, 1998). Abdal-Haqq (1998) sees a unique challenge for teacher educators, who, among other tasks, would need to “balance the need to acknowledge the different discipline-specific requirements of teaching with the need to model constructivist methods in teacher education courses and practicums” (p. 5). But this is a challenge that is not limited to constructivist pedagogy, as other allied and alternative, nontraditional methods, including andragogy, experiential learning, and indigenous epistemologies, present similar challenges.

There is also the valid concern about a teaching method that embraces students’ understandings and neglects the so-called “right” answers (Richardson, 1997). Abdaq-Haqq (1998) fears that when such neglect for right answers occurs, “student knowledge becomes idiosyncratic; 30 different students may arrive at 30 different understandings or interpretations of a concept, all of which are not equally appropriate” (p. 5). If any of these nontraditional constructivist approaches are not implemented appropriately, it may lead to what MacKinnon and Scarff-Seatter (1997) call the abandonment teaching style. To avoid these pitfalls in the proposed new direction for Nigeria’s educational system, it is important that teacher educators model constructivist approaches that “engage students in interdisciplinary exploration, collaborative activity, and field-based opportunities for experiential learning, reflection, and self-examination” (Abdaq-Haqq, 1998, p. 5). This will ensure that future teachers are knowledgeable in these strategies and are able to employ them in schools. Another challenge that Nigerian educators may face in implementing this new pedagogical direction is the temptation to regard constructivism as the only valid pedagogical theory. It is just one of the many ways of conceptualizing knowledge.

Conclusion

Nigeria’s educational system is dated. Sixty-one years after independence, Nigeria’s educational system—philosophically, epistemologically, and pedagogically—is still, essentially, colonial. From curriculum content to systems of teaching and learning, Nigeria continues to perpetuate a system that was designed to infantilize the learner as a weak and empty vessel that needs to be filled with external content. The learner’s experience is totally devalued, debased, and discounted. Kolb’s (1984) experiential learning theory, in line with allied constructivist epistemology, honors the experience of the learner and makes it an essential aspect of learning. To embrace this critically needed indigenous knowledge system, colonial educational legacy needs to be dismantled. Two major challenges exist in this effort. Poor and inadequate funding for education needs to be addressed, and there is the need to reorient Nigeria’s teacher education system to make this new direction possible.

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Building and Enhancing Research, Teaching
and Service Capacity of Host Universities:
What Works?

Over 30 Years Engaging with Higher Educational Institutions in Ghana: Lessons and What Works

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Introduction and Contextual Information

My career as a scholar/academic, educator, and practicing consultant spans three distinct areas in the social sciences: labor relations, law, and public policy. I have worked on international organizations such as the Organisation of African Unity (OAU), the African Union (AU), the United Nations, the International Money Fund, the World Bank, and the World Trade Organization. More recently, I have worked on capital/human resources (what I call “brain power”/knowledge workers) in energy and natural resources in Ghana/Africa in a post-fossil fuel world of green energy and technology. My work as a public intellectual and a diaspora African is driven by the following intertwined factors:

1. A desire to link what I do with what happens in the real world
2. Being in close touch with phenomena that I study, teach, and publish about
3. Ensuring that my work not only contributes to knowledge generation but also benefits the over 1.2 billion Africans who inhabit Africa
4. My personal/professional mantra is that although I am based in the United States, I cannot teach, write, publish, and consult about Africa without visiting, staying in, and at times living in Africa, to gain real-life/practical experience, insights, and lessons
5. My specialization as a public policy expert means that to be effective, I must be practice-centered in my approach; and to be in a position to impact my areas though opportunities in Ghana/Africa, I must be in close and constant touch and be directly engaged and familiar with pertinent developments—as I say, “You can’t do Africa without being there.”

Highlights of Previous Work and Experience Relating Directly to Africa with a Focus on Ghana

The following highlights constitute the backdrop to my over 30 years of teaching, researching/publishing, and consulting about Africa. Going back to my graduate PhD student days, in 1985–1986 I utilized an Institute of International Education fellowship as a professional intern at the International Labour Organization (ILO) in Geneva, Switzerland, to learn firsthand how the ILO worked. I also used this unique opportunity to collect materials that I sent to Boston through diplomatic pouch for my PhD dissertation.

Upon my first academic appointment:

1. I became one of the first, if not the first, faculty member at Northeastern University (my home institution) to officially accompany a student for research in Africa in the early 1990s.

2. I organized and was part of the leadership of a delegation to Ghana that resulted in Northeastern University’s first memorandum of understanding (MoU) for international faculty/student exchange with an African university.
3. I spent summers from 1991 to 2003 doing fieldwork on the OAU-AU, Ghana/Africa’s labor relations and foreign policies, and since 2009, conducting studies on oil and other resource extraction.
4. I consulted for the government of Ghana, labor unions, and private employers to create/draft laws, policies, and practices that suited Ghana and met ILO standards. I joined the deliberations of the national labor policymaking body, the National Advisory Committee on Labor, from 1991 to 2003.
5. I had my first academic sabbatical at the University of Ghana, Legon, Department of Sociology, in 1996 and two subsequent sabbaticals plus a Fulbright award from 2003 to 2019 at the University of Cape Coast.
6. In 2013–2014, I was appointed as Consultant to the Vice-Chancellor and Office of Quality Assurance, to enhance capacity at the University of Cape Coast. Professor Kofi Awusabo-Asare and I adopted the concept “positive opportunism” to promote the mentoring of young faculty, research, and publications. Our objective was to institutionalize best practices to boost capacity at Ghanaian universities in areas of teaching, research, and the functional salience of academic work.
7. From 1989 starting with the University of Ghana, I initiated and led private efforts to donate books to libraries at universities in Ghana, mainly the University of Ghana and the University of Cape Coast and since 2019 the University of Energy and Natural Resources (UENR) in Sunyani.
8. In early 2021, I donated furniture worth over \$2,500 to the University of Ghana’s Department of Sociology. In the summer of 2021, I donated copies of 2000 to 2018 editions of *Africa Bibliography* (Cambridge University Press) to UENR’s library to enhance research/scholarly productivity.
9. My 13-month Fulbright award at the University of Cape Coast (2011–2012) culminated in my contributing as a key resource person to the creation of Ghana’s first university-affiliated Institute for Oil and Gas Studies (at the University of Cape Coast), as well as drafting Ghanaian oil laws and creating the Public Interest and Accountability Committee (PIAC). The PIAC is hailed by numerous world leaders as an innovative and important solution to the resource curse (Africa Progress Panel, 2013).

Three Carnegie African Diaspora Fellowships in Ghana

I have successfully completed/collaborated with the Carnegie African Diaspora Fellowship Program (CADFP) three times at three separate Universities in Ghana:

1. University of Ghana, 2015
2. University of Cape Coast, 2017
3. UENR, Sunyani, 2021

Highlights of my Latest Carnegie African Diaspora Fellowship at UENR (June to August 2021)

I was appointed as a visiting professor/Carnegie African Diaspora Fellow at UENR from June to August 2021. I collaborated with Professor Yaw Ofosu-Kusi, Dean, School of Business/Management Sciences, my main host, and Dr. Emmanuel Opoku Marfo, Head, Entrepreneurship, my second host and faculty mentee. We collaborated on capacity building, emphasizing human resource/capital development through education, training, and employment in green energy and technology in a post-fossil fuel Ghana/Africa. I spent most of my time at the Sunyani campus of UENR in Ghana. I am pleased to report that my colleagues/main hosts and numerous UENR faculty, administrators, and I collaborated so successfully that except for one objective, we achieved all the goals we set for my fellowship at UENR. The only goal we did not accomplish was getting an MoU with a U.S.-based university signed. However, I had discussions with my colleagues at UENR and provided a template for drafting an MoU for faculty and student exchanges.

Although due to COVID-19 constraints, I spent only 67 instead of the originally planned 90 days at UENR, my fellowship was a resounding success (Panford, 2021b).

Key Accomplishments/Highlights

Three Official Public Lectures/Presentations

Under the auspices of Professor Elvis Asare-Bediako, Vice-Chancellor of UENR, we launched the maiden lecture for the university's series of invited lectures, for which I keynoted. This lecture was covered by national media, including Ghana's popular Joy FM radio station and UENR's campus radio station (Panford, 2021a).

I published the paper "Practical tips for managing sources/bibliography on Africa" and presented it to UENR library staff/faculty and graduate students. I also donated copies of *Africa Bibliography* (Cambridge University Press) and political science books on Africa to the library.

I gave a presentation to the School of Business/Management Sciences, other faculty, and the university attorney: "New curriculum in energy and natural resources in light of the

FIGURE 1

Gallon of crude oil obtained by Professor Kwamina Panford from Ghana's third commercial oil field, Sankofa. This is used to demonstrate the physical properties that make Ghanaian crude the Mercedes Benz/luxury type of oil on the world market.



imperatives of global decarbonization, cuts in global warming, and increased green energy/technology."

I had informal discussions with many UENR faculty, the acting Pro-Vice-Chancellor, Business School faculty, Engineering and Environment faculty, and the International Relations Head on Internationalizing Programs/Activities at UENR. I also had several meetings with the Vice-Chancellor and other senior leaders, including the Registrar, on the future roles of UENR in Ghana's energy and resource sectors.

I collaborated with my UENR colleagues to produce briefing notes on triple threats facing the Ghanaian economy for the Vice-Chancellor's meeting with the CEO of Ghana's national oil company, the Ghana National Petroleum Corporation. We laid out how China could threaten Ghana and the Ivory Coast's roles as the world's leading cocoa bean producers, how bad policies and environmental practices could prevent Ghana from maintaining its position as Africa's top gold producer, and the urgent need for Ghana and other African oil producers to start policies and practices to match the challenges posed by a post-fossil fuel world—a world that does not use hydrocarbons for cooking, warming, cooling, as an industrial source of energy, or in internal combustion vehicle engines.

Lastly, upon invitation, I created briefing notes on electric car infrastructure for the Ghanaian Minister of Energy to help guide national policies, legislation, and practice in anticipation of future transportation that will hinge largely on electric powered cars instead of today's gas guzzling automobiles.

Contributions to Curriculum Development and Proposal with Bibliographies from Three Africa Experts on Oil/Gas and Other Natural Resources

Using the official mandate of UENR to enhance natural resource management and benefits to Ghanaian society and based on discussions with my UENR colleagues (faculty and administrators), I proposed and submitted the idea for and provided a roster for key resource persons and experts I dubbed “Master Class Teachers,” an external board, and “Financial Friends of UENR” to supplement funding from the government of Ghana and internally generated funds to meet more of its resource needs. For instance, I proposed using experts/practitioners I called Master Class Teachers to be hosted on the UENR campus to teach special classes or topics aimed at bringing their wealth of experience to the classroom, emphasizing practice and problem solving to make UENR education unique in terms of experiential learning and salience to national development, especially in natural resource extraction and utilization.

In further pursuit of the objective of experiential education/training, during my latest CADFP project at UENR, I initiated, organized, and led faculty and a graduate assistant to one of Ghana/Africa’s important gold mines: the Newmont Ahafo gold mine at Kenyasi in Ghana. My colleagues and I went a mile underground to observe firsthand and to experience real-life gold mining. We wore all the protective equipment miners wear, and we were treated as miners for a day. We observed and even touched actual gold-bearing rocks. We learned that at that section of the underground mine, rocks contained 5–6% gold. (See photos of visit to mine.) This visit allowed my colleagues and I to observe and experience the

original source, the technology, and the labor that allowed Ghana to overtake South Africa as Africa’s top gold producer.

I also reviewed a proposal for UENR’s New Energy/Natural Resource Center. In addition, I provided Vice-Chancellor Asare-Bediako a template for an energy/natural resource center created by Professors Awusabo-Asare (University of Cape Coast) and Edward Kutsoati (Tufts University) and I in 2010. The purpose was to furnish a model for UENR’s proposed center.

Special Work with Women

During my CADFP project, I mentored/worked with five women, including one of Ghana/Africa’s new generation of women petroleum engineers and an undergraduate engineering major. My plan is to connect the undergraduate student with female university presidents or other leaders in engineering universities, such as Professor Gilda Barabino of Olin College of Engineering in Boston, to advance her education and hence career. The other women I worked with included a PhD candidate, an applicant to UENR’s master’s program in natural resources, and a Northeastern University student who recently completed her master’s degree in international development at King’s College, London.

Faculty Mentoring

In addition to my junior host, Dr. Opoku Marfo, I met frequently with approximately 10 faculty members to discuss publishing, promotion, and other career-related matters. For example, we discussed strategies relating to boosting scholarly productivity through conferences and publications, as well as securing funding through grant applications and expanding professional networks within and outside of Ghana/Africa.

FIGURE 2

Professor Panford, 4th on left front row; Ms. Ama Asafo-Adjei, Head Librarian; Professor Yaw Ofosu-Kusi, Dean, School of Business Management; Mr. Solomon Panford, Registrar; and other UENR colleagues after Professor Panford’s lecture and donation of bibliographic materials including political science books and copies of *Africa Bibliography* (Cambridge University Press).



Ingredients for Success

A convergence of my own passion, the interests of the CADFP, and my host and home institutions have driven my accomplishments. My long track record of over 30 years giving back and impacting university education, as well as training in Africa focusing on Ghana (my birthplace), also played huge roles in my success. My work relies on original materials in situ, mostly in Ghana. (I have used opportunities for fieldwork in Senegal, Zimbabwe, and South Africa, including invitation from the African Union to observe its founding in Durban in 2002.) I focus on Ghana to deepen my impact and roles via collaboration. I rely heavily on fieldwork in Ghana and other countries for my research/scholarship, teaching, and service because I am guided by the principle that “I can’t deal competently with Ghana/other African countries if my work is not rooted in or linked directly with what’s happening in Ghana/Africa”—hence my passion/preference for fieldwork in especially Ghana and the rest of Africa.

I have diligently meshed the objectives of CADFP and my host and home institutions. CADFP prefers Fellows who excel at collaboration. My home institution, Northeastern University, seeks experience-based or translational research and teaching, whereas my host institutions prefer Fellows with backgrounds and experiences pertinent to Ghana’s

education/training, research, and community engagement needs. My diverse interdisciplinary background (social sciences, law, and public policy work in a broad range of subjects, including natural resources and international organizations, as well as senior-level management and consultancy experiences in critical areas such as labor relations plus oil/gas and energy) facilitates collaborating with faculty with varying needs. I have utilized my oil research/publications and consultancy work to help found an oil and gas institute at the University of Cape Coast. My grant writing, publications, and senior academic administration experience (including chairing a department and serving as Vice-Provost) have made me highly valued by senior-level faculty and top university administrators in Ghana and other parts of Africa.

Although I am an academic, I have developed a deep and wide network of labor, industry, and other practitioners, including trade union leaders, policymakers such as high-level employees of Ghana’s Petroleum Commission, and others such as one of the lab technologists who handled samples from Ghana’s first commercial oil find that led to Ghana’s first commercial oil production at Jubilee Oil Field. (See photograph of oil from Ghana’s third oil field that I acquired for teaching/demonstration purposes.) This is one of many examples of how I use practical items from the field to support my teaching/research and consultancy work. Included in my circle of practitioners is a CEO of AngloGold Ashanti, through whom I organize tours of gold and diamond mines, including a five-mile underground visit to see gold extraction at one of Africa’s important gold mines at Obuasi in 2017 during my second CADFP project.

I have also arranged for and led participation by Ghanaian faculty in Ghana’s annual international Oil and Gas Summit in Accra and an official briefing by Ghana’s Petroleum Commission at the head office in Accra. The latter is a treasure trove of data and information on the Ghanaian oil industry not available in the public domain.

We found that our approach to handling our three critical functional areas in the academy—research, teaching, and service—as closely intertwined has worked very well. These functional areas are deemed and treated as inseparable and essential to Ghana/Africa’s higher education needs.

Key Lessons

The big lesson, driver, and main mantra of my successful collaboration and work in Ghana is “You attract bees with honey, not vinegar.” This means collaboration anchored in a positive predisposition, a “can-do” attitude with a heavy dose of humility: leading from behind and by example. Colleagues in Ghana (typically heads of departments, deans, and vice-chancellors) and I apply the term “positive opportunism” to jointly resolve institutional challenges in a truly mutually beneficial partnership. In working on

FIGURE 3

Professor Panford (middle), with Dr. Emmanuel Opoku Marfo, Head of Entrepreneurship and Paul Hammond, lecturer in Accounting (left) at UENR. Waiting to get COVID-19 tests at Sunyani Regional Hospital for a day’s visit to the Newmont Ahafo gold mine at Kenyasi on August 18, 2021.



FIGURE 4

Professor Panford (2nd from left, standing) with UENR colleagues in a safety capsule one mile underground at the Newmont Ahafo gold mine at Kenyasi.



establishing an oil and gas studies program at the University of Cape Coast, together we leverage my experience in oil and gas, links in industry, and access to publications/data/information to establish a center that teaches theories as well as trains students in community engagement and applies practical knowledge from industry to connect classrooms/students/faculty and even administrators to key industry personnel and institutions. This ensures that faculty publications will be driven by practical knowledge/experience. Industry experience enhances teaching and boosts successful grant writing. In addition, experience-based industry research and teaching enhance problem solving capacities of our host institutions, which allows them to fulfill their mandates to facilitate national development.

Lastly, mutual trust and respect are essential ingredients. Someone earns trust and respect through their capacity to deliver and build a good and long track record. They have to concretely show what they can do and have done. This is the way to attain buy-in from colleagues at host institutions in Africa. In my case, for example, since 1989 I have donated books, had several sabbaticals, and provided many important pro bono services to the government of Ghana and universities (dating from 1980–1981 as a graduate student in Canada to the present in legislative drafting in labor and oil) through CADFP and a Fulbright award as a senior scholar/visiting professor. I always first inquired about the needs of my host institutions and how best to meet them, being mindful not to overpromise.

FIGURE 5

Professor Panford (2nd from right) and UENR colleagues and the mine chaperone getting ready to enter the underground mine at the Newmont Ahafo gold mine at Kenyasi on August 18, 2021.



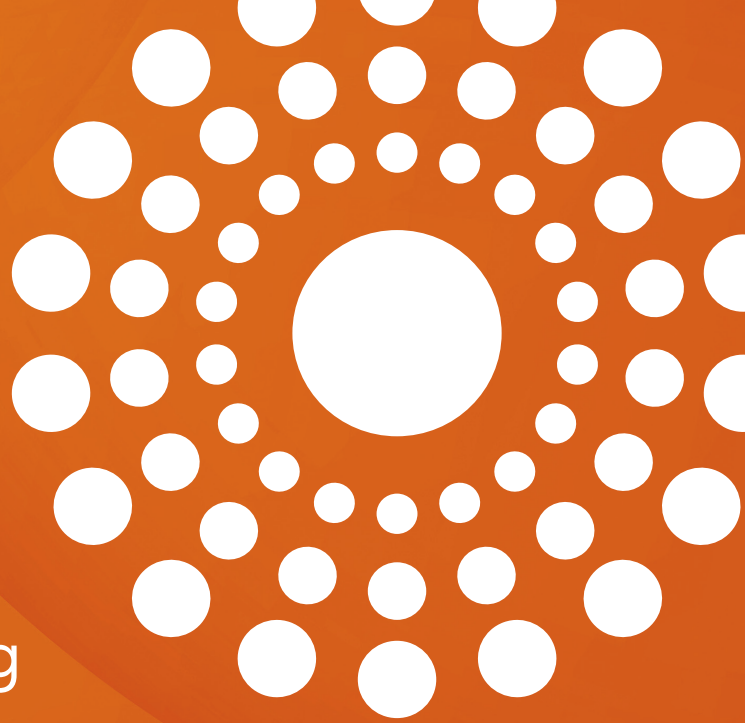
Conclusion

One must understand the society/country in which one is collaborating and be mindful of the true meaning of collaboration, which I define as genuine teamwork plus collegiality. The following traits are paramount: humility, flexibility, and successfully balancing being nice and culturally sensitive while accomplishing important work on time and on budget. Even if you were born, educated, or worked in Africa before emigrating, one should be ready to be treated by some (not everyone) at your host institution as a foreigner, even if you strenuously strive to see yourself as African. Go prepared for a challenging, exhilarating, and life-changing experience supported by CADFP! With diligence and thoughtful care, you will succeed like most CADFP Fellows.

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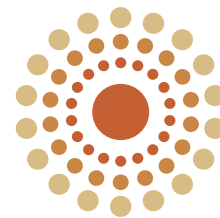
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A Vision for the Future

Mentorship: The Next
Generation of Faculty,
Researchers, and Scientists

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Mentorship: The Next Generation
of Faculty, Researchers, and Scientists

Mentoring Faculty and Doctoral Graduate Students for Capacity Development in Business Schools in Africa

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ABSTRACT

The objective of this paper is to describe an effective model of mentoring doctoral students and junior faculty in business schools in Africa by the Africa Academy of Management (AFAM). The model involves organizing a weeklong residential and intensive workshop with the aim of developing the research capacity and capabilities of doctoral students and junior faculty for the business schools. The paper describes the process of selecting the host and participants for the workshop, the facilitators, and the format and activities involved in the workshop. The paper further discusses the outcome from the workshops that have been organized by AFAM. The workshop outcomes show that doctoral students successfully complete their doctoral dissertations on time, and the quality and quantity of the junior faculty research productivity increased significantly, leading to the progression in their careers in the form of promotions.

Introduction

Developing the capacities of individual academics and institutions of higher learning in Africa to play their roles in training while enhancing their capabilities to support the development of their economies cannot be overemphasized. In fact, the involvement of most international agencies, such as the United Nations, International Monetary Fund (IMF), and World Bank (Bester, 2015); nonprofit organizations such as the Carnegie Foundation in Africa; and even the activities of the African Union (AU) are predicated in supporting capacity development on the continent. The AU established a specialized agency in 1991 called The African Capacity Building Foundation (ACBF) to “build strategic partnerships, offer technical support, and provide access to relevant knowledge related to capacity building in Africa” (<https://www.acbf-pact.org/who-we-are/vision-mission>). The United Nations Development Group (UNDG) defines capacity development as “the process whereby people, organizations and society as a whole unleash, strengthen, create, adapt, and maintain capacity over time” (2008, p. 3). Other UN agencies, such as the United Nations Development Programme (UNDP), build on this definition and view capacity development as “the ‘how’ of making development work better and is, in essence, about making institutions better able to deliver and promote human development” (2010, p. 2).

The UN sees capacity development as a systems approach and classifies capacity development into three levels—the enabling environment, organizational, and individual—which are considered as interlinked and mutually reinforcing (Bester, 2015). At the enabling environment level, capacity development emphasizes the overall policy framework in which individuals and organizations operate and interact with the external environment. It includes the economic, political, social, and environmental condition. At the organizational

level, it emphasizes the overall improvement of institutional performance and the functioning of capabilities, as well as an organization’s ability to adapt to change. Capacity development at the individual level focuses on developing and improving individual skills, experiences, knowledge, and performance. Thus, capacity development could be seen as the process by which individuals and institutions acquire, retain, strengthen, and enhance the skills, knowledge, capabilities, and other resources needed to undertake their activities effectively.

The capacity development challenges facing higher educational institutions in Africa are more salient at the individual and organizational levels. At the individual and institutional levels, higher educational institutions lack the capacity to effectively teach the required course in most of their programs. They also lack the capacity for high-quality research activities due to resource constraints, especially financial and human resources. These financial and human resource constraints have resulted in a very small proportion of published scientific papers written by Africans or lower-quality research from Africa compared to the rest of the world. An article in *The Economist* published in 2014, which is cited in Zoogah et al. (2015), estimated that Africa’s portion of the global production of knowledge accounts for only 2.4% of the world’s total scientific articles. In another study by Emerald Publishing Group on authorship of papers in Emerald journals by African authors, they found that only 2.16% of the authors on the Emerald database were based in Africa (Foster et al., 2008). They identified lack of resources, poor quality of manuscripts, lack of advice and guidance for African authors, and journal editors’ lack of willingness to accept research from Africa as the major challenges (Foster et al., 2008). These challenges are magnified when we discuss capacity development in the business and management fields. This is because the genesis of business and management as academic disciplines in Africa is very young.

Consequently, most faculty in business schools in Africa do not have terminal academic qualifications. This has affected the quality of research productivity by business school faculty in Africa (Nkomo, 2015).

The above challenges facing higher educational institutions, especially in the business and management fields, have led to the establishment of capacity development programs in Africa by several international and African institutions and organizations, including the UN multilateral organizations (e.g., the UNDP, World Bank, IMF), bilateral agencies (e.g., the United States Agency for International Development, Canadian International Development Agency, International Development Research Centre), and African regional organizations (e.g., the AU, African Development Bank, and ACBF). Recognizing the serious deficit in capacity and capabilities in business schools in Africa; the lack of high-quality research that has the potential to advance the economic development agenda of the continent; the lack of African-based theories in business education (Sigue, 2012); and the leveraging of context-specific theories (Zoogah, 2008), a group of African diaspora and Africa-centered academics teaching in business schools in Africa, the United States, Canada, and Europe started the Africa Academy of Management (AFAM) in 2011. The purpose of AFAM is “to function as an avenue for discourse on management research and practice in Africa. Fulfilment of this function involves facilitation of the development and improvement of members’ capabilities for research, teaching, and practice of management and organization in Africa.” (<https://www.africaacademyofmanagement.org/governance#quicktabs-committees%3D1=&quicktabs-committees=1>).

AFAM further has six objectives:

1. Foster the general advancement of knowledge and scholarship in the theory and practice of management among African scholars and/or academics interested in management and organization issues in Africa.
2. Perform educational activities that advance the field of management in Africa.
3. Perform and support educational activities that contribute to intellectual and operational leadership in the field of management within the African context.
4. Facilitate closer cooperation among those interested in the science and practice of management in Africa.
5. Promote the use of Africa management knowledge by educators, policymakers, and practitioners on the continent.
6. Provide opportunities for management researchers, educators, and practitioners to advance themselves through the publications of scholarly, pedagogical, and practitioner papers.

To implement these objectives by participating in the capacity development efforts for business schools in Africa, AFAM established the Africa Faculty Development (AFD) Workshop. The primary goal of the AFD Workshop is to mentor business school faculty and doctoral students in the field of management to develop excellent research skills and capabilities for conducting research relevant for and about the management of organizations and institutions in Africa, and to develop responsible academic leaders in business schools. Management is defined broadly to encompass subareas, including general management, human resource management, entrepreneurship and small business management, organization behavior, organization theory, strategic management, and international management.

This purpose of this paper is to describe an effective model of mentoring faculty and doctoral students for developing capacity for business schools in Africa so that they can produce quality and relevant research for Africa. The model is designed to accomplish four goals: (1) help doctoral students enhance the quality and relevance of their research to the African context and complete their PhD dissertations on time; (2) promote excellence and relevant context-specific research output by faculty in Africa; (3) advance research scholarship and the development of the next generation of Africa’s academic leaders in business schools; and (4) increase the generation, publication, and dissemination of management knowledge about Africa.

The Capacity Development Model Through Mentoring

The model involves an intensive weeklong residential workshop for 18 to 30 doctoral students and junior faculty, selected on a competitive basis from across Africa. AFAM starts the process by preparing a call for proposals (CFP) to host the workshop, which is sent to universities in Africa. The AFD Workshop is held every two years due to financial and logistical constraints. AFAM usually selects a region in Africa (e.g., East Africa, Southern Africa, North Africa, West Africa) to host the workshop. The CFPs indicate that the workshops are held using a cost-sharing model. Consequently, we require that proposals to host the workshop must explicitly indicate the university’s ability and commitment to fulfill the minimum requirements set by AFAM and how the university will achieve each of the requirements. The minimum requirements expected in any submitted proposal to host the workshop must include information about facilities in terms of room and space availability, quality and availability of catering services, audiovisual and information technology (IT) facilities, staffing resources, and availability of hotel/accommodation options for participants. The cost involved in providing these resources and services must be borne by the institution.

Moreover, the institution is required to arrange and pay for spaces for the opening and closing ceremonies, and arrange and pay for tea/coffee breaks, lunches, and water for the participants during the workshop. The proposal must also indicate who will be the designated contact person for the host institution and their affiliation. The CFPs further require that the institution provides information on the institutional processes required to finalize a formal memorandum of understanding (MOU).

The CFPs also provide information about the cost-sharing activities of AFAM, which include preparing and issuing a call for workshop participants; managing the selection and communicating with workshop participants; identifying faculty facilitators for the workshop; paying for accommodations for the facilitators and participants; and paying for the cost of dinners and opening and closing ceremonies. The facilitators for the workshop are highly recognized senior academics and researchers with expertise in various management fields who are African, African

diaspora, and international scholars teaching in universities in Africa, Europe, and North America. These senior academics and researchers usually volunteer their time and resources to facilitate the workshops and pay for their own travel to the workshop. It must be emphasized that the doctoral students and junior faculty participants do not incur any costs except the cost of their travel to the workshop venue.¹

Once the host is identified and an MOU is prepared for the workshop, AFAM prepares a call to doctoral students and junior faculty in business schools in Africa to participate in the workshop. The call is usually posted on the AFAM website (<https://www.africaacademyofmanagement.org/>), sent to AFAM members, and distributed to universities in Africa. There are usually about 40 to 60 applications for the workshop, but because of financial constraints, only 18 to 30 applicants have been selected for each of the workshops. Each application is reviewed by at least three faculty facilitators before a decision is made to accept an applicant for the workshop. Five spaces are reserved for

TABLE 1

AFD Workshops Held

| YEAR | HOST INSTITUTION | OTHER SPONSORS |
|------|---|---|
| 2011 | Ghana Institute of Management and Public Administration (GIMPA) Accra, Ghana | The Academy of Management |
| 2012 | The University of Rwanda Kigali, Rwanda | The Academy of Management |
| 2015 | The University of Pretoria* Pretoria, South Africa | None |
| 2017 | Kwame Nkrumah University of Science and Technology (KNUST) Kumasi, Ghana | Ecogas Bank for Investment and Development (EBID) |
| 2019 | The American University in Cairo Cairo, Egypt | The Association to Advance Collegiate Schools of Business (AACSB) |
| 2021 | The University of Stellenbosch** Stellenbosch, South Africa | None |

*There were no other sponsors in addition to the host institution and AFAM for these AFD Workshops.

**This workshop was held virtually because of the COVID-19 pandemic.

¹ AFAM paid for the travel cost of participants for the the workshops in Accra, Kigali, and Pretoria. Participants were asked to pay for their travel costs for the workshops in Kumasi and Cairo.

doctoral students and junior faculty applicants from the host institution for the workshop.

AFAM has held six AFD workshops since 2011. The workshop years, host institution, and sponsors in addition to AFAM and the host institution are shown in Table 1.

Workshop Format

The workshop is an intensive weeklong academic exercise to improve the conceptualization, theory, methodology, and presentation of the research projects of the doctoral students (usually their dissertations) and junior faculty participants. The selected participants are sent a research project by one of their peers one month before the workshop and are required to provide a written peer review of the project to the participant during the workshop. In addition, every facilitator is assigned to review one or two research projects of the participants and provide written comments to improve the quality of the project.

Sessions during the workshop include:

- (a) **Interactive paper development and presentation sessions.** These involve oral presentations of the research papers by the participants followed by oral review by another participant who is assigned that paper, a facilitator, and then all other participants (both doctoral students, junior faculty, and facilitators).
- (b) **Theory development sessions.** One or two of the facilitators will provide a presentation and workshop about theory and how to incorporate theoretical arguments when writing a research paper or dissertation.
- (c) **Methodology sessions.** One or two facilitators will discuss methodological issues in research, focusing on both quantitative and qualitative research methodologies.
- (d) **Networking opportunities.** These organized evening social events after the group dinners allow the doctoral students, junior faculty, and facilitators to mingle and network. We further organize excursions to places of interest in the city where the workshop is held to enable participants and facilitators to socialize and get to know one another.
- (e) **Mentorships.** The doctoral students and junior faculty are then assigned to the facilitators as mentors to work with them after the workshop. These mentee-mentor relationships between the participants and facilitators are supposed to last as long as the two parties are willing to work together.

Workshop Outcome

Since the first workshop in 2011, AFAM has mentored over 100 doctoral students and junior faculty from business schools in Africa. These participants have been trained and mentored on how to develop quality and relevant research about the management of organizations and institutions in Africa. The participants come from countries in Africa such as Botswana, Egypt, Ethiopia, The Gambia, Ghana, Kenya, Lesotho, Malawi, Namibia, Nigeria, Rwanda, South Africa, Tanzania, Uganda, and Zimbabwe. Several of the doctoral students completed their dissertations one year after participating in the workshop. Moreover, several junior faculty members have also increased the quality and quantity of their publications and have been promoted to senior lecturers and associate professors. The outcome indicates that the mentoring model used in the workshop to develop capacity for business schools in Africa is a successful one.

Conclusion

The objective of this paper was to describe an effective model of mentoring junior faculty and doctoral students to develop capacity for business schools in Africa. The aim is to enable the doctoral students and junior faculty to produce quality and relevant research for Africa. The model involves an intensive weeklong residential workshop for 18 to 30 doctoral students and faculty, selected on a competitive basis from across Africa, to improve the conceptualization of research ideas, theory development and application, methodological issues in the research process, and the presentation of their research projects. The workshop has led to the development and mentoring of several doctoral students who completed their dissertations in a timely fashion, and junior faculty who have been promoted because of the increase in the quality and quantity of their research productivity.

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Mentorship: The Next Generation
of Faculty, Researchers, and Scientists

Mentorship for Faculty, Researchers, and Scientists in Government Universities in Nigeria

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ABSTRACT

This paper examines the types of mentorship programs that are used by some universities in Nigeria and the major barriers they face while promoting success and career development. It argues that for Nigerian universities to accomplish higher levels of inquiries, discovery, and creativity in research and sciences, they must adopt pragmatic benchmarks in hiring highly qualified scholars who can serve as mentors to junior faculty. There is also an urgent need to establish a working environment that promotes the welfare and engagement of faculty and encourages professional advancement and development. The primary data for this study were derived from interviews and questionnaires. The conceptual frameworks are based on strategic and benchmark approaches and neoliberal principles. The data analysis shows that there is a strong positive relationship between lack of university-wide faculty mentorship programs and the ability of institutions to effectively address faculty research needs and concerns. The findings of this study also reveal strong positive correlations among lack of budget, corruption, politics, and tribalism. There is also the challenge associated with lack of institutional support for faculty development programs and other initiatives. There is significant but moderate positive relationship between inappropriate faculty assessment systems and lack of best practices for faculty development. The paper provides some benchmark strategic policy recommendations on how to reinvigorate new faculty mentorship and career development systems as well as enhance the effectiveness of existing ones.

Introduction

The current political instability in Nigeria has created many challenges in universities and higher education institutions in the country (Jeje et al., 2019; Okurame, 2008). In the past two decades, there has been academic staff strikes due to poor funding for universities infrastructure and irregular payment of faculty salary. In addition, insecurity has often made it difficult for administrators of university or polytechnic institutions to focus on spending their budget funds on developing successful mentoring programs. These precarious circumstances in Nigeria have also made it difficult for senior faculty to explore initiatives such as mentorships, research productivity, and providing high-quality educational standards.

Most Nigerian universities want to ensure that they have a strong pool of faculty and administrative leaders. Good leadership is paramount to efficiency, growth, higher performance, and the motivation to strive for excellence (Dibie & Dibie, 2017). However, developing and cultivating highly skilled faculty, high-quality curricula, and academic administrators in Nigeria is still inadequate (Afolabi et al., 2015; Sandi & Chubinskaya, 2020).

Mentoring as used in this paper refers to the act of leading a team of faculty through effective mentorship of junior faculty programs (James, 2019; Waddell et al., 2016). Mentorship is

also a trusted method for developing the best scholars, faculty educators, and university leaders (Afolabi et al., 2015; Okurame, 2008; Waddell et al., 2016). It has been argued that mentoring is not a new principle or approach to training junior faculty in many universities in Nigeria (Afolabi et al., 2015; Bonilha et al., 2019). There has also been call for Nigerian university faculty to reinvigorate the low academic standards in some universities. Despite the call to improve academic standards by the federal and state government in Nigeria, the officials of these governments have not been able to increase the salary of educators and budget to finance the mentoring initiatives. Hundey et al. (2020) and Sandi and Chubinskaya (2020) ask how university management teams can be put under pressure by the government to improve academic standards or create opportunities for professional guidance and development of their faculty and staff to elevate academic standards when government leaders cannot pay faculty members on time.

Mentoring could be regarded as a process for the informal transmission of knowledge to enhance the mentee's professional development, social capital, and psychological support (Ekechukwu & Horsfall, 2015). Although university can be regarded as a community of educators who work together to achieve goals and set higher standards, mentorship also facilitates face-to-face communication between faculty and staff

with greater relevant wisdom, knowledge, and experiences in the academic world.

Many pragmatic leadership roles, team initiatives and workshops designed to enhance faculty teaching qualities and skills could be derived through mentorship programs. According to Ekechukwu and Horsfall (2015) and Hundey et al. (2020), mentorship programs in universities are innovation initiatives that could empower and galvanize high-quality faculty and administrators. However, the massive low educational standards, social and economic dislocations, and high unemployment rate, occasioned by the pursuit of neoliberal policies by government, has created a new set of challenges in Nigeria. In the past two decades, the unrestrained and conspicuous amassing and displaying of wealth by the politicians and other public office holders during widespread abject poverty in the present dispensation has not helped matters (Jia, N., 2014; Nwonwu, 2010; Okafor, 2011; Sandi & Chubinskaya, 2020). These educational and ethical predicaments have serious implications for the stability of Nigeria's economy.

While Nigerian political leaders cannot appropriate enough budget for universities to use for the enhancement of mentorship programs, senior administrators and political leaders are unrestrained and conspicuously amass and display wealth as well as the attitude of self-aggrandizement (African Development Bank, 2020; Dibia & Dibia, 2017). The nation's economy is not doing well because there is no vibrant manufacturing sector that has the capacity to absorb unemployed university graduates. There have also been reports that 785 industries collapsed in the country and over 37 factories have closed shops in the past two decades (African Development Bank, 2020; Bonilha et al., 2019; United Nations Human Development Report, 2020).

There are many types of mentoring techniques in higher education. In some universities, efforts are made by the institutional leaders to hire mentor program coordinators, an advisory committee that could meet periodically to discuss mentorship initiative issues and develop policies, and consultants. Other universities that are dedicated to faculty success physically provide the budget for the recruitment of faculty mentees, mentors, and mentoring alumni. They also provide the resources for mentees to participate in grant writing courses and workshops on how to write research papers. Many types of professional development seminars and workshops are often offered to prepare junior faculty for academic promotion (Sandi & Chubinskaya, 2020). Other universities also organize annual receptions to recognize their faculty for their scholarly productivity and accomplishments. Many universities provide travel awards for both the senior and junior faculty to attend and present their coauthored research papers at national and international conferences. Institutions of higher education that are committed to mentorship also provide resources such as textbooks, laptop computers, and other modern technologies; information on how to write

grants; and many other professional development resources to their faculty mentors and mentees for free.

Mentoring in a university or organization can be done successfully by any experienced faculty or full tenured professor. It could be argued that mentors can also learn from their mentoring experience (Waddell et al., 2016). This is because there is so much to be learned from nurturing and interacting with team members of all ages and levels of experience (James, 2019). In addition, Cronin (2020) and Beane-Katner (2014) argued that mentoring is a two-way street, in which mentors also learn a lot from mentoring. This takes place in the process of mentoring; senior leaders develop communication skills, leadership skills, connection across teams and disciplines, and stronger institutional culture. Thus, mentors and mentees could create a safe space that could allow them to amicably communicate about their mistakes and motivate each other in the process of building trust, strength, collaborative vision, and other opportunities.

According to Prince (2021a) and Tjan (2017), investing money for mentorship or training is very important. However, money is not the only mechanism that can be used to achieve positive goals. After training, most faculty, or staff in a university regress to their old way of doing things. In addition, the nuances and politics of many universities make it difficult to apply the type of skills that junior faculty learn in the short term. Another negative outcome of training is that some mentorship trainings are completely different from the day-to-day environment where a junior faculty works. Dibia and Dibia (2017) contend that the pressure for a mentee to implement the skills they have just learned in a different environment could also backfire. Mentorship training can work better if the mentor and university where they work can develop a culture where skills learned could be applied to the day-to-day work (Chase et al., 2013; Prince, 2021b).

According to Sandi and Chubinskaya (2020) and Hundey et al. (2020), the mentoring of faculty could become the rock of any university's research and teaching success. This is because mentoring could increase faculty scholarly productivity in the areas of grant writing, teaching, publication, and giving keynote addresses at professional conferences. Sambunjak (2015) also contends that scholarly productivity due to mentorship programs not only enhances publications, but also decreases time for promotion and, engagements, increases faculty satisfaction, and motivates faculty to remain employed at their current university. Despite these benefits, it is mind-boggling to find that many universities in Nigeria do not directly engage or take the responsibility to foster faculty mentorship initiatives.

This paper examines the types of mentorship programs used by some universities in Nigeria and the major barriers they face while promoting success and career development. It argues that for Nigerian universities to accomplish higher levels of inquiries, discovery, and creativity in research and sciences, they must adopt pragmatic benchmarks in hiring highly qualified

scholars that can serve as mentors to junior faculty. There is also the urgent need to establish a working environment that promotes the welfare and engagement of faculty and encourages professional advancement and development. The conceptual frameworks are based on strategic and benchmark approaches and neoliberal principles. The data analysis shows that there is a strong positive relationship between lack of university-wide faculty mentorship programs and inability of institutions to effectively address faculty research needs and concerns. The findings of this study also reveal strong positive correlations among lack of budget, corruption, politics and tribalism, and the lack of institutional support for faculty development programs and other initiatives. There is a significant but moderate positive relationship between inappropriate faculty assessment systems and lack of best practices for faculty development.

What is missing in the faculty mentorship literature is that there are assumptions that political instability in Nigeria has made it increasingly difficult for faculty to find time to maintain scholarly productivity, teach, and balance work and family life. Faculty must work to harmonize the efforts of their citizens in the governance of their respective countries. Despite these challenges, faculty should be trying to be entrepreneurs by engaging in mentoring scholarly activities to improve on their teaching techniques, maintain external funding, and write research grants to improve the quality of the education they produce. This paper contributes to the literature in faculty mentorship in Nigeria because it provides data and insights that could challenge senior and junior faculty as well as university administrators in Nigeria to change their mindset. The paper also contends that mentorship programs could help provide a new dimension of scholarly support culture and a sense of belonging. Mentees could learn about strategies from both mentors and new mentees as they adjust to their new positions as beginning scholars. Some benchmark strategic policy recommendations are provided on how to reinvigorate new faculty mentorship and career development systems as well as enhance the effectiveness of existing ones.

Conceptual Framework

Universities that have good leaders often will realize the importance of mentorship. Mentorship has been recognized as a powerful way of developing professional skills, learning from other people in the profession, and building confidence (Dibie & Dibie, 2017; Sambunjak, 2015). The art of influencing people to work freely toward the achievement of collective goals is the core premise of good mentorship and steward leadership (Lussier & Achua, 2016; Holzer & Schweser, 2016). In addition, servant leadership and mentoring go beyond the basic purpose of helping junior faculty succeed. Mentorship also gives faculty more potential and the opportunity to be advised by people who have been good scholars and done an excellent job educating other faculty using best practices

in the profession. Having positive experiences as a good mentor could also give existing senior faculty the chance to hone their skills and become better in the process.

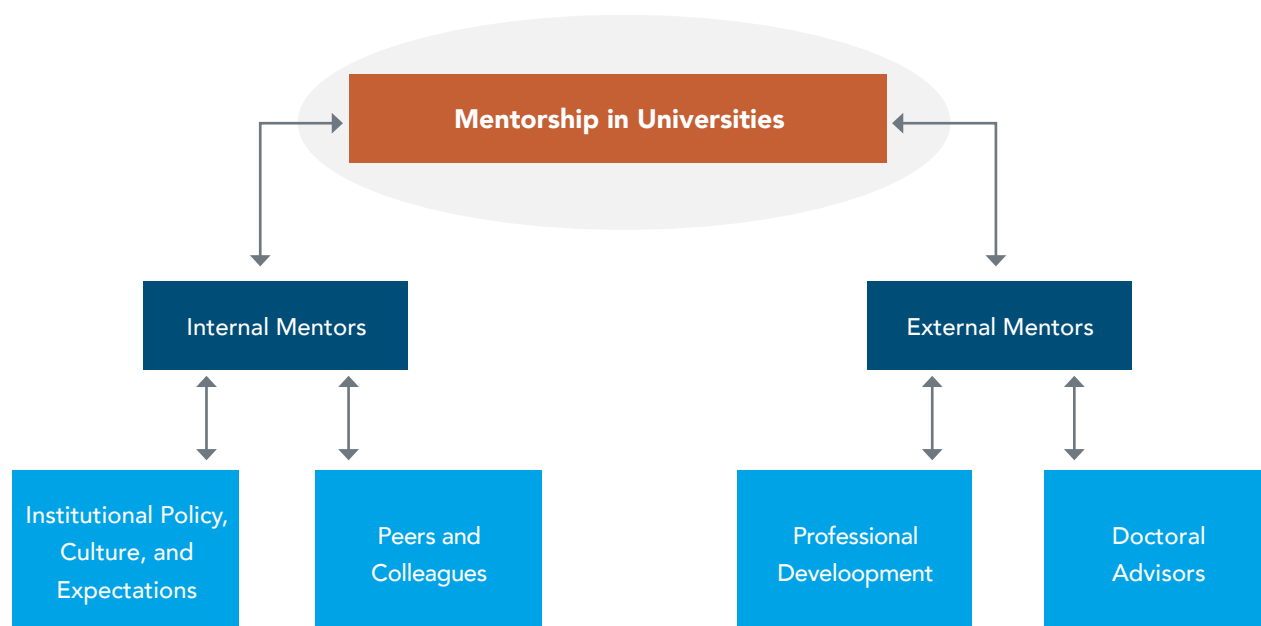
Transparency and accountability can be especially powerful in informing the activities of mentors, university administrators, and faculty leaders in the implementation of education policies and the delivery of goods and services to citizens in African countries. Dibie (2017) contends that if excellent leaders are to be constructed, they should rely on lessons of liberal and representative democracy as viewed through new lenses all over the world. As a result, the essence of mentorship leadership in Africa should be getting faculty to participate in a transparent sustainable development process and economic well-being of all students and staff. Mentees or general faculty members will be more inclined to follow leaders who exude confidence. Leaders having confidence in their abilities and conveying this confidence will ultimately make citizens feel that their leaders' decisions are correct and the right thing to do under such circumstances. In addition, new methods of mentorship and best practices point to the changing realities in which mentors and other senior university administrators hold a great deal of responsibility by working with junior faculty members in the interdisciplinary nature of the mentorship circle and for the benefit of the institution, mentors, and mentees. Figure 1 shows the framework of a mentorship program in higher education.

Figure 1 shows the standard operating process for a mentorship process in a university. In a university that practices collaborative governance principles, mentors are typically sought from internal and external sources. External mentors are those who could provide strategic guidance to a mentee on professional development as well as the processes of tenure and promotion. The external mentor's direct junior faculty members work on various research opportunities. Internal mentors are selected senior faculty members who know a lot about university policies and implementation processes. Mentoring in any university can be of great advantage to faculty and student success in adapting to a new academic environment in a positive and progressive manner.

Harrison (2016) argued that effective strategic planning depends on leaders' commitment to creating an organizational culture that supports change. Hoglund et al. (2018) and Chakrabarty and Kandpal (2020) argued that strategic management also entails the need to share authorities with all stakeholders in achieving organizational goals. As a result of the dismal performance of the government in many countries in the areas of the economic, health, political, and social well-being of citizens, there was a change in paradigm with the birth of a new framework called New Public Management in the late 1980s (Osborne & Gaebler, 1992; Hill & Lynn, 2016). According to Shafritz, Russell, and Borick (2011), this change in perspective

FIGURE 1

Mentorship Frameworks in Higher Education



warrants the enhancement of government to adopt business sector principles in providing high-quality services that could be beneficial to citizens, as well as increases the capacity of public managers and university scholars to autonomously galvanize their research abilities and creativity to ensure the achievement of policy goals. The objective of the new public management framework is also to reward public managers and scholars as well as stakeholders who work for their respective ministry, department, or university for meeting set goals. These virtues also require the government to provide public managers and scholars with the human and technological resources they need to perform like entrepreneurs (Chakrabarty and Kandpal 2020; Hill & Lynn, 2016). Thus, the mentorship problems in Nigeria identified in this paper require the federal government, state governments, and private sector in the country to adopt a new participatory governance and public management system that could enhance entrepreneurial skills through performance measurement and evaluation (Pardo et al., 2011). Nigeria needs a new public management system that would promote community-owned governance, mentorship culture, and an environment where citizens are valued as consumers and not perceived as recipients of low-quality

education programs and policies (Farazmand, 1999; Chakrabarty & Kandpal, 2020; Emerson & Murchie, 2011).

The main features of neoliberalism include the rule of the market; cutting public expenditure for social services and education; deregulation; privatization; and eliminating the concept of the public goods. (Martinez & Gracia, 2000). Academic programs in several universities in Nigeria offer course content that is low-quality. In most cases, the course content offered lacks entrepreneurial principles that would have galvanized their graduates to become innovative job creators, business developers, and product manufacturers (Ekechukwu & Horsfall 2015; Sandi & Chubinskaya, 2020). Neoliberalism assumes that higher economic freedom has a strong correlation with higher living standards; higher economic freedom leads to increased investment, technology transfer, innovation, and responsiveness to consumer demand (Martinez & Gracia, 2000). Neoliberalism believes staunchly in the freedom of the individual.

The concept of strategic doing by Morrison (2013) provides a framework for how to build a strategy for a regional development. The concept helps to establish collaborations and builds innovation in any organizations or universities that are committed to accomplish their strategic goals (Black &

FIGURE 1

The Integration of Strategic Doing and New Public Management Principals



Jreisat, 2014; Harrison, 2016). Morrison (2013) contends that strategic doing requires constant mutual communication and attention to specific details of “where an organization or government want to go” and “how the members of the organization want to get to where they are going.” The bone of contention is about working with colleagues to put the right pieces and ideas in the right combination in order to accomplish set strategic goals. According to Morrison (2012; 2013), the concept encourages building a strategic network of people who are willing to invest in developing networks. Such people are very comfortable in jumping across boundaries easily whenever the needs arise for them to galvanize their attention on strengthening the opportunity to achieve set strategic goals (Cooerrider 1990; Morrison 2013). Figure 2 shows the link between strategic doing and a new public management model that could be adopted by universities.

Research Method

The goal of this paper is to examine the different types of mentorship initiatives adopted by universities in Nigeria and the challenges they face. The research was conducted between 2017 and 2020 in Nigeria. Questionnaires were administered to 1,500 respondents drawn from five

universities in Nigeria. Those who participated in completing the survey and interviews respectively included junior and senior faculty members. A total of 1,225 (74%) questionnaires were completed and returned by the respondents. Data collected were analyzed with the SPSS statistical tool and presented in correlations, frequency tables, and percentile.

Interviews were also conducted in the same five universities where questionnaires were administered. A total of 200 one-on-one interviews were conducted. The central research questions were: (1) What types of mentorship programs do you offer in at your university? (2) What type of challenges do mentors and mentees face in your university?

The limitation of the study is that only the faculty of five universities in Nigeria were covered by this research. Current vice chancellors and provosts of universities were not interviewed to avoid bias. The dependent variable is mentorship, and the independent variables are mentors’ challenges and types of mentorship programs.

Data Analysis and Discussion

The demography of the respondents for this research includes 1,225 faculty from five federal and state universities in Nigeria. The faculty members were derived from various

interdisciplinary backgrounds and fields of study. Six hundred and forty-three of the respondents were men, while the remaining 582 of the respondents were women. Seventy-nine percent had Ph.D. (doctorate) degrees, while 29% held master's degrees. In addition, 35% of the respondents were full tenured professors, while 55% were either associate professors or senior lecturers. The remaining 10% were lecturers or post-graduate fellows. Table 1 shows the response to the first research question.

Research Question 1: What types of mentorship programs do you offer in your university?

Questionnaire items 7 and 17 were used in the analysis of the questionnaire respondents' assessment of the types of mentoring programs that are currently in their respective universities. Table 1 reveals that 69% of the respondents indicated that some mentorship initiatives in their institution have provided the support and information new faculty needed in their transition processes toward belonging to their respective institutions' environment. Another 66% of the respondents also indicated that a mentorship circle, extended mentee network, or relationship advanced their sense of belonging. Seventy-one percent of the questionnaire respondents stated that their institution often organizes a few grants writing workshops for faculty each year. It is interesting to note that 74.4% of the respondents reported that mentors are appointed based on their ongoing research programs or projects, while 65.3% of the respondents indicated that the interdisciplinary nature of the mentorship circle has not facilitated faculty capacity to foster collegiality in their respective universities. Another 63.7% of the respondents indicated that mentorship has strategically helped new faculty manage their integration into the academic community.

Furthermore, 62.6% of the respondents indicated that workshops on how to prepare faculty for research, teaching, and services accomplishment in their respective institutions were effective. On one hand, 57.2% of the questionnaire's respondents reported that their university does not pay for faculty to present their research papers at national and international conferences. On the other hand, 58.8% of the respondents confirmed that their universities do a great job in providing an array of information that could help steer new faculty on their journey to promotion and tenure.

In addition, 46% of the questionnaire respondents indicated that their institution does not engage in any type of professional development programs for faculty. After a university hires a new faculty member, that member may have to figure out how to attain the mandated requirements for teaching, services, and research to be qualified for promotion to either a tenured associate professor or full professor.

According to the data analysis, 82% of the interview respondents indicated that their respective universities

are not doing enough to promote mentorship. Only 11% indicated that they have immensely benefited from the various mentorship initiatives that have been organized in their respective institutions. Most of the interview respondents (87%) stated that the promotion and tenure procedures in their university tend to be very political and a mentorship program is a waste of time. Forty-nine percent of the respondents indicated that having a "godfather" on campus who is a dean or chairperson is better than attending workshops and other professional development trainings. This is because most of the tenure and promotion process is micromanaged by the big people in the university. However, 49% of the interview respondents reported that the mentorship programs they have participated in have provided them with a culture of support, a safe place to discuss concerns, a sense of belonging, and an avenue to learn strategies from both mentors and fellow mentees. The same 49% of respondents indicated that the interdisciplinary nature of most of the mentorship programs has also allowed them, as new faculty members, to explore their roles around campus and foster collegial relationships in writing grants and collaborating to conduct research and co-author papers. Below are some of the statements made by some interview respondents:

"Mentorship programs [are] a good thing to introduce in our university. Such initiatives could help us to meet people from other departments"

"Our university leaders are very funny people because they often promise us that the university advisory boards are planning to introduce vibrant mentorship programs. However, [a] few weeks later they will turn around to say we do not [have] any budget for mentorship."

"It is mind-boggling to observe most of our senior professors only want to be mentors to young female new faculty. However, whenever we, the junior male faculty, approach them, they will tell us that they are very busy."

Research Question 2: What types of challenges do mentors and mentees face in your university?

Table 2 analyzes the response rate of the types of challenges that universities in Nigeria face regarding mentorship. The analysis reveals that 80% of the respondents indicated that the arrogance of the mentors is a major challenge. While 69% of the respondents indicated that the negative perception of the mentorship programs has made it difficult for the recruitment and retention of new faculty, another 68% of the questionnaire respondents reported that the overbearing attitude of mentors turns them off or discourages them to approach the mentors for help.

TABLE 1

Types of Mentorship Programs That Exist in Our University

| QUESTIONS | AGREE | STRONGLY AGREE | NEUTRAL | DISAGREE | STRONGLY DISAGREE | AGREE % | DISAGREE % | TOTAL |
|---|-------|----------------|---------|----------|-------------------|----------------------------|----------------------------|-------|
| Mentorship initiatives provided the support and information for new faculty transition | 469 | 374 | 20 | 212 | 144 | 843 69% | 356 29.1% | 1,225 |
| Mentorships strategically help faculty to manage their integration into the academic community | 381 | 399 | 0 | 260 | 185 | 780 63.7% | 445 36.3% | 1,225 |
| Workshop on how to prepare faculty in research teaching and services accomplishment is helpful | 346 | 421 | 8 | 236 | 214 | 767 62.6% | 450 36.7% | 1,225 |
| Great array of information could steer new faculty on their journey to promotion and tenure | 437 | 283 | 28 | 163 | 314 | 728 58.8% | 477 39% | 1,225 |
| Mentors are appointed based on their ongoing research program | 145 | 152 | 17 | 488 | 423 | 297 24.2% | 911 74.4% | 1,225 |
| My university pays for me to attend professional conferences as a mentee | 388 | 136 | 0 | 327 | 374 | 524 42.8% | 701 57.2% | 1,225 |
| My university organizes a n annual research symposium | 216 | 308 | 0 | 551 | 150 | 524 42.8% | 701 57.2% | 1,225 |
| My institution organizes a couple of grant writing workshops for faculty each year | 182 | 169 | 0 | 596 | 278 | 351 28.7% | 874 71.3% | 1,225 |
| My institution does not engage in any type of professional development programs for faculty | 278 | 385 | 0 | 328 | 234 | 663 54% | 562 46% | 1,225 |
| The interdisciplinary nature of the mentorship circle has facilitated faculty capacity to foster collegiality | 211 | 208 | 6 | 475 | 325 | 419 34.2% | 800 65.3% | 1,225 |
| Mentorship circle extended mentee network or relationship and advanced their sense of belonging | 445 | 363 | 11 | 219 | 187 | 808 66% | 417 34% | 1,225 |
| Mean | | | | | | 49.5% | 45.5% | |

Source: Derived from field research in Nigeria in 2017 and 2020.

TABLE 2

Types of Challenges Mentors Face at Your University

| QUESTIONS | AGREE | STRONGLY AGREE | NEUTRAL | DISAGREE | STRONGLY DISAGREE | AGREE % | DISAGREE % | TOTAL |
|---|-------|----------------|---------|----------|-------------------|----------------------------|----------------------------|-------|
| Negative perception of the mentorship programs has made it difficult for the recruitment and retention of new faculty | 513 | 329 | 7 | 268 | 108 | 842 69% | 376 30.6% | 1,225 |
| Lack of material resources to help mentees | 623 | 148 | 4 | 102 | 348 | 771 63% | 450 36.7% | 1,225 |
| Arrogance of mentors | 658 | 322 | 5 | 113 | 127 | 980 80% | 240 19.6% | 1,225 |
| Overbearing attitude of mentors | 589 | 247 | 0 | 148 | 241 | 836 68.2% | 389 32% | 1,225 |
| Personalized disposition of mentors | 367 | 434 | 13 | 54 | 357 | 801 65.4% | 411 35.5% | 1,225 |
| Lack of formal structure to foster mentoring | 439 | 256 | 0 | 254 | 227 | 695 57% | 531 43.3% | 1,225 |
| Lack of trust and budget | 344 | 271 | 13 | 260 | 337 | 615 50.2% | 597 49% | 1,225 |
| Pressure of administrative duties | 451 | 276 | 0 | 314 | 413 | 498 40.6% | 727 59.3% | 1,225 |
| Self-withdrawal of junior faculty members | 528 | 266 | 0 | 123 | 308 | 791 64.6% | 431 35.1% | 1,225 |
| Laziness and irresponsible attitude of junior faculty that are mentees | 382 | 169 | 21 | 2925 | 361 | 551 45% | 653 53.3% | 1,225 |
| It is difficult to express how the mentorship program has benefited me as a junior faculty | 339 | 264 | 9 | 225 | 388 | 603 49.2% | 613 50% | 1,225 |
| Mean | | | | | | 59.3% | 40.4% | |

Source: Derived from field research in Nigeria in 2017 and 2020.

Further, the personalized disposition of senior faculty that are supposed to be mentors is another major challenge. Most senior professors who are chairs, directors, or deans and are top-notch scholars are reported by 59.3% of the respondents to claim to be under administrative pressure and so cannot spend any time to serve as mentor.

Furthermore, 50% of the questionnaire respondents reported that it is often very difficult to express how the mentorship program has benefited them because of some challenges discussed in this section of the paper. There is also the major challenge posed by self-withdrawal that was acknowledged by 64% of junior faculty members due to frustration. Another set of 57% of the respondents indicated that lack of formal structure to foster mentoring programs was also a major concern for them. While 50.2% of the respondents stated that lack of trust and funding or budget was a major challenge for them, 43.3% reported that the availability of funds for mentorship program was not their major problem.

There was a major consensus among the interview respondents that mentoring initiatives that were implemented in the university were not enough to address all the needs of the new faculty. As a result, 82% of the new faculty are not happy and sometimes do not feel they belong to their respective university community. Another 60% of the interview respondents indicated that the laziness and irresponsible attitude of junior faculty who are mentees has been discouraging. They contend that the new generation of junior faculty want everything to be done for them. This set of interview respondents argued that most of the junior faculty fail to realize that mentorship programs will help them learn new skills that will position them to become more successful in their academic career. Ninety-four percent of the tenured full professors who were interviewed contended that peer and mutual mentorship could occur in groups where faculty members with similar characteristics and experiences could establish networks that could galvanize them to build a sense of community and shared understanding of the faculty role in universities. Finally, there was a consensus among all the interview respondents that mentorship programs are important forms of institutional support for all faculty development and success with respect to rank or tenure. This is because mentorship initiatives could constitute a mechanism for changing the culture in a university by promoting and enhancing ongoing collegial support. Pragmatic mentoring programs could positively boost the reputation of the universities.

Conclusion

This paper has examined the significance and types of mentorship programs offered by some universities in Nigeria and the major challenges they face while promoting success and career development. The paper also argues that for Nigerian universities to accomplish higher levels of inquiries,

discovery, and creativity in research and sciences they must adopt pragmatic benchmarks in hiring highly qualified scholars who can serve as mentors to junior faculty. The analysis reveals that there is a strong positive relationship between lack of university-wide faculty mentorship programs and the inability of institutions to effectively address faculty research needs and concerns. The findings also show strong positive correlations among lack of budget, corruption, politics, and tribalism. There is also the challenge associated with low budget and funding of mentorship programs, as well as inadequate institutional support for faculty development programs and other initiatives.

The major contribution of the paper is that it provides a better understanding of the process of mentoring and how it guides socialization of new faculty members. Thus, some new faculty members gain role inductance in almost all the universities under study. There is no doubt that academic mentoring could play an interesting role in education in respect to bringing about high-quality educators or professors (Ekechukwu & Horsfall, 2015). This is because mentoring happens in faculty education in different settings and serving different purposes.

Although the understanding of the concept of mentorship is widespread among faculty and administrators in universities, there is a dearth of mentoring experiences among junior faculty in Nigeria due to the lack of formal mentoring schemes. Integrating formal mentoring programs into the postgraduate interdisciplinary curriculum may increase their prevalence. This gesture could facilitate the ability of junior faculty members to become independent researchers and establish grant research careers. Therefore, a good mentoring program should involve assessing junior faculty needs, the potential pool of mentors, resources allocation, program management, oversight, and frequent evaluation based on program evaluation feedback.

Finally, for university leaders to effectively help all their faculty from the day they were hired until the day they retire, mentorship programs must be adopted to help all ranks of faculty to better understand their changing academic culture, establish a collegial network, experience a sense of belonging and support, and develop a sense of confidence and commitment to both the university and the students (Waddell et al., 2016; Cronin, 2020). It is also paramount that faculty are given the resources to enhance their capacity to learn and adopt strategies that could galvanize their momentum to engage in the science of discovery, inquiry, and creativity or innovation. New laws should be enacted by the government of Nigeria mandating universities in the country to adopt best practices in providing mentorship programs that could help promote high-quality academic programs and skilled faculty all over the country.

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Mentorship: The Next Generation
of Faculty, Researchers, and Scientists

Peer Mentoring: Challenges and Opportunities for African Diaspora and African University Scholars

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ABSTRACT

Different definitions of mentoring abound, but they share some commonalities—a long-term, deliberate, and mutually beneficial relationship that meets developmental or professional needs. Mentoring is formal or informal. An informal mentoring develops naturally; whereas, formal mentoring is one in which a mentor is paired with a prospective protégé in a professional setting. By sharing expertise and experience, the mentor assists with professional development of the mentee. Bell and Treleaven (2011) describe a mentor as someone who helps a protégé learn something that the person would not have learned sufficiently, learned more slowly, or not learned at all. The U.S. Department of Transportation Mentor-Protege Program aptly captures this relationship as one that not only “enhances the capability of disadvantaged and small business owners to compete for federal procurement opportunities,” but also allows mentors to gain “goodwill and corporate responsibility” and mentees to “develop strong business capabilities to compete and perform in federal government contracts.” This essay focuses on practices, challenges and opportunities related to mentoring practices in the university setting, with a proposal for peer mentoring among faculty, researchers and scientists in U.S. and African institutions.

“I am only one. But still, I am one. I cannot do everything, but still, I can do something. And because I cannot do everything, I will not refuse to do the something that I can do.” — EDWARD EVERETT HALE, UNITARIAN MINISTER AND AUTHOR

Mentoring Defined

Edward Everett Hale’s quote, above, suitably reinforces the assertion that one person can make a difference in another’s life, whether as a mentor, coach, or in any capacity. The word mentor, is derived from the character Mentor in Homer’s *Odyssey*, the ancient Greek epic poem dating back 3,000 years. As the story goes, Odysseus entrusted his young son, Telemachus, to the care of his teacher and faithful companion, Mentor, when Odysseus had to leave for the Trojan War. As Odysseus was gone for many years, Mentor provided the necessary support and care for Telemachus. Given the role of Mentor as a teacher who provided support and encouragement, his name has become synonymous with an experienced person who conveys or shares knowledge and wisdom with someone less knowledgeable (Homer’s *Odyssey*, *Britannica*).

The many definitions of mentoring share some commonalities—a long-term, deliberate, and mutually beneficial relationship that meets developmental or professional needs, and provides guidance, personal and professional support, or direction in an organizational or other setting. Mentoring “entails information

communication, usually face-to-face and during a sustained period of time, between a person who is perceived to have greater relevant knowledge, wisdom, or experience (the mentor) and a person who is perceived to have less (the protégé)” (Bozeman & Feeney, 2007). It is also a process “to support and encourage people to manage their own learning in order that they may maximise their potential, develop their skills, improve their performance and become the person they want to be.” (Parsloe et al., 2016)

Mentoring allows the mentor to share their vast experience and influence with the protégé, while the latter benefits from the personal insights and knowledge of and the relationship developed with the mentor. Mentoring can be formal or informal. An informal mentoring develops naturally; whereas formal mentoring is one in which a mentor is paired with a mentee in a professional setting. By sharing expertise and experience, the mentor assists with professional development of the mentee. Bell and Treleaven (2011) describe a mentor as someone who helps a protégé learn something that the person would not have learned sufficiently, learned more slowly, or not learned at all. The U.S. Department of Transportation’s

Mentor-Protégé Program aptly captures this relationship as one that “enhances the capability of disadvantaged and small business owners to compete for federal procurement opportunities.” Mentors gain “goodwill and corporate responsibility, and protégés “develop strong business capabilities to compete and perform in federal government contracts.” (U.S. Department of Transportation, Mentor-Protégé Program)

Types of Mentoring

Three of the best types of mentoring are traditional mentoring, virtual mentoring, and group mentoring (UC Davis Human Resources).

Traditional (one-on-one) mentoring: This entails the formal matching of a mentor and protégé through a program, or both parties may match up on their own, informally. Either way, the mentor and protégé could establish a structure and schedule that works well for them or have the organization impose the structure.

Virtual mentoring: This is a mentoring relationship whereby both parties, who may be in different geographic locations, establish a mentoring relationship, also called distance mentoring.

Group mentoring: This mentoring relationship occurs when a mentor is assigned to a group of protégés and encourages them to ask questions and share their stories. The mentor uses that information to structure the mentoring program in ways that benefit the protégés.

Choosing a type of mentoring program depends on the goals of the parties involved. As pertains to this essay, the focus is on a traditional (one-to-one) peer mentoring conducted in a virtual space—essentially, a hybrid of traditional and virtual mentoring.

Phases of Mentoring

Mentorship is a mutually beneficial learning relationship between two or more people in potentially a variety of settings. Mentoring usually occurs in four phases: preparation, negotiation, enabling growth, and closure, which all build on one another (Metros & Yang, 2006).

- **Preparation:** This is the discovery phase, where one finds out if they want to be a mentor. This includes doing a self-assessment to determine one’s personal motive for wanting to be a mentor. It also includes learning about the mentee to build rapport and then developing a framework for the mentoring program.
- **Negotiation:** This is the business phase, when the mentor helps the protégé set learning goals, a learning agreement, clearly defined and measurable expectations and responsibilities, tactics for achieving the expectations and managing limitations, as well as other agreed-upon rules.

- **Enabling growth:** This work phase entails executing the mentoring program. During this phase, both parties meet as agreed upon in the negotiation phase. This regular meeting allows the mentor to support the protégé’s work/learning and provide appropriate feedback as the work progresses.
- **Closure:** This is the assessment stage, where the mentor evaluates the effectiveness and value of the mentorship, identifies areas for improvement, celebrates success, and decides on the next step (Metros & Yang, 2006).

It is imperative to note that each of these phases has extensive strategies and tactics to ensure minimum mishaps and to correct course in the mentoring relationship. These phases clearly apply to peer mentoring, described below.

Peer Mentoring

Peer mentoring is an intentional one-on-one professional relationship between people in the same field and level within an organization, whereby one person is more experienced and has more skills and shares that experience and those skills and encouragement with the other person (Eby, 1997). The focus is on creating a supportive relationship between both parties, as they share knowledge, skills, and experience and create an atmosphere to enhance learning. (Burmester, 2002; McDonald et al., 2003)

Peer mentoring can be face-to-face, virtual, or conducted in groups. At the same time, peer mentoring can evolve, whereby at some point in the relationship, the protégé may have the knowledge and skills to share with the mentor. In such a situation, the relationship moves from linear (mentor to mentee) to a mutually beneficial learning and development opportunity. Key features of peer mentoring include developing a personal and reciprocal relationship based on trust and professional success, and providing emotional and psychological support (DuBois & Karcher, 2005; Jacobi, 1991). Studies have shown that the advantages of peer mentoring are profound. A study of peer mentoring in nursing education showed a mutually beneficial personal and professional growth for mentors and protégés (Glass & Walter, 2000). The study also noted that characteristics of the peer mentoring process such as shared learning, shared caring, reciprocity, commitment to each other’s personal and professional growth, and friendship, contribute to the success of peer mentoring.

Mentoring Practices

A *Harvard Business Review* article (Tjan, 2017) identified a traditional mentoring program’s best practices. Among them is “putting the relationship before the mentorship ... developing your mentee’s character and not just their job skills ... Investing in your mentee’s self-awareness, empathy, and capacity for respect. The next practice of good mentors is sharing their optimism much more than their cynicism ... and loyalty.”

However, for a peer mentoring program, experts generally agree on some common steps, including identifying the goal of the program, choosing the mentor/protégé carefully to ensure a good match, providing guidelines and agenda for each meeting, identifying an agreeable meeting schedule, having the ability to discuss goals, challenges and opportunities, providing feedback, and being able to measure the outcome of the program (Lee, 2021).

While these mentoring practices are ideal in a western setting, one must consider the challenges some of the suggestions may pose for protégés in non-western settings and find appropriate alternatives.

Mentoring Challenges

While mentoring has many advantages for all parties—mentor, protégés, and organizations—it also has some challenges that should be addressed. Those challenges include, but are not limited to: 1) mentoring across gender, race, and ethnicity, 2) virtual mentoring, 3) time commitment, 4) unclear or unrealistic goals, 5) personality clash, 6) meeting schedules/geographical challenges.

1) Mentoring across gender, race, and ethnicity: In most organizations, it is not unusual for women and people of color to be assigned or seek out mentors who are Caucasian men. In situations where there may be a power imbalance, it is imperative that the mentor makes an effort to understand the lived experience of the protégé. In an academic setting, where mentoring may be between a senior scholar and junior scholar/graduate student of a different race and/or gender, it should also include a relationship built on common scholarly commitment. In cross-gender mentoring, where the mentor is at an institution with vast resources and the mentee is at one with limited resources and opportunities, it is equally important to be empathetic.

2) Virtual mentoring: This refers to traditional mentoring done through digital means such as phone, email, or video calls via Zoom. While this form of mentorship may once not have been seen as authentic—because both parties are not in the same physical location and therefore not able to pick up on nuances in communication—virtual mentoring moved from a challenge to an opportunity during the COVID-19 pandemic. This form of mentoring is flexible and convenient because both parties can meet any time and anywhere as long as they have access to technology.

3) Meeting schedules (international time zones): This is a challenge when both parties are in different parts of the world, in different time zones. While email may work for some time, a virtual meeting on channels such as Zoom allows both parties to discuss issues in ways that an email may not allow. Even with Zoom, time differences must be considered in setting up meetings.

4) Time commitment: Sometimes, mentors may not be able to commit as much time as they had initially promised, due to a variety of circumstances. Unfortunately, if there is no adherence to the time committed to the mentoring relationship, it faces the potential of gradually fading and subsequently ending.

5) Unclear or unrealistic goals: Both parties may expect too much from each other. The mentor might expect the protégé to duplicate or emulate them in every way, and the mentee might expect the mentor to fulfil not just professional but also emotional needs. With peer mentoring in an academic setting, there is either the expectation of publication of academic work, in which case, the mentor does much of the work, because they have access to research materials; or in other cases, the protégé does much of the work but receives little or no credit. These situations may create tension between both parties.

6) Personality clash: The personalities of mentor and protégé may clash and efforts might not be made to rectify the conflict as quickly as possible. The personality clash may occur well into the mentorship if both parties face ideological issues in the course of the mentorship.

Peer Mentoring Opportunities

Peer mentors and protégés are more likely to share a common perspective on the mutually beneficial aspects of the relationship. Specifically, peer mentoring can help protégés to gain new or expanded skills, develop confidence, and—in the case of peer mentoring in an academic setting—provide a support structure that paves the way to tenure and promotion through producing academic papers for conferences and publication. Most of all, it is an opportunity to build networks and community—whether a community of two or more. Peer mentorship has many advantages for mentors, including helping them gain recognition for their knowledge, skills, and experience; improving communication and personal skills; developing leadership and management qualities; providing community service opportunities. All this is an important part of being an academic and offers personal fulfilment and growth. Peer mentorship also has advantages for protégés such as identifying their goals and establishing a sense of direction, developing communication and personal skills, gaining professional advice and support, and cultivating strategies to respond to personal and career issues.

Proposal for Establishing a Formal Virtual and Face-to-Face Mentoring Programs

While formal mentoring programs have achieved varying degrees of success, as indicated by the studies cited, studies of peer mentoring programs—especially in university settings—continue to show much success, as previously stated. However,

such peer mentoring is not common between mentors based at colleges and universities in the United States and protégés at African universities.

Given the lack of resources at most of the African universities, it is imperative to consider a strategic mentoring approach that would best serve this arrangement. Thus, I propose the following:

1. Identify individuals with shared research interests at African universities through programs such as the Carnegie African Diaspora Fellowship Program (CADFP).
2. When possible, involve institutional agents in establishing the peer mentoring program.
 - a. See challenges and opportunities for mentoring, above.
3. Formalize the peer mentoring agreement in writing, spelling out expectations that are agreed upon and signed by both parties.
4. Develop quantitative and qualitative means of evaluating the outcome of the mentorship program.
 - a. The quantifiable objectives and a timetable
 - b. The analytical tools should be acceptable to both parties.
5. Be flexible and willing to change course when the mentoring situation changes.
 - a. A mentor/protégé may experience life changes such as birth, death, career change, technology or electricity challenges (with protégés in Africa), and the person should be able to opt out for any period of time or end the mentoring agreement.
6. Encourage protégés to establish research groups at their institutions, so they can share with their peers the knowledge they have gained through activities centered around research, writing, and publishing. Such arrangements allow protégés to identify available resources that can enhance their professional development.
7. Encourage protégés to seek out, share information, and collaborate with like-minded individuals at area universities; in essence, to extend the research group beyond their institutions to include faculty at other universities with shared research and professional interests.
8. Work on projects of mutual interest. By so doing, the protégés at the African universities have the opportunity to co-present papers and publish internationally with their mentors.

Conclusion

Several studies have shown that peer mentoring has contributed to the academic success of faculty in institutions of higher education. Fleming et al.'s (2015) research supports this assertion. Their study, titled Peer Mentoring Program for Junior Faculty to Promote Professional Development and Peer Networking, found that "peer mentoring was effective in improving the knowledge, skills and attitudes (KSAs) necessary to promote early career advancement and peer networking, especially for women."

Other studies affirm that a good mentor-protégé relationship is one in which the mentor encourages, clarifies, provides structure and guidance, looks for growth opportunities, is empathetic, maintains confidentiality and empathy, and mentor and mentee share a mutual respect, among other things. To ensure a quantifiable outcome at the end of the program, a peer mentoring partnership agreement is suggested. Zachary's (2012) *The Mentor's Guide* provides an easy-to-use guide that could be adapted to fit the needs of the mentor and protégé.

- **Well-defined goals:** Identify achievable goals
- **Mutual responsibility:** Spell out each party's responsibility and expectations
- **Accountability:** Identify methods to ensure each party has fulfilled their obligations
- **Ground rules:** Identify and list rules that guide the relationship—from roles to communication to dealing with conflicts
- **Confidentiality:** Emphasizing discretion in the relationship
- **Boundaries:** Setting limits in the relationship
- **Overall plan:** A comprehensive look at the agreement to ensure that goals and objectives are SMART: Specific, Measurable, Action-Oriented, Realistic, and Timely (Zachary, 2012).

While challenges exist, the advantages and opportunities of peer mentoring far outweigh the challenges. It is even more so in light of the glaring disparities in resources between institutions of higher learning in the West and in the global South. Mentors can share their knowledge, skills, and expertise, and can also learn from their protégés.

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Mentorship: The Next Generation
of Faculty, Researchers, and Scientists

Meaningful Mentoring: Strategies from Diasporic Academic Collaborations

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ABSTRACT

Drawing on experiences from a Carnegie African Diaspora Fellowship Program (CADFP) visit at the University of Lagos in Nigeria, this paper provides examples of an African diaspora woman's experiences of collaborative mentoring. The paper details the forms of meaningful professional engagements, relationships, and accomplishments resulting from intentional multidimensional mentoring. The literature on academic mentoring shows that mentorship and gender inequity in academic careers are intertwined, so gendered dimensions of mentoring are considered. Mentoring strategies that contribute to success in academic geography careers are discussed while emphasizing challenges due to intersections of gender for women scholars. While eschewing mentoring practices that emphasize one-sided caring and collegiality, the paper draws on partnership experiences with University of Lagos (host institution) faculty, graduate students, university colleagues, and others to highlight and recommend feminist-inspired mentoring strategies that forge alliances across institutional, locational, generational, and gender differences as interventions for meaningful mentoring to lessen challenges facing many African-born female and male scholars in Nigeria, the United States, or other academics in institutions of higher education across Africa or the African diaspora.

Introduction

Drawing on experiences from a non-teaching Carnegie African Diaspora Fellowship Program (CADFP) visit at the University of Lagos, Nigeria, this paper provides examples of collaborative mentoring as an African diaspora woman. We adopt an ethnographic style for a qualitative approach that offers a more in-depth account to describe collaborative mentoring dynamics from a scholar-fellow perspective. Beyond describing the transnational African continent-diaspora collaborations, the paper addresses how the variety of approaches to mentoring are strategic and transformative. The literature shows that mentorship and gender inequity in academic careers are intertwined, so gendered dimensions of mentoring are included. The paper assesses the impacts and outcomes of collaborative activities on aspects of career advancement for early and mid-career male and female geographers with mutual benefits for the senior career diaspora fellow. It also outlines relevant strategies to address some of the challenges faced by African diaspora female faculty and adds value to discussions on mentoring. In this sense, the paper is relevant to central analytical perspectives on transformative learning and feminist praxis. Furthermore, it contributes to the literature on mentoring by integrating analytic and transformational approaches that shed light on diasporic collaborations.

Broadening Participation by Mentoring: The Context of Diasporic Collaboration

Over the past decade, I (the lead author) established academic mentoring relationships more readily outside the United States that developed most significantly from being a Carnegie African Diaspora Fellow. The fellowship increased co-mentoring opportunities with geographers and postgraduate students in Africa. The paper is framed along academic career stages, and illustrates specific aspects of meaningful mentoring that are crucial for success in an academic career. It includes early and mid-career stages as well as advanced faculty cum senior administrative level to appraise strategies for mentoring across demographic, institutional and locational contexts in a transnational academic geography career in general and for the African diaspora in particular. It concludes with a summary of the paper's significance for inclusive mentoring.

CADFP Collaborators: Host, Fellow, Mentor, and Mentee Experiences

Two central actors from the University of Lagos (Unilag) CADFP during the six weeks from December 2018 through January 2019 are also contributors in the paper. They are Alabi Soneye, Dean of Postgraduate Studies and Professor,

Department of Geography, University of Lagos, Nigeria; and Vide Adedayo, Senior Lecturer in the same department and university. The diaspora fellow had a previous teaching opportunity at the University of Lagos Geography Department in 1996 during a sabbatical leave. Over the course of our post-secondary lives in higher education, the Unilag colleagues in 2018–2019 join a robust list of mentors, colleagues, and professors (which includes Professor Akin Mabogunje) with extensive international educational backgrounds that ground the paper's rationale on perspectives of transnational geography educators and mentors. International collaborations in higher education offer robust opportunities for broadening pedagogical participation and envisioning transformative practices for interdisciplinary research. This paper therefore aims to demonstrate the multifaceted enrichment of learning, teaching, and mentoring that accrue from international education collaborations in general and from the CADFP in particular.

Mentoring as Multifaceted Roles in African-Diasporic Settings: The Transformative Learning Context

There are ten identified phases in the conceptual framework of transformative learning. These (illustrated in detail with specific examples of mentoring strategies from academic collaborations as a Carnegie Diaspora Fellow later in the paper—, in the section on mid-career mentorship) are listed as: (1) a disorienting dilemma; (2) self-examination with feelings of unease or anxiety; (3) critical assessment of assumptions; (4) recognition that anxiety/uncertainty and process of transformation are shared; (5) exploring options for new roles, relationships and actions; (6) planning a course of action; (7) acquiring knowledge and skills for implementing the proposed plans; (8) taking on new roles; (9) benefits such as building competence and self confidence in the new relationships and roles; and (10) technology integration based on conditions dictated by real-life circumstances. In order to synthesize key mentoring practices and challenges across demographic, institutional and locational settings that are germane in this paper, we categorize mentoring as multifaceted roles using collaborations with selected geographers at three different career stages during and after the CADFP—representing advanced-, mid-, and early-career colleagues.

Advanced-Career Influential Mentoring: Strategic and Collegial Mentorship

Prior to arrival for the fellowship visit, it had become very clear that the host, Professor Soneye, is a seasoned and pragmatic academic. He vetted the diaspora fellow as a prospective partner based on his experience with and recommendation from an alum (not a geographer) of

the CADFP who had spent his fellowship duration at the university. Professor Soneye agreed to work with the fellow and completed the host institution fellowship application with approval at topmost university administrative levels. The success of diaspora fellowship with the university rests squarely on his capabilities and experience. An industrious and high-achieving scholar, his stellar combination of strategic positioning of the geography department and supportive cultural humility for fostering democratic relationships with colleagues cannot be overstated. Within two days of arrival on campus, he had arranged meetings with influential personnel on campus including deans, the Deputy Vice Chancellor and the Vice Chancellor, in addition to staff members in the geography department.

The diaspora fellow enjoyed a hospitable esprit de corps in the geography department at Unilag during the 6-week stay and felt at home in the department and campus. Professor Soneye is the especial hallmark of leadership, trust, guidance and unhindered productivity, characteristics that resulted in a genuine and dependable working relationship with him. Professor Soneye was and remains the solid rock and linchpin for consolidating the entire scope of the Carnegie African Diaspora Fellowship. He went beyond the call of duty as host scholar in numerous ways such as ensuring lodging/board arrangements and on-and off-hours reliable use of his Wi-Fi services. He introduced the fellow to important campus personnel and encouraged other university staff members to spend time to show her around university facilities. He approved the services of the department's driver and janitorial staff to ensure hospitable travel and regular cleanliness at the University of Lagos Scholars Suites residential space.

The paper foregrounds this supportive ambience as a vital and indispensable dimension of mentoring, yet one that is underdiscussed and undervalued. Collegiality, care, and generosity typified and complemented the exemplary dedication experienced with Professor Soneye. There were many positive experiences and interactions with people within the department, computer center, and library; other academic and administrative staff; and with some fellow residents at the scholars' suite also. The seemingly simple or mundane yet impactful and consequential encounters, engagements, and efforts range from intellectual discussions to invited home visits (such as to a student's off-campus celebration), car rides, gifts or snacks are very important for an inclusive work climate in academia. The inviting and refreshingly welcome feeling does not compare with majority-white U.S. colleges, which like the U.S. home institution, are typified as spaces of black exclusion where the diaspora fellow is most students' first or only African-born female faculty.

Mid-Career Mentoring for Success in Geographic Scholarship and Pedagogy: Intentional and Inclusive Mentorship

During the first week at the university, host, Professor Soneye, showed the fellow an office space to use. It was Dr. Adedayo's office, which she had very graciously vacated and prepared as a comfortable and functional working space. To discuss mentoring experiences of the diaspora fellow (Dr. Ibipo Johnston-Anumonwo) with a mid-career faculty colleague (Dr. Vide Adedayo), the paper uses the framework of transformative learning (Kitchenham, 2008). To this end, our Carnegie African Diaspora Fellowship engagements exemplify the correspondence of collaboration and mentorship and the ten phases of transformative learning.

Illustrating Transformative Learning in Collaboration and Mentoring

First, starting with a disorienting dilemma, the university was closed, students had been sent home, and there were no classes because of a nation-wide strike by the Academic Staff Union of Universities (ASUU). This definitely was very disconcerting with respect to how the fellowship activities that one had committed to doing would be undertaken, especially as some of these included teaching short-term undergraduate course modules. It also meant stepping up to the second phase of transformative learning, self-examination, during which feelings of doubt, unease, and anxiety similar to imposter syndrome were definitely generated. Questions arose. How would one demonstrate legitimate engagement to colleagues and what would they consider as the purpose for being at the university and the department if there were no students around? With respect to the critical assessment that is central in the third phase, there was a formal meeting with geography department colleagues who were on campus on the first official day at the university campus to brainstorm together on a reassessment of the fellowship contributions. After the meeting, the fellow submitted a written account based on explicit tasks that department members had identified were needed and the modified contributions that the fellow could offer. The tasks outlined ranged from working with graduate students who are present on campus, providing evaluative commentaries on research studies, or reviews of manuscript submissions for edited volumes for journals for which two colleagues were editors. During this phase, the department members and diaspora fellow amicably worked towards a clear evaluation of the things that the fellow could do and how the fellow's competencies would best be utilized.

It is during the fourth phase, that is, recognition, that the uncertainty as well as anxiety during this initial phase and the process of renegotiating the terms of engagement with the

host institution that it became clear that those uncertainties were not specific only to the fellow as Dr. Johnston-Anumonwo started to work directly with Dr. Adedayo—both of whom have similar academic interests in gender and development, as well as women's roles in agriculture and geographic education. These common interests launched our collective move to phase 5 as we explored options for new roles, relationships, and actions. We discussed ideas, outlined themes for joint scholarship, and exchanged two rounds of revisions on a manuscript. We appraised Dr. Adedayo's empirical findings, some of which are based on field trips with students which were an integral component of the geography curriculum and her pedagogy (but that were significantly sparse in the fellow's own U.S. teaching). The fellow, in turn, shared how she developed and expanded many aspects of inclusive teaching pedagogy—specifically an explicit intersectionality analysis that, since she began teaching college-level geography, incorporates nationality, ethnicity, race, class, and gender. However, given that the fellowship visit was for only 40 days, with the end of the campus stay in January 2019, this phase basically ended with a tentative draft, extensive discussions of our proposed plans, and importantly forming a new relationship as professional collaborators. The formal on-site institutional visit ended with plans for a course of action and solid assurances to stay in touch with each other.

In phase 6, planning a course of action, the focus was on moving beyond the agreements that were laid out in Lagos so that the proposed activities could be brought to fruition. We chose to start small by submitting an abstract for a joint presentation at a regional conference of the New York African Studies Association in April 2019. Although incipient, this was the beginning of four subsequent substantial collaborations to date. Indicative of intentional mentoring and consistent with feminist mentoring praxis, Dr. Johnston-Anumonwo initiated the invitation for Dr. Adedayo to submit some necessary material so we could work on the abstract and formulate a joint presentation. After working together to submit an abstract, and present preliminary insights on women farmers' aspirations at the April 2019 New York African Studies Association Conference, notably the activities gained momentum in phase 7 as Dr. Johnston-Anumonwo acquired more knowledge about Dr. Adedayo's ongoing and previous research and familiarized herself intently with her colleague's published research. This preparation formed the basis for implementing the proposed plans and works in progress.

By phase 8, we were both taking on new roles as collaborators, such that by the following year, we were well situated for phase 8 in terms of full-fledged international presentations. One of our more substantive collaborations resulted in us recruiting other scholars for the April 2020 American Association of Geographers (AAG) Annual Meeting session on gender, agriculture, and food security in Africa

that we organized (and persevered not to cancel in spite of the realities of COVID-19 pandemic disruptions). The session brought together five sets of African agriculture research topics, while bearing in mind that the AAG conference is recognized as the largest annual gathering of professional geographers. The second, which was a co-authored paper presentation in the fall at the Association for the Advancement of Educational Research International (AAERI) conference in October 2020, developed from the diaspora fellow introducing Dr. Adedayo to a U.S.-based, African-born geography educator based in the U.S. during a conference where he had invited Dr. Johnston-Anumonwo as a guest speaker and Dr. Adedayo attended at her invitation. Subsequently, Dr. Adedayo established new membership in this international professional organization. Overall, we gave joint presentations at the two conferences, the content of which reflect our mutual areas of specialization in geography.

The ninth phase of transformative learning identifies benefits, in this case to both the host institution colleague and the African diaspora fellow. As our relationship matured, our self-confidence grew. In particular, while preparing for our presentations, we learned more, and our competencies and knowledge base expanded. The content of the conference papers was based on our research in the areas of women and agricultural livelihoods, as well as our common interest in geographic pedagogy and active student learning. At the international conference on educational research, the goal of our presentation was to broaden engagement in international education in the geography classroom by challenging bias, oppression, and myopia. We also integrated transnational research analyses, empirical findings, and fieldwork studies to show methods for effective teaching and meaningful comprehension of prevalent crises around food insecurity, gender inequities and other related forms of socio-spatial exclusion. We used local and global content to demonstrate a variety of pedagogic approaches and geographic perspectives that foster collaborative mentoring and engaged transformational learning. We illustrated inclusive learning approaches in geography as an interdisciplinary subject.

It is worth emphasizing that in undergraduate geography courses where we teach several non-geography majors, there is abundant opportunity to incorporate interdisciplinary Africana and international content, for example by using accessible African-inspired books, resources, activities and examples. One way is effective and inclusive pedagogy to broach critical dialogues among students who are insecure with staff members' female African identity or because of warped perceptions of professional women as space invaders including in academia (hooks, 1994; Puwar, 2004; Alberts et al., 2010; Griffin & Reddick, 2011). In addition to highlighting the power of geography for international education and collaboration, in our presentation, we underscored how the

judicious combination of inclusive teaching and mentoring enables a welcome direction beyond publish or perish in an academic career. Apart from conferences where we were co-presenters, Dr. Adedayo was invited to submit her research for publication consideration in a geography education journal and her active engagement also earned her an appointment to serve as an African-based international representative—a responsibility that could foster more exposure to a wide spectrum of international colleagues, knowledges, and practices.

The tenth and final phase in our transformative learning and collaborative mentoring is pertinent, fortuitously due to the COVID-19 pandemic which effectively required the majority of higher education staff to have enhanced technology capacities. The conditions dictated by real-life circumstances necessitated gaining more competences in instructional technology, remote presentations, and other professional online engagements. By integrating communication technology, we have stayed in close touch through other forms of electronic and technical platforms, using video chats and WhatsApp alongside standard emails in ways that enabled regular feedback and additional presentations. We are continuing with works in progress, while future presentations, projects, and partnerships are under consideration, enabled in no small measure through online and virtual communication possibilities even amidst pandemic woes. Looking back at the activities with Dr. Adedayo over the past three years since the commencement of the African diaspora fellowship at Unilag in December 2018, all ten phases of transformative learning are strikingly featured and illustrated in one way or another. Moreover, precisely because it is so integral to the collaboration and mentoring experiences with a mid-career female geographer, it is important to discuss gendered dimensions of mentoring that are evident in academic geography regardless of location in Africa or outside the continent. Thus, in the next section that features mentoring graduate students, women in academia, and emerging scholars, the paper examines ways to offset barriers in academic geography careers.

Easing Barriers and Challenges for Women Through African-Diasporic Mentoring in Academic Geography Careers

Just as other mentors had previously done, the diaspora fellow took the initiative to mentor the host institution colleague by nurturing their friendship. While at Unilag, she formally mentored six graduate students during repeated individual face-to-face meetings with each of them. She provided personalized and extensive written and verbal feedback on their written work and academic guidance for enhancing their research, refining academic writing/

presentation skills and taught techniques for finding scholarly research references and appropriate citations. Along with improved quality writing as a learning outcome, the mentorship challenged them to think critically about research topics and consider competing explanations and methodologies to their research questions. In working with graduate fellows who are staff candidates, she devoted and spent time learning from teaching and administrative staff members about department facilities, resources and research work being undertaken in the Geographic Information Systems (GIS) Lab. She purposefully and actively included female postgrads and faculty within her circle of formal and informal activities. Theses and dissertation (transportation geography) topics range from alternatives to port location analysis and road construction to alternative energy use and evaluating the socioeconomic impacts. Her informed input was very well-received and appreciated. It rejuvenated existing superior performances and jump-started stagnant efforts. She was able to expand the scope of her knowledge in some areas of transportation geography also; confirmed a willingness and openness to future requests from graduate student mentees via their grad student directors or directly from them; and shared contact information readily among the students.

With postgraduate students and staff, Dr. Johnston-Anumonwo deliberately sought and enhanced female participation. She met with three other advanced female postgrads and had productive discussions about their work and the climate of studying at the department/university. She also met with all female members of the department's academic staff and established a positive rapport with them regardless of their specialty in physical or human geography. The discussions centered on steps to bring existing work to fruition; additional steps for advancement; and the nature of duties including field trips, certification, and possibilities of collaborative writing. Lastly, she formed and strengthened connections with doctoral graduates and staff members by studying their published research and keeping abreast with their current work after the fellowship stay. For instance, along with colleagues across campus, Dr. Adedayo is active in community service programs for food security through establishing a campus organic farm—a trans-generational form of mentorship—and Dr. Johnston-Anumonwo made sure to showcase this in her professional geography presentations as much as possible.

Indeed, in the diaspora fellow's own career trajectory, as a mid-career academic, she enjoyed the supportive influence of an African female leader, especially through educational service activities that support community women and girls by tutoring or other ways (Wallace et al., 2014). And in the relatively short stay at Unilag, there were instances of informal mentoring with the grad students who

were present and working on campus. Informal mentoring of students falls disproportionately on female faculty members as students seek nurturing mentors (Griffin et al., 2013, Johnson-Bailey et al., 2015). Students frequently seek academic counselling, non-academic advocacy, emotional guidance, club advisement, invited speeches, financial assistance, event chaperoning, and attendance at extracurricular activities, or just an empathetic ear. These are mainly invisible labor obligations, but reflect intricate overlaps between informal and formal long-term multidimensional mentoring and care.

Not surprisingly, both in the Nigerian or in the U.S. context, some initiatives for collaboration with African diaspora or Africa-based colleagues cannot be sustained because of overwork. On predominantly white institution (PWI) campuses in the United States, formal and informal service duties related to internationalization and gender place an uneven and uncompensated mentoring burden on an underrepresented African-born faculty subpopulation. On the home campus in the United States, there are only two female African-born faculty. Overwork, extended work days/weeks, and time deficits due to university and community service demands, lead to burnout, thereby compromising the critical nurturing of networks that are central to sustained mentoring, even as publication plans are pushed to the back burner or fall to the wayside. Authors have written on issues of social exclusion and scholarly marginalization reported by many women in African institutions of higher education (e.g., Aina et al., 2015; Eboiyehi et al., 2016; Igiebor, 2020; Breetzke et al., 2020). In fact, the experiences are consistent with the several studies about women of color in U.S. institutions of higher education (Chesney-Lind et al., 2006; Holmes et al., 2007; Wallace et al., 2012; Lloyd-Jones, 2014; Grant & Ghee, 2015; Holman Jones, 2018), and the body of literature on black feminist thought and interlocking nature of oppression (Young, 1990; Crenshaw, 1991; Holmes et al., 2007; Wallace et al., 2012; Lloyd-Jones, 2014; Johnson-Bailey et al., 2015; Warren-Gordon & Mayes, 2017; Holman Jones, 2018; Eguchi & Collier, 2018). Hence, the successes discussed in this paper are noteworthy in light of the relative lack of mentoring and its adverse effects on the academic career of many African women especially. Moreover, there are interactions variously and mutually as mentor and mentee with faculty members, administrators, and students (across genders), often by writing recommendation letters or disseminating one another's research in professional platforms. A brief illustration of this is in the following section, from the standpoint of working with an emerging geographer based in Nigeria at a different university than the fellowship host institution and well after the site visit had ended.

Early-Career Mentoring for Success in Applied Geography Research: Affirmation and Reciprocal Mentorship

Dr. Tolu Osayomi, COVID-19 Mapping Lab, University of Ibadan

In 2021, the diaspora fellow, Dr. Johnston-Anumonwo, was a co-presenter with a medical geographer researching COVID-19 in Nigeria and West Africa that complemented her expertise in geography and gender with his expertise on GIS and disease mapping analysis. Collaborating with a junior colleague on a research presentation, and graciously (rather than selfishly) crediting his hard work as lead presenter, is the type of pivotal mentoring that is especially valuable for early-career academics (Vajoczki et al., 2011). Post the Unilag fellowship visit, she modeled this mentoring praxis by collaborating with Dr. Tolu Osayomi, Director of the COVID-19 Mapping Lab at the University of Ibadan Geography Department, an early-career African-born male researcher whose superior analytic and cartographic skill using GIS techniques improved the quality of their co-authored paper presentation at a graduate seminar lecture series. This opportunity augmented his academic credentials through her inviting him to be a guest speaker at an Ivy League university—Cornell University. The approach here is a tenet of mentoring in general (and also of feminist mentoring) (Moss et al., 1999; Costello, 2015). Additionally, incorporating feminist analyses to shape topics taught in geography (from high school through grad school) is an appropriate response to urgings of educators to teach by using approaches that appreciate difference (Lanegran & Zeigler, 2016). For the Cornell University presentation on COVID-19 delivered at the Institute of African Studies, we combined our respective expertise to explicate the medical geography and gendered geography aspects of sanitation in the context of the COVID-19 pandemic across West African countries and within Nigeria. Clearly, there are reciprocal and mutual benefits of mentoring by teaming with men—both African and not—through invitations to deliver guest lectures, review manuscripts, present at colloquia, and in transdisciplinary scholarship to co-edit books, co-author papers, and co-organize conferences and panels. Networking, as well, is central for success in academia (Hanson, 2000). In the collaboration with Dr. Osayomi, we pooled responsibilities and shared rewards

equitably. A lesson in the diaspora fellow's early career years from the initiative of a senior colleague about the significance of informal mentoring has motivated her to regularly develop friendships with junior or new faculty and staff (Chesney-Lind et al., 2006).

Solid mentorship helps to secure different forms of career advancement. Endorsements (after requisite vetting of supporting materials) and testimonials at early or mid-career stages are often decisive for success, especially through providing reference letters for institutional awards to reward outstanding research, scholarship, teaching, service, and efforts that promote geography in public engagement. Thus, yet another form of mentoring is advocacy such as nominating scholars for professional activities or recognition. In fact, nominating a colleague for an emerging scholar award with a supporting statement, demonstrates that encouragement, support, confirmation, verification are essential elements of mentoring.

Peer mentoring through service duties such as these spurs professional growth. Since these types of service to the discipline are not typical in a primarily undergraduate college in the United States, the CADFP enhances the diaspora fellow's post-graduate and early-scholar supervision repertoire and career portfolio. Experiences as co-editor of publication projects enable working with fellow senior geographers, while mentoring several African and non-African international female and male contributors preparing for tenure and promotion—for example, by accepting requests to review papers (usually a labor-intensive task, but one that uplifts scholarship). Invitations to serve as external examiner for master's theses or doctoral dissertations is also an example of affirming scholarly proficiency, familiarity with and experience in African research study areas. Revising one another's writings may mean spending extra time and effort supporting African-born scholars with varying levels of English-language fluency. But these are mentoring obligations that senior African and female scholars should undertake to counter underrepresentation of African women and men and promote broader participation in academia (Winkler, 2000).

Reflections on Sustaining Meaningful Mentoring Across Different Stages, Stakeholders, and Constituents

Relatedly, the importance of African women scholars' active presence across university campus spaces, especially beyond the early and mid-career levels, cannot be overstated at African institutions and outside the continent too. As an African-born, Black, female feminist geographer, many of the diaspora fellow's expanding leadership engagements involve role-model mentorship service in other non-geography academic settings outside of the United States or Nigeria as well. For instance, in summer of 2021 there was a special opportunity to contribute as a mentor by sharing one's expertise through virtual workshop series sponsored by the Carnegie African Diaspora Fellowship Program. This was a partnership with St. Paul's University faculty and faculty at the State University of New York-SUNY at Oneonta (a "sister" comprehensive college to the home-institution—SUNY Cortland). Accepting the invitation to be a presenter at the Carnegie sponsored U.S.-based SUNY and Kenya-based St. Paul's University (Limuru) writing, research, and grant writing workshop series for the peace and conflict studies program exemplifies multidimensional mentoring. It supported a Carnegie African Diaspora Fellow, Dr. Betty Wambui, the series organizer who had invited all the presenters; it involved focused mentoring of graduate students; and it displayed interdisciplinary linkages in academia to students, all participants, and the presenters. Women supporting women in academia, while growing at a very appreciable pace, is still much needed as a way to further boost the advancement of African scholars regardless of gender. Indeed, feminist mentoring often occurs by galvanizing international and especially interdisciplinary coalitions (Liu, 2006).

Undoubtedly, an ideal mentoring strategy is for collaborators to step up and validate colleagues. Recommendations for professional engagements and new appointments by colleagues and partners lead to added benefits including extensive mentorship, enhanced learning, increased leadership duties, and expanded professional or personal connections that can evolve to co-authorships or attending international conferences. Another example is how during a high-visibility international conference of the American Geographical Society in 2021, the diaspora fellow used an exclusive platform as a spotlight speaker to amplify the research of both of the early- and mid-career geographers discussed in this paper. Based on insights gleaned from this paper's discussion, we propose feminist-inspired mentoring strategies that forge alliances to mitigate challenges for many African-born and Africa-based academics. Interdisciplinary collaboration affords mutual benefits from mentoring and being mentored. As senior faculty members, interactions within the discipline enables mentorship of early-career geographers while collaborating with peers.

Off- and on-campus, as we mentor and guide others, we affirm one another's capabilities and expertise. We contend that peer-mentoring strategies energized by feminist activism can lead to progressive change as exemplified in conference organizing, presentations, and the respective outcomes for succeeding in higher education. We also show how practices that expand critical feminist perspectives in geography and endorse individuals' contributions are effective mentoring strategies for validating visibility in geography education.

Content from varied academic engagements of being a mentor and a mentee formed the springboard for a journal article titled "Mentoring across Difference: Success and Struggle in an Academic Geography Career" published in *Gender, Place and Culture: A Journal of Feminist Geography* as part of a special issue on mentoring in academic feminist geography (Johnston-Anumonwo, 2019). This is an important contribution in scholarship of practice because of its explicit emphasis on understudied diaspora academic realities. The article mentions the opportunity afforded by the CADFP Unilag visit to increase mentoring and other connections. Related, a published chapter on the theme of transnational migrant scholars in the book volume *African Scholars and Intellectuals in North American Academies* is of direct import to diasporic academic mentoring and inclusive excellence in higher education for African-born diasporic women scholars (see Johnston-Anumonwo, 2020).

Clearly, from advanced senior stage to earlier stages in the academic life course, key attributes for success in academia are inclusivity grounded in solidarity and generous supportive kinship, friendship, and mentorship behaviors. The focus on the value of practical and emotional support correspond with recent reflections in academia on lessons of evolving mentoring relationships as students, colleagues and friends (e.g., Tullis & Holman Jones, 2014; Parizeau et al., 2016; Adams-Hutcheson & Johnston, 2019; Duplan, 2019; and Oberhauser & Caretta, 2019). Yet, while participation and leadership in associations of African or Global South studies, or Africa specialty groups, broaden possibilities for mentorship across difference, and reduce some sense of alienation, these endeavors, simultaneously, expose persistent marginalization in academia, and mentoring multiple constituents is certainly taxing (Griffin et al., 2013).

Conclusion

From this account of mentoring in the over three years of partnership (and continued partnering) professionally as a CADFP representative with others, the assessment of impacts and outcomes of the collaborative activities on early-, mid- and senior-career geographers is that there are numerous mutual benefits of mentorship for female or male geographers regardless of status as a diaspora fellow, a host institution partner, or a non-CADFP-affiliated colleague. Specifically, the paper discusses how mentoring initiatives enable women and

men to enrich academic careers. It also highlights activities that build equitable and sustained relationships between scholars in the African host university and the United States-based fellow. A particular aspect of the paper is integrating mentoring across service, research, and teaching. These reflections on countering challenges through mentorship thus showcase approaches to reshape academic encounters in ways that benefit scholars and institutions. We frame the analysis as strategies of meaningful mentoring to demonstrate how the mentoring experiences illuminate successes and possibilities in spite of barriers and challenges in the lived experiences of many academic geographers on the continent or the diaspora.

Based on a transnational and transdisciplinary academic background and diasporic academic collaborations with geographers in Nigerian institutions, the paper details the forms of meaningful professional engagements, relationships and accomplishments resulting from intentional multidimensional mentoring. Writing about our academic and individual lives through practices of mentoring, outreach and care that can dismantle institutionalized systems of hegemony is essential feminist praxis. While the emphasis here is on diasporic collaborations, the paper offers mentorship and collaboration strategies for geographers and other academics to adopt at different career stages. We have benefitted from, and practice, the multidimensional mentoring that we advocate trans-continently. Discussions about mentoring beyond the graduate school and early career levels or from a gendered dimension are not usually represented in scholarly work. As a result, this paper with its cross-generational dimension fills a gap and it adds important conceptual and empirical material to a growing literature on countering the challenges of mentoring and gender equity in African universities. The examples and practices described lead to the conclusion that transnational mentoring comprises necessary struggle, which requires that the work of unity and collaboration must continue. Although this work is exhausting intellectually and emotionally, Africans in the diaspora cannot give up especially on the lifelong and reciprocal learning project of mentoring that supports, leads, and inspires. These reflections on experiences of how diasporic collaborative mentoring is and could be effected highlight lessons applicable to others with similar situations and for academics with a different identity or career stage. The practices complement strategies and lessons reviewed by renowned geographer and mentor, Hardwick (2005). They also show the value of mentoring where lemons or disorienting dilemmas can be transformed into lemonade or benefits based on the co-mentoring values inherent in learning with and from outsiders.

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Mentorship: The Next Generation
of Faculty, Researchers, and Scientists

Mentorship: Bridging, Balancing, and Building Synergistic Scholarly Activities

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Introduction

As a recipient of the Carnegie African Diaspora Fellowship Program (CADFP), I have been deeply invested in fulfilling the objectives that my host and I set out to do and in focusing our abilities to meet them. But now, this opportunity to discuss and write on select theme provides a platform for me as a fellow to look at the larger picture. Thus, the ideas and the discussion herein are my perspectives, based on certain experiences, observations, and reflections from select readings. From them, I believe that one of CADFP visions and purposes, although I am not conversant with all of them, of changing the narrative of brain drain to brain circulation is met based on CADFP foci—facilitating African-born scholars from two countries (USA, Canada) to work on three areas (teaching, research, curriculum development) in specific West African and Sub-Saharan African universities. In viewing the CADFP program as a pilot study, many aspects of higher education have emerged beyond brain circulation and giving back.

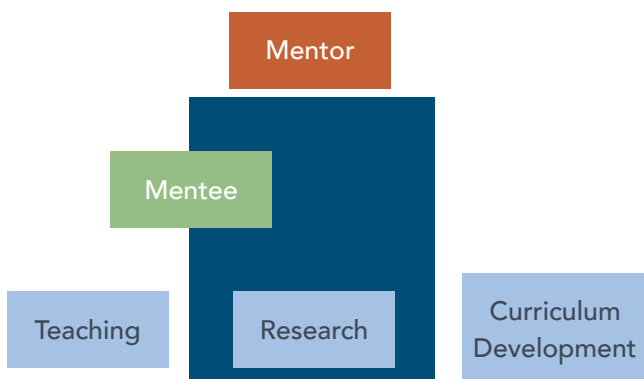
My selected theme to explore is the ways and means of creating new mentorship (virtual and face to face) systems and enhancing the effectiveness of existing ones. As such, I review broadly what mentorship entails using models, share an example and experiences, and propose a way forward.

Mentorship Overview

Generally, mentorship is a form of relationship between two bodies, namely the mentee and mentor, and the relationship can be formal or informal in nature. There are various models of the mentor–mentee relationship and they come with both opportunities and challenges. The first form of the relationship discussed herein is the waterfall model.

FIGURE 1

Waterfall Relationship Model



In the waterfall model (Bassil, 2012), often the mentor is advising or guiding the mentee, pointing out key steps, highlighting key issues, responding to questions and the like. There is a notion of expertise–novice, and a top-down approach. Closely related to waterfall model is the gradual release of responsibility (GRR) strategy usually employed in teaching and learning, where the mentor first models an idea, and then the mentor and mentee work the idea together, and then mentee can attempt the idea with peers before finally going solo. A shortened version of GRR in vernacular is an “I do”–“we do”–“you do” strategy. In my fellowship, this was commonly observed when teaching or advising postgraduates. For example, I recall in discussing the literature review process, I pointed out the importance of making annotations. As shown in Figure 2, this is the “I do” mentor part. So as an example, I shared the core aspects of annotating as including the following – citation, summary, and evaluation. Using different highlight colors, I pointed out important pieces when annotating.

FIGURE 2

Annotation Example 1

- Citation—referencing using APA or other styles
- Summary— problem, purpose, method, sample, instruments, analysis, findings, implications & recommendation
- Evaluation –strengths and weaknesses. Ask the “so what questions.” How can this study be improved?

Example

Dweck, C. S. (2010). Mind-sets and equitable education. *Principal Leadership*, 10(5), 26-29.

Dweck (2010) discusses the kind of impact the frame of mind of students and teachers has on academic progress. A quasi-experimental study conduct with hundreds of 7th–9th grade students found that students with a growth frame of mind attain more academic success than the students who have a fixed mind-set. Similarly with teachers who believe students had fixed intelligence were not able to make any changes to students who were underachievers in their class, and they remained underachievers at the end of the year as compared to teachers with a progressive mind-set where the students excelled in their classes.

This study highlights the importance of students’ teachers, and principals having a growth mindset. It would also be important to know issues that can hinder growth mindset from developing.

For the “we do” step, I gave mentees copies of the same journal article to read. After which, collectively we came up with APA citation and summary before letting them individually attempt the evaluation section based on the provided sentence frame of Figure 3.

FIGURE 3

Annotation Example 2

Wegs, C., Creanga, A. A., Galavotti, C. & Wamalwa, E. (2016). Community dialogue to shift social norms and enable family planning: An evaluation of the family planning results initiative in Kenya. *Plos One*, 11(4), e0153907. doi: 10.1371/journal.pone.015390

Wegs, Creanga, Galavotti and Wamalwa’s (2016) study employed both cross-sectional survey and in-depth interviews to investigate how dialogue intervention impacts usage of family planning in Siaya County, Kenya. Data were collected from approximately 650 women and 300 men and were analyzed using multivariate logistic regression and coding for themes. Findings show that the intervention significantly increased the use of family planning among women but not men.

The study points out ... (*strength*). The authors’ have also come up with ... (*strength*). But this ... seems like... (*weakness*)

Finally, for the “you do” step, they looked for an article aligned to their concept paper and independently annotated.

Thus, the waterfall model with GRR as a strategy has sequential steps to it, just like cascading water going downhill on rocks. The opportunities this model offers include handholding, show-me, modeling, demonstration, and guidance that aids mentee walking into a new territory, saves on time and unnecessary frustrations in addition to other benefits not listed here. On the other hand, the waterfall model has challenges, e.g., it may exacerbate the inferiority–superiority complexities that exist in the relationship, more so in some ideas than others. I have observed doctoral candidates (mentees) taking wholesale ideas proposed by their thesis advisors (mentors) even when they disagree with those ideas out of fear of jeopardizing their research. For example, citing the advisors’ publication in their literature even when not truly aligned with mentee’s research work or the mentor’s publication is outdated, given that newer versions of the idea or findings have emerged.

The second form of the mentorship relationship examined herein is apprenticeship. The apprenticeship model of mentorship (Kost, 2008) entails learning by doing where both mentor and mentee are immersed and engaged in the same task and where varied forms of discourse are used for participation. This is a master–apprentice and a side-by-side relationship as opposed to top-down, where if the mentee fails to succeed, the failure affects the mentor as well.

FIGURE 4

Apprentice Model



Mostly the mentor serves as the sounding board, helps in bridging gaps, gives feedback, holds coaching conversation, or responds to and asks questions. This model does help mentee in navigating institutional culture, knowing whose voice matter in an organization, knowing where to go when there is need to go, learning where the resources are and how to access the resources.

This model resonates well with the phrase of “standing on the shoulder of giants,” thus mentees of giants tend to be giants as well. Assuming this to be true, then the brain circulation idea may bear giant-like fruits. Notions of role modeling and shadowing similarly falls under this model.

From orature, the apprenticeship model is deeply rooted in ancestral Africa and even to- date is how folks learn i.e., art, dance, construction, medicinal herbs, cattle rearing and so on. From my fellowship experience, I have engaged with colleagues in my host institutions including CADFP fellows in planning and running doctoral research workshops, writing for publication, grant writing and conducting research— “I want to be involved so I know what to do if I have to face it alone,” says the mentee.

The apprenticeship model employs strength-based theory with a “glass is half-full” perspective instead of the deficit model with a “glass is half-empty” perspective.

The little available can go a long way. As a CADFP fellow, I wonder how many of such “glass is half-full” opportunities I failed to take advantage of since I focused on the deficit model. For instance, had I taken time to learn and engage fully with how my host colleagues and students

FIGURE 5

Illustration of Strength-Based Perspective



The glass is half full
e.g., 50% funding
opportunity.

used WhatsApp and Facebook as tools to engage with in academia, I would have been ready to face the COVID-19 pandemic productively as the educator. I would have been prepared and in a position to ease the anxiety that my students faced during spring 2020 (March–May 2020) using these mobile technologies instantaneously.

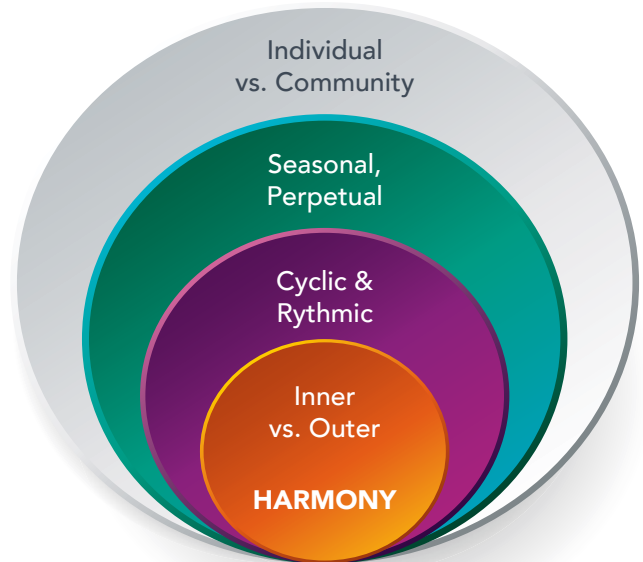
The final model I address herein is the “onion” model. Mugo (1984) notes that an “onion has layers upon layer with inner and outer curves which maintain perpetual contact with each other harmoniously, making one whole,” of which if you peel one away, it changes the onion— “the onion does not remain the same whole.” Examples of terms she points out about an onion are written on the following figure, where I find the terms “perpetual” and “harmony” significant.

So true, that the inner and outer peel are needed for the whole of the onion! Also, if an onion is cut once, either vertically or horizontally, the layers are maintained. An onion is linear, nested, round, spherical, and cyclic in nature. As such many different statements can be mentioned about an onion.

Hence the mentor–mentee relationship embedded in the onion model and philosophy, is one of a kind. The onion model mentorship is a complex multifaceted endeavor that encompasses intersectionalities of knowledge, skills and attitudes, which are critical for professional growth as well as professional development. It is a special relationship that is many-sided, rich in nature, and sustainable.

FIGURE 6

Illustration of Strength-Based Perspective



Way Forward

Mentoring comes in many forms depending on the task at hand and may involve advising, instructing, shadowing, apprenticeship, counseling, role modeling, etc. Formal or informal mentoring is central in all areas of any work in academia or non-academia, whether it is teaching, leadership, research, grant writing, curriculum development, managerial tasks, publication, or much more. As such, mentorship is complex as it rarely hinges on just one way of thinking.

Africa needs faculty that are well grounded in teaching, research, scholarship, and service and has a need to increase the numbers of high-profile faculty. One of the ways forward is to build and to sustain these capacities through well-coordinated quality mentorship program. For comprehensive and productive mentor–mentee relationship, I proposed a program that encompasses the onion model. The many layers of an onion represent the many complexities that behoove academia. Therefore, the effort to have qualified, stable, and established faculty in African institutions calls for multidimensional, concerted efforts. The new normal due to COVID-19 pandemic is a great illustration of the prevailing issues in higher education. Overnight, new modalities of instruction came into play with little to no preparation, e.g., sending examinations via email, web-conferencing for classroom instruction or committee meetings, mobile technologies for scheduling office hours or advisement, and so on. Other models of mentorship, e.g., waterfall and apprenticeship, are subsets of the onion model—they

are all integrated in it. For example, the onion's layered relationship can be analogous to the waterfall model. For instance, the majority of instructors in higher education did not graduate with a bachelor of education. As such with regards to teaching, a mentor with B.Ed. degree can support colleagues/mentees on, for instance, how to deal with student by applying knowledge gained in educational psychology course already undertaken or how to be an effective teacher using didactical skills.

The onion model is anchored overall on the community and collectivity of groups without losing one's individualism or staying true to personal values. Since both the onion's outer and inner layers must harmonize to be whole, so also the mentor and mentee must also be on the same page, encouraging and inspiring each other. This allows for intergroup dialogue pedagogies grounded in affirming and strength theory for mutual relationships, constructive conversations, and ongoing feedback. As a graduate student, one chore I had to do was to find articles for my advisor and for our grant project. But as a CADFP fellow and mentor, I had to do this menial task for my mentees because I had access and data to download the most up-to-date articles relevant to their concept paper. I was motivated by their interest, engagement, energy, and discipline, not dwelling on negativity and on their willingness to self-empower.

The concern, compassion, and care arising from a successful onion model not only enriches both mentor and mentee intellectually, but also in all aspects of life—giving great confidence, positive self-esteem, a sense of accomplishment, good self-care, and broad thriving in life.

Conclusion

In closing, mentorship is needed by everyone anywhere and everywhere. Sustainable, worthwhile mentorship models are those where both mentor and mentee have a symbiotic relationship, where a sense of community and mutual understanding are nurtured and the outcome calls for synergetic collaboration.

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Mentorship: The Next Generation
of Faculty, Researchers, and Scientists

Mentoring Graduate Students: Benefits and Challenges to Effective Mentorship

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ABSTRACT

This paper focuses on the mentoring of graduate students. Institutions with strong graduate programs attract strong students. Generally, graduate programs train scholars who will contribute to the understanding in domains of discipline central to their core areas. *This is accomplished through effective mentorship.* The future of higher institutions depends on successful graduates who eventually play a pivotal role in society. To prepare the next generation of faculty, researchers, and scientists, mentorship has to be at the core of academic programs. For effective mentorship, faculty and students work collaboratively. This collaboration has to be part of the institution's mission. Programs are to *engage students and experts in collaborative educational, research, and service experiences.* To fulfill this mission, graduate programs have expectations for faculty and students based on expertise and engagement: Faculty are to be involved with students to model engagement in professional organizations and collaborative interactions; provide and encourage students to become engaged in research opportunities and mentor their participation in these endeavors. Students are expected to demonstrate active participation in their coursework, assignments, and research experience; and to *actively* seek out research opportunities with faculty. To accomplish this, administrators have to *rethink faculty loading.* Meeting with students consistently and regularly is critical. Challenges to effective mentorship are discussed.

Introduction

Mentorship is an integral part of graduate education that plays an essential role in both professional and personal development (Johnson & Huwe, 2002). To effectively prepare the next generation of faculty, researchers, and scientists, mentorship has to be at the center of graduate programs. Institutions should strive to have a clear mission statement that includes student engagement with faculty in collaborative research and service experiences, student engagement in research opportunities, and encouragement of students' active participation in the program. When a graduate student is under the advisement of a mentor, they are able to learn from their mentor's vast experience, thereby better preparing them for future careers. Mentorship is a mutual relationship between a student and an expert in which the expert guides the student's personal and professional development (Kerssen-Griep et al., 2008). Others describe mentorship as a relationship in which an individual teaches, advises, and supports another, usually a less experienced person, into the social and academic world (Carpenter et al., 2015).

While some would assume mentors and supervisors are the same, they are vastly different despite their similarities. Supervisors, for example, focus more on transactions such as exchanging information or knowledge. Mentors, on the other hand, take the supervisory role and add the task of preparing

mentees for the future (Bravin et al., 2020; Remaker et al., 2021). Based on this difference, it may seem that mentors are a better fit for all students, whether graduate or undergraduate. While this may be the case for graduate students, Brown et al. (2009) suggest that supervisors are most appropriate for undergraduates.

As previously stated, mentorships are integral to graduate education. A large body of research demonstrates the benefits of having a mentor when one is a graduate student. Some suggest that when students have positive mentor-mentee relationships, mentees see improvement in self-esteem, confidence, and *career efficiency while promoting retention, dissertation completion, research productivity, and career advancement* (Carpenter et al., 2015). Mentorship also enhances career development and opportunities for both academically and professionally inclined graduate students. More specifically, it promotes rapid career development, higher rates of compensation, enhanced professional identity development, and greater career satisfaction (Johnson & Huwe, 2002).

Further research explains the disadvantages of pursuing graduate education without a mentor. For example, when Syeda et al. (2020) asked doctoral students about their publication experiences with and without mentors, what they found suggested that *completion of a dissertation alone did not guarantee proficiency in the publication process.* Those

without a mentor to teach and guide them through the process were ill-prepared to publish on their own. This in turn led to discouragement among graduates to publish in their career because they did not feel competent in the publication process. On the other hand, graduate students who did have a mentor demonstrated higher quality writing and were more engaged in the publication process in their careers. In other words, *without mentorship, graduate students are likely to be ill-prepared for their professional lives.*

While mentor-mentee relationships can be extremely beneficial to graduate students, not all mentorships provide positive outcomes. *A mentorship is said to be dysfunctional when the primary needs of either the mentor or mentee are not being met and the relationship is no longer beneficial to either party* (Johnson & Huwe, 2002). For those relationships that are not as successful, there are a variety of factors that lead to poor mentorship. *The most common include mentor unavailability, difficulty with termination of the relationship, feeling unable to meet the mentor's expectations, exploitation by the mentor, negative personality traits and behaviors, and relationship maintenance that requires the graduate student to engage in unpleasant or undesirable activities.* Poor mentors are often those possessing undesirable personality characteristics such as being critical, demanding, authoritarian, jealous or sabotaging (Johnson & Huwe, 2002).

To be a good mentor, Hoffman et al. (2008) suggest, one should be engaged in students' values, guide students through learning, and provide opportunities for development. Mentors should be supportive, clear, and non-threatening (Kerssen-Griep et al., 2008) as well as patient and open to discussion (Innocente & Baker, 2018). To create a more personal mentor-mentee relationship, a mentor could also provide appropriate self-disclosure and humorous messages (Kerssen-Griep et al., 2008). *A good mentor should also work toward strengthening professional development and maintaining a nurturing and supportive environment* (Baltrinic et al., 2018).

Successful Mentorship

Brown et al. (2009) provide six guidelines for being a successful mentor. The first guideline suggests that *the ultimate goal of mentorship is supporting the mentee's transition to independence.* Mentors should also educate, encourage, and inspire the mentee's work in research while fostering the development of skills and professional identity. Sensitivity to the needs of the mentee should be conveyed through empathy, positive regard, and genuineness. *Mentors are responsible for exposing mentees to a variety of research methods to guide their professional and academic understanding of the research process.* They should also provide opportunities to expand their professional development. Finally, Brown et al. (2009) suggest that *mentors promote scholarly values, scientific integrity, and ethical decision making to better prepare students for a successful career.*

Offering another perspective on what makes a good mentor, Kram (1985) outlines two areas of need essential for graduate students: *career and psychological.* **Career** refers to a mentor's assisting mentees in learning and skill development while also creating opportunities for development. **Psychological** needs focus more on interpersonal and relational aspects. This type of mentorship helps mentees develop a sense of confidence and effectiveness because mentors are counseling, encouraging, and supportive. Faculty should use a combination of both career and psychological mentoring to provide effective and successful mentorship.

Adding to Kram's approach, Carpenter et al. (2015) suggest two more areas of need for graduate students: *research and intellectual.* A mentor who is meeting a student's **research needs** provides additional support in the understanding of the research process as well as opportunities to engage in research practices, including publishing. **Intellectual needs** involve critiquing students' work and providing them with materials that will enhance their intellectual growth. Carpenter et al. (2015) suggest that adding these two dimensions can allow mentors to provide a broader spectrum of guidance and support to mentees.

Successful mentorship cannot occur without considering each individual student's identities. *A positive mentorship relationship should be individualized to each graduate student, to best meet their academic and sociocultural needs* (Brown et al., 2009; Remaker et al., 2021; Kerssen-Griep et al., 2008). For example, Remaker et al. (2021) describe the unique mentorship experiences of women of color (WOC) in graduate education. Women of color, belonging to two minority categories, experience complex challenges such as encounters with microaggressions, on top of the usual hardships of being a graduate student. Without a proper mentor, WOC are likely to be at a disadvantage and may become less successful in their graduate programs. Their experiences exemplify the *importance of mentors being able to provide culturally sensitive mentorship.*

Another example, provided by Brown et al. (2009), describes how each student is at a developmentally different level in their academic career. For example, students admitted to a doctoral program likely have different understandings of the research process. Some students may have received research experience in previous programs while others had no such experience. *Mentorships therefore should be individualized to meet mentees where they are and propel them forward academically and professionally.*

Other recommendations for successful mentorships involve open and frequent communication between mentors and mentees (Birkland et al., 2019). Mentors should be good listeners, patient, knowledgeable, and have effective communication skills (Allen & Poteet, 1999). A mentorship is most valuable when there is a sense of trust between the mentor and mentee (Broughton et al., 2019). This can

often be achieved through open communication and the development of clear and defined goals and expectations (Birkland et al., 2019). Along with trust, there should be an intentionality in the relationship (Broughton et al., 2019). Mentors should be aware of the time commitment needed for an effective mentorship.

Additionally, to promote successful and effective mentorship, Bravin et al. (2020) recommend ways in which graduate programs can help maintain positive mentoring relationships. They suggest that *graduate programs should devise systems that monitor mentor-mentee relationships*. Doing so could decrease the occurrence of dysfunctional mentorships and allow for a more professionally prepared cohort. *Training faculty in and providing guidelines for proper mentorship is also beneficial for maintaining positive mentor-mentee relationships*. Each of these recommendations, according to Bravin et al. (2020), strengthens mentoring relationships and can make a significant impact on preparing graduate students for future careers.

Benefits of Mentorship for Mentees

Graduate students with mentors are given the opportunity to experience personal, academic, and professional benefits. Mentorship allows students to develop self-esteem, competence, career efficacy, engagement, achievement, and receptivity to criticism (Carpenter et al., 2015; Innocente & Baker, 2018; Kerssen-Griep et al., 2008) while improving academic productivity, professional competence, and success in their given program (Bravin et al., 2020). Additionally, graduate mentees are able to develop their professional skills and identities, increase confidence and knowledge, become more involved in their academic departments, enhance networking with other researchers; in addition, they are more likely to succeed in dissertation completion and have increased self-confidence, independence, and comfort as future faculty members (Association for Talent Development, n.d.; Baltrinic et al., 2018; Brown et al., 2009).

Mentorships are an important factor in determining the quality of a student's academic experience. Brown et al. (2009) found that those who received mentoring reported greater satisfaction with their doctoral program compared to those who did not receive mentoring. Mentorships have the power to enhance career development and career opportunities. Effective mentor-mentee relationships have also been associated with more rapid career advancement, higher rates of compensation, enhanced professional identity development, and greater career satisfaction (Johnson & Huwe, 2002).

Graduate students with mentors are often better equipped for future careers as faculty members. Mentees are able to receive expert guidance as they explore their research interests, make choices that impact their future, and navigate the challenges of the research process and publication (Association for Talent Development, n.d.; Brown et al.,

2009). Syeda et al. (2020) found that when students engage in the publication process with mentors, they improve their academic and research writing skills. They also were more likely to describe themselves as competent and interested in research publication while being more prepared for academic careers and engagement with empirical-based practices.

In addition to intrinsic rewards such as higher self-esteem and confidence, a successful mentorship relationship allows for improved mental health and resiliency (Ferguson, 2018). Because an effective mentor-mentee relationship involves meeting a student's psychological needs, a mentor should be able to help reduce the stress of their mentees. A mentor can also help students feel that someone cares about them and will give them advice (Birkeland et al., 2019) which can lead to improved mental health.

Benefits of Mentorship for Underrepresented Students

Underrepresented students face additional challenges to their success in graduate school because of their minority status. Mentorship of underrepresented students allows for the alleviation of additional stressors caused by discrimination and microaggressions. Mentors can help bridge the divide when an environment is different from what the student is used to (Hagler, 2018). Graduate mentorship has also been shown to contribute to the success of underrepresented students, especially when mentors show concern about all aspects of a student's life and connect students to resources proactively when they express concerns (Bravin et al., 2020), as well as when *mentors help students navigate issues of imposter syndrome or stereotype threat* (Broughton et al., 2019).

One key demographic group of underrepresented students is women. Women in graduate programs face the usual challenges of coursework and publication in addition to gender discrimination and microaggressions. In these cases, mentorship allows female students to overcome barriers and obstacles that introduce additional challenges to their graduate education. Brown et al. (2009) found that *female graduate students with mentors were twice as likely as those without mentors to engage in research activities after their doctoral training*.

Women of color (WOC) face an even more complex set of challenges because of their intersectional identities as both a woman and a person of color. Therefore, it is important to have a mentor who explicitly assists a student in navigating their multiple identities to promote their professional identity and career endeavors. Mentorship would also provide guidance through academic and career milestones, model professional values, and facilitate technical skill development for WOC (Remaker et al., 2021).

Also common for WOC in graduate education are feelings of isolation, which can impact success in their graduate program. *A mentor-mentee relationship can prevent feelings of isolation by providing psychosocial and emotional*

support, respect, empowerment, guidance, and confidence to students (Remaker et al., 2021). Mentors have the ability to provide support as students attempt to navigate their programs and potential barriers while still holding onto their cultural values (Hagler, 2018).

Benefits of Mentorship for Mentors

Mentorship is not only beneficial for graduate students; it also presents numerous benefits to mentors themselves. *Mentors receive intrinsic or intangible rewards such as gratitude, approval, and purpose* (Ferguson, 2018), as well as experiencing personal satisfaction in their mentoring relationship, *enhanced career satisfaction, and a sense of generativity*. They can also experience extrinsic rewards including gaining collaborators for current and future projects, greater research productivity due to help from a mentee, demonstration of service and teaching to the university for tenure and promotion decisions, and *increased professional stature from developing the next generation of scholars in the field* (Brown et al., 2009). In other words, mentors can benefit from these relationships both personally and professionally.

Through mentor-mentee relationships, mentors are able to help others, share their perspectives and learn new ideas (Association for Talent Development, n.d.). Individuals who mentor students tend to have higher morale and greater career satisfaction (Broughton et al., 2019) and *decreased feelings of stagnation* (Birkeland et al., 2019). Additionally, mentorship provides an opportunity for mentors to reflect on their own experiences (Broughton et al., 2019). Doing so could improve their own professional development as well as the development of the mentor-mentee relationship for future students.

Challenges to Successful Mentorship

There are several challenges to successful mentorship, as outlined below:

Students or employees?

Institutions that view graduate students as employees struggle with providing successful mentorship because the students are so busy teaching/and or providing administrative services, that they hardly have time for mentorship.

Availability of university resources/funding

One way of addressing the above challenge is having funds to offer graduate students as financial aid through the form of assistantships. Providing financial assistance ensures that graduate students are full-time students. In addition, through the assistantships, the students are engaged in relevant collaborative professional activities that are beneficial for their future careers, such as research and publication (Brown et al., 2009). In addition, these opportunities have a set amount of time the graduate student is expected to provide, usually 20 hours a week. This is helpful because it leaves students with time for their own school work and/or research activities.

Faculty load

For faculty to be effective and successful mentors, their load has to be considered. Faculty with many classes to teach find little time for mentoring. Also, having many classes to teach leaves little time for faculty to engage in scholarly activities such as collaborative research, which is supposed to be a positive model for graduate students (Baltrinic et al., 2018).

The number of mentees per faculty

Having fewer students to mentor is more effective. However, this depends on the number of graduate students admitted and the number of faculty available.

Policy on length of program for MA/PhD

It is helpful to have a clear policy on the length of time within which a student is expected to complete their program. This should be clearly stated in the graduate handbook (could be at both the college and department level).

Selection of student advisors/supervisors/mentors

For mentorship to be effective, there has to be a shared research interest (Brown et al., 2009; Carpenter et al., 2015; Remaker et al., 2021). In some cases, students can develop the interest during the process of working with the advisor/supervisor/mentor. If there is a shared research interest, it promotes student engagement with faculty in collaborative research activities and service experiences (Baltrinic et al., 2018).

Coursework: when is it completed

Completion of coursework for graduate students should be given considerable attention. Students' completion of certain courses, such as research methods and statistics, should be paced alongside major milestones in the program, e.g., proposal writing and data collection and analysis. If these courses are completed early in the program, students struggle when they start working on their proposal, data collection, and analysis. In some cases, students start working on their data collection and analysis two to three years after they have completed their course work. The majority do not remember their statistics after two to three years, so they seek statistical analysis help from non-academic professionals. This is a problem because when they graduate, they do not have the skills needed to mentor the next generation of students in these areas (research methods and statistics).

Conclusion

In conclusion, successful mentors put the relationship before the mentorship, focus on character rather than competency, shout loudly with their optimism, and keep quiet with their cynicism. They are also loyal to their mentee. Overall, mentorship has benefits for both students and faculty. Therefore, investing in the mentorship of graduate students ensures a brighter future for the next generation of faculty, researchers, and scientists.

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Mentorship: The Next Generation
of Faculty, Researchers, and Scientists

Developing and Sustaining Collaborative Mentorship Programs with African Academics and Students

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ABSTRACT

Mentorship programs seek ways to help mentees succeed in their overall academic endeavor—develop teaching, research, and service skills; better understand their academic roles and responsibilities; and facilitate development as future academic and societal leaders. International mentees face challenges such as communication platform access, time zone differences, and conflicting guidance from international mentors and home supervisors. There is need for structured mentoring programs that clearly address the following: purpose of establishing the mentorship program, target mentees, collaborative structures, institutional involvement, and reporting structures.

Mentoring programs that integrate the following themes will likely assist mentees to navigate the academic environment and facilitate positive self-transformation: appropriateness of mentor–mentee matches, clarity of mentorship purpose and goals, well-defined relational strategies and platforms, relationship solidification, mentee advocacy and integration into the academic culture, collaborative mentorship, and mobilization of institutional resources and structures. We explore issues relating to purpose, structure, challenges, and strategies for collaborative mentorship programs for African scholars/students.

Introduction

Academic mentorship programs provide bidirectional benefits to the mentors and mentees; however, most mentorship programs are aimed at providing the mentees with opportunities and guidance for academic growth in the areas of research, teaching, and service. Student mentees and early career researchers tend to benefit mostly in the area of scholarship growth, especially in internationally situated mentorship programs. Several formal multinational or cross-national mentorship programs have been established for collaborations with African scholars; examples include those sponsored by the CORE Africa Research Mentorship Scheme, the Carnegie African Diaspora Fellowship Program (CADFP), and the Canadian Bureau for International Education (CBIE). These formal international mentorship and scholarly collaboration programs have largely provided support to African early career scholars and graduate students. The CORE Africa program provides a platform for matching collaborators for the purpose of facilitating research support to African scholars from problem identification to research design to grant sourcing and writing. CADFP has successfully engaged African-born scholars in the United States and Canada in scholarship visits to African universities with the aim of fostering collaboration and mentorship between diaspora scholars and African scholars. These and similar programs have contributed to capacity building and personal development in the areas of scholarship, teaching, and service.

While recognizing that most international collaborations that are focused on African scholars can provide rewarding experiences, it is also important to note that some challenges impede the effectiveness and efficiency of these programs. There is a need to find innovative ways of facilitating collaboration and mentorship, as well as the transformation of the mentees' relational selves and professional identities and competencies as high-quality researchers and scholars. The objective of this paper is to identify some barriers to effective and efficient collaboration and proffer some experience-based practical strategies for facilitating international collaboration and mentorship with African scholars. We attempt to answer the following questions: What is the purpose of establishing the mentorship program? Should mentorship be collaborative? What are the roles and responsibilities of mentors and mentees? What are the key challenges in establishing and sustaining productive collaboration and mentorship programs with African scholars? What are the strategies for facilitating productive collaboration with African scholars?

Nature and Purpose of Collaboration and Mentorship

Mentoring is a learning relationship, which helps people to progress further in their current endeavors and chosen careers. According to Adenle (2014), it is a partnership between two people, the mentor and the mentee. Usually,

the two people work in similar fields or share similar experiences. It is a helpful relationship based upon mutual trust, respect, and understanding that is generally focused on long-term career development.

“Mentoring is to support and encourage people to manage their own learning in order that they may maximise their potential, develop their skills, improve their performance and become the person they want to be.”

— ERIC PARSLOE,

THE OXFORD SCHOOL OF COACHING AND MENTORING

The primary purpose is to drive personal growth and build skills, knowledge, and understanding. Mentors may use coaching skills in their conversations, but usually the mentor's role is wider than that of a coach and may include opening doors, making connections, and sharing experiences. Organizational mentoring is particularly appropriate for increasing employee retention, facilitating cultural shifts, and encouraging organizational diversity. It is often used to support talent programs, so that participants get the most they can from their involvement, using a mentor to help them embed learning. Mentoring can also encourage ethical behavior within an organization. By having someone who knows more than yourself share advice, offer guidance, and be a sounding board for your thoughts, you stand to benefit from experience beyond your own.

There are two kinds of mentorship programs, and both are important for collaboration: formal and informal. A formal mentorship program is structured, organized, and intentional. It requires a procedure in place for enrollment and a system for matching mentees with mentors. This type of mentorship takes a longer time frame (at least a few months). The formal mentorship programs build deeper relationships amongst mentors and mentees, and guarantees diversity and collaboration, which can result in more opportunities for innovation and free-flowing communication. Informal mentorship programs do not have set goals or systems in place and usually occur for a short period of time. According to Henderson (2021), this type of “flash mentoring” is good for collaboration as well because it can quickly widen an individual's circle of influence.

Mentoring programs that integrate the following themes will likely assist mentees to navigate the academic environment and facilitate positive self-transformation: appropriateness of mentor–mentee matches, clarity of mentorship purpose and goals, well-defined relational and operational strategies and platforms, relationship solidification, mentee advocacy and integration into the academic culture, collaborative mentorship, and mobilization of institutional resources and structures. In this paper, we hope to explore issues relating to purpose, structure, challenges, and strategies for collaborative mentorship programs between North American scholars and African scholars/students.

Mentoring and Collaboration

Collaboration between individuals or teams in an organization or across organizations promotes openness and exchange of ideas and improves productivity. In most cases, mentoring is an integral part of collaboration. Collaborative environments help reduce stress for the mentees and make them happier. A survey conducted by Sullivan (2018) found that over 50% of happy employees collaborate with at least five people every workday. According to the findings in the survey of 4,000 working adults in France,

Germany, the United Kingdom, and the United States, nearly 70% of those who described themselves as happy and satisfied with their jobs indicated that they collaborated with people outside of their office, such as clients or partners, at least once or twice a week. It provides new employees with guidance and input from more experienced workers. This helps fresh hires not only to learn the ins and outs of the job they've been hired for but also to assimilate into the work culture, gain confidence quickly, and have more job satisfaction. Mentoring benefits the mentors just as much; mentors will grow in confidence, solidify their skill set, and have a greater sense of purpose as they build deep relationships with their mentees. Mentorship helps individuals to build deeper relationships with one another, which in turn, facilitates collaboration.

Benefits of Mentoring and Collaboration

The benefits of collaboration are significant but do not “just happen”; a process must be put in place to ensure that collaboration/mentorship achieves the desired goals. Strategy and intentionality are necessary to cultivate a collaborative culture. An investment of time and resources is likely in the beginning, as well as a labor of love to direct team members to each other. Once the processes are established and the culture is there, however, the impact will be enormous. Morale, retention, job satisfaction, innovation, productiveness, and efficiency all improve in a collaborative culture. According to Cross et al. (2019), the following benefits can be derived from formal robust mentoring structures:

Career Development

Mentoring benefits career development by engendering valuable professional growth. Mentorship provides a structured process for career planning and professional development. Career development also facilitates opportunities for exposure and visibility.

Personal Development

Mentoring provides the mentee with access to successful role models and promotes psychological empowerment and assertiveness, self-efficacy, self-esteem, confidence, job-related well-being, and problem-solving.

Academic Craftsmanship

Mentoring generates academic craftsmanship, enabling the mentee to develop skills such as proficiency in academic teaching, research, and writing, including publication and grant writing.

Psychosocial Support

A mentor provides a mentee with some psychosocial support, which enhances assertiveness, motivation, a sense of caring, inspiration, and guidance. In addition, the mentor provides professional advocacy where the need arises, thereby facilitating social networking, inclusiveness, a supportive framework, and camaraderie.

Job Satisfaction

Mentoring promotes job satisfaction, tenure, and retention; however, this should be interpreted cautiously (Jeffers & Mariani, 2017).

Challenges to Productive Collaboration and Mentorship

Literature and anecdotal evidence suggest that collaboration and mentorship programs involving African academics are fraught with a myriad of challenges, some of which are caused by erroneous perception of the African academic system by non-African collaborators and mentors. Thus, the use of African-born diaspora mentors for African mentees would likely build trust and mitigate the perceptual challenges associated with cross-continental collaboration and mentorship involving African scholars.

The following challenges have the potential to negatively impact the ability of African scholars to engage in meaningful cross-continental collaborations and mentor-mentee relationships:

Personal and Relational Dynamics

Personal and relational dynamics could pose challenges to collaboration and mentorship arrangements involving scholars from different cultural backgrounds. This is especially so when female scholars are involved (Files et al., 2008). In addition, anecdotal evidence indicates that scholars from the global north tend to believe that collaborative and mentorship relationships with scholars from developing countries, especially Africa, only produce one-directional benefits, thus insinuating a beneficiary-benefactor relationship.

Time and Schedule Challenges

de Saxe et al. (2015) identified lack of time and schedule incompatibilities between collaborators and mentees as a possible cause of failure of academic collaborative relationships. This challenge is exacerbated by significant time zone differences.

Structural Challenges

Some structural challenges prevent the actualization of a productive collaborative relationship between African universities and other universities, especially in the Americas. Such structural challenges include:

- Low availability of funding for research-related activities, which could hamper the ability of the African collaborator/mentor/mentee to meet their side of the relational expectations. The scholars from Africa also have funding challenges with respect to conference attendance in countries outside Africa. This creates a perception challenge—that African scholars do not participate in international conferences.
- Curriculum and other academic differences between the African institution and diaspora partner institutions, which could affect the extent and level of participation of the partners in the collaboration/mentorship relationship.
- Lack of reciprocal attendance at conferences and events organized in Africa. Security concerns and unfounded stereotypes are some of the factors that discourage scholars from other continents, especially Europe and the Americas, from attending conferences in Africa, thus posing serious inhibitions for cross-continental knowledge mobilization.
- Collaboration platform, especially in the covid era, where most collaborative activities are undertaken via virtual platforms. This has cost and other implications for scholars in developing countries. Gender could have a moderating effect on this factor, considering the results of several studies summarized by Goswami and Dutta (2015).

Organizational Factors

Formal and, to an extent, informal collaboration will likely succeed if there is organizational backing for the relationship, especially through a memoranda of understanding and assignment of resources to facilitate the collaboration. African universities tend to lack the will/ability to muster and channel financial, human, and other resources to ensure the success of cross-continental collaboration/mentorship arrangements. Evidence points to the importance of institutional support to productive collaborations and mentorship programs (Charron et al., 2019). In addition, several system stressors could affect the ability of vulnerable faculty and graduate students to effectively participate in external collaboration/mentoring relationships with scholars outside of their university/country.

External Factors

Several external factors are beyond the control of the collaborating scholars, which could negatively impact the ability of African scholars to engage in sustained, productive collaboration and mentorship relationships with diaspora scholars. Such factors include:

- Incessant academic strikes and closure of universities in some African countries.
- Denial of visas to researchers from developing (especially African) countries to undertake research visits and attend global conferences (Akanle et al., 2013). This creates limitations in global knowledge mobility and reputation inequities (Wondimagegn et al., 2021).
- Government and institutional interference in the management of research funds, which often causes unnecessary bureaucratic delays and impediments to the successful completion of externally funded collaborative research activities.
- Conflicting guidance between internal mentors and local mentors/supervisors.

Based on these, we propose a model for further study, which could shed more empirical light on the factors that could affect the ability to engage in meaningful and productive collaboration/mentorship relationships with African scholars.

Strategies for Sustaining Collaborative Mentorship Programs with African Scholars

Several authors have suggested strategies for ensuring successful collaboration and mentorship relationships. In this section, we highlight some of the suggested strategies, and additional strategies based on experience in collaborating

with, and mentoring African scholars within and outside theegis of CADFP.

Build Teams Strategically

This ensures that only individuals who will be committed to the collaboration/mentorship efforts are invited to the team. Other strategical issues include job rotation and structured leadership and collaborative engagement. The parties involved in collaboration have to define upfront the type of relationship and the level of formalization required for effective sustenance of the relationship. Also, team leads should be mindful not to expand the team beyond a manageable and sustainable threshold. A study conducted by Gratton and Erickson (2007) indicated that collaboration tends to decrease over time with teams larger than 20 people.

Secure Organizational Support

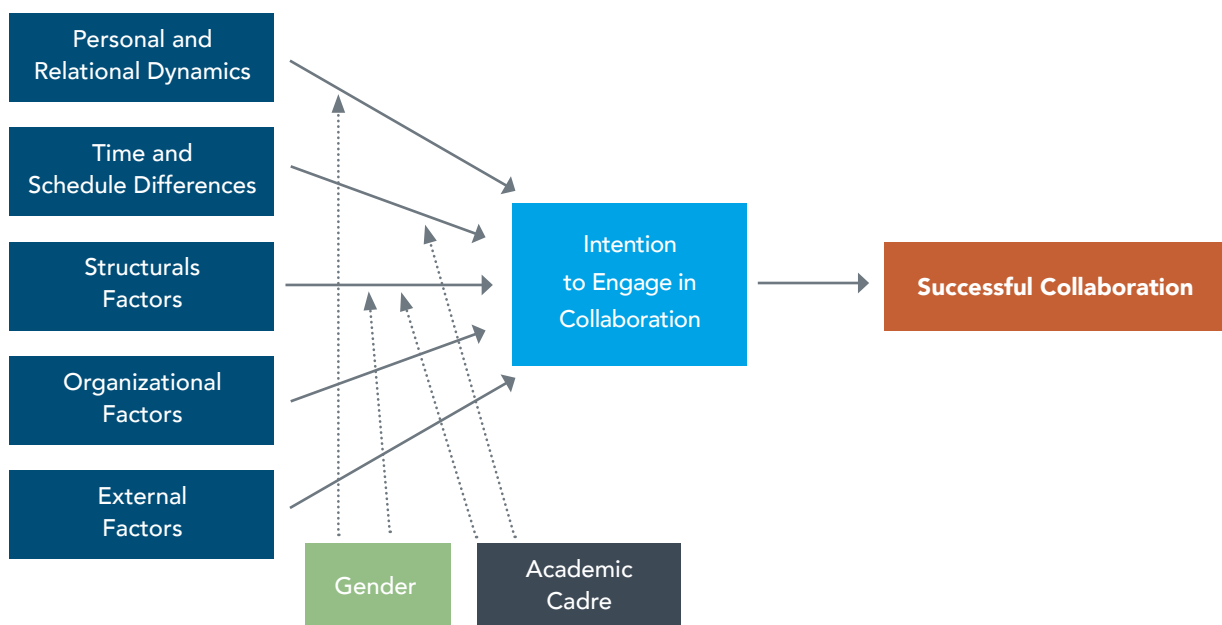
Shakhman et al. (2020) emphasized the need for institutional leaders (at departmental, faculty, and university levels) to provide support (including resources) for collaboration and mentorship programs. Such management support will facilitate formal collaborations among collaborating departments and universities.

Choose Communication Strategy/Platform Intentionally

Be intentional about the team's communication strategy and platform. Explore the most effective mechanism/

FIGURE 1

Collaboration Success Factors



platform for communication among collaborating scholars (e.g., e-mentoring). The COVID pandemic has provided opportunities for the use of online tools for collaboration. In a study conducted by McCarthy (2012), online platforms and social media were found to provide viable mechanisms for effective multigroup international mentorship involving staff and associated professionals, local industry professionals, recent graduates, and local peers from the university.

Maintain Some Structure

It is important to maintain some structure, even in informal mentoring relationships. Such structures hold the collaborations (including mentors and mentees) accountable for the success of the program. Some aspects of structure to consider include creating and adhering to program guidelines from the onset and developing regular schedule for interaction among all parties—scheduled meetings and email communications.

Implement Journaling

According to Stevens et al. (2010), structured reflective journaling has the potential to reduce cultural challenges faced by mentees in internal collaboration, enabling better participation in scholarly activities like conference presentations and publishing.

Employ Mentoring Program Managers (MPMs)

This is especially useful in formal mentorship and collaborations arrangements, where resources are available to facilitate collaboration and mentorship relationships. The MPM could be appointed by the host institution or the collaboration funding agency, such as CADFP. MPMs must be good communicators with strong organization and project management skills and the ability to respond to multiple parties in a timely manner.

Set Up Layered Collaborations

This is a situation where a multinational team is set up, consisting of senior academics (e.g., professors and associate professors), mid-level academics (e.g., assistant professors and senior lecturers), early career researchers (e.g., lecturers and postdocs), and students. Information can flow within the sub-teams and across different sub-teams. Mentorship relationship flows in various directions in the sub-teams—between senior- and mid-level, mid- and low-level, and senior- and low-level team members. Some issues are resolved at the sub-team level, while others are resolved at the full team level. Scheduled meetings are split between sub-teams and the general group, with the frequency determined by the need, structure, team composition, schedule, and other contextual variables. This model of collaboration promotes efficient use of time and reverse mentoring, which generates symbiotic benefits to all participants.

Follow Other Tips

Detsky and Baerlocher (2007) provided the following tips for sustaining a reciprocally beneficial mentoring relationship:

- Recognize the convenience of the mentee in the mentorship relationship;
- Encourage a sense of honesty in the mentees—they should have the freedom to reject a mentor's advice;
- be explicit in defining the credit that both mentor and mentee will get for work done
- provide timely support to mentees—prolonged delays could be frustrating; (v) distinguish between mentorship and friendship
- be willing to terminate the mentorship relationship if there is an evident mismatch;
- ensure that there is an end to mentorship—friendship can commence at the termination of the mentorship process.

Conclusion

"Many times, we miss the opportunity to achieve greater impact because of our reluctance to collaborate. The only barrier to collaboration is the unwillingness to collaborate. Innovative social change no longer comes from thinking outside the box, but rather getting rid of the box and collaborating with others."

— PRECIOUS NEMUTENZI, EARTH UNIVERSITY

This statement underscores the need for collaboration in academia both at the local and international levels. In this paper, we have explored the needs, challenges, and strategies for effective collaboration and mentorship between African and diaspora scholars. Our research suggests that the following factors could prevent productive and symbiotically beneficial collaboration/mentorship relationship between African and international scholars: personal and relational dynamics, time and schedule differences, structural challenges, organizational factors, and external factors. We proposed a model that could form the basis of further research to provide deeper insights into factors that prevent productive collaborations involving African scholars. Additionally, we proffered strategies for successful collaboration and mentorship, including the layered collaboration strategy, which could foster efficiency and bidirectional benefits for all parties involved in the collaboration relationship. It is expected that this study will sensitize African scholars, their international collaborators, and institutional administrators on the need to better structure collaboration relationships to be more effective and efficient while taking cognizance of resource constraints.

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Mentorship: The Next Generation
of Faculty, Researchers, and Scientists

International Mentoring with Project Flourish: A Military Family Stress, Resilience, Trauma and Well-Being Project

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ABSTRACT

This study aimed to record mentees' perspectives and highlight the applicability of the career adaptability framework to international mentoring within the Carnegie African Diaspora Fellowship Program (CADFP). The objective was to use a collaborative autoethnographic qualitative design to explore the central research question: How do host institution scholars in an international mentoring relationship describe the processes and outcomes of mentoring? Data were processed iteratively and analyzed using the directed content analysis method. The significant results indicate that the mentees' experiences align with the four dimensions of the career adaptability model. The findings extend the literature on career adaptability by showing that working alliance and readiness for change underlie the effectiveness of the career adaptability framework in mentoring. We recommend further research investigating the career adaptability framework's relevant factors, specifically while working with complex goal dilemmas inherent in international mentoring.

The data presented in this paper are part of the findings from a collaborative autoethnography conducted by a military well-being research and outreach team (i.e., Project Flourish) consisting of two researchers from a host institution and a visiting scholar in the Carnegie African Diaspora Fellowship Program (CADFP). The central research question is: How did host institution scholars experience international mentoring? Specifically, this paper illustrates the applications of the various resources of career adaptability (i.e., concern, control, confidence, and curiosity) and personal adaptability (i.e., cognitive, affective, and behaviour) in an international mentoring relationship through the lens of two host institution mentees. The data illustrate how the fellow and mentees engaged the tenets of the adaptability model (Ukasoanya, 2021) within the mentoring program while promoting the needed supervisory working alliance. The results indicate that the mentees' self-expressed experiences reflect the four dimensions of the adaptability model (Savickas, 2019). Interestingly, the participants made meaning of the benefits and drawbacks of this program through the lens of concern, control, confidence, and curiosity. We recommend that career adaptability continue to be investigated as a mentoring model in complex contexts.

Background Information

The context of this study foregrounds mentoring, the project where the mentoring occurred, and the goal implementation dilemma that informed the choice of mentoring framework.

The role of mentoring in the professional development of early-career academics in higher education is established in the

literature. Tillman (2001) categorized faculty mentoring as:

a process within a contextual setting; a relationship between a more knowledgeable individual and a less experienced individual; a means for professional networking and sponsoring; a developmental mechanism (personal, professional, and psychological); socialization and reciprocal relationship; and the opportunity for identity transformation for both the mentor and the protégé. (p. 296)

This definition is relevant to both the intent and process of the CADFP mentoring experience. It was designed as a knowledge-sharing network between a fellow from Canada and two host institution scholars from an African university on a pilot military mental well-being research–outreach initiative platform. Much is known anecdotally about mentoring in this fellowship, primarily through fellows' perspectives. However, there is little or no empirical information about mentees' experiences. Understanding host scholars' perspectives may highlight the challenges and opportunities that could be harnessed by host institutions, visiting scholars, their institutions, and CADFP. One goal of this study is to fill this gap.

Project Flourish is the name given by the Nigerian Defence Academy, Nigeria, to a military family mental well-being research project funded by the CADFP (General M. I. Idris, Commandant, personal communication, June 2016). This name was assigned due to the initial community impact during the project's preliminary phase. This project operationalized mental well-being as a multi-dimensional construct encompassing all aspects of individuals' lives and

work in the military community, including their feelings, thoughts, and behaviours (Michaelson et al., 2012). This project aimed to garner data that will contribute to the identification, promotion, and maintenance of mental well-being using a participatory approach in the military academy in Nigeria. It also aimed to develop a training and service support system that responds to the pervasive traumatic stress and other emotional distress associated with military service. There was a need to adopt a preventive family-oriented approach to mental health promotion to recognize the connections between family mental health functioning and force readiness. Project Flourish was oriented on the premises that (a) there is currently little or no culturally responsive military community mental well-being intervention and (b) promoting military mental well-being at the family level. Family mental well-being readiness is an invaluable leadership and human resource investment for the military because of its association with combat readiness (Le Menestrel & Kizer, 2019). Fortunately, the Nigerian Defence Academy has adequate organizational frameworks and human resources that could be leveraged to develop a sustainable mental health and well-being program. To accomplish these, curriculum development, mental well-being, psychological training, and clinical and non-clinical outreaches that responded to community needs in real-time were conducted. The research team hoped to fill the knowledge and service gaps related to the lives and welfare of military personnel and their families.

A multi-partnership goal negotiation dilemma (Dentoni et al., 2018) occurred at the mentoring project's onset. This necessitated using the career construction framework to guide the work (Orsato et al., 2013). During the fellowship application process, the host institution, CADFP fellow, and the host institution scholars agreed on the same goals for the project. However, the three parties (i.e., the fellow, the host institution scholars, and the host institution) involved in the project interpreted the goal implementation process according to their unique needs. For example, the host institution interpreted the project objectives through the lens of stringent daily military and non-military schedules. The fellow interpreted the objectives through the lens of milestones that needed to be attained within 90 days. The host institution scholars focused on deriving immediate pedagogical research and professional positioning benefits from the CADFP. Consequently, there were repeated collaboration ruptures that negatively impacted trust, communication, and project progress (Muran & Eubanks, 2020). In situations with partnership goal negotiation dilemmas, Orsato and colleagues (2013) asserted that various stakeholders could approach project negotiation with similar goals while holding different interests and motivations relating to implementation. To accomplish project goals, the parties would adopt a "win-win approach ... [where each

party would] put their priorities on the table, explain the motivation to do so, share their intention to collaborate, then invite the counterparty to reciprocate the dynamics of the negotiation" (Orsato et al., 2013, p. 448). In a win-win adaptability approach, the parties would intentionally build value and work collaboratively to attain a set project goal. Therefore, the Project Flourish mentor and mentees purposefully trained and adopted the specific win-win approaches of (a) seeking interdependence through clear communication, (b) proactive learning, (c) transparency in sharing project objectives, (d) emotional translucency in institutional-level communication, and (e) positive and hope-filled communication. The team believed that the project would mitigate unique barriers and challenges relating to the military context by purposefully adopting the attitudes of concern, control, curiosity, and confidence in every activity (Savickas & Porfeli, 2012), which are essential dimensions of the career adaptability framework (Maree, 2020; Maree & Morgan, 2013).

Theoretical Framework

The career adaptability framework guided the process of the mentoring project. This framework is justified because the team determined to (a) proactively cope with unanticipated events, (b) engage in continuing problem-solving and creation of 'other options' when planned work processes are thwarted, and (c) work for the successful delivery of the project goals irrespective of challenges. Career adaptability is a higher-order career construct that is composed of four dimensions: concern (i.e., preparing for future career tasks), control (i.e., taking responsibility for development), curiosity (i.e., exploring possible future selves and opportunities), and confidence (i.e., believing in one's ability to solve problems and to succeed; (Savickas & Porfeli, 2012). The four dimensions of career adaptability have been associated with the readiness to attain work goals and thrive, especially when faced with unpredictable work realities (Inkson et al., 2015; Perera & McIlveen, 2017; Rudolph et al., 2017). This framework has become more relevant in the changing world of work, where individuals need to make dynamic adjustments to cope with unpredictable realities (Peetz, 2019). Also, the four dimensions of career adaptability guided the investigation of the mentees' mentoring experiences. Consistent with collaborative autoethnography (Chang et al., 2013), the mentor and mentees collaboratively determined that the following research questions would guide daily, weekly, and final individual reflections:

1. How would you describe your experience working together in a mentor-mentee relationship in the task today?
2. How did you experience concern in working together?
3. How did you experience control in working together?

4. How did you experience confidence in working together?
5. How did you experience courage in working together?
6. What aspects of the project were valuable to you?
7. What factors accounted for your unique experiences?

Literature Review

This section addresses the basic concept of supervisory mentoring. This is a concise review of why and how supervisory mentoring works, rather than an exhaustive literature review. There is no consensus about how mentoring is defined. However, an agreement is that it consists of a relationship between an advanced professional and an advancing professional in which the advanced professional offers intentional professional development (Haggard et al., 2011), skill development opportunities for growth and visibility, with relevant socio-emotional support to the advancing professional, leading to more straightforward career advancement (Rockquomore, 2013). Vocational researchers have noted that mentoring works primarily because of its psychological (e.g., friendship, acceptance, and counselling) and career (e.g., coaching, challenging, and protecting) functions (Baranik et al., 2010). These researchers operationalized mentoring that has these functions as supervisory. Supervisory mentoring is a model where mentors are like “co-travellers” with the mentees but with the skill and disposition to support them to gain targeted career insight and grow into their best professional selves (Yalom & Leszcz, 2005). Supervisory mentors offer mentees autonomy-promotive environments where they can experiment with new responsibilities and roles, test and validate their career identities, and develop the confidence to influence outcomes at work (McAllister & Bigley, 2002). As a person-centred relationship, mentees are expected to draw promotive career benefits and psychosocial well-being from this relationship (Fargo, 2018).

Supervisory mentoring is more effective when the mentor has “political stature” in the organization (Sun et al., 2014). Politically skilled mentors would position mentees for success by offering them tasks, support, and responsibilities that would earn them visibility and recognition in the organization. These mentors aim to empower mentees psychologically (Zhang & Bartol, 2010) and create a climate that allows them to get embedded in the organization (Chen & Wen, 2016). These opportunities help mentees to grow in concern, control, confidence, and curiosity, which can lead to courage without inhibition as they strive to meet the expectations associated with supervisory mentorship.

Supervisory mentoring is intentional. The mentors plan the process with the desired end goal (Montgomery, 2017). An effective mentoring relationship requires a mutual understanding of the goals and needs of the mentee

(Montgomery et al., 2014). The mentor needs to understand the mentee’s career goals, emotional needs, cognitive orientations towards career-related decision-making, strengths, and weaknesses. Based on this understanding, mentors communicate evaluations of worth to the mentees and help them to create positive self-definitions from these affirming evaluations. Ragins (2012) conceptualized this as “relational mentoring” and noted that the processes motivate individuals to invest more in their work roles and perform beyond expectations. From a counselling perspective, supervisory mentoring entails “drawing out” and conveying career-related dignity to mentees. Jacelon and Choi (2014) categorized dignity as individuals’ respect for themselves, the respect others have for them, and their empowered positioning to enact behaviours worthy of respect in their environment. Galvin and Todres (2014) asserted that individuals gain “temporal eloquence” characterized by the attitude of “I can” and confidence in how they act or conduct themselves when significant people affirm them within their work environments. Therefore, we argue that individuals who experience supervisory mentoring may be more likely to demonstrate temporal eloquence and dignity than their peers who do not.

Mentoring that will be successful demands that the mentor supports the mentee to work toward change in the cognitive, affective, and behavioural spheres. This serves strategic purposes. It helps the mentor target opportunities at the mentee’s strengths while providing guidance and learning to boost specific areas of weakness in specific spheres (Montgomery et al., 2014; Ramirez, 2012). As such, the mentoring process becomes an avenue for learning and continuing development. This mentoring model is adequate because the mentor and mentee maintain reciprocal social exchange (Rutti et al., 2012). While the mentor offers targeted opportunities, skills, and expectations, the mentee must reciprocate by demonstrating commensurate competence, autonomy, relatedness, intrinsic motivation, and professional growth (Dell et al., 2021).

Materials and Methods

Research Design

We chose autoethnography to voice our individual and collective experiences using self-reflexivity (Ellis & Adams, 2014) and multi-subjectivity approaches (Duffy et al., 2018). Collaborative autoethnography (CAE) enables researchers to collect their narratives and reflections about their narratives through various sources (Chang et al., 2013). They submit these for collective review, questioning, and reflexivity to gain a rich insight into their co-experienced phenomena. In our case, the phenomena are the processes and outcomes of a CADFP-funded mentor–mentee relationship conducted in a military university in Africa.

Participants

The fellow and two host institution scholars were researchers and research participants. However, only the data about the two mentees are included in this paper. When this project was implemented, the two host institution scholars were doctoral students and lecturers. However, they have graduated with their PhDs and continue to work in their institution.

Ethics

We inquired with our institutional boards and confirmed that human ethics approval was not required for this CAE. However, to protect all third parties whose data could incidentally be reported in our study, we ensured that narratives that would identify other persons or parties in any way were deleted and not included in the analyses. Therefore, the final narrative highlighted meta-reflections of our experiences.

Data Collection

Many data sources were utilized, including personal reflective journals, individual memos that each person brought to project meetings, self-observational data, and a survey. Consistent with Chang et al. (2013), the team agreed on the data sources and selected memories that would be utilized as data from the onset. They also agreed on the questions that would guide daily and weekly individual reflections (see theoretical framework section).

Data Processing

Data processing consisted of three iterative processes. First, all team members engaged in an uninterrupted process of individually examining, evaluating, and analyzing all data sources. Each developed personal written narratives guided by the following questions:

1. Why did you choose the memory(-ies)?
2. What does the memory(-ies) mean to you?
3. How does the memory(-ies) explain the essential experiences of working with each other and the context?

Secondly, the team collaboratively discussed personal narratives for comments, insights, and questions. The guideline was that each person would highlight similarities and differences in the others' narratives. Also, there was an expectation that the team would expand on one another's narratives by reflecting on what was missing or present in the memories. Memo writing continued throughout this process as a supportive data source. The team agreed to conduct a second round of personal narrative writing that included the reflections and insights from this group's first data analysis meeting to represent individuals' meanings.

Thirdly, the team met again during the last week of the second CADFP to discuss the narratives and elaborate on the data. This continued until no substantial new data emerged, and the team was confident that data had been rigorously processed.

Data Analysis

The team adopted a data analysis method that offered the most structure to the complex data. A directed content analysis was justified because the mentorship was grounded in the theory of career adaptability from the onset. Also, we aimed to build on the theory of career adaptability.

We organized the data into coding categories derived from the four underlying career adaptability dimensions: concern, control, confidence, and curiosity. We grouped the data segments according to each category by identifying persistent words and phrases related to the concept (Morse & Field, 1995). We individually identified themes within and across categories using inductive and deductive approaches. The mentor organized the data, developed the interpretation and discussion in each category, and then passed it to the mentees to review, modify, or add insights independently. We reflected on these themes repeatedly using the WhatsApp messaging system.

The two mentees allowed their quotes to stand as part of their career development reflection. Our initial goal was to keep aside prior knowledge from literature and look for novel themes within the career adaptability categories. This goal was impossible because the mentees had become immersed in the new body of knowledge and found it challenging to keep these aside. Most of their quotes reflected existing literature, while their codes retained much of the desired inductive nature of data analysis. Considering that everyone in the military university knew the two mentees, we decided to protect their identities by labeling each quote as Mentee 1 and Mentee 2.

Results

The findings indicate that:

- (a) the relationship catalyzed the mentees' growth;
- (b) implicit coaching and explicit learning sustained mentees' engagement (i.e., curiosity and control);
- (c) mentoring supported professional reinvention at the personal, professional, control, and organizational levels (i.e., confidence and control); and
- (d) benefits of mentoring are expressed through mentees' agency and self-determination (a combination of the dimensions of career adaptability).

We present these results under four themes: (a) relationship-catalyzed personal and professional growth; (b) implicit coaching and explicit learning sustained adaptability; (c) professional reinvention at a personal, professional, and organizational level; and (d) looking further.

Theme 1: Relationship-Catalyzed Personal and Professional Growth

This theme is defined as the atmosphere of relationship-instigated learning. Task engagement depended on the relationship, whether the relationship fostered the acquisition of valued professional skills and whether the relationship enhanced the sense of self-importance and pride.

Relationships fostered most of the valued outcomes from the project. The mentees placed a high value on specific aspects of the relationship. They emphasized how the relationship atmosphere instigated learning, the relationship enhanced their engagement in the tasks and goals of the project, and the relationship created enough space for them to attain their personal and professional goals. Overall, they conceptualized the mentor–mentee relationship in two interrelated but separate ways. The mentees described one type of valued relationship as person-centred, emphasizing the power of empathy, genuineness, and unconditional positive regard in promoting their sense of autonomy, competence, and motivation (Murdock, 2017). Also, they viewed valuable mentor–mentee relationships as a tool that facilitated engagement in the tasks and goals of the project. The host institution scholars operationalized the relationship as follows. Both Mentees 1 and 2 said that they valued “openness to share experiences and knowledge, non-toxic work relationship, team members being carried along and a nonjudgmental approach of the process was a boost to learning and engagement at all times.” They further said, “The work relationship with the visiting scholar was very cordial and beneficial. Team members were able to express themselves freely, ask questions and receive clear guidance, share opinions and ideas, and generally be part of the team process.”

Atmosphere of the Mentoring Relationship

This subtheme emphasizes how the mentoring atmosphere of relationships could mitigate difficulties associated with logistic and systemic barriers and support them to focus on their professional growth. They appreciated that the workspace was a “judgment-free zone” that encouraged freedom of expression and professional interaction. Despite the freedom of communication, the mentees expressed satisfaction with meetings that had articulated goals and expected outcomes. Respect and appreciation for their input mattered to them. Both Mentees 1 and 2 said, “The relationship gave me a sense of belonging and the feeling that my opinions counted. My views on how the research applied in the context were always sought and used in the planning and executing tasks.” Mentees 1 and 2 continued, “The atmosphere was always respectful and cordial. Team members could engage in the process without fear of being disregarded. This allowed for ease of learning and brainstorming among members.”

Relationship-Promoted Attitude to Task Engagement

This subtheme emphasizes how the mentor–mentee relationship relates to willingness to learn and engage in tasks:

Working as a team in developing and executing workshops for different specific groups was huge on the learning curve and brought out my skills and a drive I didn’t know existed. Short timelines that we were able to meet the achievement of given set goals have made me better able to handle tasks at short notice. (Mentees 1 and 2)

We held work meetings weekly to plan, deliberate, and brainstorm on tasks to be executed daily, weekly, and for the period of the project. In a nonjudgmental atmosphere at such meetings, team members were able to freely air their views, make suggestions, clear doubts, if any, and generally ask questions that brought clarity to tasks and the entire process. (Mentees 1 and 2)

Relationship Fostered the Acquisition of Valued Professional Skills

This subtheme emphasizes the specific aspects of the collaborative relationship they identified as meaningful and valuable. They purposefully evaluated how the relationship engendered adaptability resources such as curiosity, positive attitudes, and motivation.

Working alliance did it. It led to my increased curiosity in the area and created a new research path for me. This made working on the project exciting and worth the while. Team members were motivated to participate in every part of the process and learned skills all along the way. (Mentees 1 and 2)

Mentees 1 and 2 also said, “Yes, indeed, the working alliance established has sparked positive attitudes and continued interest in the military well-being [of] military families, researching ways to better support this population with my professional knowledge and service.”

Relationship Enhances Self-Value

This subtheme highlights how the supervisory mentor–mentee relationship promoted the development of pride, self-importance, and self-worth. It also emphasizes how professionals could be supported to implement their adaptability resources such as confidence, concern for the task, and desire to make upward changes.

The visiting scholar was always open to conversation about work and even personal life matters, which were still a big learning experience. The level of transparency and dedication to work, coupled with the respect accorded to all staff working with her, left none in doubt that they were valued and respected members of a high-functioning team. This left us proud and willing to put in our best to ensure the success of the project. This built my self-esteem and developed in me a belief that I had much to offer. (Mentees 1 and 2)

Being allowed to contribute to the work made me feel valued and trusted. It also gave the feeling of responsibility

and ownership, which was previously rare to come across in the work sphere attainable here, in Nigeria. It was refreshing, encouraging, and deeply inspiring to be allowed to participate in a supportive team effort. Even mistakes were taken as a learning experience, and there was never any condescension for not knowing anything; instead, it was turned into a learning experience for personal improvement. (Mentees 1 and 2)

I discovered confidence in myself as a female, an academic, and a researcher who is worth the space she occupies. (Mentees 1 and 2)

Theme 2: Implicit Coaching and Explicit Learning Sustained Adaptability

This theme represents how the participants identified their adaptability processes and the various learning factors supporting them. Adaptive individuals can purposefully pursue project tasks as social actors while acknowledging challenging institutional demands (Savickas, 2019). The participants found implicit and explicit learning opportunities to adapt “new” work tasks to fit their institutional context. This theme also highlights how they perceived themselves as motivated agents who purposefully used learning to construct their personal and professional selves. We identified the following subthemes within this theme: (a) professional inspiration came by watching, (b) attuned task-planning motivated learning, (c) a curiosity-inspired space of learning, and (d) growth through concrete teaching of new concepts.

Professional Inspiration through Watching

The participants expressed how they aspired to transfer the learning they acquired in the project to their work at the military institution and planned to recreate the work culture in their jobs. They viewed each task as an opportunity to improve their service to their institution.

Watching the project evolve from within, I learnt a lot about working in teams and the responsibilities of a team leader. I watched the research fellow drive research endeavours with passion, professionalism, and skill, which inspired me to do better. (Mentees 1 and 2)

Working in this research team taught me new leadership models that could be even more successful for generating positive results. It gave me confidence in research, confidence in reasoning and my abilities as a worthy professional. It also developed a positive work culture that has reinforced the acquired confidence by continued successes. (Mentees 1 and 2)

Attuned Task-Planning Motivated Learning

The mentees observed that the host scholar approached the mentor–mentee relationship with intentionality. This subtheme emphasizes how they continuously evaluated the work process and determined how those learning would be transferred to the professional life they desired to create for

themselves. The participants recognized the project tasks as tools to prepare them for the future of their careers (i.e., concern), and they took personal responsibility for learning the project activities and evaluating the process (i.e., control).

One thing that really resounded with me during the course of our Project Flourish engagements was the level of planning and care that had been put into even the most minute detail. I had participated in several collaborative research efforts, but none had goals so clearly articulated, communicated, and even adjusted in practice to better suit collaborators’ needs and better fit into the context. (Mentees 1 and 2)

The process was clear, and every ambiguity was removed. Acquisition of skills was made easier and curiosity encouraged. The project planning and delivery inspired me to be more diligent in my work endeavours and work harder to achieve my goals as a woman and a professional. (Mentees 1 and 2)

A Curiosity-Inspired Space of Learning

This subtheme highlights the interrelationships between adaptability resources such as curiosity and mentees’ confidence in their growth.

We approached every task with curiosity, and I was safe to try new things or opinions. We were encouraged to make contributions to even key parts of the research, which encouraged engagement and both individual and collective project ownership. The transparency, clarity, and guidance this provided made task execution almost seamless. It seemed that all project tasks were designed to meet our learning needs, but every project goal was accomplished, and we grew personally and gained recognition within the institution. I still appreciate that positive bond grounded in mutual respect, trust, and belief in individual and collective abilities. (Mentees 1 and 2)

Growth Through Concrete Teaching of New Concepts

This subtheme highlights how the host institution scholars approached the mentoring relationship as a space to construct skills and professional outlooks that will enable them to lead their institutional mental well-being agenda.

Learning more about the project, the specific variables being explored, and strategies for effective execution birthed further professional interest in these variables and my chosen career: Academic Lecturer and Researcher. The techniques acquired made work more interesting and productive. This further fostered an interest in the profession. (Mentee 2)

Mentee 1 added, “The literature in the area was no more new to me, and I found the narrative quite interesting. As a result of this, my interest grew in well-being research, especially in the military context.”

Theme 3: Professional Reinvention at a Personal, Professional, and Organizational Level

The mentees attributed their processes of self-reinvention

and the proactive drive to attain higher social positioning in their institution to the mentor–mentee relationship. Their expression aligns with recent studies (van Dam & Meulders, 2021) that have recognized the personal characteristic of self-reinvention as adaptability. The mentees in this study clearly articulated the difference between their desires for personal growth (e.g., re-positioning themselves for their professional journeys and political growth by earning institutional recognition and academic leadership). In this study, the host scholars drew from their adaptability-focused thinking, feeling, and behaviours to implement self-re-invention during and even after the end of Project Flourish.

Self-Reinvention at the Personal and Professional Level

This subtheme emphasizes how the scholars were self-evaluative. They closely monitored their goals for participating in the project. They developed various new adaptability skills in the project.

Being allowed to learn and grow as a respected team member and professional gave me feelings of ownership and dedication to the project's success. I was able to pull on my mental resources, personal network, and physical resources to ensure goals were accomplished. (Mentees 1 and 2)

I was lucky to be engaged in this project at the earlier parts of my career as an academic, and I was able to learn various skills and strategies through observation, modelling, and even full-scale in-house training efforts. Among others, I learnt new teaching and communication skills (such as liberating structures which have been such a joy!), statistical analyses, classroom and workshop management skills, writing skills, research skills, a meta-analysis of the literature, improved presentation skills. (Mentees 1 and 2)

Professional Reinvention at the Organizational Level

This subtheme also emphasizes how the scholars were self-evaluative about their larger professional goals. Their voices show “ownership” of their learning, growth, and motivation to continue to grow. They recognized how the mentoring relationship enhanced their professional visibility in their institution. Interestingly, they are continuing with the project.

Working as a team in Project Flourish brought me to the fore and showcased my abilities I didn't realize existed. The skills I picked up during this process helped a lot with my PhD program. At the level of my institution, I am better able to sell an idea and pursue personal goals within the institution, even against the odds.

Experience gained from the research efforts (literature review, data collections, and workshops) and interactions has provided a solid base from which I am able to work with the military population, a place of knowledge and understanding. It has informed the creation of lecture content, including several workshops I created and delivered focused on themes such as retirement and retirement planning for the military

population, resilience building for young officers, stress management for mid-level officers, leadership, and emotional intelligence programs for young officers. After being given the basics, curiosity drove me to study and learn further. With guidance and concern from the visiting scholar, I was able to achieve and surpass set goals and tasks. (Mentees 1 and 2)

Political Self-Reinvention

The mentees described the logistic challenges encountered in the project as opportunities for growth.

Several challenges were met in the course of the project. Learning to navigate political, systemic, and even logistic challenges were part of the benefits of this research effort. Learning to face challenges head-on with hard work, a solution-focused mindset, and also being open to adjusting plans in order to fit into evolving situations was also beneficial. (Mentees 1 and 2)

I learned that our collective adaptability was the key ingredient that gave us success in this project. Several times, the team was forced to improvise to make things work even when problems were encountered. When timings were suddenly changed, logistical support withdrawn, and mix-ups regarding venues or participants were encountered, the team bravely adjusted to ensure goals were met and tasks completed as successfully as possible. (Mentees 1 and 2)

Theme 4: Looking Forward

The participants highlighted the relationship between personal agency and self-determination repeatedly.

Mentees 1 and 2 said, “My passion for well-being was acquired and fanned by further research engagements. Literature review and subsequent practice-built passion and interest into the field, especially when we began to see the relevance and results acquired (going further than the project).” They continued:

This project helped me see what I could be if I worked a little harder; it also showed me the nexus between research to real life in ways I had not previously considered and helped me learn new models of teaching and learning, which have been invaluable for my career development. Participating in this project changed my perspective and introduced me to a world of possibilities. (Mentees 1 and 2)

Discussion

I (the CADFP fellow and mentor) decided to write the discussion. The goal was to focus on the results and ensure that the mentees did not continue to add further data about other exciting memories we did not include in the data processing phase of this study. A few themes that stood out from the findings include practical considerations about supervisory mentoring, delivery of political power as the incentive for social exchange, and working alliance as a mechanism for enacting and evaluating effective supervisory mentoring.

Supervisory mentoring is effective when communicated through the tasks, goals, and relationships relating to the project. The working alliance was an essential resource for this project. Working alliance is the collaboration between an expert and a client that consists of three interdependent dimensions (i.e., goals, tasks, and bonds) and yields positive outcomes when working together (Amparabeng & Pillay, 2021; Bordin, 1979; Callahan & Watkins, 2018; Morrison & Lent, 2018). In this project, the working alliance provided supported the delivery of the psychological (i.e., friendship, acceptance, and counselling) and career (i.e., coaching, challenging, and protecting) empowerment aspects of supervisory mentoring (Baranik et al., 2010). Although team members occasionally experienced strains in the emotional bond, the relationship built around the project's tasks and goals helped resolve the issues quickly. The rupture of the emotional bond often happened when institutional logistics hindered the implementation of critical project goals, disrupting the mentees' learning goals. By the middle of the project, the mentees became skilled at managing the working alliance. They began to view ruptures as critical indents yielding insights and promoting systems management growth (Yalom & Leszcz, 2005). This was a practical demonstration of the application of Rutti and colleagues' (2012) observation that a reciprocity paradigm in mentoring often guarantees stronger relationships and the attainment of desired outcomes, despite challenges.

For practical purposes, supervisory mentoring entails the mentor putting in many hours of intentional preparation and reflecting on how each day's task would support the mentee's professional growth. In this project, the mentees were motivated by the project tasks' clarity, rigour, and transparency. This boosted their sense of worth. This finding aligns with Montgomery's (2017) observation that successful mentoring is intentional. This present work extended Montgomery's work by providing a platform for demonstrating how mentees perceive and describe intentionality in mentoring. Also, the findings introduce readiness for change as an essential aspect of intentional steps to successful mentoring (Boyatzis et al., 2019). For example, the mentor intentionally taught the career adaptability framework and its applications in two three-hour workshop sessions at the project's onset to promote mentee readiness. The team did a crash course on seven steps to data analysis (Bannon, 2013) for one week as a tool for developing a shared language for the research and evaluation of Project Flourish. To further promote readiness to lead, the mentor hosted workshops on liberating structures and appreciative inquiry methods for the mentees. These experiences helped the mentees to move from pre-contemplation to active participation (Prochaska & Velicer, 1997).

Self-reinvention was a consistent theme in the results. While the mentor, a civilian, did not have political power in this prestigious military institution as suggested by Sun et al. (2014), the demonstrable feasibility and desirability of Project Flourish created its power. Process evaluation data indicate that this project was well received. Military personnel appreciated the workshops because presented data aligned with military medicine and psychology research. The contents of the workshops on military mental well-being were respectful of the command structure and the ideals of the military context. Military leaders brought their rich leadership ideas into discussions about military-responsive mental well-being interventions and how these could be scaled to non-military communities who suffer from the challenges related to war and deployment. The findings of this study indicate that the mentees perceived that the visibility of the project positioned them for professional and academic recognition in the institution. They expressed pride and confidence in how the new skills acquired would better serve their institution. This is consistent with Zhang and Bartol's (2010) observation that effective mentoring leads to the empowerment of mentees. Perhaps a contribution of this work to these researchers is that adaptability-driven mentoring should be considered when the mentor is an outsider without political power in the institution. Adaptability as a framework for mentoring enabled the mentees to "unleash" their resources of concern, control, confidence, and curiosity across all project activities and to re-invent themselves into a place of "political" and professional relevance in their organization. Also, the mentor's approach to leadership allowed the mentees to experiment with their "political" power within the team.

Implications for Practice

Career adaptability (Savickas, 2013) is a self-construction framework that could guide various collaborative works. It provides a conceptual platform for preparing individuals to access their residual coping skills while acquiring new ones in response to unpredictable work situations. The findings from this study indicate that schools, counsellor training programs, and higher education that invest in mentoring may continue to explore how the various dimensions of this theory may become helpful in furthering their mentoring goals.

Mentors and mentees may harness the opportunities presented in challenging situations by intentionally applying adaptability approaches. Mentors in complex contexts may consider activities that promote readiness for change as logical initial mentoring activities. This study's findings highlight how some valued counselling paradigms, such as readiness for change (Prochaska & Velicer, 1997) and working alliance (Muran & Eubanks, 2020), contribute to effective mentoring. Perhaps research that explores the efficacy of mentoring could further explore the applications of these

constructs to understand the underlying processes by which they contribute to mentoring in complex situations.

Finally, this study highlights the power of mutual emotional and behavioural engagement between mentors and mentees, especially when clearly defined tasks, goals, and relational boundaries exist.

Limitations and Strengths

While the findings demonstrate the effectiveness of the intentional application of adaptive mentoring, they should be applied with caution due to its limitations. First, the sample size is minimal. Second, this study is limited by informed bias. All the team members looked forward to the time they would unpack their experiences. The interest in the success of Project Flourish could affect the narratives of the mentees because they were researchers and participants. However, we sought to improve trustworthiness and replicability by conducting rigorous data analysis.

Conclusion

Career adaptability is a valuable framework for conducting international mentoring, especially in a context with stringent boundaries. The fellow and mentees found this model adaptive for negotiating goal dilemmas. The model provided rich opportunities for mentees to learn about themselves, their growth, and their desired future work in their institution.

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Mentorship: The Next Generation
of Faculty, Researchers, and Scientists

The Virtual Mentor: Refashioning Mentorship in the Age of Pandemic (A Conceptual Framework for CADFP Collaboration with African Institutions)

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ABSTRACT

This paper proposes a Virtual Mentorship Program (VMP) that will serve as a networking platform for Carnegie African Diaspora Fellowship Program (CADFP) mentorship projects in Africa. Arguing that COVID-19 has hampered mentorship projects due to the global restrictions on proximity to local sites, the paper posits a Virtual mentorship option as a pathway for navigating project collaborations between CADFP scholars and African institutions. If the physical presence of both mentee and mentor is a *sine qua non* for successful mentorship, then the restrictions to proximity (e.g., lockdown, travel restrictions) greatly hamper this critical aspect of professional and career development. Mentorship between African diaspora scholars, African faculty, and students in host institutions could be enhanced via virtual mentoring to achieve maximum mutual benefits for all parties. This paper establishes that creating an intentional database of virtual mentors and making the database available to African scholars and graduate students will offer a valuable alternative for the “new normal” pandemic times. Considerations are given to mentoring models and relevant technology. The case is made that refashioning mentorship systems and delivery, matching mentee discipline to mentor expertise, beating digital divides, and eliminating spatial and temporal constraints will make for sustainable project collaborative ventures. Affiliate African institutions can benefit from a VMP by working toward robust technological infrastructures with the capacity to support networked mentorship projects with their CADFP guest Scholars.

“The delicate balance of mentoring someone is not creating them in your own image but giving them the opportunity to create themselves.” — STEVEN SPIELBERG

The Carnegie African Diaspora Scholars Program (CADFP) has instituted enduring commitment to higher education in Africa through capacity building such as research collaboration, graduate student teaching, mentoring, and curriculum co-development. According to the CADFP website, “A total of 527 African Diaspora Fellowships have been awarded for scholars to travel to Africa since the program’s inception in 2013.”¹ When the COVID-19 pandemic emerged in 2020, travel restrictions disrupted the established yearly flow of African diaspora scholars to African institutions. The pandemic disrupted the proximity to sites and direct engagements with host institutions on which CADFP projects have usually thrived. Incidentally, the sustainability of CADFP projects depends on the quality, scope, and extent of mentorships available to host institutions, even in times of crises. Thus, this paper

argues that, despite its successful collaborative ventures, an alternative mentoring model supported by technology is necessary in our “new normal” pandemic age. Based on the challenges that COVID-19 posed to academia, and to CADFP projects specifically, as a result of the global restrictions on proximity and travel, the paper asserts that the pandemic has created an impediment to *on-site* collaboration with African faculty peers and graduate students on the continent. It has also sharpened Africa’s technology and infrastructural limitations while heightening the need for alternative ways of mentoring to complement existing forms of mentorships in the host institutions.

Traditional mentoring, as a critical aspect of academic, professional, and career development demands the physical presence of both mentor and mentee. However, in times of

¹ See “Carnegie African Diaspora Fellowship Program,” <https://www.iie.org/programs/carnegie-african-diaspora-fellowship-program>. The 2021 Alumni Convening event, where this paper was presented, embodies the essence of collaboration with African institutions. It showcases cohorts of African diaspora Scholars who have traveled to Africa and worked in close proximity with African host institutions on-site.

crisis, such as those the pandemic has created, it has become vital to refashion existing mentorship formats to achieve similar goals inherent in traditional mentoring relationships. Mentorship between African diaspora scholars, faculty, and students in African host institutions should be transformed to achieve maximum mutual benefits for all parties. To ensure the continuity of CADFP mentorship projects without the physical presence of both mentor and mentee, a virtual mentorship model may be the solution to creating the next generation of faculty, researchers, and scientists. Virtual mentorship has the potential to alleviate limitations to proximity induced by the pandemic. Significantly, virtual mentorship promises continuity in mentoring relationships with prospects of enhancing the effectiveness of existing traditional mentoring and CADFP collaborative capacity building in African institutions. Based on these observations, I propose a Virtual Mentorship Program (VMP) as a pathway to effective and sustainable mentoring relationship between African peer faculty, students, and diaspora scholars. Virtual mentoring offers a sustainable alternative to traditional face-to-face format without the demands of physical and on-site presence of mentors and mentees.

Mentors, Mentoring, and Mentorship: Impact of Globalization

With its origins in Greek mythology, the word “mentor” alludes to the role of a character named Mentor who served as guide to the young Telemachus, son of Odysseus. This well-known story provides an important context for underscoring mentoring as an existential life experience. It also demonstrates that humans prosper best by learning and modeling others. Mentorship has its first model and root in families. At the most basic level, it works through modeling, such as when children rely on parents for advice, wise counsel, guidance on life skills, and decision-making. Its universal and dyadic practice has survived centuries across cultures and national boundaries. Mentoring establishes a lifelong relationship between mentor and mentee. Also, the success of mentees depends on the relationship they share with their mentors.

In contemporary academic and corporate institutions, mentors play diverse roles and serve in different capacities. They are defined by their responsibilities; they “... provide guidance, advice, feedback, and support to the mentee, serving variously as role model, teacher, counselor, advisor, sponsor, advocate, and ally, depending on the specific goals and objectives negotiated with the mentee.” (“Mentor roles & responsibilities.”) Orsini et al. (2009) emphasize the critical role of mentorship to the career success of both faculty and students in higher education. They identify three key features of mentorship: emotional and psychological support, assistance with career development,

and role modeling. As the authors observe in their conclusion, “Mentoring relationships foster professional, psychological, and social benefits for those involved” (para 7). Furthermore, mentoring provides mentors and mentees the advantage of career development through networking.

Traditionally, mentorship can be formal or informal and has been proven to offer both mentors and their protégés comparable potential value in the mentoring relationship.² As technology continues to reshape social life, it has also impacted mentoring formats and relationships among stakeholders. As a result, there is increasing demand for alternatives to traditional mentoring that accommodate the shifts facilitated by globalization, and more currently, by the COVID-19 pandemic. Pender (2015) envisions new pathways for 21st-century mentoring relationships in the corporate setting in her book, *Creative Mentorship and Career-Building Strategies: How to Build Your Virtual Personal Board of Directors*. In the chapter titled “Mentorship, Yesterday, Today, and Tomorrow,” Pender articulates the organic nature of mentoring relationships and qualities of a mentor as “a resourceful, well-connected supporter, an expert source of coveted information, and a wise advisor” (p. 1). The author clearly asserts:

The institution of mentorship is a continuous cycle that carries information, experiences, and resources down through the generations. Every mentor is likely a mentee; and every mentee will, it is hoped, be a future mentor. ... The need for a mentor never ends; even after 30 years in a profession, we all need that cheerleader and trusted person we can ask for advice, the expert who seems to have all the answers. Even when mentors don't have the answers, they know someone who does. (p. 3)

Pender explains that corporate mentoring today has been greatly impacted by changes in all spheres of social life, including instability of the job market, remote work, and emergencies. These shifts make the case for alternative mentoring. She further observes that a “new professional landscape has made traditional, one-on-one mentoring nearly obsolete” (p. 8). Pender calls for responsive action to address the limitations of traditional, face-to-face mentoring. Thus, the author’s argument for a Virtual Personal Board of Directors (VPBOD) expresses the need to eliminate what she sees as the risk of traditional dyadic mentoring that ties the future of the mentee to the success or failure of the mentor. Having multiple mentors rather than one offers what she calls “a lateral view” that enriches the mentee’s perspectives on issues (p. 7). Thus, for effectiveness in professional development, she advocates for a group mentoring model and format for corporate businesses.

² “Reverse” mentoring is acknowledged by experts as a positive model. See Mary G. Pender (2015), *Creative mentorship and career-building strategies: How to build your virtual personal board of directors*. Pender notes: “Seasoned professionals appreciate a mentee’s assistance with projects and show that appreciation by taking special interest in the mentee’s career. ... Mentees should always be looking for ways to help mentors, such as with research, social media, or administrative tasks. Even small contributions can make a big difference” (p. 10).

The true “superstars” don’t have just one mentor; they have a Virtual Personal Board of Directors. A VPBOD is a “must-have” for navigating all the stages of a successful career in any profession. As a matter of fact, we need a VPBOD even more as we advance in our careers. Pursuing professional growth by building and maintaining a VPBOD is a safer, and smarter, career strategy. A VPBOD enables you to draw on the strengths of many different people whom you admire and then synthesize the diverse input into your individual decisions. And as your career grows, so will your board, and you will be able to move the members around to different positions to suit your needs. (p. 8)

Additionally, Pender advocates for “reverse” mentoring devoid of hierarchy and indicates the need for simultaneous mentoring relationships between mentors and protégés (p. 15). Although Pender’s focus prioritizes mentoring structure and relationships in the corporate world, her ideas and strategies for dealing with corporate needs offer an interesting sounding board for a VMP for CADFP’s projects with affiliate African institutions. These ideas factor into the conceptual model developed in this paper.

The Pandemic Crises: Issues and Challenges

The pandemic situation has heightened the critical issue of technology infrastructure in African institutions. While infrastructure and technology challenges are prevalent in many African countries, some institutions managed a “smooth transition” to remote learning in the heat of the pandemic lockdown. A senior program manager from Carnegie Mellon University Africa (CMU-Africa), based in Kigali, Rwanda, explains how their institution navigated its technology concerns to ensure virtual learning: “The staff moved rapidly to ensure that all students had the equipment and data packages required for them to continue their coursework and stay connected to CMU-Africa” (Stokes). The CMU-Africa example provides important information on how an African university handled COVID-19 response by switching to remote learning with “... faculty mentor and staff advisor office hours, career/internship advising, professional development sessions, counseling and psychosocial services, and IT support.”³ While CMU-Africa in Rwanda had the advantage of a small student population, there is, however, little or no documentation on how many other African institutions with large populations transitioned to online education during the lockdown and what their challenges were. It is assumed that the technology challenges for larger universities would

be similar to that of Rwanda’s CMU-Africa; in other words, students’ lack of adequate internet access and connectivity outside the university premises would also be major concerns for sizable institutions. The big question, then, is how can virtual mentoring be sustained with technology constraints and digital divides? Technology and infrastructural challenges in Africa notwithstanding, it seems that successful virtual mentoring in global corporate organizations and educational institutions elsewhere showcase relevant evidence to support a VMP initiative for sustaining CADFP collaborations with African institutions. Interestingly, educational institutions, much like corporate organizations, have devised various mentoring formats to cope with the constraints imposed by COVID-19 and are adopting responsive mentoring models to navigate the “new normal” challenges.⁴

Findings from Bapat et al.’s (2021) study of graduate students in India emphasize the importance of the mentor’s role. The study underlines the distinctions between the mentor’s roles and the roles of academic guides or supervisors. The authors reveal that graduate student researchers faced concerns related to finances, security, and health; these problems were also magnified by the COVID-19 crises. Further, because the lockdown impacted students’ ability to do lab research or be physically present in labs, the COVID-19 pandemic revealed the fact that academic guides are less prepared to handle students’ psychosocial needs. As the authors explain, “... the academic guide is rarely explicitly charged with the student’s wellbeing, emotional and mental health, motivation, and personal development. In this most challenging of professional pursuits, the subtle needs of the graduate student largely go unseen and consequently have long-lasting effects on the individual” (p. 321).

Their analysis highlights the qualities that a mentor brings to the mentoring relationship beyond that of the academic supervisor or guide, suggesting that mentors and mentees share a level of relationship that is more personal rather than hierarchized. Notably, the authors also demonstrate how the special role of mentor is usually conflated with other roles served by academic advisors, guides, and supervisors. Therefore, they contest this conflation, demonstrating how the pandemic makes the mentor’s role distinct, unique, and relevant in time of crisis. They emphasize the fact that mentors fulfill psychosocial needs for mentees in ways that are different from roles performed by academic advisors. Most importantly, their study brings a global perspective on mentoring in times of crisis and sharpens the need for institutions to map out special roles for mentors that go beyond that of the academic advisor.

³Sherry Stokes, “CMU-Africa mobilizes to continue classes during COVID-19.” <https://engineering.cmu.edu/news-events/news/2020/04/03-cmu-africa-remote-instruction.html>

⁴For example, Mentor Collective, founded in 2014, offers a “Structured Mentorship Platform” complete with program design, recruiting, mentor training, mentor and mentee matching, program assessment, and program support. <https://www.mentorcollective.org/>

Mentorship transforms careers. Yet, a lack of awareness of the need for a mentor is ironically, a pandemic. The pandemic has brought a host of challenges for the academic re-searcher. As bench work has come to a standstill, there is not just reduced productivity, but a significant increase in fear, anxiety, and depression amongst students. Our survey of 150 graduate students of Life Sciences courses confirmed the anecdotal observation that > 75% did not have a mentor other than their academic guide. Over the past six months, we have been exploring the requirements of mentee-mentor relationships during both normal times and during the COVID-19 pandemic (p. 320).

The global context of this study, certainly, provides a way to perceive similarities in the challenges that graduate students in other countries were confronted with during the pandemic crisis. It has taken a global pandemic to make these mentoring challenges evident.

The Case for Virtual Mentorship: Considerations and Challenges

The pandemic has, indeed, created mentoring gaps that need to be filled using technology. With the uncertainties of variants surrounding COVID-19, what is the future of CADFP collaborative mentoring projects? To negotiate these uncertainties and enhance existing mentoring, I propose a VMP to bridge the mentoring need for the 21st century. Although the challenge of technology is a reality in Africa, a VMP using both synchronous and asynchronous formats has the capacity to bridge distances while maintaining continuity in mentoring relationships. Although distinct from traditional face-to-face mentoring, virtual mentoring has the potential to complement the dyadic quality of the traditional mentoring format and fill in psychosocial needs of mentees by offering enhanced levels of personalization as well as intimacy between mentors and mentees.

Virtual mentoring has been facilitated by the expansion of technology and exacerbated by the pandemic. Nonetheless, it is becoming the future of global societies. Virtual mentoring may be activated on platforms such as email, video, Zoom, or messaging for single, group, or multiple mentoring with less constraints on time and space. It has been indicated to enhance diversity and inclusivity of mentees and interactivity with their mentors (Reeves, “5 mentoring models”).⁵ Furthermore, as Khan (2010) explained, virtual mentoring, also known as “(a) e-mentoring, (b)

computer mediated mentoring, (c) email mentoring, and (d) online mentoring,” may be activated via email or internet conferencing systems “to facilitate a mentoring relationship when a face-to-face mentoring option is not economical or available” (p.41). Additionally, Yaw (2007) describes virtual mentoring as the “merging of traditional one-on-one mentoring with the digital age and is rapidly becoming a mentoring method of choice, especially in virtual education” (para. 5). She explains that e-mentoring takes place in various formats to make up for lack of time and offers the benefit of choice of mentors to protégés.

Virtual mentoring is critical for sustaining collaborative projects in African institutions. A study by Lasater et al. (2021) shows that virtual mentoring provides utility in times of crises and unexpected changes. The authors reaffirm its significance in sustaining mentor and mentee relationships during crisis and calls for empathetic response to “the complexities of mentees’ lived experiences” and a “genuine ethic of care.”

E-mentoring can provide students with transformational learning experiences by facilitating reflective dialogue between mentors and mentees and allowing mentees to learn from a diverse group of geographically dispersed mentors (Butler et al., 2013). E-mentoring could be particularly advantageous during crises. When mentees experience abrupt life changes, such as those spurred by COVID-19, e-mentoring provides an expedient way for mentors to offer support (Fletcher, 2012) (p. 160).

Virtual mentoring also offers a useful alternative to traveling at a time when proximity is restricted. A VMP will serve as a collaborative networking platform to facilitate and sustain mentoring between African diaspora and African scholars, as well as graduate students. Collaboration with host institutions during crisis, such as was created by the pandemic, could be effectively navigated through a networked virtual mentoring alternative. To examine how a VMP might be modeled to achieve mutually beneficial goals for host institutions in Africa and their diaspora counterparts, it is important to assess existing mentorships and institutional infrastructural challenges in Africa during the COVID-19 crisis.

Incidentally, there is a dearth of current studies and data related to the impacts of the COVID-19 pandemic on education in African institutions and on mentoring specifically. Due to this scarcity, I have included feedback from personal inquiries to colleagues in Nigerian universities about existing mentorships in their universities and the effect of COVID-19 crises on its operational dynamics.⁶ My questions to peer faculty focused on the nature of existing mentorship on campuses prior to the pandemic, the format

⁵ See also, Ryan Carruthers, “How to start a mentoring group,” August 24, 2021. <https://www.togetherplatform.com/blog/starting-a-group-mentoring-program>

⁶ Thanks to Dr. Ayodeji Shittu (Redeemer’s University) and Professor Chioma Opara (Rivers State University, Port Harcourt) for the feedback.

of mentoring, and challenges experienced by faculty mentors and mentees during the pandemic following the lockdowns. The peer faculty responses provided me some indications for institutional position on mentoring of students, the handling of COVID-19 crises, and their impact on mentoring. My assessment of the peer feedback, based on three questions about format, mentors, and technology, revealed the following information:

1. **On format:** Mentoring in the university is conducted in both formal and informal modes.
2. **On mentors:** Advisors, research supervisors, professors, and counselors, serve as mentors. This shows evidence for conflation of the mentor's role with the roles of academic advisors and research guides.
3. **On technology:** The availability of basic communication technology tools (e.g., phones, email, and social media platforms) enable "distant mentoring." There is indication that virtual mentoring could be successfully carried out with enhanced technology tools, such as Zoom and Skype.

A significant need persists for an in-depth study of the impact of COVID-19 on mentoring relationships, the utility of technology-assisted mentoring in times of crisis, and assessment of the impact of virtual mentoring on relationships between faculty mentors and student mentees during the pandemic. Some critical questions and considerations linger, however: How can virtual mentoring be made mutually beneficial barring the temporal and spatial challenges? What is lost in a virtual mentoring relationship where both mentors and mentees are miles apart? Can trust be built in virtual mentoring space? Can virtual mentoring lay claim to the levels of intimacy that has traditionally defined face-to-face mentoring? How might the psychosocial benefit of traditional mentoring be achieved in the virtual environment? Furthermore, what role should institutions play in facilitating virtual mentor and mentee relationships? Can the benefits of virtual mentorship be realized in mentor/mentee relationships among African diaspora scholars, faculty, and students in African institutions? Lerman (2020) explains that, while both virtual and face-to-face mentoring share challenges, virtual mentoring may pose additional challenges related to temporal and technological limitations as well as "... a lack of real-time interaction, current technology limitations, and low energy due to two-dimensional technology" (p. 19). Khan (2010) affirms Lerman's views, adding that while virtual mentoring brings the flexibility of its asynchronous format to enhance value in

the mentor/mentee relationship, its promise of proximity via technology is not without caveats: "One of the drawbacks of virtual mentoring is that it may lack nonverbal communication and is lower in social presence" (p. 42).

Despite its perceived drawbacks, virtual mentoring has become a permanent feature of our globalized and technological world. Businesses continue to invest in VMPs that are mediated by technology infrastructures and facilitated by the need to bridge distances and offset travel costs. Mentoring via technology continues to provide premium advantages for career growth and success of mentees. It is also changing traditional mentoring relationships and formats by creating new forms of mentor/mentee relationships. Broitman (2000), for example, underlines the benefits of flexibility that the asynchronous virtual format brings to virtual mentoring. The author states:

Virtual communication systems facilitate communication and information exchange using synchronous or asynchronous methods (Hightower et al., 1998). Synchronous methods of communication occur in real-time, meaning they occur at the same time. Asynchronous communication does not have to be in real-time and participants can communicate at their discretion. The availability of an asynchronous communication medium for individuals geographically dispersed and faced with dramatic time zone differences is essential for communication to occur on a regular basis. (pp. 44–45).⁷

Considering these insights, I assert that creating an intentional VMP, refashioning mentorship systems and delivery, matching mentee discipline to mentor expertise, and beating the digital divide as along with spatial and temporal constraints have become crucial goals for higher education in the 21st century. For African institutions of learning, linking faculty and graduate students in African host institutions with virtual mentors may be the pathway to creating successful mentorship for the next generation of Africa's faculty and students. To alleviate persisting challenges of the pandemic, the VMP can serve as a collaborative networking platform for the African diaspora, African scholars, and students.

The Virtual Mentorship Program: A Conceptual Model

Virtual mentoring has been identified as an essential method for limiting the constraints to proximity. Thus, creating an intentional database of virtual disciplinary or interdisciplinary mentors, and making the database available for African and diaspora scholars, faculty, and graduate

⁷ S. L. Broitman. "Exploring virtual mentoring: Developing a global virtual mentoring program and a theoretical framework for future research." Broitman notes that virtual technology that allows for effective asynchronous communication includes e-mail, electronic document management, bulletin board systems, and internet newsgroups (as cited in Warkentin, Sayeed, & Hightower, 1997. Broitman, pp. 44–45). Also, see author's conceptual framework, "Recommendations for implementation: A theoretical framework for mentoring in a virtual environment." Over the years, new and emerging technologies have continued to sustain and enrich virtual mentoring and learning.

students, presents a valuable option during crisis. Reasons for the proposed conceptual framework are:

- The promise of virtual mentoring as an enabler for capacity-building relationships between African diaspora scholars and African host institutions
- The value of a virtual mentoring database of Carnegie-affiliated scholars with expertise in various fields, disciplines, and professional and industrial experience as a strategy for expanding collaboration with African institutions and sustaining academic mentoring in host institutions' ecosystem.
- The potential of a VMP to enhance mutually beneficial CADFP goals.

In framing a conceptual VMP model, critical questions have also been taken into consideration:

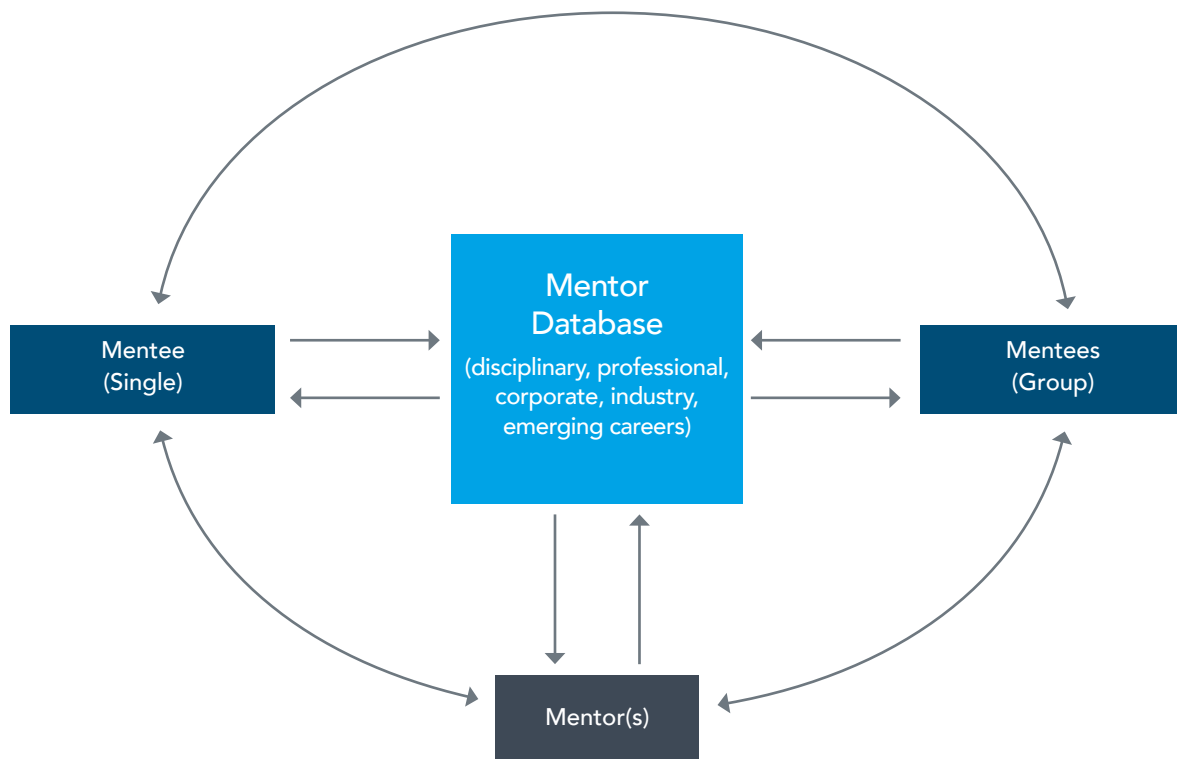
- What models or mentoring platforms or formats might best suit African scholars and students?
- What assumptions and challenges regarding technology and infrastructure can be made? In other words, what must be in place for virtual mentoring to be successful?

- What assessment systems should be considered for tracking VMP growth?
- What kinds of mentoring models already exist in African universities that the VMP could enrich?
- What benefits can virtual mentoring bring to the collaborative projects of African diaspora scholars and host institutions in Africa?

The conceptual VMP model illustrated below combines virtual single mentoring and group mentoring models that could be possible through a range of technology mediation tools or software. The long-term goal for the VMP is to enhance capacity building in African institutions. A virtual mentorship system that combines the values of the traditional, single, dyadic format with the group or multiple mentoring formats into an intentional program presents high potential for positive impacts. A virtual platform may offer benefits of sustaining collaborative and mentoring relationships between CADFP scholars and host institutions within the African continent, considering the persisting COVID-19 variants.

FIGURE 1

Collaboration Success Factors



Conceptual Framework for a Virtual Mentorship Program

Virtual Mentoring Technology: Considerations for Software

In “The Technology in Practice,” Hussain (2010) shares how different types of technology platforms, such as web, email, telephone, and videoconferencing, lend themselves adequately to virtual mentoring. Hussain lists the following considerations as critical for establishing a VMP: technology and infrastructure; choice of format or platform options; and security, financial, and value considerations.⁸ Virtual mentoring also requires software. In considering a mentoring software, functionality is of utmost importance. According to Cronin (2019), companies use mentoring software to track, manage, and measure the effectiveness and time-saving value of mentoring programs. Cronin informs that the benefits of using mentoring software far outweigh the cons, including the following: “Manage the sign-up process, match mentors and mentees, enable e-communication, book sessions, measure progress, report success.” Mentoring software, such as Together, Chronus, Guider, and Launchpad, is already in the market and has shown proven success. For example, Guider a corporate mentoring software developed for Fortune 500 companies, is valuable for inputting user profiles, matching mentor and mentee, following up on areas of mentee needs, providing introductory sessions that enable mentor and mentee relationships, and offering the ability to assess, track, and measuring outcomes (<https://www.guider-ai.com>). This example of virtual mentoring software illustrates how a mentoring database can work for collaborative mentoring relationships between African diaspora scholars, their African counterparts, and students.

Mentor and Mentee Pairing: Considerations for Models

In the traditional mentoring model, mentor and mentee are matched based on a set of program-defined criteria. Schnieders (n.d) outlines several matching techniques in *4 Steps to Matching the Right Mentors and Mentees*. In one format, mentees are given an opportunity to find mentors, and in another format, program owners perform the task of matching for the mentees. Schnieders outlines varieties of matching techniques as follows:

Self-Matching enables mentees to find their own mentors; Admin Matching empowers program owners to create matches on behalf of the participants; Bulk Matching permits program owners to match a large pool of program participants at the same time; Hybrid Matching is a combination of the previously mentioned matching types.

Reeves (2022) shares five models of mentoring that include traditional one-on-one mentoring as well as group mentoring, peer mentoring, reverse mentoring, and flash mentoring. These models offer flexibility, unique insights, and mutually beneficial value to the mentoring format and relationships. To establish a VMP, therefore, consideration should be given to matching techniques and, most importantly, to creating an integrated virtual mentor database in which matching and pairing are flexible and made available to mentees. Also, single mentees could be matched with single mentors; group mentees could be paired with a single mentor or with multiple mentors. Creating a virtual mentoring database of experts, coupled with a diversified mentor/mentee pairing relationship, could potentially enrich existing traditional models already available in African host institutions. Establishing a mentoring database is very important for virtual networking and makes multiple mentoring formats possible. Mentees can access the database and choose a mentor based on discipline and expertise for specific interests or career goals. Mentors can also be assigned to mentees based on expressed interest or request.

Benefits of the Virtual Mentorship Program

As stated at the outset, it is assumed that humans at every life stage need mentoring in one form or another. The VMP concept recognizes the organic nature of a mentoring relationship that includes academic mentors and professional mentors to ensure success and sustainability of the mentoring relationship. The VMP database offers opportunities to mentees to engage disciplinary and interdisciplinary experts from various fields, including corporate organizations, industries, and institutions of higher learning. To be truly mutually beneficial, the VMP database should also include African disciplinary and professional experts as mentors for diaspora scholars. The VMP database should be available to mentees (faculty and students) in host institutions; it should provide flexibility in matching mentor and mentees, and ensure mentees’ flexibility in choosing mentors or groups of mentors. Mentees have the opportunity to choose a single mentor or a group of mentors, and mentors can work with a single protégé or a group of protégés. Also, African host institutions may choose what electronic-based model or combination of models works best, considering the capacity of technology available to mentees and their institutions.

Creating an interdisciplinary database of mentors opens more opportunities for lifetime relationships and more opportunities for more African scholars in the diaspora to

⁸Z. Hussain. (2010). “The technology in practice” examines several e-based models. See *Virtual Coach, Virtual Mentor*. Information Age Publishing, pp. 53–76.

engage with educational challenges in Africa. Considering that not every CADFP applicant is accepted, virtual mentoring offers opportunities for service to academics or corporate/industry professionals who wish to offer their services as mentors. The VMP database could also be opened to other African institutions that do not have a CADFP guest scholar on-site. Such institutions can buy into the database as affiliates through a Memorandum of Understanding (MOU) with CADFP.

The VMP promises immediacy of linking with host faculty and students; it offers timeliness and availability as well as options of platforms for mentoring sessions. Using the promptness of virtual mentoring, faculty peers and students will have the benefit of a wide array of mentors with expertise in different areas. Unlike the traditional mentoring format, mentor and mentee relationships within the virtual mentoring format do not stop when CADFP scholars go away at the end of the project cycle. The VMP database ensures continuity in mentoring among CADFP scholars, host faculty, and graduate students.

A VMP ensures the monitoring of mentees' progress. Mentoring software tracks progress, which heightens the potential for mentees to develop a deeper interest in professional and personal growth. As a result, the psychosocial function of traditional mentoring can be enhanced via virtual mentoring. Mentors can also volunteer on a rotational basis with defined duration of service and possibility of renewal with CADFP.

Virtual mentorship shows high potential for enhancing the effectiveness of existing mentorships in host institutions. Ercan et al. (2021) strongly attests to the value of virtual mentoring based on an e-mentoring program organized by the Turkish Association for Child and Adolescent Psychiatry during the COVID-19 pandemic. The program was intended to facilitate networking among "residents and junior specialists from different Child and Adolescent Psychiatry departments in Turkey." (p.174) Remarkably, it provided other more significant objectives:

Those programs allow participants to overcome geographical distances, and ease access of mentees to mentors, allow flexibility in programming, and may be more cost-effective and egalitarian. However, it may lead to a loss of non-verbal communication cues, may affect rapport, and it is dependent on quality of internet connection. Privacy, confidentiality, and measurement of effects of the program may also be important issues to consider [7–10]. Regardless of limitations, e-mentoring programs may have the potential to ameliorate the effects of the Covid19 pandemic on academic education [5, 6] (p. 174).

Several other global mentorship initiatives have shown proven successes, for instance, the 1000 Girls 1000 Futures mentorship program for female STEM students.⁹ Virtual mentoring creates opportunities for navigating the "new normal" times. There is need for in-depth study on the impact of COVID-19 on mentoring relationships, the utility and value of technology-assisted mentoring in crisis, and the effect of virtual mentoring on faculty and student protégés during the pandemic. The proposed VMP, coupled with a database of experts, offers continuity and sustainability in the pandemic context barring the limitations of technology and infrastructure in African countries. Bringing enhanced ways of achieving career and academic goals to diaspora and African faculty and students is an example of how mentees can be remade in their own images rather than in the image of the mentor. "Standing upon the shoulders of giants," as Isaac Newton observed, mentees and mentors can glory in their human capacity and persistence toward success.

⁹1000 Girls, 1000 Futures. This advertisement on the program's website captures the objective of the STEM mentoring program for girls: "1000 Girls, 1000 Futures connects STEM-focused high school girls to dynamic, motivated female mentors during a year-long virtual science education program. Participants gain access to innovative programming focused on developing essential 21st-century skills and become part of a strong network of female STEM leaders from around the world! Accepted students and mentors receive free membership to the New York Academy of Sciences!" <https://www.nyas.org/mentorship-opportunities/>

STEM is an acronym for Science, Technology, Engineering and Math education.

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Mentorship: The Next Generation
of Faculty, Researchers, and Scientists

Post-COVID-19 Pandemic Collaborative Faculty Training and Mentorship

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ABSTRACT

This paper highlights lessons learned and mentorship activities that I engaged in during my Carnegie African Diaspora Fellowship Program (CADFP) fellowship at two universities in Kenya. The CADFP enabled the universities to work collaboratively in the training and mentorship of their faculty. I developed and facilitated four workshops: one on qualitative research methods, one on grant writing, and two on post-graduate student supervision. Each university hosted two workshops, and faculty from each institution attended the sessions. Supervision and mentorship were identified as critical areas for additional training and support. For this project, I used the appreciative inquiry model developed by Cooperrider (1986). Appreciative inquiry calls for discovering, dreaming, designing, and creating a destiny together. Therefore, faculty were divided into cross-institutional, cross-disciplinary teams, and they collectively co-created key components of the supervision training. Coopting of faculty is more likely to result in better supervision outcomes for students and faculty. I believe that in our post-COVID-19 future CADFP will have opportunities to use its fellows to develop such workshops virtually with attendance by faculty from several institutions and countries in order to “dream and envision” a way forward.

Introduction

This paper is in the response to the call by the Carnegie African Diaspora Fellowship Program (CADFP) for exploration of ways to mitigate the effects of the COVID-19 pandemic, which precluded travel by CADFP fellows to Africa. As I begin this paper, I would like to note that there is no substitute to having a CADFP fellow in-country. Many networking and human connection opportunities cannot be replicated virtually. The benefit of having a fellow on the ground far outweighs anything that I can describe on these pages. Therefore, this paper should not be construed as a call for virtualization of the CADFP program. Instead, I offer some food for thought on a way forward when CADFP fellows face restricted travel in the event of global events such as the COVID-19 pandemic. In this paper, I provide highlights of the activities that I engaged in while in Kenya in 2017. I also provide some outcomes of these activities and end with some recommendations. I primarily focus on ways to achieve some of the desired outcomes, such as capacity development and training through online options. Therefore, I carefully note areas where the activities can be replicated virtually.

In 2017, I was invited by the CADFP to apply for the fellowship in order to work with KCA University (KCAU) and Africa Nazarene University (ANU) in Kenya. These two universities had jointly identified institutional challenges that were impeding the work of their faculty, especially with their post-graduate students. Consequently, I embarked on

the CADFP with a clear mandate of what ANU and KCAU required of me for this experience to be mutually beneficial. Therefore, during a pre-CADFP visit to Kenya, I met with the deans of KCAU and ANU—Dr. Renson Muchiri and Dr. Rose Karimi, respectively—to clearly define my responsibilities and to have a meeting of minds with regard to the project that we were going to collaborate on during the CADFP.

Early Days of the Project

When I arrived in Kenya in June 2017, I immediately scheduled a meeting between KCAU and ANU administrators to develop a calendar of project events and to agree on project deliverables. I met with institutional leaders at both universities to ensure that we had complete buy-in for the project.

Once we had institutional buy-in and support from high-level administrators, we began our work. During the initial planning meeting, we decided that due to the upcoming Kenyan presidential elections (in August 2017), any workshops and training needed to be conducted before the elections began. There were some concerns that universities would close during the election cycle due to probable election violence, which would make it difficult for faculty members and post-graduate students to participate in the workshops. Consequently, we scheduled the workshops for early in my fellowship. ANU hosted the first two workshops, and KCAU hosted the third and fourth workshops.

Introduction to Activities

I engaged in eight activities for my CADFP fellowship:

- 1) conducted a qualitative research workshop
- 2) conducted a grant writing workshop
- 3) attended post-graduate thesis defenses as an observer
- 4) conducted the first post-graduate student supervision workshop
- 5) conducted the second post-graduate student supervision workshop
- 6) reviewed the Proficiency Certificate in Research Design, Methodology, Data Analysis and Report Writing that was being proposed by the Institute of Research Development and Policy at ANU
- 7) shared my international marketing/business expertise as a guest speaker
- 8) developed a training manual for post-graduate student supervisors after CADFP

ACTIVITY 1:

Conducted a Qualitative Research Workshop

The first workshop was collaborative. Faculty were invited to share their individual experiences with conducting qualitative research. The faculty shared both their positive experiences and any challenges they faced as they conducted qualitative research. This experience of collective sharing was designed as a catharsis, encouraging open dialogue about the pros and cons of conducting qualitative research. As a facilitator, I also shared my experiences of conducting qualitative research in Kenya, the United States, and other countries. The first workshop was attended by participants from both universities and was held at ANU:

- ANU secured the meeting facilities, promoted the workshop, and hosted the KCAU team.
- KCAU recruited, advertised, and transported their faculty to ANU for the workshop.
- I facilitated the workshop and provided additional resources for those in attendance.

Outcomes. After the workshop, a KCAU faculty member started using qualitative research methods, and he sought additional training by attending a course in South Africa. He subsequently used some of the tools that he learned during the qualitative research methods workshop and conducted research that he presented at an international conference in the United States.

Recommendations for Activity #1:

- Develop some qualitative research methods workshops that can be easily shared online.
- Encourage faculty in countries where CADFP has a presence to take a basic qualitative research methods course on MOOC, Coursera, or other such platforms that offer free introductory courses on many subjects.

ACTIVITY 2:

Conducted a Grant Writing Workshop

The second workshop on grant writing was conducted at ANU with participants from both universities. The workshop focused on the different types of grants that researchers can apply for. Workshop participants shared their experiences of applying for internal, external, national, and international grants. Faculty shared successes and challenges in the application process, and participants shared best practices. The workshop underscored the need for institutions to work together because most funding agencies value cross-disciplinary, cross-institutional, and cross-national applicants. Participants repeatedly emphasized that donors were usually more likely to fund projects that spanned multiple disciplines, universities, and, in some cases, nations. Therefore, by the end of the workshop, participants sorted themselves into cross-disciplinary and cross-institutional groups that planned to identify areas of mutual interest in order to apply for national and international grants. I shared with the group that I was there as a CADFP fellow because the two universities had collaborated on a winning CADFP application that resulted in net benefits to both universities. Hence, my presence in Kenya as a CADFP fellow underscored the need for institutional collaboration. Moreover, the grant writing workshop was done jointly with ANU Director of Institute of Research, Development and Policy, Professor Linda Ethangata, who shared many experiences with the participants. Once again, the responsibilities of each party were clearly defined:

- ANU secured the meeting facilities, promoted the workshop, and hosted the KCAU team.
- KCAU recruited, advertised, and transported their faculty to ANU for the workshop.
- The fellow facilitated the workshop together with Professor Linda Ethangata.

Outcomes:

- Faculty at both institutions began to explore ways to collaborate on securing grants.
- Participants learned the importance of understanding issues such as:
- funding agencies' priorities

- selling your idea to the funding agency
- the review process, including peer review
- developing a workable and defensible project budget
- knowing and meeting submission deadlines
- post-grant administration issues, including budget conciliation

Recommendations from Activity #2

- Develop some webinars/workshops that can provide basic grant writing training for faculty.
- Share examples of winning proposals with institutions that are applying for grants from agencies in the United States and other Western countries.

ACTIVITY 3:

Attended Post-graduate Thesis Defenses as an Observer

I attended post-graduate thesis defenses at both ANU and KCAU as an observer, not as a panelist. I learned a lot about how post-graduate students were mentored and supervised at each university. After each thesis defense, I interviewed students and faculty to get their perspectives. I identified areas of improvement and shared them with each institution.

Outcomes. Supervision manuals were developed, and a report was submitted to both universities.

Recommendations from Activity #3

For post-graduate thesis defenses, the CADFP can recruit a few discipline experts who can serve on post-graduate thesis defense panels to provide feedback and mentor the students. With technology, this is easily achievable, particularly for areas such as statistics, where the expertise is cross-disciplinary.

ACTIVITY 4:

Conducted the First Post-graduate Student Supervision Workshop

After attending the thesis defenses, I was ready to work on the post-graduate student supervision workshops because I had first-hand knowledge of the process at each university. I identified post-graduate student supervision as one of the areas with the greatest need. Therefore, I conducted two workshops focused on post-graduate student supervision which were hosted by KCAU. The first workshop happened on August 1, 2017, with participants from both universities.

I designed a workshop that used David Cooperrider's (1986) model of organizational change. The model is comprised of four steps that guide an organization through change: discover, dream, design, and destiny. Cooperrider's work has been widely cited in academic literature and adopted by many

organizations worldwide, such as the United Nations. Using this model, faculty were asked to reimagine and/or re-envision a new way of supervising their post-graduate students.

During the first workshop, faculty were divided into cross-institutional, cross-disciplinary teams to discuss the supervision issues they faced at their respective universities. Together, these faculty dreamed of a new reality and identified the characteristics of a good mentor. They grouped those characteristics into eight of the most important traits of a great mentor, using the acronym SSH RICCH, which stands for supportive, secure, honest, role model/visionary, inspiring, committed, competent, and humane.

Outcomes. Faculty participated in the workshop and recognized the importance of figuring out what kind of a mentor they were and would like to become.

Recommendations from Activity #4

CADFP can develop introduction to post-graduate student supervision modules that enable faculty to learn best practices and identify their strengths.

ACTIVITY 5:

Conducted the Second Post-graduate Student Supervision Workshop

The second workshop on post-graduate student supervision occurred at KCAU on August 21, 2017, with faculty in attendance from both universities. It started with a recap of the first supervision workshop. After that, faculty members were led through the design and destiny components of Cooperrider's model, with an interrogation of its applicability to the design and implementation of new supervision standards. Faculty recognized the intertwined destiny of successful post-graduate students, their own careers, and institutional legacy.

Outcomes. Faculty participated in the workshop and recognized the importance of designing a supervision legacy that would withstand the test of time.

Recommendations from Activity #5

CADFP can develop supervision modules that enable faculty to design and reflect on current and future supervision models. Moreover, if post-graduate students are professionally supervised and mentored, then the old adage of "each one teach one" will be achieved. The development and implementation of a sound post-graduate supervision system will make an immediate and impactful difference in the quality of post-graduates. Post-graduates who have been sufficiently mentored during their programs will undoubtedly make excellent mentors themselves, resulting in a paradigm shift.

ACTIVITY 6: Reviewed the Proficiency Certificate

I reviewed the *Proficiency Certificate in Research Design, Methodology, Data Analysis and Report Writing* that was being proposed by the Institute of Research Development and Policy at ANU:

- ANU was proposing to develop a 40–48-hour certificate program that would be offered in several modules to students who had an undergraduate degree (post-graduate students).
- I provided feedback to Professor Linda Ethangata on ways to improve the certificate.

Outcomes. The certificate program was developed and has started admitting students.

Recommendations from Activity #6

Professors in the United States can easily review certificates and curriculum without needing to travel.

ACTIVITY 7: Shared My International Marketing/Business Expertise as a Guest Speaker

I was a guest speaker for Mr. Kiarie Kaira’s International Marketing Course on July 13, 2017, and Mr. Githii Kagwathi’s Multicultural Communication Course on July 10, 2017, at ANU.

Outcomes. I served as a guest speaker in two courses at ANU.

Recommendations from Activity #7

Guests can easily speak and share expertise in an online environment, especially now after the COVID-19 pandemic, when all students are familiar with online learning.

ACTIVITY 8: Developed a Training Manual for Post-graduate Student Supervisors After CADFP

To develop the key components of the short-term training, I consolidated all of the materials that had been developed and pointed to KCAU and ANU additional resources that could further aid in the development of a long-term training program. During the first and second supervision

FIGURE 1

Appreciative Inquiry Model

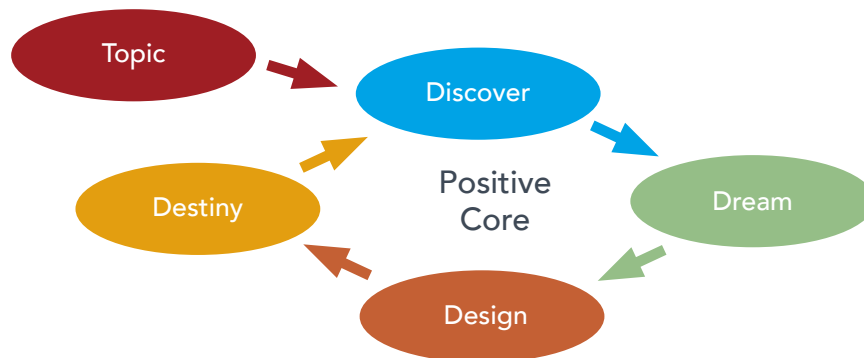
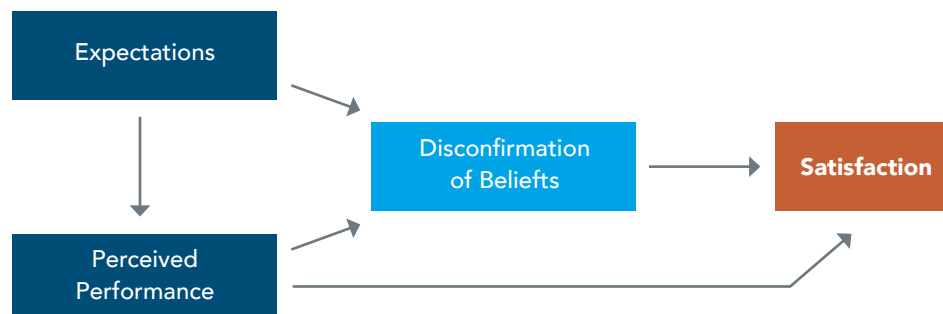


FIGURE 2

Expectancy Disconfirmation Model



workshops, I used the appreciative inquiry model developed by Cooperrider and Srivastva (1987) to develop the key components of the supervision training, shown in Figure 1.

I also used Richard Oliver's (1980) expectancy disconfirmation model, shown in Figure 2.

Post-Implementation Outcomes and Highlights of the CADFP

- 1) KCAU and ANU faculty have informed me that they now use some of qualitative research tools that they learned during the workshop.
- 2) I developed a post-graduate supervision manual that was delivered to KCAU and ANU in November 2017.
- 3) In 2019 and 2020, I visited KCAU and discussed applying for the CADFP Alumni Fellowship with KCAU.
- 4) In 2019, together with KCAU, I applied for the CADFP Alumni Fellowship. Although the application was not successful, a strong desire to continue the collaboration remains.
- 5) There have been numerous conversations with ANU faculty on joint research projects.
- 6) The supervision manual has been implemented.
- 7) *The Proficiency Certificate in Research Design, Methodology, Data Analysis and Report Writing* was implemented.

Recommendations for Virtualization/Online Replication of my CADFP activities

- 1) Workshops can be run online through a webinar using Zoom or another online platform. In 2017, online learning was not as widely accepted as it is today. A positive externality of the pandemic has been that many higher education institutions in Africa have had to develop online capabilities. Kenya is no exception and ranks highly on internet access to the general population. Therefore, university students can easily and cost-effectively access webinars and other online learning tools.
- 2) Using online learning management systems, participants can be assigned to breakout rooms where they can learn from faculty from other disciplines, institutions, or even countries. Access to this diversity of thought will undoubtedly expand and improve faculty's knowledge of student supervision practices.
- 3) Develop an appreciative inquiry workshop that will guide participants through Cooperrider's four Ds of organizational change.
- 4) Faculty can use Cooperrider's ideas to better understand their own supervision styles and look for areas of improvement in their current environment.

- 5) CADFP can hire consultants to run these sessions for many different institutions.

Final Thoughts: Online Benefits for CADFP

- 1) CADFP can hire alumni fellows to conduct these remote workshops from their countries of residence, which would represent cost savings for the Institute of International Education.
- 2) CADFP can easily scale these workshops to enable teams from around the world or from different institutions within a country to learn best practices from one another. Scaling the workshops to include many countries will result in faster change than conducting one workshop at a time in one country.
- 3) Through mentorship, CADFP can let post-graduate student supervisors know that they are not alone in their struggle to educate and mentor the next set of post-graduate students. Often, knowing that one is not alone can go a long way in ensuring that change happens. Over time, proper mentorship and supervision will eliminate the need to conduct online supervision workshops because of the resultant paradigm shift.
- 4) CADFP can invite university administrators to participate in these online training sessions so that they can garner first-hand knowledge of the challenges that their faculty face in post-graduate student supervision. University administration buy-in is crucial because administrators have the resources that can bring about change in their respective institutions. Further, with institutional engagement, future training can be supported and funded by the universities rather than by the CADFP.

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Mentorship: The Next Generation
of Faculty, Researchers, and Scientists

Mentoring Graduate Students and Faculty in the Humanities

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Introduction

While the Carnegie African Diaspora Fellowship Program (CADFP) program would want its fellows to gear their teaching, pedagogical, or mentoring expertise to graduate students alone, there are compelling reasons to include junior-level to middle-level faculty members in their consideration. This is more in many Nigerian universities, especially the private universities, where quite a number of master's graduates and doctoral students teach senior students. Thus, to focus only on master's and doctoral students and leave out inexperienced lecturers will not help to fill the gap in the efforts to raise standards across the board in the humanities.

My experience at Kwara State University (KWASU), Malete, Nigeria, has brought me this experience.

Many of the lecturers in what is now the Department of English (Language and Literature sections) up to the senior lecturer level need as much mentoring as do the graduate students who should be our primary focus. Many of them are still unable to write publishable peer-reviewed articles or successful proposals for grants. It will thus be a godsend to them to have someone experienced in those areas to also mentor them, during the rather short period of fellowship and thereafter. If one therefore wants to assist in improving the study of the humanities in a place or system where neither the students nor junior-rank to middle-rank university teachers understand their stuff, it will be necessary to go beyond the CADFP mandate to include faculty members in the mentoring process.

The weak grasp of the humanities among many graduates and junior lecturers has been exacerbated by the private universities that have profit in mind and not high academic standards. Others are not appropriately exposed and might be the products of in-breeding, such as having all degrees from the same university that might not be enforcing high standards. And disturbingly, from my inquiries, it seems that many of the junior faculty members were not employed on the basis of qualifications alone but, as is common in Nigeria and many Third World or corrupt countries, on "who know man," a term for employment for a specific job that requires certain standards but is done outside due process.

Expected Results

A university's quality ranking criteria have to do with the quality of the students produced and the superior publications or grants the faculty members receive. Here were my objectives in mentoring the graduate students and faculty at Kwara State University (KWASU), Malete, Nigeria:

- Employment of faculty members educated in high-standard universities;
- Presence of experienced teachers, especially at the senior lecturer, reader, and full professor ranks;

- Teachers who insist on moral and ethical imperatives;
- Teachers who are current and are driven by professional initiatives to work hard;
- Teachers who do not exploit education for personal gratification, in the sense of seeking monetary rewards because of poor salaries.

Understanding the Nigerian Education System

I did not leave UNC Charlotte to foist onto Nigerian students my American experience of 30 years of dealing with students, especially graduate students. Transplanting does not always work well in many foreign soils, and so I did not want the American experience to be the fix-all in mentoring my Nigerian students. I wanted to be selective because there are factors beyond the control of the students and teachers. There are socio-cultural issues to be borne in mind, as I wanted to contribute my little bit to raising the standard of university education in the humanities; in my case, language and literature.

These are some of the issues that must be addressed to help improve the standard of the humanities:

- There are large classes and not enough classrooms, which could disrupt having regular class meetings;
- Many students do not have confidence in themselves and so do not only cheat on exams but also outsource essay writing. Many graduate students in Nigeria shop for thesis/dissertation content from already submitted ones at distant universities and copy from these. It is common knowledge that some hungry university teachers, in their efforts to make quick money, write theses/dissertations for MA and PhD students. The system ends up graduating many who are not qualified to have the very degrees they would use in seeking jobs;
- Professors/lecturers keep their turf and do not want a new expert, Carnegie African Diaspora fellow or any other person, to teach a course they call theirs. This is to the detriment of the students. Many lecturers have the feeling that once somebody else teaches a course they have been teaching, they would lose respect. Their ego would be hurt if somebody else carried the students along the way they are unable to. Or they are reluctant to be reassigned to teach new courses that they might not be willing to do the research on;
- The National University Commission's interference with the university curriculum in departments of English and Literary Studies is controversial. If its role is advisory and oversight, it could be more productive for university senates to approve courses that would lead to needed jobs and national development;

- The higher education is geared toward neither national development nor market forces, and that leads to graduates of higher learning being inadequate in their jobs and not capable of self-employment.

Understanding the Socio-Cultural Background

It is important to understand where the students are coming from, for the mentoring process to succeed. Thus, the relationship between the student and the teacher should facilitate easy communication in mentoring. Nigerian students generally respect their teachers, as they respect their elders, and could swallow hook, line and sinker what they are told. This puts a responsibility on the Carnegie African Diaspora fellow/professor doing the mentoring to research and know their stuff so as to keep the student on the right path.

The Existing Gap

There is a scarcity of experienced, sharp, up-to-date, and productive scholars in the Nigerian academy. This situation arises from many factors, the most important of which is the lack of a post-tenure/post-professor review process—and the common notion that once one becomes a full professor, there is nothing more to achieve in the academy except to lobby for government appointment into boards of parastatals or political office. Many senior faculty members are thus deadwoods and not current in their fields and are not productive, either. From the university culture, many have been promoted to professor on the basis of publications secured from suspicious sources such as non-peer-reviewed journals or vanity presses. As the saying goes, “If gold rusts, what will iron do?” I am saying that there are many weak senior faculty members supervising graduate students, and that practice would not help at all in creating the next generation of faculty, researchers, and students.

Contribution

The foregoing discussion points put the Carnegie African Diaspora fellow in a strong position to contribute toward uplifting and sharpening the intelligence and knowledge of faculty and graduate students to become self-reliant and purposeful through mentoring by one grounded in research from an American institution.

My Kwasu experience and practice guide me to propose and work toward the following:

- Running a weekly open workshop for all graduate students in language and literature and history;
- Teaching the following:
 - Research methods;
 - MLA and APA citation methods;
 - Theory and theorizing in literary studies;

- Writing a journal article and book chapter;
- Mastering the jargon of the discipline and writing for all disciplines to understand;
- Literature review;
- Writing and rewriting—the importance of expression in writing;
- Organization and other properties of a good essay or thesis;
- Supervising the thesis/dissertation: chapters and their content.

Best Practices

This section may look simple or even simplistic, but it helps in the mentoring process to mold academic discipline and character of the graduate student or junior faculty; they can imbibe this from the dutiful and responsible Carnegie African Diaspora fellow. I made sure that I set a new professor culture of being punctual to class—by my arriving at least five minutes before the class began and before most students came in. The punctual teacher makes the students punctual, too. I was prompt in grading papers and submitting results within several days. This was in contrast with some professors grading papers over months or withholding results for no reason. When one behaves professionally with the students and in the classroom, one leaves a positive impression that the graduate students can imbibe.

Long-term Implication

Although my Carnegie African Diaspora fellowship lasted only three months, it could have long-lasting implications for the department and an impact on the students for a long time. After all, the students I influenced would carry the knowledge they derived from their exposure to my efforts, into their teaching career. My service delivery in mentoring, teaching, coaching, and other activities will assist in molding (if not remolding) the students and junior faculty into more professional university teachers in the humanities. My contribution at the Postgraduate Board meetings helped to revise the academic curriculum of the department for a long time. My contribution, which is a CADFP initiative, helps to create the capacity for academic development.

After: Post-Fellowship Relationship

- Mentoring can be carried out consistently by social media methods and email, even when face-to-face meetings are not possible;
- One can channel knowledge from either side without institutional or bureaucratic encumbrances through personal connections with identifiable students or faculty members;
- One can still remain active in the academic activities

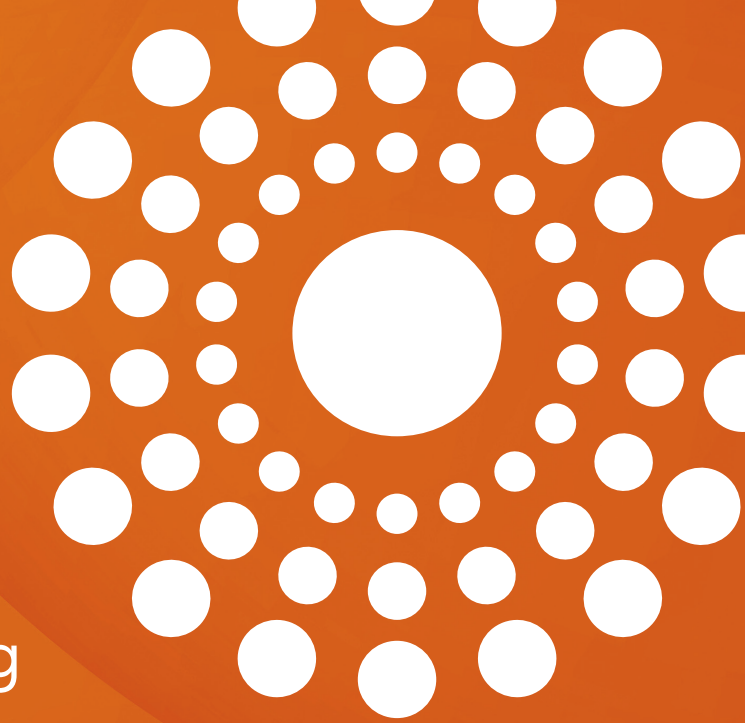
of the department and in touch with the students and academic staff, but this relationship has to be two-way traffic for it to be sustainable;

- Mentors should forward to former mentees relevant notifications of academic opportunities, especially publications, conferences, and grants;
- Mentors can recruit mentees and others of the host institution into their publication and research agenda, as I have done in my last two Routledge books—both Dr. Saeedat Aliyu and Dr. Reuben Kehinde Akano contributed a chapter each to the *Routledge Handbook of Minority Discourses in Africana Literature* (edited by Tanure Ojaide and Joyce Ashuntantang, London & New York, 2020) and *The Literature and Arts of the Niger Delta* (edited by Tanure Ojaide and Enajite Eseoghene Ojaruega, London & New York, 2021). It gives the mentor a sense of achieving something from one's tenure as a Carnegie African Diaspora fellow.

Summary Recommendations to the CADFP

- Mentoring should not be limited to graduate students alone but should include junior-rank to middle-rank lecturers, many of whom are from private universities or employment anomalies.
- The fellow should understand the Nigerian higher education system and university culture before assuming the fellowship.
- The fellow should study the Nigerian socio-cultural background to understand student-faculty relationships.
- The host university supervisors need to be current and productive and should undergo a post-professorship review every five years.
- The CADFP makes tangible contributions to the departments/institutions that fellows go to by bringing fresh approaches to issues of dealing with graduate students and diversifying an existing monoculture.
- Exposure is very important in a university setting, and CADFP helps to bring exposure to graduate students because the more global things are with the involvement of foreign fellows and local teachers and students, the more rounded the education received.
- KWASU did not have to spend much more money in receiving CADFP fellows than they would on sending their junior faculty or students to Europe or the U.S.
- If the financial and administrative resources are there, CADFP should be extended to continue to have as many fellows to spend their assignment in their respective institutions for about the same maximum of 90 days.

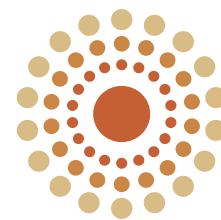
Carnegie African
Diaspora Fellowship
Program Alumni Convening



A Vision for the Future

Mutually Beneficial Collaboration

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Mutually Beneficial Collaboration

New Strategies for Discovery of Drugs from African Plants

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Fall 2013, and
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Drug Discovery is a Possible Area of Excellence at African Universities

Plenty of ethnomedical precedence exists for natural products, especially from plants, serving as drugs and drug leads. Common examples include Aspirin, Capsaicin, and Morphine. A U.S. Food & Drug Administration (FDA)-approved drug for the treatment of Alzheimer's disease, Rivastigmine, is a chemical derivative of Physostigmine. Physostigmine was isolated from the Calabar bean (*Physostigma venenosum*), a plant native to Nigeria. The Calabar bean was used as a source of poison in local folklore. In a classic series of experiments, a major component of the poisonous concoction was discovered to be Physostigmine. Chemical modifications of Physostigmine to increase brain bioavailability led to Rivastigmine, whereas modifications to decrease it led to Neostigmine. Neostigmine is used for urinary retention, myasthenia gravis, and Ogilvie's Syndrome. The natural product itself, Physostigmine, is used to treat glaucoma. All three compounds are used to treat various disorders but are based on a common pharmacological mechanism of action (acetylcholinesterase inhibition). Given this background, we believe that systematic exploration of plants and other natural products based on Africa's ethnomedicine can be useful in modern drug discovery. There is sufficient reason to believe that the cure for any disease — including COVID-19 — can be of African origin. The challenge is how such drug discovery can be operationalized and be beneficial to all partners. The following suggestions will be helpful in strategizing the discovery of drugs from African plants:

1. Begin a systematic effort to examine and reexamine plants for drugs and drug leads. Just because an extract or compound was discovered and found to be inactive in a particular pharmacological assay 30 years ago does not mean that reexamination may not generate interesting results. Of course, plants that have not been examined are clear targets. New technologies such as those utilized in combinatorial chemistry and high throughput screen can be used.
2. Develop better abilities to evaluate compound/extract synergies and appropriate pharmacological assays. Inconsistencies between in vitro and in vivo results led to the concept of prodrugs. Just because a preparation failed in a test or two, or even in rodents, does not mean the preparation is ineffective in humans.
3. Enhance medical research capacity, including clinical trials, in Africa. A major reason many people shy away from traditional medicine is the lack of clinical evidence, other than anecdotal incidents. COVID-19

has been supposedly "cured" by many different preparations. It is obvious that in most cases, what was cured was not COVID-19. There is no scientific diagnosis indicating that the person cured had COVID-19.

4. Grow programs with sustainable business models. Protect intellectual property. Encourage competition. Use U.S. Department of Health & Human Services National Institutes of Health-type models for grant and contract awards. Set clear short- and long-term goals, as well as criteria for terminating or extending a program.
5. Seek institutional collaborations and mentorships. There are new technologies which facilitate collaboration, such as Zoom and WhatsApp. Physical distance is becoming less of a barrier. Collaboration with those who have indigenous or local knowledge in a mutually beneficial manner needs to be carefully examined.
6. Consider diseases with global burden — including pain, cancer, diabetes, and neurodegenerative disorders; not just diseases with African burden. Efforts in this area can attract funds from anywhere in the world. For instance, pain is universal and critical need exists for non-opioid pain medications.
7. Several universities currently have ongoing efforts and lessons can be learnt from such. The University of Ibadan Faculty of Pharmacy in Nigeria has developed some teas through their Centre for Drug Discovery, Development, and Production with scientific support for the products. However, such efforts need to be taken to the next level in drug discovery. The same can be said about the Model Herbal Clinic at the University of Lagos Faculty of Pharmacy in Nigeria. I have had the privilege of serving as a Carnegie African Diaspora Fellow at both institutions, which is partly why I am familiar with those efforts.
8. Physical infrastructure and capacities are major considerations. But the biggest burden is the human will.

Challenges

Drug discovery is a long, expensive, and risky proposition. On average, thousands of compounds need to be synthesized to obtain one that is USA FDA approved. Steps need to be taken to mitigate the risks. A substantive ethnomedicine basis for a drug discovery program greatly increases the odds of

success. Steps can be taken to optimize a lead compound, as illustrated with Physostigmine.

Incentives for faculty members to focus on these efforts are generally low. Academic salaries are typically not generous, and many countries in Africa have currencies that are depreciating — making the salaries worth even less on a global scale. It is therefore easy for such faculty members to embark on non-academic ventures for survival. Productivity on the drug discovery front then decreases, which decreases attractiveness of the efforts to global entities that might have been interested.

Funding remains a big challenge. Obtaining funding for faculty, student, and technician salaries; supplies; and travel on a sustained basis for a decade becomes a major challenge. However, such funding is necessary to increase the probability of success. Funding for purchase and maintenance of major equipment such as nuclear magnetic resonance and mass spectrometers must be sought if not locally available. Funds should be pursued at university, state, national, and international levels, as well as from both the government and the pharmaceutical industry.

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Mutually Beneficial Collaboration

The Beauty, Complexity, Connectivity and Power of the CADFP Project, "Culture, History and Women's Stories: A Framework for Capacity Building in STEM Related Fields and for Fostering Entrepreneurship"

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ABSTRACT

The seven-year ongoing ethnomathematics thrice-funded Carnegie African Diaspora Fellowship Program (CADFP) project “Culture, history, and women’s stories: A framework for capacity building in STEM related fields and for fostering entrepreneurship” is a mutually beneficial collaboration with faculty/staff and students at four higher educational institutions: Federal University of Technology, Akure (FUTA) and National Mathematical Centre (NMC), Abuja, both in Nigeria; Borough of Manhattan Community College (BMCC), City University of New York (CUNY) in the United States; and Ecole Superieure Sainte Felicite (ESSF) in Cotonou, Benin Republic. It has extended to collaborations of Professor Nkechi Agwu, the Carnegie African Diaspora Fellow, with nine nongovernmental organizations (NGOs)/501(c)(3)s: Centre for Gbari Research and Documentation (CGRD), Chi Stem Toys Foundation, Nigerian Women in Agricultural Research for Development (NiWARD), Nigerian Women in Mathematics (NWM), and Pan-African Strategic and Policy Research Group (PANAFSTRAG), all in Nigeria; and the Drammeh Institute, Black Women for Black Girls Giving Circle, New Covenant Dominion Ministries High School, and Chi Stem Toys Inc., all in the U.S. It has resulted in several joint publications, presentations, digital media, and news features, as well as national and international awards to the collaborators. The most recent is the memorialization of Professor Nkechi Agwu as one of 64 women honored on the Association for Women in Mathematics (AWM) EvenQuads Notable Women in Math Playing Cards, released in January 2021 in commemoration of AWM’s 50th anniversary—a testimony to the global impact of this project and the power of networking and collaboration.

Introduction

In today’s world, collaboration and networking are key elements for the optimal success of any humanity development initiative. The Carnegie African Diaspora Fellowship Program (CADFP) is framed around international collaboration and networking between scholars in African higher educational institutions and their counterparts in the United States and Canada on mutually beneficial projects that will enhance and facilitate their research and teaching endeavors, while simultaneously facilitating the growth and development of the host and fellow institutions and promoting networking connections between program alumni and Fellows. The program encourages collaboration and networking even beyond the grant funding period. The program allows for continuity in networking and collaboration, in addition to growth of the project through funding up to three times, supplemental grants for project resources, and travel grants to conferences to give joint and individual presentations. The seven-year ongoing ethnomathematics thrice-funded CADFP project “Culture, history, and women’s stories: A framework for capacity building in STEM related fields and

for fostering entrepreneurship” exemplifies the collaboration and networking goals of the CADFP. It is a mutually beneficial collaboration with faculty/staff and students at four higher educational institutions: Federal University of Technology, Akure (FUTA) and National Mathematical Centre (NMC), Abuja, both in Nigeria; Borough of Manhattan Community College (BMCC), City University of New York (CUNY) in the U.S.; and Ecole Superieure Sainte Felicite (ESSF) in Cotonou, Benin Republic. This project was birthed through collaboration and networking within the Mathematical Association of America (MAA) Institute in the History of Mathematics and its Use in Teaching (IHMT).

This paper discusses the methodology used to facilitate the successful collaboration that extended beyond the four higher educational institutions to nine nongovernmental organizations (NGOs)/501(c)(3)s: Centre for Gbari Research and Documentation (CGRD), Chi Stem Toys Foundation, Nigerian Women in Agricultural Research for Development (NiWARD), Nigerian Women in Mathematics (NWM), and Pan-African Strategic and Policy Research Group (PANAFSTRAG), all in Nigeria; and the Drammeh Institute, Black Women

for Black Girls Giving Circle, New Covenant Dominion Ministries High School, and Chi Stem Toys Inc., all in the U.S. The collaborations on this project have resulted in several joint publications, presentations, digital media, and news features, as well as national and international awards to the collaborators. The most recent is the memorialization of Professor Nkechi Agwu by the Association for Women in Mathematics (AWM). She is one of 64 women honored on the AWM EvenQuads Notable Women in Math Playing Cards, released in January 2021 in commemoration of AWM's 50th anniversary.

This paper details the history behind and journey toward the project, how the collaborators met to develop and implement the project, and the main national and international advantages and challenges of collaboration. It highlights the problem of science, technology, engineering, and mathematics (STEM) education, particularly of female children in Nigeria and the U.S. It provides recommended solutions to these problems as modeled by this project, such as the mathematical storytelling of some members of NiWARD, NWM, and NMC; the joint PANAFSTRAG and Chi Stem Toys Foundation teacher training workshops on the use of a curriculum based on mathematical storytelling and indigenous mathematical knowledge systems for teaching and learning mathematics; and the vocational and entrepreneurial STEM workshops for women, youth, children, and disabled people in rural communities in Nigeria.

Statement of the Problem and Proposed Solutions

We are living in a world where science and technology have become an integral part of the culture. Any country that overlooks this fact is unlikely to catch up with the rest of the world. Everyday human activities are driven by science and technology. Undoubtedly, a sound STEM education is the key to developing industries, alleviating poverty, promoting peace, conserving the environment, improving economic growth and development, and ensuring good health for all. Many students in Nigerian secondary schools encounter problems in studying mathematics. First, students have difficulties in understanding the topics taught; and second, teachers have difficulties in achieving effective teaching in our schools.

Another dimension of the problem is that in most Nigerian societies, educating female children is not a priority. Women are left behind in most professions. "Africa is the only continent where education is a male-dominated profession—an imbalance that perpetuates gender-based inequality" (Wong, 2015). In particular, the number of women in STEM related fields is low when compared with their male counterparts. This project provides a solution to the gender imbalance of women as teachers and/or STEM related professionals.

It has been observed that among the factors that influence achievement of learners of school mathematics, teachers' effectiveness as measured through the acquisition and use of good instructional skills and methodologies appears very prominent (Sobel, 1988). Studies have shown that high-quality teaching can make a significant difference in students' learning—and high-quality teaching requires a high-quality workforce. For instance, NMC organized workshops in certain schools in some states under the Mathematics Improvement Project (MIP). After NMC intervention, schools' results improved tremendously. The percentage credit pass in mathematics at Government Secondary School (GSS) Icheke-Ogene rose from 7.69% in 2010 to 55.56% in 2012, and that of Saint Peters College Idah rose from 33.02% in 2010 to 70.86% in 2012. Also, in Kaduna State, the percentage credit pass in mathematics at GSS Markarfi rose from 29.9% in 2013 to 99.2% in 2015 after NMC intervention under the MIP.

Some of the problems related to teaching and learning the core subjects in our educational system include a lack of:

- Good quality teachers
- Effective teaching methods
- Instructional materials
- Small class sizes
- Adequate teacher training
- Good working conditions for teachers
- Good teacher retraining
- Incentive for teachers
- Mathematics laboratories in our schools
- Regular workshops and seminar for teachers
- Reader-friendly textbooks in schools

Among all the stakeholders in the education process, the teacher is the most important one. No educational system can rise above its teachers, and no nation can rise above the standards of its schools. Education is the key that unlocks the door to modernization. However, the teacher holds the key to the door.

Professor Agwu offers a new and innovative way of teaching mathematics and the sciences in schools by using culture and women's stories. This approach is designed for capacity building in STEM related fields and for fostering entrepreneurship and innovation. Although teachers in many advanced countries are using this innovative pedagogical approach to teach subjects at all levels, teachers in Nigeria are not yet using this approach. The use of cultural artifacts and women's stories concretizes educational concepts, arouses and sustains the learners' interest, and fosters entrepreneurship and innovation among learners. With this innovative approach, STEM students' achievements are improved.

The problem of the teacher in terms of quantity and quality has been identified as one of the most important factors affecting student performance in mathematics. In particular, the approach to teaching mathematical sciences is an important factor that determines student achievement in mathematical sciences. The approach of using culture and women's stories has not been used in Nigeria. The NMC and Professor Agwu are collaborating on this CADFP project, "Culture, history, and women's stories: A framework for capacity building in STEM related fields and for fostering entrepreneurship," to introduce the use of culture and women's stories in STEM teaching in Nigeria. The problems confronting mathematics students resulting from the pedagogical approach of teachers and the curriculum deserve appropriate attention. This project addresses these problems.

The Genesis of the CADFP and Exodus to Forging Different Types of Collaborations

The journey toward this project began with Professor Nkechi Agwu's certification training during the summers over a seven-year period, from 1997–2003. She received training from the MAA IHMT at the Catholic University of America in Washington, D.C., as a historian of mathematics and an ethnomathematician under the mentorship of Professors Victor Katz and Frederick Rickey, renowned historians of mathematics, and Professor Ubiratan D'Ambrosio, a renowned ethnomathematician. She also received motivation and inspiration to work in the area of African indigenous mathematical knowledge systems, which is an area not covered in the mathematics literature and curriculum—and which this CADFP project addresses.

All groups of people have made significant contributions to the development of mathematics, although the contributions of Africans—other than algebra and geometry in ancient Egypt—are still highly unacknowledged in the history of mathematics (Lumpkin, 1980). "This is partly due to our oral traditions, slavery, colonialism, neo-colonialism, globalization and the fact that our indigenous mathematics, scientific and technological knowledge as a people is often shrouded in our spirituality. This notwithstanding, efforts must be made to document the mathematical contributions of Africans to enrich the curriculum in a multicultural and interdisciplinary way by providing a wide repertoire of examples of mathematical concepts illustrated from the African context" (Agwu, 2016, p. 13). This CADFP project makes an effort to document those contributions.

At MAA IHMT, Professor Agwu was reminded of the traditional strategy game called *okwe* (popularly known worldwide as *mancala*) that is commonly played in villages and cities in Ala Igbo (Igboland). It teaches aspects of farming through the sowing of seeds and capturing of seeds into a player's storehouse. Professor Agwu learned this game from

her late paternal grandmother, who was an expert player and was an eighth-generation farmer from Agbakoli Alayi. She recognized the mathematical implications of the game when she began an ethnomathematics research project as part of her MAA IHMT training. Professor Agwu chose *okwe* for her research project to study topics in game theory and other mathematical topics related to the game, with input from a group of MAA IHMT historians of mathematics. She found it interesting that despite her strong mathematical background she had never been able to win against her grandmother, who never had even a primary school education. This was the genesis of Professor Agwu's work as an ethnomathematics researcher and the exodus of this CADFP project.

During the period Professor Agwu was attending MAA IHMT and afterwards, she received several research and faculty development grants from her local institution, BMCC, as well as related individual and collaborative CUNY-wide grants, to further her ethnomathematics research study on *okwe* and to conduct other ethnomathematics research and develop related curriculum on Igbo indigenous mathematical knowledge systems. She received help from a renowned Igbo cultural anthropologist and Catholic priest, Dr. Jon Ukaegbu, who is a native of Mbaise, Imo State, Nigeria, and an expert in Igbo symbolism.

Professor Agwu's strong interest in mathematical storytelling and curriculum development for women of African heritage in STEM began in 2005 when she was chair of the Black History Committee of the American Association of University Women (AAUW), New York City branch. She became president of this branch in 2009 and developed, implemented, and engaged in initiatives related to nurturing, grooming, and mentoring school girls to consider STEM related careers. This facilitated her networking connections with PANAFSTRAG, the Drammeh Institute, and Black Women for Black Girls Giving Circle, as a member of the AAUW leadership team, promoting one of AAUW's major efforts to bridge the gap of underrepresentation of women in STEM in the U.S. In the July/August 2010 issue of *The Network Journal* (<https://tnj.com/nkechi-madonna-adeleine-agwu-phd>), Professor Agwu explains the AAUW New York City branch mission, as well as her own STEM and economic agenda for women and girls, so that all women can have a fair chance at climbing the ladder to success (Gordon, 2010). She also provides policy recommendations for governmental and nongovernmental institutions that want to facilitate pathways to break down barriers for women in STEM. This CADFP project builds upon and implements some of those recommendations.

In 2001–2010, CUNY implemented a graduation requirement for each student to take at least one writing intensive course in a subject area of their choice. All departments at BMCC, Professor Agwu's own CUNY campus,

were now required to develop and implement some writing intensive courses to help students meet this graduation requirement. Faculty members were funded to develop and implement these courses. Professor Agwu saw this as an avenue to balance the mathematics curriculum at BMCC/CUNY for race, gender, class, and ethnicity as it pertains to African heritage. She took advantage of this opportunity to develop writing intensive courses in discrete mathematics, mathematics foundations, and introductory statistics featuring African indigenous mathematical knowledge systems and African women's stories. This led to several presentations of her work at a few sessions of the United Nations (UN) Commission on the Status of Women (CSW). These presentations allowed Professor Agwu to solidify her network connections with the Drammeh Institute and PANAFSTRAG and to meet with the founders of NiWARD, Professor Stella Williams and the late Dr. Mojisola Olayinka Edema—who was Director of the Centre for Gender Issues in Science and Technology (CEGIST) at FUTA.

These connections resulted in Professor Agwu writing a proposal to come to CEGIST-FUTA as a Carnegie African Diaspora Fellow for the first iteration of the project, under the title "Culture and women's stories: A framework for capacity building in STEM related fields." The project title was later modified to the current title, with subsequent second and third iterations at the NMC. A by-product of the project implementation at FUTA was Professor Agwu's journey to become a mathematical storyteller for NiWARD; partnering with PANAFSTRAG and Chi Stem Toys Foundation to conduct annual professional development workshops for mathematics teachers in Lagos State and its environs (currently ongoing); partnering with Chi Stem Toys Foundation to conduct bi-weekly STEM related vocational education and entrepreneurship workshops for women, youth, children, and disabled people in Abuja and Bende Local Government Area (LGA) in Abia State, Nigeria (currently ongoing); partnering with the BMCC Science and Technology Entry Program (STEP) to conduct weekly workshops for high school students in New York City; and partnering with the Drammeh Institute, Chi Stem Toys Inc., and Black Women for Black Girls Giving Circle on a joint mathematical storytelling and Ndebele doll sculpturing STEM program for middle school and high school girls in New York City. A by-product of the later STEM program is a collection of YouTube videos created by the Drammeh Institute in which the girls evaluate the program and discuss their Ndebele doll creations, the related mathematical ideas, and the NiWARD member the doll represents. The successful collaboration with Chi Stem Toys Foundation in providing STEM related vocational and entrepreneurship workshops to empower community members in Bende LGA in Abia State, Nigeria, resulted in the honor of

Professor Agwu being named as Chief Ada Bende (First Daughter of Bende) by the traditional ruling council of the 50 autonomous communities in Bende LGA; in production of cultural heritage items by workshop participants; and in disbursement of small empowerment grants and equipment by Chi Stem Toys Foundation to a few participants to facilitate their entrepreneurship endeavors.

At CEGIST-FUTA, Professor Agwu gave curriculum development and teacher training workshops framed around the project goals to STEM education stakeholders. A curriculum based on the Akure Kingdom and NiWARD members was also developed. The workshops were evaluated by CEGIST-FUTA within their regular mode of program assessment. Professor Agwu connected with one of her NMC research group members at these workshops, Dr. Smart Oloda, who attended the workshops as an NMC representative. Dr. Oloda shared his experiences and the successful project outcomes with the NMC director at that time, Professor Adewale Solarin. Professor Solarin was impressed and inspired by this report. He embraced the first iteration of the project at CEGIST-FUTA with a commitment by the NMC of 200,000 Nigerian naira (₦200,000) toward resources. As a result of the success of this project at CEGIST-FUTA, CADFP sponsored Professor Agwu to share her work at the African Studies Association annual meeting in 2014; at a World Bank forum in 2015 on "Engaging the African diaspora: Partnering for long-term trade, investment, and skills for workforce development in Africa"; and through a mini-conference grant sponsoring her and Ms. Olubukunola Williams, one of her co-principal investigators for the project at CEGIST-FUTA. Professor Agwu and Ms. Williams shared their work at the annual Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) conference in 2016. RUFORUM published the paper for this presentation.

Professor Solarin, the NMC director at that time, felt that the project aligned with NMC's mission and vision and that the NMC should spearhead it for a more national outreach. He invited Professor Agwu to the NMC to replicate the project there. This was the beginning of the journey for the project to come to the NMC, Abuja, as a CADFP project under the past director, Professor Solarin. Professor Agwu then wrote a proposal for the second iteration of the project, with the NMC serving as the host institution. While the proposal was undergoing review by the CADFP and before the project officially started at the NMC, Professor Agwu began collaboration with the NMC under the auspices of its mental arithmetic program. This collaboration involved putting together the NMC Ethnomathematics Research Group and engaging team members and schoolteachers in Delta and Rivers States in evaluating and field-testing the curriculum developed at

CEGIST-FUTA during the first iteration of the CADFP on the Akure Kingdom and NiWARD members.

To ensure the project's effective development, implementation, and sustainability at the NMC, it was necessary for Professor Agwu to obtain a sabbatical leave from her home institution, BMCC, to work with the NMC Ethnomathematics Research Group for an extended period of time. While in New York City for a UNESCO meeting, Professor Solarin visited Professor Agwu's host institution, BMCC/CUNY, to share the NMC's mission and vision and the significance of the project with top-level administrators, mathematics department faculty members, and students at various CUNY campuses. This visit facilitated Professor Agwu's sabbatical leave from BMCC to engage in the project as a Carnegie African Diaspora Fellow at the NMC. However, before the second iteration of the project actually started at the NMC, the NMC directorship changed hands. Professor Stephen Onah became director of the NMC. This change in leadership came with a few initial challenges in getting Professor Onah's buy-in because the new director came from outside the NMC. However, once Professor Onah was fully briefed about the project and its initial outcomes, he recognized its value in moving the NMC's mission forward and its significance to the Nigerian mathematical community. He endorsed the project, giving it the NMC's full support. He also approved financial resources for the research group to travel to various states in Nigeria to engage in ethnomathematics research on indigenous mathematical knowledge systems and to present their work at various professional groups' conferences: the Nigerian Mathematical Society (NMS), the Mathematical Association of Nigeria (MAN), and NiWARD. He also provided in-kind support for an NWM leadership team to come to the NMC to be interviewed for the women's stories part of the project and to help review and evaluate the curriculum developed within the women's stories part of the project.

The first cultural group the NMC Ethnomathematics Research Group studied was the Gbari, located in Abuja and neighboring states. The NMC Ethnomathematics Research Group, International Model Science Academy (IMSA), CGRD, and Chi Stem Toys Foundation collaborated to share information about the indigenous mathematical knowledge systems of the Gbari people, as well as develop a related mathematics curriculum and field-test the curriculum with Gbari schoolchildren at the CGRD and IMSA. Chi Stem Toys Foundation sponsored the CGRD field-testing, and the NMC sponsored the IMSA field-testing. As a result of this collaboration, the NMC Ethnomathematics Research Group has published a few papers and presented at MAN and NMS annual meetings. In addition, Professor Agwu was honored by the CGRD with the Ladi Kwali Lifetime Achievement Award.

To date, the NMC Ethnomathematics Research Group has developed and is field-testing a mathematics curriculum based on the indigenous mathematical knowledge systems of the following cultural groups: Gbari, Iggede, Tiv, Yoruba, Fulani, Igbo, Efik, and Ibibio; and stories from the lives of women in the following groups: NiWARD, NWM, and NMC Women in the Mathematical Sciences. The developed curriculum is published by the NMC in an Ethnomathematics Resource Book series. As a consequence of the CADFP making visible the indigenous mathematical knowledge systems of the Iggede people, Professor Agwu was honored with the title Queen of Iggede Land by the traditional ruling council of the Iggede people. In addition, due to the successful outcomes and visibility of this project, Professor Agwu was given a citation by the Brooklyn Borough President at the Borough's 400 Years of Fortitude Program in 2019; was an invited keynote speaker in 2020 at the Black Heroes of Mathematics Conference by the five major British mathematical societies; received the honor of Global African Woman of Distinction in STEM in 2020 by the Drammeh Institute; was recognized by the United Nations' International Decade for People of African Descent; and has been memorialized as one of 64 Notable Women in Math on the AWM EvenQuads Playing Cards released in 2021 in commemoration of AWM's 50th anniversary. All these honors are a consequence of the successful collaborations and impact of this CADFP project.

Upon her return from sabbatical leave at the NMC for this CADFP project, Professor Agwu initiated a faculty interest group (FIG) in "Culture, Women's Stories, and Creativity in STEM" at the BMCC Center for Excellence in Teaching, Learning, and Scholarship (CETLS) to further the project's research, curriculum development, and teaching initiatives with interested faculty members at BMCC and CUNY-wide. In addition, the FIG would work toward creating a BMCC study-abroad mathematics survey course in Africa that would engage students in the mathematics curriculum developed by the FIG, the NMC Ethnomathematics Research Group, and other project collaborators. The work of the FIG led to the collaboration of Professor Agwu with the New Covenant Dominion Church High School (NCDCHS) to provide an avenue of field-testing the developed curriculum not just with BMCC students but also with high school students in New York City, since her partnership with BMCC STEP was no longer in effect when she took sabbatical leave. Nigeria is considered a Level-3 risk country by the U.S., so it could not be the host country for the FIG study-abroad mathematics course. Therefore, the FIG had to explore other countries in Africa. The Benin Republic, which neighbors Nigeria, is a low-risk country with a dominant cultural group of the Yoruba people, who are also found in the southwestern part of Nigeria. One of

the members of the FIG, Professor Thierry Agbotouedo, is a native of the Benin Republic; therefore, the FIG selected the Benin Republic to serve as the host country for the study-abroad mathematics course being developed. This led to the (ongoing) collaboration of Professors Agwu and Agbotouedo with ESSF in Cotonou, Benin Republic. Travel funds for Professor Agwu to Cotonou, Benin Republic, were provided by Chi Stem Toys Foundation. Professors Agwu and Agbotouedo have both made site visits to introduce mathematics faculty members and administrators at ESSF and other higher educational institutions in the Benin Republic to Professor Agwu's CADFP project and to the work of the FIG and Chi Stem Toys Foundation, as well as to identify faculty members who would be willing to collaborate with the FIG to develop a mathematics curriculum based on the indigenous mathematical knowledge systems of ethnic nationalities in the Benin Republic and to cooperate in teaching the study-abroad course in mathematics once it is fully developed and ready to be implemented. Unfortunately, the CADFP does not serve the Benin Republic as one of its allowable host countries, so ESSF cannot apply for Professor Agbotouedo as a Carnegie African Diaspora Fellow to facilitate development of the BMCC study-abroad mathematics course. We are in the process of exploring other grant funding options. In summer 2021, BMCC open educational resources (OER) provided funding to both Professors Agwu and Agbotouedo to facilitate the development of a mathematics curriculum for the study-abroad mathematics course that will be available on the BMCC OER web page for use by anyone.

Professor Agwu has exhausted the maximum number of times she can be funded for a CADFP project. However, her project with the NMC is still ongoing beyond the Carnegie Foundation's grant funding period because of shared funding and resources provided by Chi Stem Toys Inc. and her own personal funds, which covered her international travel between the U.S. and Nigeria. NMC funds covered local travel, accommodations, and feeding Professor Agwu and the NMC Ethnomathematics Research Group. We are exploring options for grant funding that will move the project to the next level. We hope to conduct nationwide workshops to train mathematics teachers on using the curriculum we developed, similar to what is being done by PANAFSTRAG and Chi Stem Toys Foundation in Lagos.

As of August 2021, the NMC directorship changed hands. It is the prayer of the NMC Ethnomathematics Research Group to receive the same level of support and funding or even better from the new director, Professor Promise Mebine, who is coming from outside NMC. Professor Mebine has endorsed the continuity of the project but provision of resources is shaky due to internal funding

availability so the Group is having to solicit actively for grant funding to sustain the project. In addition, COVID-19 and the current issues of conflict in Nigeria have presented challenges for Professor Agwu in traveling to Nigeria since returning to the U.S. at the end of January 2021. Professor Agwu and the NMC Ethnomathematics Research Group hope to continue with study tours to meet with cultural custodians for nationalities that have yet to be studied. The next group on our agenda is the Bini people in Edo State, whose tour was supposed to take place in April 2021 but had to be rescheduled due to COVID-19 lockdowns by the Federal Government of Nigeria (FGN).

Research Methodology Used for the Women's Stories Aspect of the Project

The project uses an ethnographic research approach:

1. Analysis of the biographies of members of NiWARD, NWM, and NMC Women in the Mathematical Sciences.
2. Initial mathematical storytelling explorations for interesting patterns, characteristics, and relationships; community development activities and work with rural women relevant to indigenous mathematics and scientific knowledge.
3. Selection of a subset of members of NiWARD, NWM, and NMC Women in the Mathematical Sciences for further ethnographic study based on leadership characteristics, diversity of STEM related disciplines, and community development activities that relate to farming and traditional work of rural women.
4. Participant observation of the scholarly work and community development activities of and/or interviews with the selected subset of members of NiWARD, NWM, and NMC Women in the Mathematical Sciences, which may include relevant study tours to cultural and historical sites.
5. Development of curricular activities, Ndebele doll sculptures, and mathematical stories of the selected subset of NiWARD, NWM, and NMC Women in the Mathematical Sciences.
6. Field-testing of curricular activities and professional development on their use with educators at universities, colleges, and schools and within workshops for primary, secondary, college, and university students and educators within STEM enrichment, research, and professional development programs.
7. Dissemination of curricular activities for further assessment and refinement through conference presentations, workshops, seminars, research publications, and books.

A Sample Activity: NiWARD Women, Ndebele Doll, and Graph Theory

This activity is published in the book *God's own: The genesis of mathematical story-telling*, authored by Professor Nkechi Agwu under her pen name Nma (Beautiful) Jacob (Agwu, 2016). The activity requires participants to read the biography and/or curriculum vitae of a NiWARD woman published on the internet and/or in the following books: *The grace of Dr. Mrs. Mojisola Olayinka Edema: A visionary and a reformer* (Agwu et al., 2016); *Celebrating Africa's 50 exemplars* (Williams, 2017, Chapter 40, pp. 208–212); and *God's own: The genesis of mathematical story-telling* (Agwu, 2016). A by-product of this activity is indirectly educating participants on techniques for writing a biography and/or curriculum vitae and engaging in mathematical storytelling.

Questions

Read Chapters 8 and 9 of *God's own: The genesis of mathematical story-telling* (Agwu, 2016). Then watch the African Views Organization's African Cultural Exchange YouTube video on how to make an Ndebele doll at <http://www.youtube.com/watch?v=HamUbtroHcA>. Use the instructions in the required reading and/or the video to:

1. Construct an Ndebele doll to represent a NiWARD woman whose biography and/or curriculum vitae you read. Prepare to bring in your doll to present it to the class.
2. Decorate your doll to reflect two vertex-edge graphs you see in the NiWARD woman's story and identify the standard name of the two vertex-edge graphs if possible.
3. Color the two vertex-edge graphs their chromatic number, state their chromatic number, and explain why you cannot color them with a number of colors less than what you claim is the chromatic number.
4. Use counting techniques and principles to count and state the number of vertices and edges of the two vertex-edge graphs on your doll and create a table showing the graph, its name, its chromatic number, and the number of its vertices and edges.
5. Develop an accompanying PowerPoint presentation on the life of this NiWARD woman that presents the two vertex-edge graphs you represented on your doll, their chromatic number, and the number of vertices and edges in each graph. Discusses why you selected those two vertex-edge graphs over the other types that are evident in the biography of the woman, and discusses what aspects of the woman's life inspire you.

Network of Collaborations Illustrating the Beauty, Complexity, Connectivity, and Power of the CADFP Project

Figures 1–4 illustrate the beauty, complexity, connectivity, and power of the CADFP project as it relates to the four higher educational institutions and the nine NGOs. A list of these bodies is provided below before the figures.

Four Higher Educational Institutions

- A. Federal University of Technology, Akure (FUTA), Nigeria
- B. National Mathematical Centre (NMC), Abuja, Nigeria
- C. Borough of Manhattan Community College (BMCC), City University of New York (CUNY), U.S.
- D. Ecole Superieure Sainte Felicite (ESSF), Cotonou, Benin Republic

Nine NGOs

1. Pan-African Strategic and Policy Research Group (PANAFSTRAG), Nigeria
2. Nigerian Women in Agricultural Research for Development (NiWARD), Nigeria
3. Chi Stem Toys Foundation, Nigeria
4. Center for Gbari Research and Documentation (CGRD), Nigeria
5. Nigerian Women in Mathematics (NWiM), Nigeria
6. Chi Stem Toys Inc., U.S.
7. The Drammeh Institute, U.S.
8. Black Women for Black Girls Giving Circle, U.S.
9. New Covenant Dominion Ministries High School, U.S.

Challenges in Forging Effective Mutually Beneficial Collaborations

The following key factors were important for forging effective mutually beneficial collaborations for this CADFP project and/or presented challenges of creating, measuring, and evaluating the collaborations.

1. Visibility and networking

As an African diaspora university faculty member who had not visited Africa since 2008 (many years before the first iteration of this project in 2014), it was not easy to connect with colleagues in African institutions who would value this CADFP project and help it move forward. Many of these colleagues do not have funding for travel to international conferences, where network connections to foster collaboration can take place. The majority of

FIGURE 1

Collaborations Resulting in First CADFP Project at FUTA

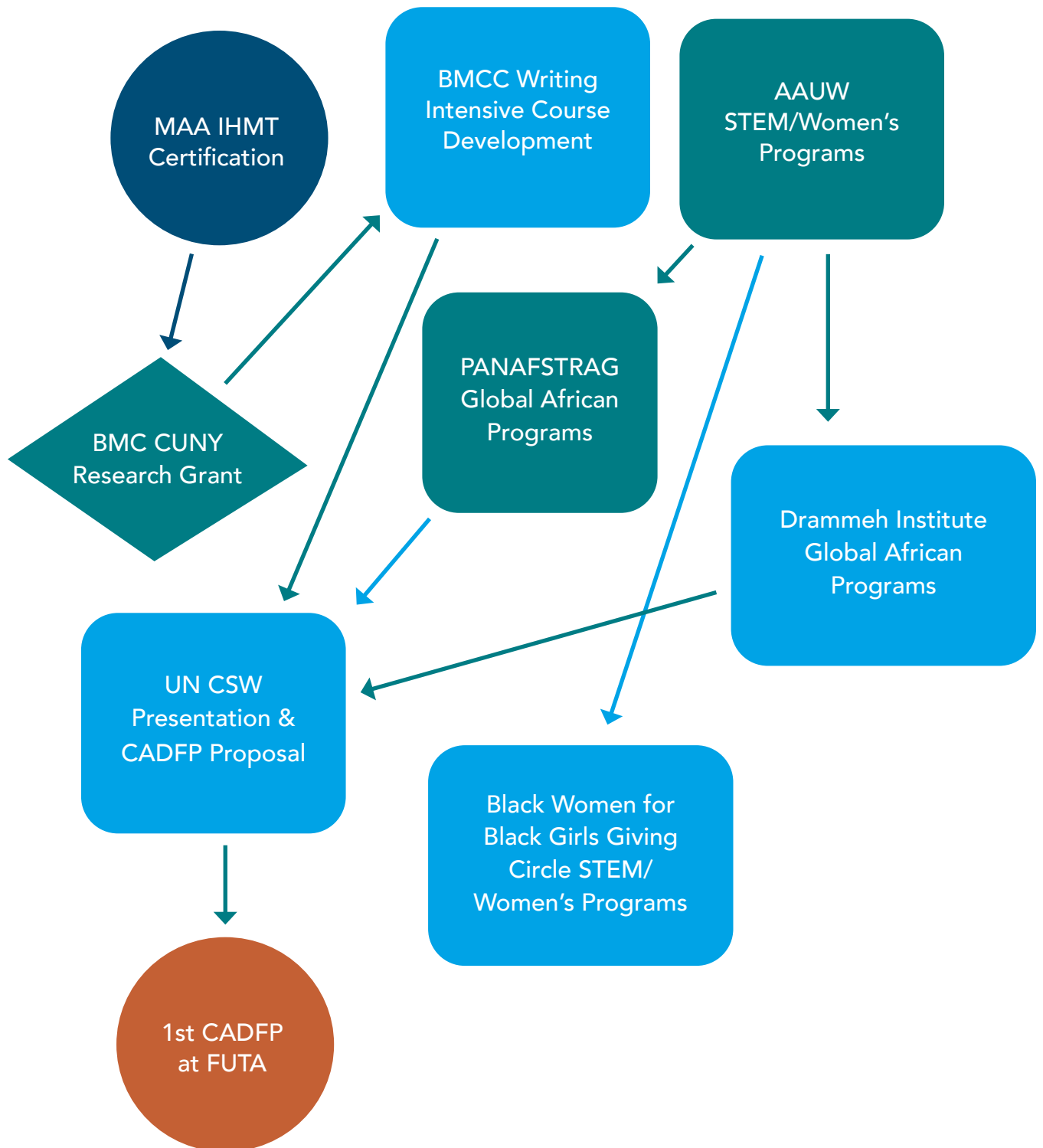


FIGURE 2

Collaborations Leading to Second CADFP Project at NMC

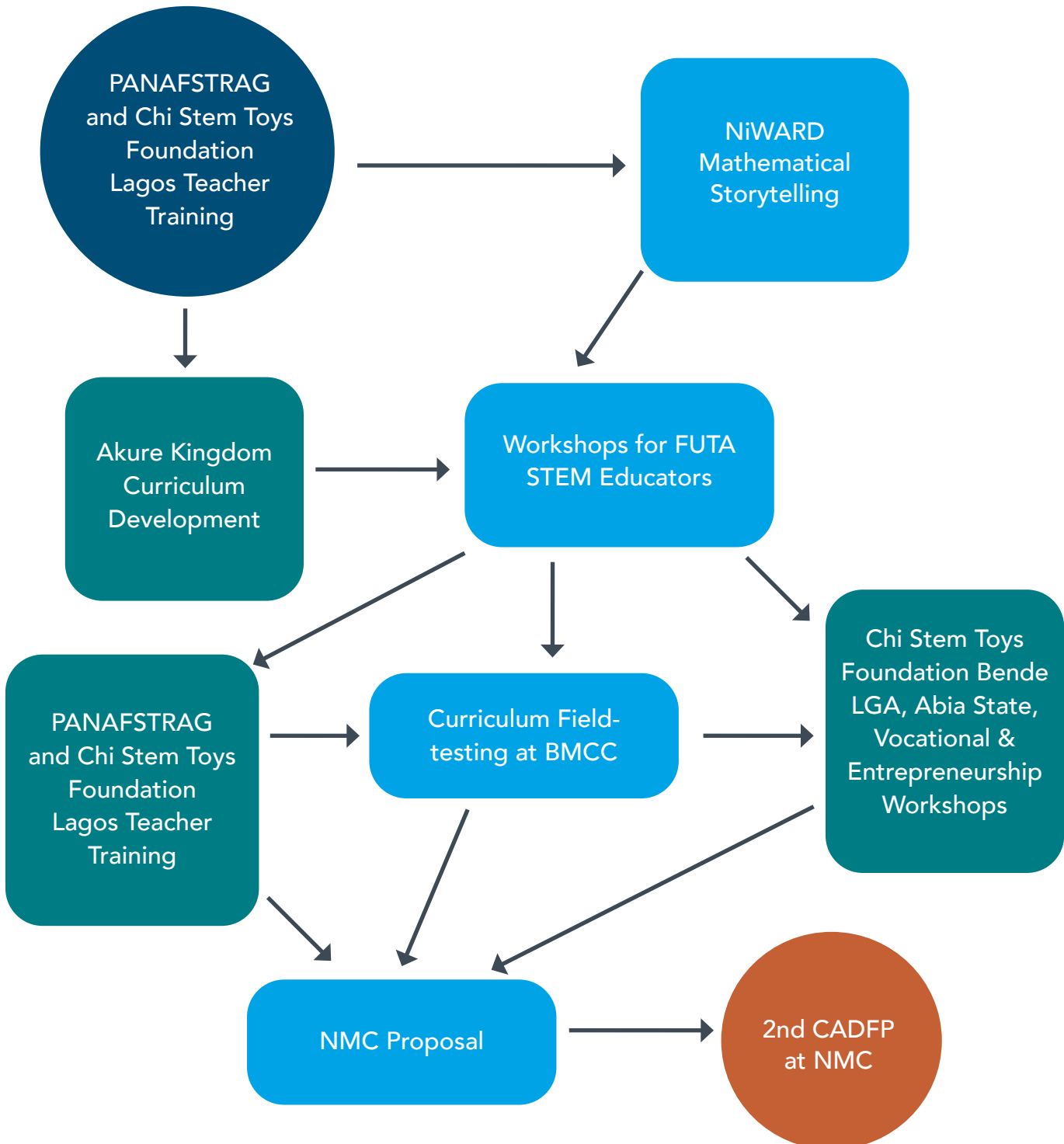


FIGURE 3

Collaborations Leading to Third CADFP Project at NMC

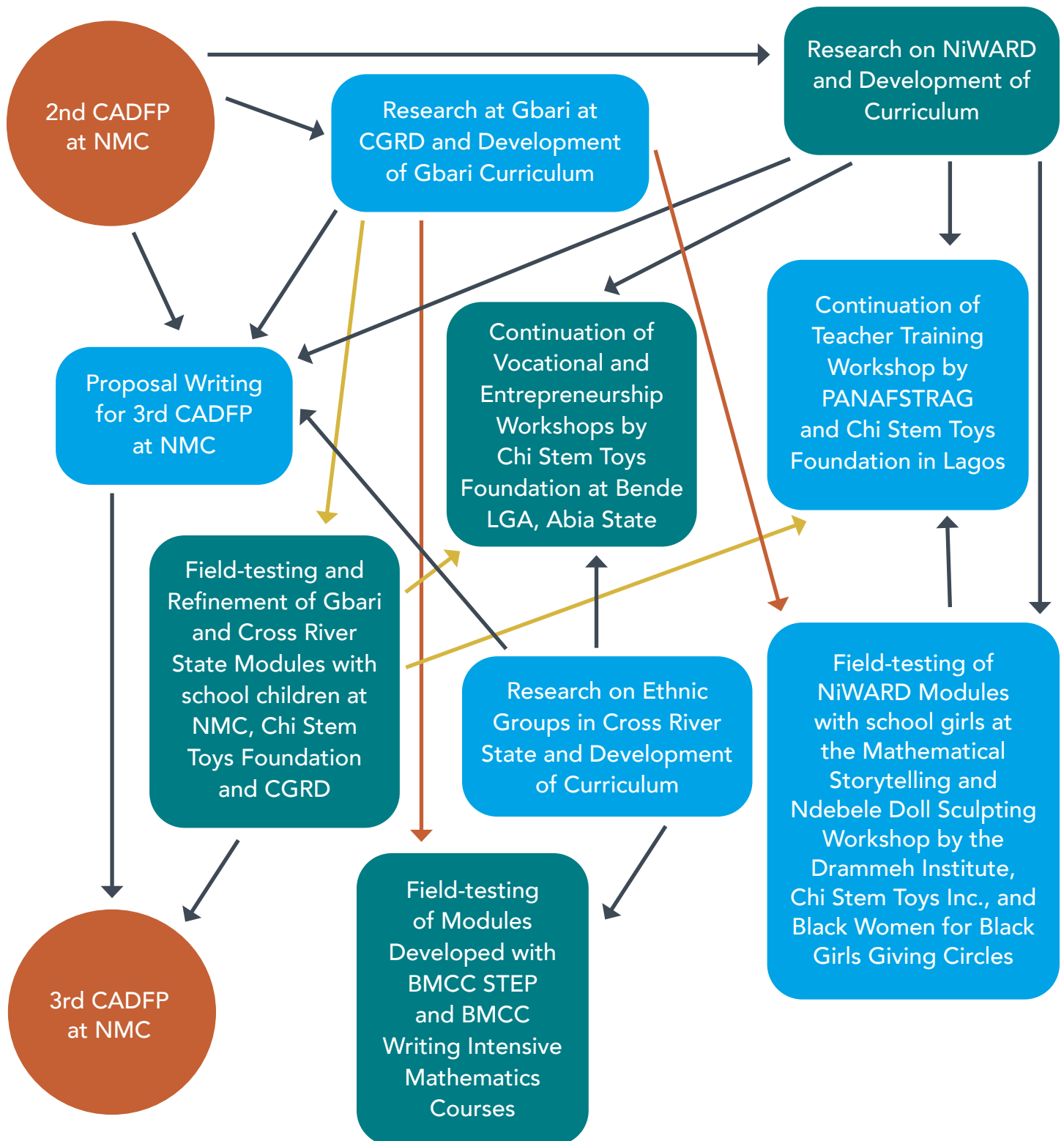
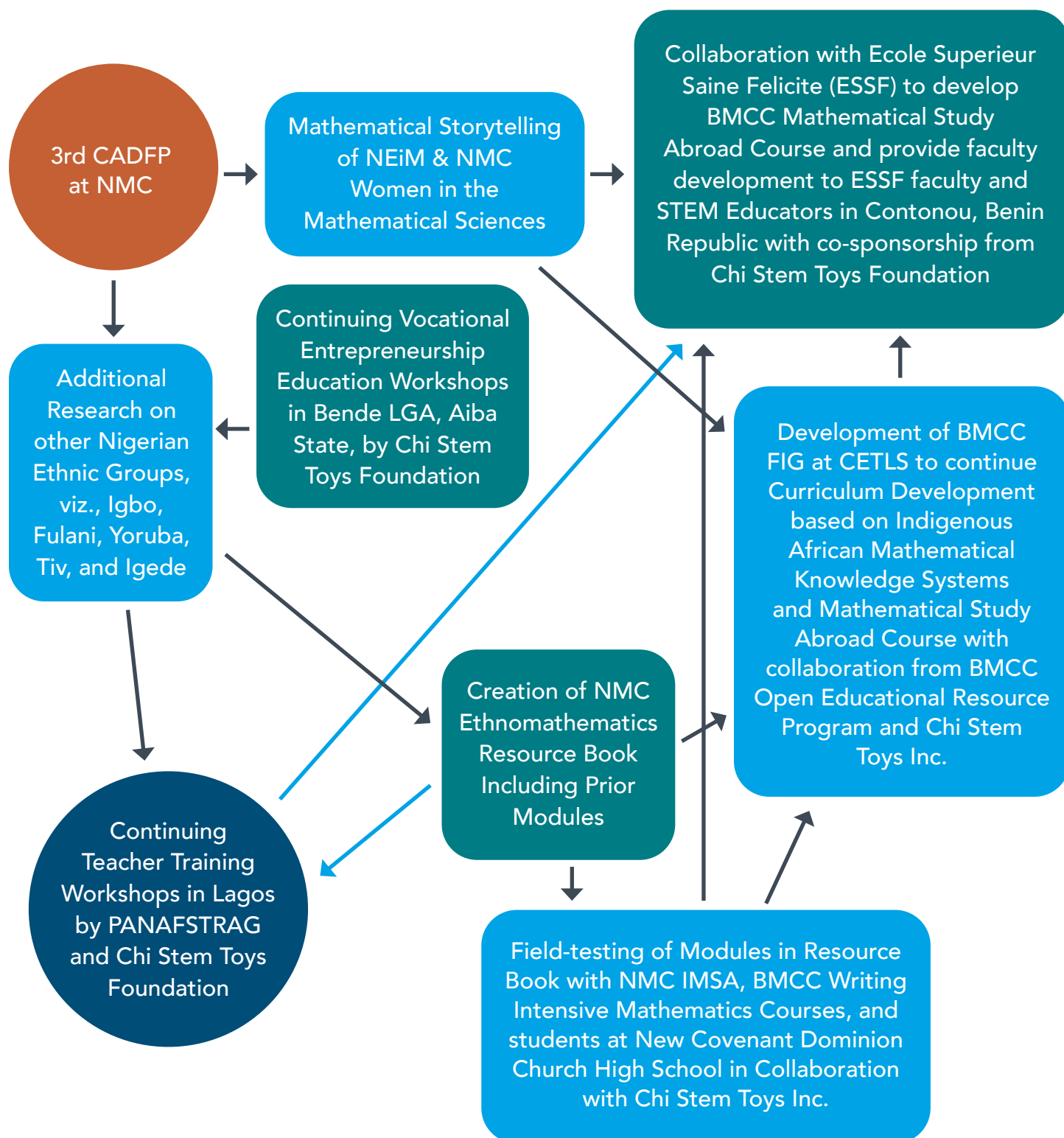


FIGURE 4

Collaborations Resulting from Third CADFP Project at NMC



these colleagues are males, who are not concerned about self-reproduction in male-dominated STEM fields. The connection to make this CADFP project possible occurred at a UN CSW. This meeting was geared toward empowering women and female children. The connection was made with two female colleagues, Professors Williams and Edema; these professors were leading a professional group—NiWARD—that was concerned with issues of women’s empowerment in STEM related fields. Professor Edema was leading a workshop about gender issues in science and technology. Without this unique connection, this CADFP project probably would not have taken off.

Part of this CADFP project’s success came from Professor Agwu tapping into her pool of networking groups with an interest in STEM education to collaborate with them on related aspects of the project, such as teacher training and faculty development, field-testing and evaluation of the developed curriculum, vocational and entrepreneurship education, and STEM enrichment for students. The project’s impact at FUTA and NMC included professional development workshops for STEM faculty and teachers on the developed curriculum and field-testing the curriculum with schoolchildren at the CGRD, NMC IMSA, BMCC STEP, and NCDCHS: students in writing intensive mathematics courses at BMCC; teacher training joint workshops by PANAFSTRAG and Chi Stem Toys Foundation in Lagos; STEM related vocational and entrepreneurship education workshops by Chi Stem Toys Foundation in Bende LGA; and the joint Mathematical Storytelling and Ndebele Doll Sculpturing Program by the Drammeh Institute, Black Women for Black Girls Giving Circle, and Chi Stem Toys Inc. Participants attending all of these workshops were surveyed for their opinions related to the impact of the workshops and use of the curriculum materials. This feedback, together with feedback from conference presentations and publications, has been used to refine the materials published by the NMC as an Ethnomathematics Resource Book on the Nigerian ethnic groups studied so far.

2. Funding and resources

Funding has been an extremely crucial factor for the success of this CADFP project. Many organizations have contributed funding and resources beyond that provided by the CADFP to facilitate the project’s growth and development and its extension beyond the host and home institutions. Without this support, the project would not be as acclaimed as it currently is, nor would it have the visibility it currently has. The donated funding and resources have supported workshops within and outside the host and home institution and have provided international travel funds for Professor Agwu, who has also sacrificed her own funds for international travel outside the CADFP funding period

to continue working with the NMC Ethnomathematics Research Group to facilitate the project’s sustainability. The NMC Ethnomathematics Research Group is soliciting funding to move the project to the next level, training teachers from around the nation to use the curriculum published in the NMC Ethnomathematics Resource Book. This project has received maximal funding support from the CADFP (thrice funded), supplemental grant funding, and funding for joint presentation at an international conference—which indicates successful outcomes based on the CADFP evaluation process.

A measurable success of the project is demonstrated by the fact that the NMC has continued to provide local support for Professor Agwu and the NMC Ethnomathematics Research Group to maintain the collaboration, attend national mathematics association conferences to present the group’s work, and publish the group’s work. This support indicates the impact of the project in moving the NMC’s mission forward. Another measurable success is the fact that PANAFSTRAG and Chi Stem Toys Foundation have continued the workshops to train teachers in Lagos and to provide STEM related vocational and entrepreneurship training in Bende LGA, Abia State. Lastly, FIG success is evaluated by the CETLS on an annual basis, with semester-end reports of the outcomes published on the college website. Additionally, evaluative feedback (formally, by BMCC’s Office of Institutional Effectiveness and Analytics and/or other BMCC or CUNY online training programs; informally, by the Carnegie African Diaspora Fellow) from students in BMCC writing intensive mathematics courses where the developed curriculum is being field-tested indicate that the curriculum has increased their level of interest and motivation in mathematics and is fostering cultural awareness and education on issues related to women’s empowerment in STEM. Thus, the CADFP project is meeting its goal of providing an effective model for capacity building in STEM related fields.

3. Commitment of leadership and leadership turnover

The change in directorship at the NMC before the second iteration of the CADFP project, with the new leadership coming from the outside, presented challenges of getting buy-in and commitment from the new director. This slowed down some of the work being done before the official start of the second iteration of the project. However, once buy-in was achieved, it came with the commitment of adequate support that ensured the project’s success, facilitating national and international visibility through conference presentation and publications. With another change in the directorship in August 2021, we pray for continuity and sustainability at the same or higher level and we are gradually getting it.

Additionally, the project's success would not have been as strong if not for the support of the home institution's (BMCC's) leadership in granting Professor Agwu a sabbatical leave for the second iteration of the project at the NMC. The extended time period allowed many more ethnic groups to be studied, with related curriculum developed and the mathematical storytelling of NiWARD, NWM, and NMC Women in the Mathematical Sciences. The home institution has faced some challenges, particularly in terms of funding for the FIG to develop the study-abroad mathematics course in the Benin Republic. Other than the recent funds made available in summer 2021 to Professors Agwu and Agbotouedo by the BMCC OER, the FIG has had to solicit for funding outside of CUNY for course development and implementation. So far, the FIG has been unsuccessful—but is hopeful for the future. We are thankful that Professors Agwu and Agbotouedo were willing to invest their personal funds with some support from Chi Stem Toys Foundation for travel to the Benin Republic. They made the necessary connections with mathematics colleagues in the Benin Republic to lay a foundation for the study-abroad course implementation at ESSF.

4. Public Health and Security Challenges

The COVID-19 pandemic that has plagued the world also presented challenges for moving forward certain aspects of this CADFP project. FGN lockdowns and security issues prevented the NMC Ethnomathematics Research Group from engaging in study tours to meet with the custodians of culture for ethnic groups for which a curriculum had yet to be developed. The pandemic also affected travel of Professor Agwu to Nigeria in 2020 and 2021 to continue in-person activities with the NMC Ethnomathematics Research Group, including presentations at the NMS and MAN due to some of their annual meetings being rescheduled. The annual PANAFSTRAG and Chi Stem Toys Foundation teacher training workshop in Lagos took place in 2020 and 2021 via Zoom due to COVID-19 challenges. These security challenges have disqualified Nigeria as a host country for the study-abroad mathematics course being developed by the BMCC FIG because Nigeria is listed as a level 3 security risk country by the US.

Discussion of Results From Field-Testing Done at NMC IMSA and CGRD

The results of our field-testing the Gbari module both at NMC IMSA and with local Gbari children at the CGRD showed that the use of cultural materials and women's stories improves academic achievement for both male and female students in geometry. This supports the finding by Kurumeh (2004) that the use of Ethnomathematics improves the achievement and interest of students in geometry and measurement. It also lends support to Aprebo's

(2016) recommendation that the use of teaching aids in our environment for teaching mathematics and the use of African objects as examples in teaching mathematics help learners see the mathematical composition in any subject or object. And it supports Ugwuanyi (2014), who opined that the use of instructional materials in mathematics reduces to a large extent the abstract nature of many mathematical concepts. When mathematics topics are made less abstract, students' understanding and retention are improved, which leads to higher academic achievement.

The results of our field-testing the Gbari module at NMC IMSA also shows that the mean score of all male students in geometry is higher than that of female students, but there is no significant difference in the mean post-test achievement scores in geometry between male and female students taught with the use of cultural materials and women's stories. This finding supports some researchers (Atovigba et al., 2012; Ali et al., 2014), who found that male students perform better than female students in mathematics, and other researchers (Timayi et al., 2016), who found a difference in the mean and standard deviation scores of male and female students in favor of male students in geometry—but the observed difference was not statistically significant with regard to achievement and gender interaction. However, these results do not support some other researchers (Linderberg et al., 2010), who reported that gender differentials among males and females is converging; hence, they perform similarly.

Conclusions Related to Field-Testing at NMC IMSA

From the results of our field-testing the Gbari module at NMC IMSA, the use of cultural materials and women's stories in teaching geometry improves the academic achievement of students in general, irrespective of the student's gender. Also, although the mean post-test score of all male students in geometry is higher than that of female students, there is no significant difference in the mean post-test achievement scores in geometry between male and female students taught with the use of cultural materials and women's stories.

Recommendations

Based on the work so far, the NMC Ethnomathematics Research Group makes the following recommendations:

- Africa needs to use cultural, creative, and innovative methods to profile women and girls for further empowerment and sustainability of agricultural processes and other areas of STEM.
- Improve the teaching of mathematics in Africa through the use of curriculum based on our indigenous knowledge systems.

- Transform agricultural research so that the African agriculture sector can feed Africa and the rest of the world by supporting STEM that will empower women and youth in the sustainability of agriculture.
- All mathematics teachers in Nigeria should adopt the use of cultural materials and women's stories in teaching geometry in secondary schools.
- All mathematics teachers in Nigeria should undergo a capacity building workshop on the use of cultural materials and women's stories in teaching geometry in schools.
- Collaborative models that promote network connections and visibility are effective for successful outcomes in capacity building in women's empowerment in STEM related fields.

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Mutually Beneficial Collaboration

A Sustainable Approach to Mutually Beneficial Collaborations Between African and North American Universities

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ABSTRACT

Life is about what is made out of it. The worth of a life is measurable by the significance of contributions it makes to the improvement of society, especially to the lives of others within its circle of influence. This paper presents a sustainable approach to building workable and mutually beneficial research and teaching collaboration between North American and African universities. It is based on literature and experiential knowledge that I gained working as an academic in both continents and from recent Carnegie Corporation of New York-funded collaborative research with colleagues in South Africa. It is a framework for currently evolving mutually beneficial collaboration between host institutions and the scholar, and by extension, the scholar's institution. Implementation of the framework is envisioned to enhance research and teaching capacity in host institutions. It is also expected to provide accessibility to rich/credible data and exposure for researchers and students from both the host- and scholar's institutions through established collaborative research and course-based exchange programs. Furthermore, it is expected to result in more impactful and long-lasting contributions to the improvement of lives in Africa, and better understanding of African society by North Americans who would be involved in the exchanges.

Introduction

International partnerships are currently receiving increasing attention among higher education institutions and in the public sector. The increasing attention is based on the belief that individuals and organizations can achieve more by working together in a collaborative setting (Dhillon, 2009). An important first step to establishing collaborative partnerships is to acknowledge its aims, actions, and benefits (Amey et al., 2007; Caniglia, 2017; Murphy et al., 2017; Nielsen et al., 2015).

There are three levels of possible mutually beneficial university partnerships, namely: individual, departmental, and institutional levels (Carfang, 2016; Cozza & Blessinger, 2016). The individual level involves scholars from two or more higher institutions agreeing to work together. The extent of their collaboration could vary from joint presentation at conferences to deeper relationships involving developing funding proposals together, research visits and co-supervision of students. This level of partnership does not usually involve many formalities. The only aspect that may officially involve the universities is when a permit is needed by the visiting scholar(s) to use university-owned equipment, residence, library, office and research facilities.

The second level is the departmental level, which, depending on the nature of the governance structure of the universities involved, requires varying complexity of paperwork. This level of collaboration may involve faculty and student exchanges

and the running of joint academic programs. Such programs at certificate, diploma, or degree levels may be a blend requiring students to spend some time at both universities. It may also involve jointly offering online courses. There would need to be an established agreement on tuition, cost, and profit sharing, in such cases.

The third level is international collaboration at the institutional level. It usually involves rigorous paperwork, and the agreement could take a substantial amount of time to achieve. It may start with the relationship between two scholars from two or more institutions and gradually evolve to the departmental and institutional levels. This level of partnership, depending on the governance structure of the participating universities, would involve communication, visitations, and signing of well spelled-out formal agreements by officials of the partnering institutions.

This paper is based on information obtained from both primary and secondary sources, as there are not many publications with records and statistics on higher education in Africa. This paper has three main sections. Resource asymmetries between North American and African universities are discussed in the first section. This is followed by a discussion of my ideas and encountering of practices used to promote mutually beneficial collaborations between home and host institutions. Metrics that can be used and are being used for measuring and evaluating effective mutually beneficial collaborations among North American and African universities are discussed in the third section, before I offer some conclusions.

Resource asymmetries between North American and African universities

Many African governments have been making significant investments in higher education, with the aim of producing high-skilled manpower that could help in solving their local problems and propel the nations to industrial economy status. While some successes have been recorded, many African countries are still grappling with lack of adequate manpower needed to service their economies. Unlike in North America, many of the universities and other higher institutions of learning set up in some African countries are nothing more than “glorified secondary schools.” A significant number of the institutions are not adequately staffed, and many of the university laboratories are either not equipped with the needed training facilities or are operating with outdated equipment. Many of the teaching and research infrastructures are overwhelmed, as the student-to-equipment ratios are far beyond the design. Inadequate funding is among the main causes of the problems. Other causes of the problems include too frequent changes in educational policies and the politicization of education governance (Luhanga, 2010; Sayed, 2000; Taha & Bjørkelo, 2016). These have led to mass migration of many upcoming scholars to the western world, thereby depriving many of these institutions of the academics needed to train the students. The majority of those that couldn’t leave do not have access to research amenities required for graduate studies. Consequently, “half-baked” graduates are turned out from these institutions and are shouldered with the responsibility of servicing the economy, managing various organisations, and training upcoming generations (Banya, 2001; Carfang, 2016; Duffield et al., 2013; Ishengoma, 2017; Zink, 2017).

Although educational aid is being offered by many foreign governments, intergovernmental agencies, and voluntary organisations to break the cycle of incompetence, there still remain some fundamental hurdles that must be overcome in order to solve the problem of inadequate higher education in many African countries (Sayed, 2000; Taha & Bjørkelo, 2017).

Ideas and practices encountered/used to promote mutually beneficial collaborations between home and host institutions

Governments and many of the higher institutions of learning in Africa are striving to overcome their many challenges. One of the approaches is international partnerships with universities in more developed countries and with well-equipped local institutions and industrial organisations. Many of these open-minded, forward-looking universities, with funding support from governments and non-governmental organizations, have established linkages and

international offices to foster academic collaborations. One of the approaches being used by these international offices includes inviting well-established African academics who are based abroad to come for research visits, conferences, and sabbaticals. They use such visits by these international experts as an avenue to develop linkage/partnerships with the visiting scholars and their institutions. Such visits by international experts often enrich life, study, and research opportunities for students and academics. As the interactions usually lead to long-lasting faculty and student exchanges, co-supervision of graduate student theses, curricula review, and joint research projects aimed at solving local problems. Visiting international scholars and their institutions benefit from such partnerships in terms of opportunities for faculty and students to learn about other countries’ cultures, curricula and research strengthening, and cooperation in addressing common problems (Caniglia et al., 2017; Carfang, 2016; Cozza & Blessinger, 2016; Duffield et al., 2013; Eddy, 2010; Lukman et al., 2009; Luhanga, 2010; Suarez-Balcazar et al., 2013; Wrye et al., 2019).

There are some factors that are critical to the success of international university partnerships. These factors include funding, communication, synergy, measurable outcomes, and dissemination of findings, organizational compatibility, and simplicity. Furthermore, for an international partnership to succeed, the governance approach must recognize and embrace a perspective that synergistic integration of stakeholders and communities is necessary to resolve university problems. It must also be willing to develop or adopt new methods (e.g., contracts, grants, joint initiatives) that are required to achieve its goals. The adopted governance model must emphasize a win-win situation where all partners benefit from the project (Cozza & Blessinger, 2016; Duffield et al., 2013; Eddy, 2010; Franceschet & Costantini, 2010; Hydén, 2017; Perry & Zambo, 2016; Sayed, 2000; Schmalzer & Kiendl-Wendner, 2017; Tomazic et al., 2016).

Talking about personal experience, I found all the aforementioned factors very relevant to the success of my collaboration with my hosts during my Carnegie African Diaspora Fellowship Program (CADFP). I was hosted in 2019 by two colleagues from the University of Johannesburg and University of Witwatersrand, both in Johannesburg, South Africa. Although one of them was my former undergraduate student, I didn’t really have a close relationship with either of them. However, we had brief contact prior to preparing and submitting an application for CADFP in 2018.

In our dialogue, we discussed my area of expertise which could be of benefit to them, their junior colleagues, and their students. We also considered available resources, in drafting a proposal. Our CADFP collaborative research project on the development of a life cycle assessment database brought us close together with quite a number of their graduate

students and university officials at the college level. Since the time of implementation of the CADFP in 2019, we have remained close friends and have undertaken many other activities together. These include:

1. Collaborative development of research project proposals and funding applications
2. Co-supervision of graduate students
3. Serving as external examiner for their graduate students
4. Co-authorship of book chapters, journal articles, and conference papers
5. Curriculum review
6. Undertaking research visits to each other's institutions

We are exploring more opportunities to work together on new projects, such as textbook authorship/publication and facilitating student and faculty exchanges.

Apart from scientific meetings, I found our several social activities helpful in enabling us to get to know each other better in a more relaxed environment. It also fostered an understanding of our areas of interests and limitations. Currently, our collaboration is at the individual level, and we are planning to take it to higher levels.

Metrics for measuring and evaluating sustainable and effective mutually beneficial collaborations

Mutually beneficial university partnerships are necessary to foster sustained commitment to agreements and projects. Ensuring continuity of the mutual benefits for all the partners is also essential for a long-lasting collaborative relationship. However, there need to be credible metrics for evaluating the benefits, and there should be a clearly laid out plan for the evaluation of the relationship and the benefits (Murphy et al., 2017; Nielsen et al., 2015; Tomazic et al., 2016; Wrye et al., 2019).

Various metrics are used in measuring and evaluating effective mutually beneficial collaborations among scholars and their institutions. Among the commonly used metrics are the number and amount of research grants won by the team; number of collaborative projects implemented; number of exchanges that took place across the institutions, and number of graduate students supervised that successfully completed their programs within a certain period. Other metrics include the number of jointly published research papers in reputable peer-reviewed journals, and the number of patents registered. Ultimately, these metrics do not only positively affect the academic progression of the scholars involved, but they also impact the reputation and rankings of scholars and hosts, as well as of their universities (Franceschet & Costantini, 2010; Ishengoma, 2017; Reddy et al., 2016).

Conclusion

A sustainable and effective mutually beneficial collaboration may or may not be difficult to form, but it definitely needs to be nurtured, flexible, and regularly reviewed to ensure continued success of the program(s). The partnership has to be synergistic in addressing local needs and beneficial to all the parties involved before all stakeholders buy in to it. Responsibilities of the collaboration also need to be stated clearly from the onset of the partnership (Suarez-Balcazar et al., 2013; Tomazic et al., 2016; Wrye et al., 2019). Furthermore, outcomes of the endeavor and lessons learned need to be disseminated at appropriate fora, whether locally, nationally, or internationally, to ensure the proliferation of excellent practices. In this way, African universities will achieve the desired progress while the collaborating North American universities will also benefit immensely from the partnership.

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Mutually Beneficial Collaboration

Developing an International Collaborative Family Research Project in Tanzania: Practices, Challenges, and Lessons Learned

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ABSTRACT

Improving global health through international research collaboration is increasingly becoming a common pathway of transferring evidence-based knowledge across cultures. Developing such collaborations is both challenging and rewarding, with mutual win-win opportunities as well as practical considerations. This article describes the practices, challenges, and lessons learned while developing a family health research project partnership between Wright State University (WSU) and Muhimbili University of Health and Allied Sciences (MUHAS) through the Carnegie African Diaspora Fellowship Program (CADFP). Specifically, the article describes applying the revised 2018 Conceptual Model for Partnership and Sustainability in Global Health (PSGH) developed by Michele Upvall and Jeanne Leffer in establishing, implementing, and sustaining the WSU–MUHAS partnership. The three-level findings from this partnership include: 1) Personal level: Promotion and/or tenure awards and increased opportunities for professional development training; 2) Interpersonal level: Increased research productivity, increased partnership in scholarly activities such as manuscript and grant writing, increased trust and collegial relationships; and 3) Systems level: Increased appreciation of the CADFP at the university level. The comprehensive collaborative model is a great resource for global health networking and global health research productivity between low- and high- resource countries.

Introduction

Collaboration in global health research and practice between high-income countries (HICs) and low-income countries (LICs) is well documented in the literature (e.g., Atkins et al., 2016; Godoy-Ruiz et al., 2016 [especially, in addressing the Sustainable Development Goals (SDGs)]; and Rosa, 2017). Likewise, the contribution of the field of global health in global health learning across disciplines is increasingly becoming important (e.g., Kang et al., 2020; Lu et al., 2020). However, despite the increase in global health programs, empirical evidence is still lagging behind in the development of win-win collaborative models/ frameworks that guide bilaterally integrated approaches between HIC and LIC partners (Upvall & Leffer, 2018). Using the Partnership and Sustainability in Global Health (PSGH) as a guide, this article describes the practices, challenges, and lessons learned when developing and implementing a collaborative family research project between Wright State University (WSU) and Muhimbili University of Health and Allied Sciences (MUHAS) through the Carnegie African Diaspora Fellowship Program (CADFP). The PSGH is instrumental in that it provides a practical guide for global health research, practice, and education initiatives. The most valuable tenet of the model is the integrated inputs from the fellow and the host in developing the partnerships and collaborations. These views were critical in establishing reciprocal relationships within the CADFP.

The WSU–MUHAS Partnership and Sustainability in Global Health Project

Partner Factors (CADFP Fellow):

Conceptually, the PSGH describes the fellow as a visiting scholar in a chosen country of interest. The model describes the fellow's factors that contribute to the success of a partnership in terms of cultural perspectives, personal attributes, personal expectations, power/politics differentials, professional status, and knowledge of the host country.

Within the WSU–MUHAS partnership, the fellow was a WSU nurse scientist and educator with a background in family and community/public health science. The fellow's institution, Wright State University, has a mission and vision that supports global health research and education. The vision and mission are consistent with those of professional nursing organizations such as the American Academy of Nursing that encourage nurses' involvement in global health to advance nursing science. The fellow's African-born scholar status with previous strong ties with the host was a bonus in facilitating the partnership. Legal and grants office staff at the fellow's university were supportive of and central to the funding applications as well as IRB approvals for this international research collaboration. WSU's newsroom disseminated the fellow's work through their online platform, increasing visibility of the program to the university and local community.

Partner Factors (CADFP Host):

Conceptually, the PSGH describes the host institution as the setting for the visiting fellow in a chosen country of interest. The model describes the host factors contributing to the success of a partnership as: expectations of culture of the visiting fellow, expectation of visiting fellow, impact of social, political, environmental status of host settings strengths and needs, power/politics differentials and professional status.

Within the WSU–MUHAS partnership, the CADFP host was a MUHAS public health scientist and educator with a background in gender studies as well as nursing education. MUHAS has a vision and mission that supports international collaboration in global health research and education. The host faculty and researchers were actively involved in scheduling and attending introductory meetings to share personal and institutional needs for the collaborative relationship. Through the host, the fellow was able to learn about the host setting's internal and external dynamics, and its successes and challenges with previous and existing international collaborations.

The main need from the host was enhancing institutional capacity building in writing and submitting winning grants, especially National Institute of Health (NIH) grants. The host faculty voiced concern about experiencing a lack of a full commitment and follow-up by fellows on agreed-to collaborative promises. The host and fellow both acknowledged the need for developing a win-win relationship by learning more about each other during the partnership engagement process. Both the fellow and host facilitated formalizing the relationship between institutions as well as strategies to meet the needs of MUHAS research priorities. The host was able to link and support the fellow in building relationships for collaborative projects such as the global health learning study abroad program, HIV/AIDS and breast cancer awareness research projects. The host continued to participate actively in developing mutual research ideas, as well as writing and submitting joint funding applications. The official MUHAS ID issued to the CADFP fellow on arrival was significant in facilitating the sense of belonging and advertising the program to curious staff and faculty members.

Resources

Conceptually, the PSGH describes the success of a global health partnership as dependent on the availability of resources (e.g., human, material, and financial) for the fellow and the host. The CADFP fellow and host both shared the need for human, material/equipment, and financial resources at the department/college and institutional levels.

Human

Research mentorship in grant writing was an urgent need for both the fellow and host as they developed the collaborative research project. A local mentor and collaborator, Dr. Josephine Wilson, played a critical role

in mentoring both the fellow and host in writing the HIV/AIDS external grant. An external mentor and collaborator, Dr. Eunice Lee, was instrumental in mentoring the fellow and host in a National Institute of Health–National Cancer Institute (NIH–NCI) application in breast cancer awareness.

Material/Equipment

Materials for data management such as a transcriber machine were a felt need by the host for the success of the program.

Financial

There was a felt concern from both sides of ongoing challenges of funding streams. It was clear that there were significant disparities in actual and perceptions of resources between the host and fellow at the personal and systems levels. At the university level, the fellow was able to secure pilot funding through professional development funds and internal seed funds to initiate the collaborative global health study abroad program and research projects on HIV/AIDS and on breast cancer awareness. Together with a team of WSU faculty, the fellow was able to travel to the host country to complete a needs assessment to determine and learn about the research and global learning needs, legal and social logistics, anticipations, people and environment. This enabled the fellow to determine how cultural perspectives and power differences of self and biases may influence/hinder expectations and professional needs in the context of a win-win collaborative relationship. These initial collaborative efforts were precursors to the ongoing CADFP funding opportunities (i.e., 2017 and 2021). The collaborative efforts completed via the 2017 CADFP program enabled the fellow, host, and a new research partner to secure a pilot seed grant from WSU School of Nursing for the Breast Cancer Family Research project. The breast cancer project thus expanded to include WSU, MUHAS, and the University of California, Los Angeles.

Time

Time was an important and essential resource for both the fellow and host in facilitating the global health collaborative project. The fellow and host conceptualized time in terms of the promotion and tenure clock, time for project development/write-up, time for implementation and analysis/evaluation, and time for grant submission. It was imperative that both parties get involved in valuing the meaning of time from a cross-cultural perspective. Time differences, delays in IRB approvals, changes in the research teams, changing political and social climates, individual priorities and work expectations, and discouragement via peer review feedback on grant submission all influenced the partnership processes.

Engagement Processes

According to the PSGH, the engagement process covers the relationship-building and developing partnership processes.

Relationship-building process:

Conceptually, the PSGH describes the relationship-building process as including the main attributes of negotiating partner roles, building trust, and collaboration. Negotiating partner roles includes: needs assessment/ongoing assessment, mutual goals setting, strategies to address concerns, clear action plans, and clear communication. Building trust includes: cultural bridging organizations, two-way communication, transparency, shared mission/vision, mutual respect, and preparation for visitors. Collaboration includes: support from both partners, strong communication, and leadership

Within the WSU–MUHAS partnership, it was essential that both parties continue to assess their priorities and agree on mutual goal setting on the projects. Building a trusting relationship between the fellow and host was important as it brought to light the need for clear communication with the team. The host and fellow shared professional interests, research goals, strengths, and weaknesses and integrated these in their projects. The fellow's areas of expertise and research interest, family research, matched well with the host's interest. The host guided the direction of the research project in terms of addressing university research priorities.

Both the fellow and host played a key leadership role in the project write-ups and IRB approvals.

The host's role in project implementation to meet local needs was essential. The ongoing collaborative experience between the host and fellow gradually offered an open, safe, and trusting environment to share frustrations or concerns as they emerged. This facilitated clear action plans and ultimately successful project activities. Getting the right people and those who do the right thing was essential for relationship building. It was important to note that the most influencing factor for successful engagement was mutual respect between the fellow and host in terms of their world views.

Developing partnership process

Conceptually, the PSGH describes the developing partnership as the process that includes the following attributes: cultural bridging, collaboration, capacity building, and shared leadership. Cultural bridging includes: negotiating shared language, ongoing negotiation, addressing power differences, and working within the geopolitical context. Collaboration includes: timing to meet host needs, mutual support, negotiation and timely review of the project. Capacity building includes: accompaniment, shared expertise, role modeling, and shared leadership, which includes addressing power differences, shared vision and goals, role modeling, ongoing assessment and shared expertise.

Within the WSU–MUHAS collaboration, it was vital that the fellow respect the host's goals and needs and vice versa. There was significant learning between the host

and fellow as the negotiation took place. The fellow had practical expertise from her institution that built upon the host's knowledge. The knowledge sharing was bidirectional. There were several moments of value clarification related to differences in research project approaches and priorities from the perspectives of the fellow and host and, measures to put in place a mutual beneficial cultural bridge. The fellow's language fluency in Kiswahili and prior understanding of the Tanzanian culture was a bonus in facilitating cross-cultural communication through the period of negotiations and timely reviews of project planning and implementation activities. A clear understanding of the geopolitical, social, and economic contexts was important in determining the fellow and host's perspectives and expectations in the collaborative relationship and for timely participation in the implementation of research activities.

Mutual support through trust and respect was highly needed, especially when time ran out for the fellow or host. Building capacity was essential in responding to the fellow and host's project needs. Embracing an interdisciplinary collaborative relationship reinforced the relationship by engaging potential mentors and key players. For example, key players from the MUHAS research administrative office, the Office of International External Relations, and dean and faculty at the School of Nursing were vital for the collaborative study abroad program. The IRB office staff were instrumental in the research project. The fellow practiced accompaniment to strengthen the relationship by empowering the host to take leadership roles on the projects as the principal investigator. The host and fellow shared expertise when writing the grants and role-modeled expectations to each other without judgment when things did not go as planned. They both used judgmental concerns as teachable moments for future growth. The fellow and host learned to negotiate power for the benefit of the project. The fellow mentored the host in developing and preparing research concept drafts and proposals to be submitted to NIH officers and funding opportunity announcements, respectively.

Sustainability

According to the PSGH, after forging the partnership, it is vital to understand and address program factor inputs and processes that facilitate sustainability and outcomes.

The program factors include: design and implementation, organizational setting, and broader host community. The design and implementation factors include: the community/needs assessment and equal partner participation. The organizational setting factors include: resources and disparities as well as the broader host factors, namely: the geopolitical and influence of social, economic, political, and cultural factors.

Program factor inputs and processes

Within the WSU–MUHAS partnership, ongoing learning about the host and the community where the work took place helped address the program factors related to project design and implementation. The fellow and host both participated in introductory meetings with the local hospitals/agency to plan and facilitate students' global health learning experiences. The fellow also advocated for foreign student visas with local immigration officials. The needs assessment facilitated the identification of community strengths and key stakeholders. The students or research team engaged in an equal and mutually beneficial participatory relationship. Resources previously discussed in this article facilitated the project's sustainability.

WSU and MUHAS administrative support to the fellow and host was critical to project implementation and future sustainability. Listening to the needs of the host and fellow and their broader communities was important to the success of

the project activities and outcomes. Growing leadership skills to champion global health learning and research was vital for sustainability. It would have been easy to give up due to the challenges involved, but the fellow's commitment to the host and the host's commitment to the fellow maintained a bidirectional flow of energy and stability for the collaborative work. The fellow and host had to adapt to several program changes, including the COVID-19 pandemic, in order to succeed.

Outcomes

According to the PSGH, the outcomes include but are not limited to: improved health outcomes, continued innovations, expanded world views, host country ownership, program activities continuation, collaborative research/publications, program development/professional training, program/project completion and collegial friendships.

The fellow and host achieved the following outcomes from the WSU–MUHAS partnership:

TABLE 1

Program/research activities: Funded Research Projects after CADFP

| YEAR | TYPE OF GRANT | DESCRIPTION OF GRANT AWARDING AGENCY/INSTITUTION, ROLE AND STATUS | AMOUNT |
|------|---------------|--|-----------------|
| 2020 | External | The Carnegie African Diaspora Fellowship Program (CADFP) [Alumni Fellowships] March 26, 2020 Project Title: Co-Development of New and Strengthening Existing Academic and Clinical/Experiential Learning Policies and Procedures for MUHAS Occasional Elective Students and Collaborative Research in Family-Based Interventions for Addressing Non-Communicable Diseases. Status: Completed | Paid Fellowship |
| 2020 | Internal | Wright State University, CONH Seed Grants Goal: To assessment of acceptability of implementing a community health worker-led breast cancer awareness and screening program in Ileje district, Tanzania Status: Ongoing | \$7,500 |
| 2016 | External | Fellow, Carnegie African Diaspora Fellowship Program Goal: To complete the following projects: Collaborative research in HIV/AIDS prevention and curriculum co-development in strengthening MUHAS capacity for elective programs. Status: Completed | Paid Fellowship |

TABLE 2

Program/research activities: Funded Research Projects Prior to CADFP

| YEAR | TYPE OF GRANT | DESCRIPTION OF GRANT AWARDING AGENCY/INSTITUTION, ROLE AND STATUS | AMOUNT |
|------|---------------|---|---------|
| 2011 | Internal | Wright State University Research Initiation Goal: To conduct a "Needs Assessment for an International Collaboration on HIV/AIDS in Tanzania." Status: Completed | \$9,940 |
| 2011 | Internal | Wright State University Professional Development Grant Goal: To travel to Tanzania for a Global Health Service Learning program planning visit. Role: PI Status: Completed 41 students have completed the global health study abroad program as of 2019. | \$3,000 |
| 2010 | Internal | Office of Service Learning Award Goal: To develop a Global Health Service Learning course Status: Completed | \$1,000 |

TABLE 3

Program/research activities: Unfunded Research Projects

| YEAR | TYPE OF GRANT | DESCRIPTION OF PROPOSAL |
|------|---------------|---|
| 2018 | External | Proposal: Developing A Breast Cancer Awareness and Screening Program Among Women 40-65 years Old in Ileje, Tanzania, ONS Foundation |
| 2018 | External | Proposal: NIH-NCI R03 Feasibility and Acceptability of Community Health Worker-Led Couple-Based Breast Cancer Awareness (USAWA) Intervention among Women 40-60 years old and spouses in Mbeya, Tanzania. |

TABLE 4

Collaborative research/publications/presentations/reports (before and after CADFP)

| YEAR | DESCRIPTION |
|------|---|
| 2022 | Eustace, R. W. (2022). A theory of family health: A Neuman's Systems perspective. <i>Nursing Science Quarterly</i> 35 (1), 101-110 |
| 2018 | Eustace, R.W., Nyamhanga, T., & Lee, E. (2018). A discussion of social determinants of breast cancer among women in Tanzania: Advantages, gaps and future directions in family scholarship [Poster presentation]. The 2018 Annual NCFR Conference, San Diego, California, November 7-10, 2018. [International] |
| 2018 | Eustace, R.W., Nyamhanga, T. Lee, E. (2018). <i>Theorizing the social determinants of breast cancer in sub-Saharan Africa: A family nursing perspective</i> [Paper presentation]. The Nursing Theory: A 50 Year Perspective, Past and Future Service and Academic Outreach, March 21-22, 2019, Cleveland, OH. [National] |
| 2018 | Eustace, R.W., Nyamhanga, T. M., Ghuhiya, A. I., & Mushy, S. E. (2018). Family life education development, implementation, and evaluation in Tanzania. In <i>Global perspectives on family life education</i> (M. Robila & A. Taylor, Editors) (pp. 135-151). Springer, Cham. |
| 2017 | Nyamhanga, T. M. & Eustace, R. W. (2017). <i>360° review of MUHAS elective programs</i> . Muhimbili, University of Health and Allied Sciences (MUHAS). |
| 2017 | Eustace, R. W., Wilson, J. Asiedu, G., Nyamhanga, T., & Mkanta, W. (2017). Community stakeholders' perceptions of the role of family in HIV prevention in Iringa, Tanzania, <i>Journal of Community Health Nursing</i> , 34 (1), 10-20 |
| 2015 | Eustace, R. W., Nyamhanga, T., et al. (2015). <i>What is the role of family in HIV/AIDS prevention? Implications for Community-based Family interventions in Tanzania</i> [Poster presentation]. The 3rd Muhimbili University of Health and Allied Sciences Scientific Conference, May 28-30, 2015, Dar Es Salaam, Tanzania. [National] |
| 2013 | Eustace, R. W., Nyamhanga, T. et al. (2013). <i>Risk factors for HIV transmission: Findings from a cross-sectional study in Iringa, Tanzania</i> [Poster presentation]. The 2013 Central Research Forum (CRF), Wright State University, Dayton, OH, October 24, 2013. [Local] |
| 2013 | Eustace, R. W., Wilson, J., Nyamhanga, T. et al. (2013). <i>Risk factors for HIV transmission: Findings from a cross-sectional study in Iringa, Tanzania</i> [Poster presentation]. The APHA 141th Annual Meeting and Exposition Boston, MA, Nov 2-6, 2013. [International] |
| 2013 | Ford, J. Eustace, R. W., Wilson J. Nyamhanga, T. et al. (2013). <i>So many people here take alcohol and AIDS is a big problem: Examining the factors influencing the HIV epidemic in Iringa, Tanzania</i> [Poster presentation]. The APHA 141st Annual Meeting and Exposition Boston, MA, Nov 2-6, 2013. [International] |

TABLE 5

Other Collaborative research/scholarly relationships

| ROLE | DESCRIPTION |
|---------------------|--|
| Manuscript Reviewer | Mwanukuzi, C. and Nyamhanga, T. (2021). "It is painful and unpleasant": Experiences of sexual violence among married adolescent girls in Shinyanga, Tanzania. <i>Reproductive Health</i> 18(1). https://doi.org/10.1186/s12978-020-01058-8 . Dr Eustace, Reviewer |
| Student Advisor | Maswi, E. (Ongoing). <i>Perceived barriers to early detection of breast cancer among women at Maweni Regional Referral Hospital, Kigoma</i> . MUHAS. Dr Nyamhanga, Faculty Advisor |

Future program/project continuation/initiatives:

- Write and submit an NIH application to conduct a multi-level research study in breast cancer awareness and early screening in Tanzania.
- Develop a WSU–MUHAS collaborative application for a virtual study abroad program. Grant award WSU UCIE Seed Grants for Global Virtual Exchange Program Development.

Program development/professional training

- SUNY COIL Study Abroad Goes Virtual Workshop, 6-24 September 2021 (Fellow - professional development)
- Certificate of Completion, 2021 National Cancer Institute Multilevel Intervention Training Institute (MLTI), (Feb 25-July 22, 2021) (Fellow)
- Certificate of Completion, 2022 National Cancer Institute Multilevel Intervention Training Institute (MLTI), (2022) (Host)

Promotion and tenure

- Dr. Eustace: promoted to Professor
- Dr. Nyamhanga: promoted to Associate Professor

Collegial relationships:

- Informal family dinner invitation by the host

Conclusion

Overall, the ongoing WSU–MUHAS partnership is a successful, win-win global health program. Evidence-based theoretical frameworks such as the Partnership and Sustainability in Global Health (PSGH) are critical to the development of a successful and sustainable win-win global health partnership. A clear understanding of the mutual benefits and actual and potential barriers within the current partnership was instrumental to enhancing the quality of the relationship. The use of trust- and respect-based communication among the fellow, host and key stakeholders to address cross-cultural influences over time was vital for positive sustainability and outcomes.

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Mutually Beneficial Collaboration

Improving Clinical and Continuing Education Outcomes in Speech-Language Pathology: Mutual Benefits of Collaboration Across Continents

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ABSTRACT

This paper describes collaboration in the field of speech-language pathology between researchers in South Africa and the United States. The main aim is to address resource asymmetry regarding access to professional services by confronting the paucity of validated and reliable measures for children with communication disorders in South African languages and enhancing the application of knowledge gained in interprofessional continuing education. The International Classification of Functioning, Disability and Health (ICF) (World Health Organization, 2001) was selected as the framework for the collaboration. A series of three interrelated projects within the ICF: Children and Youth Version (ICF-CY) framework is reported on: promoting the ICF through interprofessional continuing education events; translation of child communication assessment tools; and developing leadership in health care professions with a specific emphasis on speech-language pathology. The impact of the collaboration is reviewed and recommendations are made for research collaborations.

In conclusion, the collaboration significantly benefited children with communication disorders; the Carnegie African Diaspora Fellows; speech-language pathology communities, including students; and international readership.

Introduction

More than 200 million children under the age of 5 live in low- and middle-income countries (LMICs) and are not fulfilling their developmental potential (Morelli et al., 2017). This includes children with intellectual disability, autism spectrum disorder, cerebral palsy, and other genetic disorders. These children are at high risk for developing speech-language disorders with far-reaching consequences. Not only is interpersonal communication with caregivers, families, peers, and health care providers challenged in a significant way, but the child's growth, long-term development, learning and education, and ultimately employment and contribution to society are also negatively impacted. According to Article 19 of the Universal Declaration on Human Rights (United Nations, 1948) communication is a human right. Speech-language pathologists (SLPs) aim to prevent, assess, diagnose, and treat a plethora of speech, language, social and cognitive communication, and swallowing disorders in both children and adults (ASHA-a, n.d.). As such, SLPs play a critical role in addressing communication skills, thereby positively impacting development, learning, and skill development within a human rights paradigm.

The field of speech-language pathology was established in the 1920s in the United States (ASHA-b, n.d.), and in South Africa professional education for SLPs and audiologists began in 1937 (Pillay et al., 2020). Although the profession has a proud research, education, and clinical history in both the United States and South Africa, the latter currently faces an alarming supply-need gap (Pillay et al., 2020).

South Africa is a multicultural country with 11 official

languages. After the demise of apartheid in 1994 following the nation's first democratic elections, transformation was initiated to provide equal access to education and health care, and protection against discrimination (Abrahams et al., 2019; Ronski et al., 2018). Despite these initiatives and efforts, the disparity continues, exacerbated by the burden of disease, which creates a major context for disability associated with communication disorders (Abrahams et al., 2019; Kathard & Pillay, 2015). In addition, there is a dearth of SLPs in South Africa, which results in large, underserved populations and barriers to care, particularly in rural areas. This critical shortfall of SLPs is directly linked to inequitable service delivery. It is clear that SLPs have a professional responsibility to advocate for individuals with communication disorders.

Resource asymmetry regarding access to professional services, paucity of validated and reliable measures for children with communication disorders in South African languages, and misalignment among resources were the basis for collaboration between the authors from the United States and South Africa. The purpose of the paper is to describe collaboration within the Carnegie African Diaspora Fellowship Program (CADFP) in the field of speech-language pathology between researchers in the United States and South Africa. The main aim of this paper is to address resource asymmetry regarding access to professional services by confronting the paucity of validated and reliable measures for children with communication disorders in South African languages and enhancing the application of knowledge gained in interprofessional continuing education.

Collaboration Framework

The World Health Organization published the International Classification of Functioning, Disability and Health (ICF) in 2001, followed by a Child and Youth Version (ICF-CY) in 2007 to provide a common language for describing human functioning and disability as well as a framework for gathering data and measuring clinical outcomes (World Health Organization, 2001, 2007). In 2012, the ICF-CY was incorporated into the ICF (WHO, 2012), and the ICF was adopted as the framework for collaboration.

The ICF is a biopsychosocial framework that allows for the holistic consideration of children with communication disorders. It allows for understanding the effects of a communication disorder on a child's ability to communicate in structured and natural contexts, and the ways that environmental and personal factors influence the child. The framework therefore attempts to move away from diagnosis to instead focus on a holistic view of health and functioning (Cunningham et al., 2017). Furthermore, it allows correct comparison between different cultures based on language, belief, environmental conditions, and beliefs, which are important considerations when planning interventions (Zakirova-Engstrand & Granlund, 2009).

The ICF framework comprises two levels: first, Functioning and Disability, which is divided into Body Function and Structures (e.g., sensory, mental, speech, or voice functions); and Activities and Participation (i.e., ability to execute tasks or actions in everyday life situations, such as mobility, communication, and self-care). The second level consists of Contextual factors, which include both Environmental factors (e.g., the physical, social, and attitudinal environment in which people live their lives) and Personal factors (e.g., age, habits, lifestyle, and social background) (Raghavendra et al., 2007; World Health Organization, 2012).

The advantages of adopting the ICF framework, which aims to establish a common language to improve communication across health care professions, are expounded in the literature. What is less frequently mentioned is that the framework also makes it easier for clinicians and parents to discuss the child not only in terms of functioning, activities, and participation but also in terms of social and physical environments, as these aspects ultimately impact health and well-being (Adolfsson et al., 2018). The ICF (World Health Organization, 2012) provides a systematic coding scheme for health information systems that can be understood across borders and languages. It also permits comparison of data across disciplines, countries, services, and time (World Health Organization, 2012). According to Moran et al. (2020), the ICF framework also bridges professional, cultural, economic, and geographical variations to provide a universal map for health care providers. Furthermore, the ICF emphasizes the strengths of an individual, focusing on the ability (instead

of disability) and how the individual's abilities can be used optimally to ensure full participation in everyday activities (Bornman, 2004). Bornman continues by explaining that the ICF focuses on an individual's participation in environments, and that the both the barriers and facilitators that impact participation can be described. The ICF is thus crucial to client-centered care and incorporates child preferences and family values. The use of the ICF facilitates partnerships that ensure child and family have a voice in care received and outcomes achieved (Vallino & Louw, 2017). The ICF can be used to determine whether a particular intervention program has been effective by measuring the program's impact on the different components (Westby & Washington, 2017). For example, these components might be the impact related to (i) Body Functions and Structure (improvement in phonological awareness; improved receptive vocabulary); (ii) Activities and Participation (being included more frequently in other children's games; joining conversations with peers more often); and (iii) Environmental factors (enjoys attending preschool, where the child is comfortable with teachers and peers).

The ICF framework has been applied to children with a variety of communication disorders (e.g., speech sound disorders and/or language impairments) (McLeod & Threats, 2008; Threats, 2010), children who stutter (Yaruss, 2007), children with cleft palate (Neumann & Romonath, 2012), children who use augmentative and alternative communication (AAC) (Rowland et al., 2012), and school-aged children with language impairments (Westby & Washington, 2017). As a result, clinical tools were developed based on the ICF, such as the Speech Participation and Activity Assessment of Children, the Intelligibility in Context Scale (ICS) (McLeod et al., 2012), and the Focus on the Outcomes of Communication Under Six (FOCUS®), which was later shortened to FOCUS-34® (Thomas-Stonell et al., 2010). Adopting the ICF as a basic assessment and intervention framework for children with communication disorders allows for a new therapy model that highlights speech activity, participation, and the child's environment through person-centered goals. Following their scoping review on ICF components, Cunningham et al. (2017) identified a lack of research focused on intervention outcomes for the Participation factor, specifically whether speech-language interventions affect how a child uses communication to participate in their world.

Despite clinical and research interest in the ICF and endorsement by professional associations like the American Speech-Language-Hearing Association (ASHA), Speech Pathology Australia (SPA), and South African Speech-Language-Hearing Association (SASLHA), there is still not a widespread understanding of the ICF and thus limited clinical use by SLPs in the United States (Huer & Threats, 2016) and South Africa (Bornman & Louw, 2019), in contrast to countries

such as Australia, Canada, the Netherlands, and Sweden.

By adopting the ICF-CY as a basic framework for assessment and intervention for children with communication disorders, a new therapy model that focuses on speech activity, participation, and the child's environment through person-centered goals can be adopted. There is a paucity of validated and reliable measures for children with communication disorders in all the South African languages with the exception of English. Given the advantages of working within the ICF framework as described above, the IVF was adopted for this international collaboration on multiple levels.

Collaboration Projects and Outcomes

Funding from CADFP (2016 to 2022) enabled the authors to collaborate on a series of three independent yet interrelated projects within the ICF framework.

Promoting the ICF

The collaboration started with selecting the ICF (World Health Organization, 2001) and ICF-CY (World Health Organization, 2007) as a framework for our projects. In spite of the advantages of this framework, it has attracted scant attention to date in

both the United States and South Africa in comparison to, for example, Europe, Australia, and Canada. There is also limited use of the assessment measures for children with communication disorders developed within its framework in both the United States and South Africa.

A series of continuing professional education workshops for multidisciplinary audiences was conducted in South Africa on the clinical application of the ICF (World Health Organization, 2001) and ICF-CY (World Health Organization, 2007; Louw & Bornman, 2015, 2016a, 2016b). The evaluation of these continuing education (CE) events was performed in a unique and novel manner through the use of a Personal Commitment to Change (PCC) statement that was developed by the authors in lieu of more traditional satisfaction measures. A case study was then conducted on an interprofessional CE event presented to health care practitioners in 2016 in Pretoria, South Africa. Using the results of the PCC tool, a thematic analysis of the 32 participants' statements was conducted. Three main themes were identified: (1) applying new knowledge in practice (61.97%); (2) increasing content knowledge related to training (21.12%); and sharing information, skill, and resources (16.9%). To our knowledge, this is the first study to explore a reflection tool using a commitment to change statement to evaluate CE in health care professions, other than in continuing medical education. The results show that the participants engaged in deep reflection generated by the PCC statement, which contained no guiding statements yet elicited responses regarding gains

and implementation (Bornman & Louw, 2019). This project led to a national conference presentation in the United States, a publication in an international journal, and webinars aimed at graduate students.

Translation of Child Communication Assessment Tools

The aim of the second project was to address resource asymmetry of South Africa's SLP community in an innovative approach on multiple levels. This collaboration was based on issues regarding the paucity of validated and reliable measures for children with communication disorders in South African languages and the desire to enhance the application of knowledge gained in interprofessional CE to address service delivery for these children. Internationally, the challenge remains to develop culturally valid, contextually relevant and reliable speech-language pathology resources that will meet the needs of the unique populations they serve (Bornman & Louw, 2021; Pascoe & Norman, 2011; Ronski et al., 2018). The ICF (World Health Organization, 2001) framework was used because it provides a standardized language (as it is perceived to have a positive impact on translation) as well as a framework for gathering data and measuring clinical outcomes (World Health Organization, 2007).

Various assessment tools for child communication developed within the ICF-CY framework (Cunningham et al., 2017) were studied, and FOCUS© (Thomas-Stonell et al., 2010) was selected to translate. This project illustrated the process involved in the cross-cultural translation and adaptation of FOCUS© and its shortened version, FOCUS-34©, while also determining the social validity and clinical applicability of the translated measure. The target language used as example was Afrikaans, one of the 11 official languages of South Africa (Bornman & Louw, 2021).

This research project employed a two-phase cross-cultural translation model. Phase 1 (comprising a seven-step blind back-translation procedure) was sequentially followed by Phase 2 (social validation and clinical applicability of the measure, using focus groups with stakeholders) (Bornman & Louw, 2021). The process resulted in a clear and appropriate translation acceptable to both parents and speech-language pathology stakeholders. Both groups questioned the meaning of certain concepts, explored cultural differences, and requested the extension of some items. A framework was proposed for cross-cultural translation and adaptation of assessment measures with suitability in the speech-language pathology discipline (Bornman & Louw, 2021). A second assessment, Speech Participation and Activity in Children (SPAA-C) (McLeod et al., 2012) was also translated into Afrikaans. The results of this collaboration led to an international publication and a national conference presentation in the United States (Louw & Bornman, 2018).

Leadership in Health Care Professions and Speech-Language Pathology

The third project is current. SLPs work in many different contexts, such as health, education, and private practice, and often distinguish themselves as leaders irrespective of the context in which they function. However, leadership is typically not included in preprofessional training curricula (Carozza, 2019). However, recent changes in health care and education worldwide necessitate leadership skills. More recently, literature on leadership for health professionals specifically (e.g., Ledlow & Stephens, 2017) is being published. In the United States, new SLP clinical doctorate programs are including organizational leadership. However, the emphasis in the field in general is on leadership for health care systems and advancing careers, rather than on leadership for advocacy (Carozza, 2019). These new trends point to the importance of developing coursework to better prepare future SLPs and to provide continuing education to SLPs on leadership. Although leadership is an inherent quality and characteristic of the SLP profession, formal training for the development of a skill set and abilities is lacking. Health care leadership is viewed to enable SLPs to transform and improve services and care for individuals with communication disorders.

Furthermore, a deep-rooted appreciation and understanding of the role of the SLP as an advocate and enabler for children with communication disabilities and their families — and the SLP's impact on the life outcomes of these children—is required. Leadership development for SLPs requires expertise regarding the SLP training curriculum, an appreciation for contemporary best practices, insights into current challenges facing the profession, and knowledge about advocacy (a role and responsibility for SLPs) and leadership in speech-language pathology, which includes patient needs and ethical standards.

ASHA (ASHA-a, n.d.) has identified advocacy as a role and responsibility for SLPs, as they are uniquely positioned to advocate not only at a practice level (for the importance of strengthening communication skills) but also on a policy level. This is strongly correlated to SLPs' leadership role, which differs from traditional leadership models, as it involves patient needs and ethical standards. Despite recognition of the importance of leadership skills tailored to health care practitioners (e.g., Ledlow & Stephens, 2017) and recognition of leadership as an inherent quality and characteristic of the SLP profession, formal training for the development of a skill set and abilities is lacking.

The current project has direct clinical impact and consists of two phases. Phase 1 consisted of a research-intensive, in-depth literature review of leadership in health care professions. A rapid review methodology was selected to systematically review the literature on leadership in a variety of health care professions to guide the development

of leadership training content in the discipline of speech-language pathology, especially in LMICs. Leadership is also essential to advocacy. This rapid review of leadership in health care professions will provide an evidence-based theoretical underpinning for the development of leadership program content for SLPs in LMICs.

The results of the rapid review are being finalized as a manuscript and will be reported as a rapid review study using a narrative synthesis (Dobbins, 2017; Garrity et al., 2020). The rapid review is predicted to be a useful tool to synthesize knowledge on leadership in health care professions. It will provide a strong evidence base to develop preprofessional and CE training content on leadership for advocacy, which includes leadership, "followership," teamwork, and advocacy.

The second phase of this leadership project develops a custom-designed training module with a series of four seminars on leadership and advocacy for the SLP profession. These seminars will be freely available to SLPs from different countries across the African continent (with an emphasis on South Africa, Namibia, Kenya, and Tanzania). Graduate and doctoral students from both institutions driving this project (East Tennessee State University in the United States and the University of Pretoria in South Africa), as well as broader African families and associations on the African content, will be involved in developing the series. A measurement of success will be developed, and the results of the training series will be submitted for publication in a peer-reviewed journal.

The tectonic changes brought about by the global COVID-19 pandemic have illuminated the critical role of SLPs in supporting all individuals who are communicatively vulnerable and their families. It has brought to the fore the importance of leadership skills that encourage inquisitive, rational thinking in the speech-language pathology discipline to solve complex problems, using research evidence and knowledge of the context when making decisions and an aptitude to seek new solutions and apply new ways of working. It is envisaged that this project will provide SLPs with specialized leadership training relevant to the speech-language pathology discipline on both continents but also with a broader understanding of the environment and context in which they operate.

Impact of the Collaboration

As the African proverb tells us, *"If you want to go fast, go alone. If you want to go far, go together."* Research and the spirit of collaboration knows no country borders, and this project allowed the authors to expand their teaching and research partnerships. Benefits for the Centre for Augmentative and Alternative Communication at the University of Pretoria (South Africa) stem from continued close collaboration with an experienced and respected international research partner, while the East Tennessee

State University College of Clinical and Rehabilitative Health Science (United States) would meet its aims of expanding research activity and collaboration. Both institutions value research publications in high-impact peer-reviewed international journals.

The resounding success of the systematic approach to the collaboration over three projects was measured in terms of the deliverable outcomes: two new assessment measures for clinicians in South Africa were produced, professionals in two continents received CE through workshops and conference presentations, and international professionals gained access to the two publications. Students in both South Africa and the United States were educated on the ICF (World Health Organization, 2001) and ICF-CY (World Health Organization, 2007), currently accepted as the international gold standard disability framework and its clinical applications. This was done using webinars and other methods. CADFP benefited the collaborators, SLPs, communities, international readership, and most importantly children with communication disorders and their families in a significant manner.

Furthermore, the sustainability of this collaboration with its three projects is of paramount importance, which means that the projects (and/or their outcomes) should continue in the absence of CADFP support.

For example, one of the outcomes of the current project is the development of curricula on advocacy for leadership that could be used in both South Africa (and sub-Saharan Africa) and the United States. This means that a new generation of SLPs will receive this knowledge, while practicing SLPs could receive this information as part of continuing professional development. The SLPs who attend these workshops will also be encouraged—as part of the PCC statements—to actively pursue their leadership skills through sustained advocacy initiatives. Attendees will also be encouraged to develop an evidence-based portfolio of leadership, and professionals who conduct graduate SLP student training will be encouraged to include leadership portfolios as part of the outcomes expected in the final year from these students. This is a long-term vision, but given the focus on leadership and advocacy in the speech-language pathology discipline, the profession will be strengthened if this strategy is seen as “best practice.” Another strategy included on the projects that has demonstrated positive impact on sustainability is the inclusion of key stakeholders in the whole project, as that ensures buy-in. From the activities of the three projects, it is clear that the perspectives of the key role-players are considered from the beginning of the project (e.g., through online focus groups) and that their input is central in the planning of the workshops and subsequent training material. This has strengthened partnerships and developed new relations with relevant stakeholders from the onset of the collaboration. This has also ensured that once the first project ended, there was

momentum to continue, as the project has strong support to continue its further rollout and implementation.

Plans also include strengthening further institutional links—for instance, student exchange post COVID-19—which would follow an innovative approach and not be a mere study abroad course. For example, the focus could be on service-learning placements as capstone projects, which would raise awareness of how the impact of communication disability may vary in different contexts and how that impacts advocacy (specifically related to agency and voice).

Recommendations for Collaboration

The opportunity to develop a new collaboration through the mechanism of CADFP has been extremely valuable. Based on the authors’ highly successful experience and on literature (e.g., Nyström et al., 2018) focused on research collaboration, the following key recommendations are posited:

- Select collaboration partners with care to facilitate the process and enrich the experience
- Agree on an overarching theoretical framework or principles to be adopted for the project from the beginning
- Build trust and understanding between the collaborators and key stakeholders
- Set clear goals and timelines to ensure the project’s objectives are met
- Include goals to strengthen the collaborative partnership so that, by the completion of the project, a new partnership is forged that can lead to future collaborations and grow the research network
- Set specific milestones to evaluate project progress and measure effectiveness
- Be flexible and realize that it can be difficult to anticipate the exact roles and responsibilities of collaborators and contributors over the project’s lifetime
- Include key stakeholders in different roles and at different times throughout the collaboration
- Agree on how to assign credit to other collaborators in presentations they deliver
- Be flexible regarding variables that impact collaboration, (e.g., time zones, different academic calendars and responsibilities, use of terminology)
- For research collaborations, allow additional time for ethical clearance from all institutions and understand the requirements from the various universities
- Agree how to ensure the integrity, access, and stewardship of the research data

Conclusion

Collaborating across continents, cultures, and languages extends the possibilities of discovery (Dusdal & Powell, 2021). New perspectives and contexts are added, projects are broadened and enriched. The three collaborative projects conducted within the ICF framework (World Health Organization, 2001, 2007, 2012) clearly demonstrated that new knowledge on creating, measuring, and evaluating material based on this framework holds mutual benefits. The overarching focus of these three projects highlighted communication advocacy, which can lead to more services for underserved populations while also raising the awareness of the types of services offered by SLPs. A greater awareness of the roles and responsibilities of SLPs will also enhance the visibility of the profession and might even result in the creation of new positions for SLPs in the health and education sectors.

Funding sources, such as CADFP, thus make a noteworthy contribution to education in higher institutions not only on the African continent but in the United States as well. Finally, the ripple effect of this collaboration also significantly touched other CADFP Fellows, children with communication disorders and their families, as well as speech-language pathology communities (including students and practicing SLPs) across the globe.

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Mutually Beneficial Collaboration

Addressing North/South Resource and Power Asymmetries in Global Education: CADFP Fellow as the Activist in Ojaide's *The Activist* and Manuel in Roumain's *Gouverneurs de la Rosée*

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Introduction

Echoing Nietzsche's view on the literary artist that the writer is not of his time, in this international education curriculum analysis, I have recourse to Tanure Ojaide's and Jacques Roumain's deployment of exegetic devices of Marxian allegory in *The Activist* and *Gouverneurs de la rosée*. My work aims to scrutinize North/South resource and power asymmetries by drawing on an aesthetic and imaginary representation of the classical education of Preceptor and Disciple transfer of knowledge. The reading of transfer of knowledge holds the critical advantage of calling for deeper analysis of the interplay of various binaries commensurate with North/South. They exhibit structures of imposition from above vs. expression and cultivation of individuality and agency; external discipline vs. free activity; acquisition of isolated skills and techniques by drill vs. acquisition of them as means of attaining ends that make vital appeal. Above all, the structures epitomize the North/South dialectic of dominance and struggle for liberation. Allegorically, the Carnegie African Diaspora Fellowship Program (CADFP) Fellow, like Ojaide's *The Activist* or Roumain's Manuel, is spurred into scrutinizing transfer of knowledge through North/South curriculum design in global education. It is a crucial moment when critical curriculum and critical pedagogy education compelled the Fellow as a literary artist and social critic into rethinking education and conscientization of African governments on their precariously long-standing, sociohistorical, and political realities engendered by Western education curriculum. In this framework of thought, my essay ponders North/South resource and power asymmetries in global education as any relation of two or more metaphors associating systematically with a set of similarly related real-world referents. In this vein, my analysis will demonstrate that the CADFP Fellow is The Activist or Manuel who should take critical initiation and agency in the host institutions in Africa to see the structural similarities and divergences in the represented relationships to become a transformative education and critical curriculum leader.

Theory and Philosophy of Education: Transfer of Knowledge: North/South Curriculum and Pedagogy Asymmetries

One of the oldest and still most popular philosophies of education is the notion that education is the drawing out of our common human nature. For the Rational Humanists, education is "to lead out" on the one hand and "to rear or nurture" on the other hand. In either case, education works with what is already in the learner's nature.

Another definition of education is the "taking on," or "taking in," of the accumulated and stored-up knowledge and wisdom of the race. For the Essentialists, the learner is a

passive element in a process by which he receives, absorbs, and assimilates the various arts and sciences of civilization. No prior nature is postulated except the capacity to receive and be the receptacle for as much of the world's knowledge as possible, and, of course, in the process to develop the major skills of reading, writing, and calculating upon which all such learning depends. The North is privileged with the stored-up knowledge and wisdom of the race, whereas the South is postulated with only the capacity to be the receptacle of such knowledge.

According to a third definition, more in tune with the behavioral sciences, education is the shaping of individuals — their understandings, their attitudes, their values and aspirations — in terms of the culture in which they happen to live. The use to which the arts and sciences shall be put is always determined by a culture existing at a specific time in history and a specific place in the world's political geography. Hence, the value of this or that art or science is always a function of the social system at a given time in its history. Thus, whether a particular art or science is to be taught or learned is a negotiable matter to be determined in light of the culture's own ethic.

Professor John Dewey epitomizes the vital link between education and philosophy in the following terms: "If we are willing to conceive education as the process of forming fundamental dispositions, intellectual and emotional, toward nature and fellow men, philosophy may even be defined as the general theory of education." The first clause, "the process of forming fundamental dispositions," needs some gloss for it. I understand that Dewey is saying that human beings have dispositions ("intellectual and emotional, toward nature and fellow men"); that some of these dispositions are fundamental; that it is conceivable and possible to form them in young people by deliberate, intentional, and predetermined means; and that this activity is education (Winn, 1959a).

Dewey is clearly trying to intimate that whatever is fundamental is desirable and worth pursuing in the process of "forming." He implies that the dispositions to be formed are not only fundamental but of considerable interest to us; they are important to the task of giving a person's developing life a focus and an orientation necessary for happiness and success. In short, we want the learners to possess these dispositions. The binary referent posits the South as the receptacle of the knowledge transferred from the North.

Paraphrasing Dewey thus does not mean to suggest that he is ignoring the important role of the learner. Indeed, most of Dewey's writing in education served to explain how this role could become far more active and constructive than any previous theory had conceived. Not only was the learner a participant in the "forming" activity but also, through his own experience and the feedback effect of his reaction to

the dispositions made available to him, the learner actively shared in deciding what dispositions were most worth forming in his own character.

One of the dispositions on which Dewey put a high value was the disposition to share. The sharing of information, experiences, viewpoints and opinions, the sharing of cooperative help in the working out of learning projects — all these were considered good, and the disposition to share with one's fellows came to have an overpowering importance in Dewey's educational theory. Inevitably, "the morality of sharing" places a high premium on human intercourse and personal gregariousness. Gregariousness, then, came to assume a large auxiliary function in support of the sharing disposition. It is partly for this reason that, under Dewey's influence and that of the Progressives over the past five decades, the socialization of the learner has come into equal prominence with the intellectual development of the young learner as a strategic educational aim (Winn, 1959b).

Education may be all these things superficially, but each viewpoint makes the same mistake: believing that the learners (the South) are things to be worked over in some fashion to bring them into alignment with a prior notion of what they should be. In these conceptions of education, the learners are to be used. They are to be employed on behalf of (1) a prepared, pre certified idea of "human nature," which they are expected to fulfill; (2) an objective body of extant subject matter, which they are expected to absorb; (3) an objective concept of a culture's ways and means of living, which they are expected to assume, or (4) a set of dispositions, deemed fundamental, which are to be formed in them and for which they are expected to become the living vehicles.

In every case, the process of education is understood to have its aim and point outside the learner. The learner, by virtue of what is to be done with them and for them, is eventually seen as an object rather than a subject. Their activity of learning is aroused and promoted in the name of considerations residing outside their own self-determination and self-direction, which, in the case of global education, is the role assigned to the South.

It is about bringing the learner's own self-determination to the very center of the learning process in education that reminds the learners that they are constantly, freely, and creatively choosing. This is the kind of education we, CADFP Alumni, should pursue. It is the education of private awareness and personal involvement — education that carries the learner beyond mere intellectual discipline, beyond mere "fundamental dispositions," to the zone of value creation where selves create their own selves beyond the reach of teacher and textbook (Payne, 1996).

Approaching North/South Curriculum and Pedagogy Asymmetries: CAMP Experience With the Sharing Disposition

I received a CADFP/UNIJOS Project grant and went to teach in the Department of Foreign Languages of the Faculty of Arts, University of Jos (Unijos), Nigeria, May 15 through August 15, 2017. The project included collaborative curriculum work, active classroom pedagogy enactment, and graduate student mentoring.

As Dr. Victor O. Aire, professor of French in charge of postgraduate programs, was retiring in May 2017, my presence was timely. I had to step in and teach three African/Caribbean literature courses.

Our comparative literature work focuses on African and the Caribbean novel explored *Gouverneurs de la rosée* by Haitian author Roumain and *Les Bouts de bois de Dieu* by the Senegalese writer and filmmaker Sembène Ousmane. At collaborative curriculum workshops on the two novels, the French-teaching faculty made remarks on the publication dates and the out-of-date thematic we tended to think the two novels presented along with other novels of the same literary production period. The syllabus design session of the workshops provided opportunities to share interdisciplinary teaching interests in curriculum, syllabus building, and pedagogy implementation.

Referring to literature and culture theorists: Roland Barthes, Jacques Derrida, Jacques Corzani, Ojaide, Wole Soyinka, and Edwards Said who say "that there is no closure to a text, that a text is polyphonic and polysemous", we opened the two novels to a new thematic and critical study. We reached a consensus on the theme of our study and collaborated equally on designing course curriculum and strategies to implement the syllabus. We encouraged students and faculty alike to explore the two texts as environmental literature in Africa and the Caribbean. This new orientation in novel study in French at Unijos also explored the theoretical work developed by Val Plumwood and other Marxist, feminist, ecofeminist, and ecocritical authors in *Ecofeminism, Women, Culture, Nature*, edited by Karen J. Warren. My personal collaborative curriculum effort was to infuse ecofeminism, Marxism, and social and liberation theory into the theoretical portion of the course to support environmental literary studies, which is our course-learning objective. Practicum and implementation of collaborative curriculum took us to Unijos, the Federal Department of Forestry, Jos Archaeological Center, and land conservation libraries to browse critical documents on environmental literature and bioecological degradation issues. Our final exam and research paper writing — Student Learning Outcomes Assessment (SLOA) — was an attempt to answer the prompt I formulated in French as follows:

Curriculum Design and SLOA

FRANÇAIS 612

PREMIER SEMESTRE 2016–2017

Honoré Missihoun, PhD

Mai–Aout 2017

CADFP-IIE/UNIJOS Project Scholar

Examen: Sujet de Dissertation

Dans une approche de Littérature Comparée, lisez attentivement l'énonciation de Dissertation proposée ci-dessous sur deux œuvres romanesques, l'une par Jacques Roumain et l'autre par Ousmane Sembène. Basez votre travail sur les théories féministe, écoféministe et marxiste, développées par Val Plumwood.

« Elle est là, la douce, la bonne, la coulante, la chantante, la fraîche, la bénédiction, la vie. » Cette citation tirée de Gouverneurs de la rosée de Jacques Roumain, et cette conviction « J'arrose un arbre pour demain » affirmée par Maimouna au paroxysme de la grève dans Les Bouts de bois de Dieu par Ousmane Sembène, nous autorisent-elles à considérer l'eau comme un personnage principal des deux romans ?

En vous appuyant sur la plateforme théorique édiflée par Val Plumwood dans son texte

« Androcentrism and Anthropocentrism, Parallels and Politics » dans *Ecofeminism, Women, Culture, Nature* édité par Karen Warren, rédigez un travail de comparaison entre les deux œuvres romanesques en insistant sur le personnage de l'eau dans une perspective féministe, écoféministe et marxiste. Inspirez-vous aussi du poème écrit par le linguiste Umaru Kiro Kalgo :

Le Cadeau

Le Cadeau!

Ce mot nous rappelle la source de
vie. On y entend Dieu qui est
Créateur et Eau qui est moteur de la
vie. Que ce mot est magnifique!

Il a toute la capacité d'évoquer la présence du Créateur.
IL a tout le pouvoir de nous baigner dans cet amour de DIEU
qui se manifeste par le cadeau de vie.

Le cadeau est la seule expression de l'amour entre le Créateur et la créature.

La seule expression de bonne relation entre les créés.

Le Cadeau nous lie les uns aux autres tout au long de la vie.

I thoroughly enjoyed the opportunity to teach African literature in the context of everyday lives in which the texts were produced. Being able to feel, smell, and observe the subject of the texts in social, psychological, spiritual, and material contexts offered me a wonderful pedagogy tool as well as opportunity for discoveries and understanding. I did not have to translate every word or scene to the students. They live the experience that the texts narrate. This enabled us to take the texts to a high level of contemplation and explore their deepest meanings, as crude oil pollution is a reality that forms part of Nigeria's collective consciousness.

Collaboration in Effective North/South Curriculum and Transformative Literary Allegories

In the framework of mutual collaboration among CADFP Alumni, I keep working with my two Unijos PhD students in Francophone African Literature whose dissertation research work I partly directed and read until one of them completed his PhD last academic year. Department chair and academic host Dr. Nora Ladi Daduut and I worked intensely in the same Alumni framework, which took her on a CADFP grant to a conference

presentation in the Department of French at the University of Western Australia in the fall of 2018. A sustained collaboration with professor Aire and the reading of my PhD students' work sparked a comparative work interest in my research endeavors on Roumain, Ousmane, and Ojaide. This culminated in writing "Action, Aims, and Purposes in Ojaide's *The Activist* and Roumain *Gouverneurs de la rosée*," a chapter for the book project of Dr. Enajite Ojaruega, professor of English at the University of Abraka, Nigeria. It is the study of the impactful and transformative action of the heroic Marxist protagonists: Bakayoko in Ousmane's *Les Bouts de bois de Dieu*, The Activist in Ojaide's *The Activist*, and Manuel in Roumain *Gouverneurs de la rosée* that inspired my abstract for this Alumni convening presentation.

"Addressing Resource and Power Asymmetries ... in Global Education in Tanure Ojaide's *The Activist* and Jacques Roumain *Gouverneurs de la rosée*" is a study of pedagogy of emancipation, critical pedagogy in minority discourses. A great deal of innovative works in the field of critical pedagogy draws on various fields of social sciences, which reflect critical pedagogy as a methodology and an approach to education that is not restricted to a single system. Paulo Freire's argument that the "open-ended" nature of education and pedagogy reflects the dynamic "human" and favors a definition of the human points toward the performative quality of representation in terms of the metaphor of "Plasticity." This, indeed, does not exclude dissenting reconstruction of human experiences through pedagogy. In the binary North/South, education, curriculum, and the transfer of knowledge and technology require dissenting reconstruction of human experiences (Freire, 2007).

Expanding on Freire, pedagogy is most effective when it derives from local experiences, which literature best translates. To understand how a crisis affects us all, we must first understand it. Only through the literary analyses of the community-engaged writers' experiences and the literature of people's own experiences can a proper pedagogy be formed for honest and effective change to be made, which is the case of the education that activism and critical pedagogy championed in *The Activist* and *Gouverneurs*. The two stories debunk the fashionable claim made even by writers that literature can do nothing to alter our social and political condition. Chinua Achebe answers: "Of course, literature can" (Achebe, 2002).

The Activist (CADFP Fellow), the protagonist of *The Activist*, and Manuel (CADFP Fellow), the protagonist of *Gouverneurs*, are returnees — they are symbols of the intellectualism, patriotism, and visions needed to effect transformation in their locales. They show that such change is feasible through changes within the dynamics of educational policy, and in the power of social engagement in intellectual activism. It is about conscientizing the people through critical education and curriculum to reform colonial and neo-colonial education by addressing the North/South asymmetric curriculum of transfer of knowledge in the context of international education (Nwagbara, 2008).

Conclusion

The CADFP Fellow should be the epitomic example of the homo faber in global education. Everywhere tends to see in Manuel the Hebrew "Emmanuel," "God is with us." Nonetheless, that character is allegedly so divine that it does not make rainfall from heaven. He digs the ground with his hands to make water spring from it manually. His name signifies "by the hands," and by extrapolation it signifies "manual laborer," not "God with us." For Marx, Man is the "homo faber," the "creative and making man" who shows that it is labor or the social being that determines conscience (Arnold, 1979). That is as true for Ojaide's *The Activist*, the CADFP Fellow in Nigeria, as it is for Roumain's Manuel, CADFP Fellow in Haiti, for as heroes they have not come from heaven to lead the people. They belong in the broad masses of the people substantiating the practical nature of critical curriculum and critical pedagogy. Their knowledge draws on social community practice and years of work in the proletarian world. Their names and social Praxis experience may also signify a teaching/learning curriculum text, a study guide for the followers to know how a machine functions, or how to acquire a knowledge. The personas of *The Activist* and Manuel, epitome of CADFP Fellow, are "manuals" of practice and revolutionary sensibility.

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Mutually Beneficial Collaboration

Strategic Leveraging of Diaspora Academics: Operationalizing Brain Cycling for Innovation and Capacity Building in African Universities

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ABSTRACT

Africa's contribution to scientific research intellectual property (IP) remains anemic. Innovation is key to growth in Africa, but Africa's innovation talent, specifically knowledge inflows by Africa's diaspora academics, remains untapped. With an enabling strategic policy, the expertise of diaspora academics can be cycled back home and, in a proper context, can contribute to stimulating the region's innovation competitiveness. Africa diaspora academics, especially in the sciences, can establish research teams in various universities to leverage bilateral knowledge exchange, especially on "frugal" innovations deployable to Africa's needs (e.g., agrifood, healthcare, and green manufacturing) while training highly qualified personnel (HQP). By embracing the silver lining of the COVID-19 pandemic—the acceleration of online learning—diaspora academics with peers in African universities can co-develop Afrocentric-responsive online curriculum learning resources, a disruptive opportunity for pedagogy revolution on the continent. This article proposes a framework of policies and operationalized solutions to barriers on transforming the "brain drain" challenge to a high-yielding diaspora "brain circulation" that results in acceleration of socioeconomic development in Africa.

Background

According to United Nations (2020) estimates, Africa's population is 1.3 billion (~16.7% of world population) with an annual growth rate of 2.5%, the fastest in the world (Ojo, 2021). Most of the African countries remain far from meeting the base level of Maslow's hierarchy of needs for their growing population and rank poorly in their progress to realization of the 2030 United Nations Sustainable Development Goals (UN SDGs) (Adeyeye et al., 2021). Variations of the 2030 UN SDGs have been rephrased in the African Union Agenda 2063 with a commitment to achieving them (Africa Union Commission 2017). However, a structured metrical framework to track continental and member nation progress remains a missing link. Individual countries (e.g., Kenya) have developed an economic blueprint aligned to the UN SDGs, hence the Big 4 Agenda with some specific measurable goals, including food security, affordable housing, universal health coverage (UHC), and enhanced manufacturing (Kivisi, 2019; Kenya, 2018). While progress has been at a snail's pace, rapid population growth and the disproportionate impacts of global issues—such as climate change and disease pandemics, including COVID-19—have further exposed broad-based institutional vulnerabilities.

At the heart of the institutional vulnerabilities are issues, such as systemic structural biases that impede fair participation in global trade, a donor dependency mindset, poor governance allied to weak institutions, and lack of an effective policy framework (Mugo & Puplampu, 2020). As such, Africans are generally faced with "fight or flight" realities, which mirror the physiological effects of elevated hormones (e.g., cortisol and adrenaline) as a response to high stress (Mugo & Alberkant, 2020; Dhanjai et al., 2019). It can be said that, at

a biological level, African people face high levels of allostatic load—the "physiological wear and tear" due to chronic stress (McEwen, 1998). Faced with these challenges and accelerated by the modern reality of globalization and integration of world economies, modern-day human capital flight is a major problem for Africa (Sheikheldin & Mohamed, 2021). Modern-day migration, unlike historical slavery, which was achieved through physical aggression, proceeds on a subtle, consensual basis. However, both historical and current migrations rob Africa's human capital at its prime. In a world now in fierce competition for human capital, Africa has increasingly lost its innovation engine and talent, with many professionals draining to the Global North, a phenomenon christened the "brain drain" (Adesote & Osunkoya, 2018). Arguments have been made against the use of the phrase "brain drain" in favor of politically neutral terms, such as "brain circulation" or "brain exchange." (Adesote & Osunkoya, 2018; Saint-Blancat, 2018). However, especially in the case of Africa, and to some extent other weaker global economies, "asymmetric brain exchange" drains talent from Africa in a nonsymbiotic proportion, resulting in a net loss of Africa's highly qualified personnel (HQP) capacity (Saint-Blancat, 2018; Shin & Moon, 2018). The massive outflow of highly skilled African professionals to the Global North at their prime of life results in loss of human resource capacity for African development. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO) science report (2021), the share of highly skilled individuals in sub-Saharan Africa is among the lowest in the world, yet the high-skilled emigration rate from these countries, especially to the United States and Europe, grew from 11% in 1995 to 16% in 2010 (likely higher today),

the highest high-skilled emigration rate of all developing regions (Mugo & Puplampu, 2020).

While all professionals are of high value to our integral society, science, technology, and innovation (STI) are the core skills essential to finding solutions to the UN SDGs. Yet it is estimated one-third of African scientists and research professionals drain out of Africa, distressing and disrupting capacity for training and development, especially in critical sectors such as healthcare, education, and engineering (Sheikheldin & Mohamed, 2021). For example, UNESCO Director General Irina Bokova reported, “In Namibia, Zimbabwe, and Tanzania, there is one qualified engineer for a population of 6,000 people—compared to one engineer per 200 people in China” (UNESCO Africa, 2013). This reality is duplicated in other African countries. As such, engineering talent to build infrastructure, such as railway lines, roads, sewer systems, and housing, is hired from other countries, especially China, at exorbitant costs often incurred as concessional loans, drowning Africa in unsustainable public debt. Dire situations also present themselves in healthcare, where the general ratio of physicians to patients is reported to be 1 to 8,000 compared to the minimum World Health Organization recommendation of 1 physician to 5,000 (Sheikheldin & Mohamed, 2021). With a healthcare system in a dysfunctional state and typically unable to cope with common tropical infections such as malaria, cholera etc., impacts from new infections such as COVID-19 compounds the human cost on the continent. Africans must urgently rethink and self-determine their own destiny through bold, action-oriented policies.

This article will provide insights on policy framework on how the enormous African diaspora brain talent could be cycled back to catalyze African innovation, especially in STI development.

Theoretical Framework: African Universities, the Diaspora, and Brain Drain

Higher education institutions play the premier role in knowledge production through research and community engagement. Universities’ enterprise is at the heart of developing the human capital needed for global and national social development. Accessible quality education at all levels, including higher education, is one of the UN SDGs that directly and indirectly interweaves with all other SDGs (e.g., ending poverty, hunger, affordable health and well-being, gender and socioeconomic equalities, clean water and sanitation, sustainable cities and communities, healthy environment, and its ecosystems). Yet African universities are highly deficient in quality and quantity of professors. For example, a case study of the Ethiopian academic diaspora reported only 6.4% of the academic staff in Ethiopia’s 25 universities hold a doctoral degree, with most of them working for the University of Addis Ababa, yet over 200 Ethiopian professors work in the

United States and Canada, most with the rank of full professor (Sheikheldin & Mohamed, 2021). Further, it is estimated that about 20,000 highly qualified African researchers have been leaving the continent every year since 1990 (Sheikheldin & Mohamed, 2021). Unique to Africa, there are currently more African PhD holders outside the continent than inside it. Coupled with anemic investment in research and innovation in Africa stemming from lack of government education policy frameworks that nurtures and values an innovation mindset, it is not surprising Africa remains further from the frontier of innovation and is poorly represented as a contributor to intellectual property (IP) in science and technology. Yet, unequivocally, innovation is the key to African stability and growth in the coming decade (Mugo & Puplampu, 2020).

In recognition of the contribution of diaspora to their homeland countries, governments have narrowly focused their policies on tapping diaspora remittances, which in some African countries exceeds official development aid and private capital. For example, in 2020, Kenya’s 3 million diaspora population remitted approximately \$3 billion annually, nearly 3% of that nation’s Gross Domestic Product (GDP) (Central Bank of Kenya, 2021). In Nigeria the remittances are over \$21.7 billion (John et al., 2020). While these remittances come with some “adrenaline bursts” of (short-term) economic benefits, without a nuanced policy framework focused on targeted remittance investment on longer-term priorities aligned to the UN SDGs, the remittances could result in a negative dependency cycle that threatens Africa’s long-term socioeconomic well-being. For example, in Kenya, it is estimated about 5% of remittances is spent on funerals, and about 30% of the diaspora investment goes to real estate. Within real estate there is lack of proper land use and zoning practices, and arable land is subdivided to unproductive units for houses, thereby impacting food security, water supply, and sanitation, and as such resulting in “concrete jungles” (Kibunyi et al., 2017; Yiran et al., 2020; Onyango et al., 2021).

Beyond the narrow view of financial remittances, the largest untapped potential remains the knowledge inflows of the sub-Saharan Africa diaspora academics and professionals. This is especially the case for African scientists, whose skills are so valuable in catalyzing Africa to be a player in the emerging global knowledge economy. Yet migrant African scientists continue to robustly contribute innovations to their resident countries. Interesting and worthy an independent rigorous scrutiny is anecdotal evidence that suggests that, while Africa loses more from highly skilled professions due to initial investment in their training, diaspora academics and professionals remit less, partly due to their outlook on life and economic stability in their domiciled countries.

Visionary management insight proposes that professionals’ immigration (brain drain) could be the catalyst for brain circulation, where their broadened viewpoint from living in two worlds and innovations they are expert practitioners in can

be cycled back home in proper contextualized applications (Mugo & Puplambu, 2020). The African diaspora academic professionals could be the link for mutually beneficial collaborations between Global North and South universities, which can foster the creation of homegrown Africa innovations (Ai). Through a clear rethink in governments' higher education strategic policy and a passionate execution by stakeholders in the universities on the continent, it is possible to tap into the wealth of potential in academic diaspora brain circulation.

The proposed professional diaspora brain recirculation model for innovation competitiveness is not new. Some countries have exploited expertise mobilization to foster engagements. For example, China facilitates the inter-mobility of Chinese professors between their home country and host countries, often the United States and Canada (Tian, 2016). This ongoing mobility complemented the circulation of knowledge obtained from reverse migration, where 25% of the 1.21 million Chinese scientists went back to China following their research studies and work abroad (Tian, 2016). In this case, it is reported that, by 2017, out of the more than 5.2 million Chinese nationals who went abroad for higher education and research, nearly 3.1 million returned (Zong & Lu, 2017; Shin & Moon, 2018). This phenomenon greatly contributed to science and technology innovation takeoff in China, currently on course to overtake the United States in IP and patents generation (Mugo & Puplambu, 2020). The mobile scientists and returnees also play an instrumental role in linking China to the global knowledge network. While there is an ethical debate on the Chinese government's involvement in this strategic knowledge mobilization, now at the center of the U.S./China trade conflict, it is without debate that the bold policy initiatives by China on knowledge circulation have contributed to rise and regained pride in China's nationalism. However, the China/US fistfight on IP issues can inform other countries' policies on best practices for transboundary brain exchange that is mutually beneficial to the countries involved.

A calculated and focused strategic move by China, the brain recirculation and investment in incubators and manufacturing by private sector investments initially focused on repurposing innovations and scalable production of goods that compete on cost at a global scale, such as textiles, polymers (plastics), electronics, and other consumable products. China also focused on intensive food production innovations to feed their large population and for exports. Evolutionally, the *Homo sapiens* brain growth simultaneously happened with innovations in fire (cooking), which gave access to more digestibility of starch and other nutritious foods. When the core needs of food supply are met, this triggers energy bursts necessary for other higher technology innovations.

While the most radical strategic transformation of brain drain to brain circulation happened in Germany in 1954, Israel in the 1960s/'70s, and in contemporary times, China and other countries, such as India, Mexico, and Costa Rica, are

also making notable strides in developing incentive policies that mobilize diaspora academics to contribute technical skills to their countries, especially in medicine, biotechnology, information technology, and materials science (Ette & Witte, 2021; Shin & Moon, 2018; Sharma & Varshney, 2019; Pedroza & Palop-Garcia, 2019).

Success in other countries indicates that African countries can do the same to tap into this gold mine of untapped potential (Chand, 2019). Diaspora academics in developed countries can collaborate and establish research labs (hubs) in their motherland universities, leveraging opportunities bilaterally. The opportunities could include sharing of research infrastructure and innovation ideas; mobilizing research students between research groups spread among two or more countries; and fostering multi/bilateral research networks, thus creating a knowledge exchange and innovation ecosystem. This approach can also booster the quality and competency of training of HQP in Africa, where even though universities have grown in number, the same cannot be said of the quality of learning at both graduate and undergraduate levels (Puplambu & Mugo, 2020). The continent is in dire need for university programs in science and technology, the engine for innovation that impacts societies. African universities struggling to achieve their core mandate of research, innovation, and academic excellence could especially benefit if they adopted an open, collaborative approach where African diaspora academics find a sense of acceptance in African universities and are embraced to create research groups and innovation hubs housed in African universities. As such, if African universities open their world to the tremendous untapped potential of African diaspora academia and possibly international academia, such an approach could present far-reaching benefits in promoting economic dynamism through technology innovation and HQP training, transforming Africa to a truly knowledge economy and catalyzing Africa's human capital and social development (Mugo & Puplambu, 2020). Notably, the African diaspora is often most willing and seeks such opportunities, but the policy frameworks and territorial attitude in African universities prevents that shared, collaborative mindset from blossoming. The effort to connect African universities to diaspora academics has been realized to some extent by the establishment of the Carnegie African Diaspora Fellowship Program (CADFP). In this human capital inflow initiative, Africa remains a spectator, reflecting the donor-driven development paradigm. The lack of the required, sustained, long-term collaboration dims the optimal innovation outcomes that could otherwise ensue. Requiring a resolute determination to globally soar, African universities and especially Pan African University should exploit this brain recirculation approach to fast-track Africa's STI and social development.

With experience in forging research collaborations between Canada (resident country), India, China, Costa Rica, and Kenya, the last initially funded by CADFP, the authors share

some operationalization suggestions (vide infra) of diaspora brain exchange and recirculation involving forging mutually beneficial transborder science research ecosystems.

Operationalization Suggestions of Diaspora Brain Exchange and Recirculation

First, with the dire state of affairs and the need to move fast, identification of scope of engagement, focusing on the lowest barriers for entry initiatives that require low-cost investment, is key for Africa economic development. African countries can learn from China regarding bolder strategic approaches to pragmatically focus on lower-investment innovation options by customizing, adopting, and adapting already known innovations and redeploying them to their needs and realities, especially where their competitive advantage lies: agriculture. As illustrated in Figure 1, there are many low-cost, local-centric ideas, such as grassroots innovations related to valorization of local low-value and waste products. Scaling up integration of low-cost smart sensor and data analytics (artificial intelligence) technologies in healthcare, manufacturing, environmental monitoring, and food production is happening in Global North and emerging countries but is minimal in Africa. The missing element is a strategic iterative and adaptive development framework and customization for application in the African

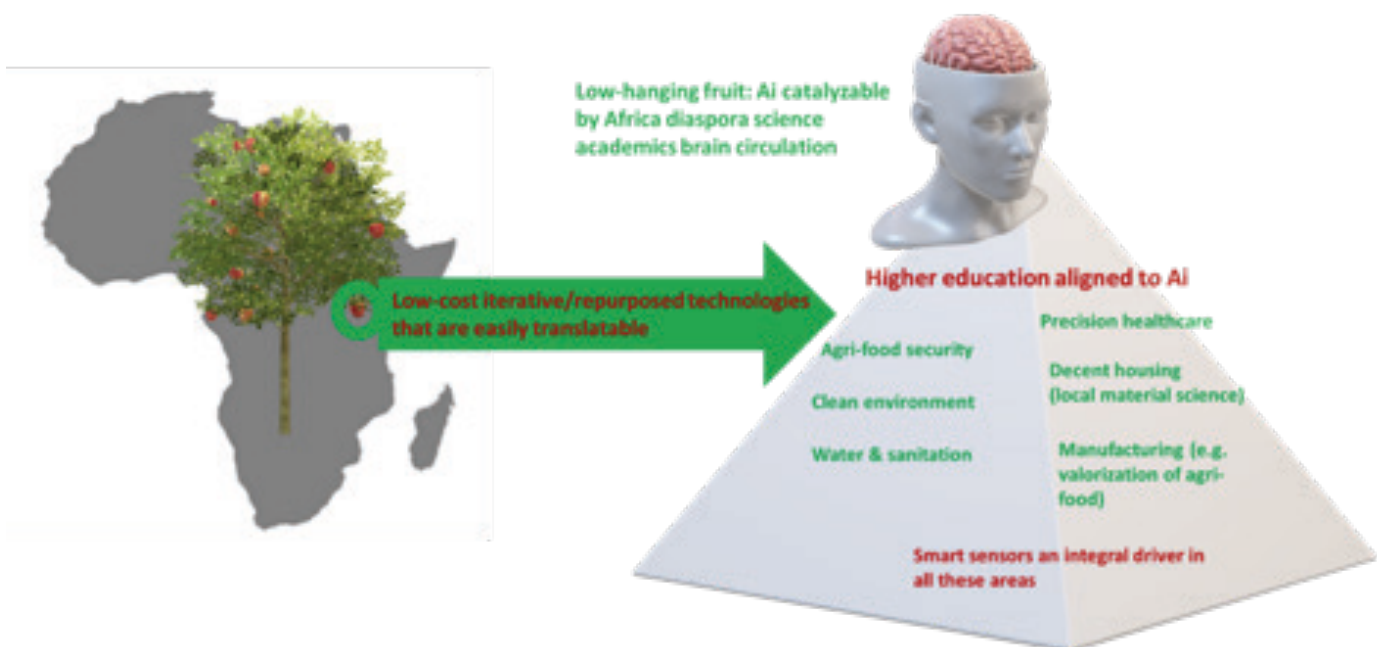
context (Mugo & Puplampu, 2020; Mugo & Alberkant, 2020). The African academic diaspora is well positioned to advance an agenda for change in a range of areas. For example, the Canada-based Mugo research group provides technology leadership in the development of smart portable and in some cases wearable sensors hyphenatable to smartphones, otherwise referred to as the Internet of Things (IoT), for real-time diagnostics monitoring of plant/soil nutrients and animal/human health (Mugo et al. 2022; Mugo & Alberkant, 2020; Dhanjai et al., 2019). These devices provide data-driven decision making to boost efficiencies in food production and monitor animal/human health and well-being.

Tapping into innovation requires the requisite mindset and focus on training the workforce that can guide the innovation culture in building technological capabilities. Strong investments in human capital, with a broad investment in basic education and higher education that nurtures creativity and policies that support innovation ecosystems, could be the missing link for economic takeoff in Africa (Puplampu & Mugo, 2020).

Due to the COVID-19 pandemic, African universities, like their counterparts elsewhere, have been delivering learning through online platforms, a clear case of disrupted innovation in the learning process. The disruption required creativity for

FIGURE 1

Illustrating the priority (“low-hanging fruit”) concept for catalyzing Ai through Africa diaspora brain cycling



science educators to use hybrid learning approaches that integrate online learning. Building on this reality, science educators in the diaspora can increasingly be called on to be integrated members of the academy in Africa, teaching undergraduate courses and mentoring graduate students with only supplementary in-person engagement. With now optimized video-chat platforms, such as Zoom, Google Classroom, Blackboard Collaborate, and many others, e-teaching across continents is possible with enhanced quality in mentor-mentee interactive engagement. This low-cost approach could significantly stimulate brain circulation and transform the training of HQP. In addition, engaging diaspora academics to collaboratively teach and be involved in graduate mentorship through e-learning would incentivize the much-needed creation of Massive Online and Open Course (MOOC) curriculum contextualized to African realities and needs. As such, this approach would accelerate the decolonization of curriculum, which is long overdue.

Addressing Barriers to Diaspora Academics Brain Cycling

i) Reaping full benefits for diaspora brain recirculation requires intentional government policy and investment. Priority should be on nuanced policy framework focused on achieving measurable targeted results (low-hanging fruit/competitive areas). This is approach is how China and other emerging countries have made meteoric progress for scientific innovation through intentionally leveraging from brain exchange. African countries can create an outcome-based funding model where public universities are funded based on outcomes allied to quality publications, patenting, training on successful HQP, knowledge translation to community, and commercialization. These are quantifiable metrics. However, the reality is that such a nuanced policy framework will require many years of advocacy, and execution could become a battleground in African universities. The battle can be best addressed by enhancing university autonomy. While some scope of autonomy exists in some universities on the continent, these institutions often fail to fully activate the autonomy benefits. Individual universities could draft their strategic policy framework to tap into mutual engagements, with professional and academic diaspora as the key to scientific innovation and technology development and coordinated at the national level. It is possible to drive this initiative through the coalition of willing faculty partners (between diaspora and African resident faculty) and the creation of a collaborative research exchange. A major challenge is the near-complete lack of science infrastructure for the African collaborating research group. As such, the collaborating diaspora partner often has to provide the needed resources, which are typically inadequate, creating an unsustainable, asymmetric relationship. The approach

by CADFP to facilitate short-term mobility, while helpful for scientists in the short term, is inefficient for meaningful, long-term engagements due to this dire lack of research infrastructure. While the short-term mobility is effective in generating interest in intercollegiate cooperation through the signing of memorandums of understanding (MOUs), with gaping disparities in enabling research facilities, long-term operational viability of meaningful activation of the MOUs toward knowledge exchange is curtailed. Rethinking approaches to access various forms of funding that go toward research infrastructure would play a role in unlocking sustainable collaborations. Given that no country has an unlimited supply of resources, mutual partnerships and creative leveraging can help in operational issues.

ii) Governance problems in African public universities often incapacitate research output, leading to lethargy and cynicism. Science research infrastructure typically requires not only the brick-and-mortar lab but also equipment that needs maintenance and incurs operational costs. Strategic approaches by would-be collaborators and research capital investors (e.g., CADFP) should rethink investment with highest dividends. Given small success triggers a positive cascade, models such as interdependent autonomous research institutes housed within university premises can be actualized. Such a model was effective, for example, in the Japanese International Cooperation Agency (JICA) partnership with Jomo Kenyatta University of Agriculture and Technology (JKUAT) in Kenya, which has for over two decades triggered significant research capacity building (Losenge et al., 2016; Kivisi, 2019). These research institutes allied to public institutions (providing HQP training) but managed autonomously could mitigate the governance issues of public universities while playing a key role in changing the research culture. Such research centers would also aid in retaining talent on the continent, especially graduate students. In addition, such investments would minimize “brain waste,” where high-skilled individuals remain in the diaspora, yet their skills are underutilized (Zong & Lu, 2017).

iii) Diaspora academics could play a useful role in establishing labs in such research institutes. In addition, such research institutes could be paired with not only public universities but also Pan African University. Indeed, this could breathe new life and leadership direction into the latter. Importantly, the research institutes should be allied to focus on developing innovations and knowledge translations in core UN SDGs, such as agri-food security, sanitation, and water treatment. A good example of such research programs is the Green Revolution in India, started with the help of the U.S.-based Rockefeller Foundation, with a research focus on developing high-yielding varieties of wheat and rice. This research initiative addressed large-scale starvation in India.

Beyond India, the initiative has been replicated in Mexico and the Philippines (Sharma & Varshney, 2019). These institutes should also be equipped with high-speed wireless internet, which would especially aid in scaling up integration of digital technology and e-learning, helpful to the entire local institution. Indeed, the proposed research institutes could learn from the impressive initiative by physicist Neil Turok, the brain behind The African Institute for Mathematical Sciences (AIMS), a pan-African network of centers of excellence for postgraduate training in science, technology, engineering, and mathematics (STEM), which currently has centers in Cameroon, Ghana, Senegal, and South Africa (AIMS, 2021).

iv) The important question is how to marshal funding for the creation of such research institutes. A leveraging approach and starting small are key, as is very strongly aligning the initial research objectives of the institute to the most urgent societal needs (UN SDGs) that can easily be solved through “shovel-ready” iterative and repurposing innovations that can be translated for community use in short term (two to five years). Aligning institutes to such initiatives is likely to attract leveraged investment from organizations such as CADFP, Global Challenges Canada, and The Rockefeller Foundation, and a strong advocacy by African governments to also commit investment, probably through an incentive matching program, where every foreign dollar is matched by beneficiary country. African countries should be encouraged to invest at least 1% to 5% of their GDP in research and development as the only way out of dependency and poverty. In addition, an opportunity lies in finding a framework to tap onto diaspora remitting stakeholders, majority of whom are professionals with a mindset that aligns on importance of research innovation as the only long-term solution to dependency. If 1% to 5% of all remittances to each country is channeled to research and development, hopefully toward such proposed institutes, focused on short- and medium-term innovation solutions, the impact would be monumental. In the case of Kenya, a 1% allocation of the annual diaspora remittances to research institutes would mean \$30 million, a significant sum that can yield great outcomes if targeted to such investments. In addition, by recruiting competent research directors, including those from the diaspora who are experienced in scaling and leveraging research funding from diverse public and private sources, these institutes would significantly change the research and policy landscape. The proposed suggested framework and ideas are “low-hanging fruit” within the realm of short-term realization that can catalyze a quantum leap in Ai.

Conclusion

African diaspora academic brain circulation, especially in STEM, should be a priority for development of a knowledge-based economy to fast-track an uplift in socioeconomic standing of the African continent. A strategic low-hanging-fruit approach of fostering diaspora academics to establish research labs in African universities with a research agenda of developing iterative and repurposed technologies that align to urgent societal needs, such as agri-food, water and sanitation, health solutions, and smart (green) manufacturing, could make a rapid scalable impact in these areas while producing multilayered socioeconomic benefits. Using creative funding approaches from international private donors and diaspora remittances, research centers of excellence that are autonomous yet allied to local universities could be created. Such institutes could be useful in addressing issues and rapidly influencing and enhancing the research culture in African universities.

Taking advantage of the expanded e-learning platforms accelerated by COVID-19, African universities can tap onto African diaspora academics to provide e-learning mentorships for graduate and undergraduate courses. Investments in high-speed internet connectivity in the universities is a fairly a modest way to realize such a high-value, low-cost collaborative knowledge cycling agenda that can be a catalyst for significant socioeconomic change. While a hopeful thought that African governments and public universities will rise to the occasion and fast-track these realizable possibilities, private universities in Africa, which typically have less bureaucratic inertia, could run with it. Pan African University could be especially well situated to operationalize the diaspora brain circulation possibilities to create “open innovation” research institutes as well as MOOC curricula (especially in STEM) that become a key catalyst for change for massive high-skill human capital development on the African continent. With such thinking, Africa can reclaim its place as the true cradle of human civilization.

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Mutually Beneficial Collaboration

Collaboration as a Key Approach in Optimizing Scientific Research Success

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ABSTRACT

The main goal of collaboration is founded upon the need to tackle societal and fundamental challenges together. Researchers and organizations worldwide are increasingly committing themselves in mutual collaboration for multiple years to a common goal to enrich, enhance, and deepen technological capabilities and applications within their numerous fields. The existence of resource asymmetries between American and African universities and research institutions has remained a major impediment in the latter's realization of meaningful pace in scientific research progress. A practical approach toward addressing this serious setback would therefore be for fellows from American and African institutions to find convergent mutual research interests that would enable them develop joint fundable collaborative research projects. Several profound mutual benefits are expected to arise from such research collaborations for both the host and home institutions. This paper provides a quick overview that illuminates the numerous potential benefits of mutual collaboration for optimization of scientific research success.

Introduction

While innovation is largely attributed to be the main driver of economic growth, at the heart of it, research and development (R&D) activities are the real integral ingredients that allow scientists and researchers to develop new knowledge, techniques, and technologies. Increasing changes in technology allow people to optimize use of available resources, resulting in increased productivity. As productivity grows, so does the economy. It is thus axiomatic that innovative activity has been the single most important component of long-term economic growth. For instance, a recent study of 15 Organisation for Economic Co-operation and Development (OECD) countries, including the United States, estimates that a 1% increase in R&D spending could grow the economy by 0.61%. This is an indication that countries that invest more in R&D, commensurately, have economies that grow faster (OECD, 2004).

It is generally accepted that various scientific issues and innovative technologies can often be addressed by working together in teams of researchers from different backgrounds (Bansal et al., 2019). The merging of different fields often makes it possible to achieve research goals that are more effective and impactful. Policymakers and program managers tend to favor more international collaboration in funding considerations (He, 2009). It is also worth noting that since 1991, international collaboration has grown more than tenfold for the most advanced countries, and twentyfold for Brazil, Russia, India, and China (Adams, 2013). It is, however, rather discomfoting to observe that such trends of research

collaboration have been not only scarce but rare between African countries and other countries in the world. Also, despite some of these countries having received colossal amounts of dollars in aid, grants, and low-interest loans over the past few decades, they are still underdeveloped today. Perhaps even more painful is that their prospects are only slightly better than they were decades ago (Christensen et al., 2019). With increasing populations in many of these regions, a change of developmental strategy is urgently needed for a meaningful headway to be realized in the foreseeable future.

Collaborative research can be defined as research involving coordination between researchers, institutions, organizations, and/or communities. The cooperation has the potential to bring together distinct expertise needed for the success of a project. Collaboration can be classified as voluntary, consortium, federation, affiliation, or merger and may occur at five main levels: disciplinary, interdisciplinary, multidisciplinary, transdisciplinary, or national versus international.

A thorough consideration and understanding of research collaboration shows that its numerous advantages far outweigh disadvantages. As would be expected, however, some potential collaboration challenges may arise, including language, financial commitment, inadequate regulatory frameworks, and diverse interests among collaborators. These may nonetheless be successfully addressed by ensuring that collaborators enter into comprehensive and transparent collaborative cooperative research agreements or memoranda of understanding (MoU's) that are well designed and defined to properly guide intended collaboration projects.

An important study finding on international research collaboration by Wagner et al. (2019) showed that international collaboration and atypical knowledge recombination tend to produce higher impact research. This is yet another demonstration of the important role that international research collaboration can play, especially for developing countries, including those in Africa. So far, international research collaboration in many African countries has been addressed in a rather clunky manner; therefore, the need for redress and refocus is urgent, with a view to fine-tuning for tangibility and effectiveness.

While African researchers produce only 1% of the world's research, a recent report shows that the quality and quantity of that research is improving (World Bank, 2014). Between 2003 and 2012, African researchers more than doubled their outputs, producing papers on subjects ranging from HIV to cancer, climate change, and aging. A significant number of the peer-reviewed articles received international citations, a measure of the importance and quality of the research. As the report highlights showed improvements in science, technology, engineering, and mathematics (STEM) research outputs in Africa, it also suggests the pace and quality of research need to be stepped up further. STEM research makes up only 29% of Africa's total research output, despite the need for more research on energy, transport, light manufacturing, and extractives.

Although collaborative research projects may inevitably be associated with challenges that individual research projects might not experience, they also offer numerous potential benefits. The biggest challenge to international research is invariably the unavailability of funding, as was well exemplified in a survey by the Association of Universities and Colleges of Canada (2014) on internationalization, where 83% of universities cited the lack of research funding opportunities as the most significant barrier to international collaboration. How do we address this gigantic funding challenge when it comes to the much-needed international research collaboration between African and North American institutions? This paper attempts to highlight this topic with a view to stimulating discussion and exploring suggestions that may lead to useful implementable solutions.

Benefits of Research Collaboration

Collaboration has been an integral part of research for a long time. However, the nature of collaboration appears to be evolving from conducting research within departments, disciplines, or institutions to newer areas necessitating partnerships across departments, disciplines, or institutions (e.g., academic, governments, private industry).

This type of interdisciplinary/multi-contextual collaboration has stoked the pace of research and encouraged the development of innovative and groundbreaking strategies in

investigating increasingly novel, complex, and convoluted areas.

A number of key factors and benefits may be considered to be the main drivers in the trend toward increased research collaboration, as elucidated in the following sections.

Division of labor to complete tasks in a timely fashion

Research collaboration can be useful when devising a division of labor scheme to complete project tasks in a timely and efficient manner (Macrina, 2000). This is particularly important when tasks are sufficiently differentiated to require orchestrating efforts with collaborators who have diverse research interests, skills, and specialization.

For example, in the sequence of research activities, some members of the team may engage in data collection, others may specialize in data handling and preparation, and yet others may perform data analysis and reporting. The U.S. Agency for International Development recognizes the importance of strengthening the agricultural sector of developing countries to build a firm base for economic growth. The scope of this kind of endeavor is likely to be far beyond the research capabilities of a single researcher and demands a carefully orchestrated effort between multiple research groups.

Given the nature and demands of each project, certain specialized tasks will remain in the domain of select experts, while more generic tasks may be shared by others.

By dividing the workload according to collaborator skills, completion of the work may become more manageable. A tacit assumption and expectation from the practice of division of labor is that because each assigned activity targets team members with the appropriate experience and expertise, the tasks will be performed with greater efficiency.

Ability to share resources

One important justification for collaboration is the enhanced ability to share and exchange resources.

Resources have generally been defined as data, databases, ideas, equipment, computers, methods, reagents, cell lines, research sites, personnel, and many other technical and human resources. Benefits from collaboration may include cost savings and the potential to facilitate scientific progress. Thus, resources found to be deficient with one member of a team or institution may be readily available from willing collaborators within or between institutions.

An example of a mutually beneficial arrangement of sharing resources would be a research team that is seeking to improve upon a particular medical or social intervention agreeing to collaborate with another research group that can provide access to a study population or database. Both parties stand to benefit from this sharing of resources.

Opportunity to learn about other disciplines

Research collaboration may provide opportunities for investigators to learn how approaches from complementary

disciplines may be applied to existing problems and lead to the development of innovative solutions.

This may occur when discussions among colleagues stimulate new ideas. Collaboration between academia and private industry may also allow investigators to see real-world application of research. These types of collaboration may result in social and economic benefit to society, science, and private industry.

Risk management

While most research may entail some risk or hazard, the degree of risk and its concomitant costs will depend on the nature of the research conducted.

Risk management is defined as decisions made to accept exposure or to reduce vulnerabilities by either mitigating the risks or applying cost-effective controls. Collaboration may be viewed as a strategy for the risk management of a research project.

Research activities that may knowingly or unknowingly expose investigators, participants (human or animal), or the public to some degree of danger cannot be conducted unless the risks are abated or eliminated.

Collaborative partners may differ in the experiences and expertise of risk management skills for relevant areas. An example might be found in collaborations between clinical research and basic science groups.

Opportunity to engage in collegiality

Collegiality represents one of the four norms of science. Its function is to maintain a social environment promoting cooperation and trust. Researchers who treat one another as colleagues are more likely to trust one another to cooperate.

In pursuit of a common goal, researchers engaged in collegiality treat each other with respect, providing constructive criticism and assistance. Collaboration may be seen as a mechanism to promote greater collegiality between colleagues, departments, and institutions.

This can be particularly useful in opening dialogue between researchers from distinctly different disciplines where previous research efforts were in divergent and perhaps unrelated directions.

Collaboration can also be useful in establishing innovative alliances between research teams from academia, government, and private industry. These alliances can result in long-term research relationships benefiting science and society, with broad-based economic interests. Both science and society are best served by collegiality and open collaboration.

Opportunity to lend credibility and validity to project

Collaboration can be beneficial when researchers invite the participation of investigators who have more experience in a desirable area of research. This experience could include a history of successful proposal submissions, insightful and

innovative approaches to problem-solving, and significant publications in the field.

Collaboration with such experienced researchers can lend credibility and increase validation to most projects and may increase the chances of a successful grant/funding submissions.

This alliance can both facilitate successful ongoing research efforts and future collaboration.

Technological advances facilitating communication

Collaboration has been increasingly facilitated by advances in communication technology.

The ability to learn about the work of others has greatly been enhanced by access to online databases. Databases from numerous disciplines offer both up-to-date information and opportunities to search past publications.

Relevant information can be obtained or exchanged through phone, email, fax, shipping, teleconferencing, or virtual conferencing through institutional/individual websites. Researchers may be better able to learn about each other's work and sustain collaborative efforts as a result of available communication technology.

Resource Asymmetries

The existence of vast resource asymmetries between North American and African institutions is an obvious pointer to their observed current disparity in research and technological status. Yet amidst all this, a great potential still exists to change the situation through meaningful win-win mutual international research collaborations.

Rapid economic growth in some of the emerging economies has fueled the rise of a global middle class (United Nations Conference on Trade and Development, UNCTAD, 2021). Nevertheless, there is persistent poverty and rising inequality. Wealth is highly concentrated, and there are large disparities in income-earning opportunities and in standards of education and health. These imbalances constrain economic growth and human development while heightening vulnerability to events that have a potential to destabilize societies, such as pandemics, economic crises, and climate change.

Suggestions for Success in International Research Collaboration

The following suggested implementation approaches provide important pathways toward achieving potential international research collaboration success:

Establish increased mechanisms of providing availability of needed research funding sources that will enhance and increase the pace of international collaborative research efforts between North American and African institutions.

Encourage increased mutual international research collaboration avenues among researchers from African and

North American institutions. In this concerted drive, African institutions and governments, including development partners, are urged to accelerate support for research and research-based education in Africa to build the necessary human capital to further increase research collaboration efforts on solving African problems. To be effective, these efforts should also include partnerships with the private sector.

Focus needs to shift toward pursuing and accelerating relevant policies aimed at improving the quality and quantity of teaching of STEM across all levels of their systems of education to substantively incorporate research and research-based curricula in African countries. Such concerted efforts should include bilateral and multilateral university collaborations, post-graduate scholarships, and encouragement of international firms to contribute to the development of STEM capacity in Africa.

Although science can benefit from collaboration, investigators should be aware of both the positive and negative impact on the responsible conduct of research (Shamoo & Resnik, 2003). For instance, while working with a larger staff can enhance the investigation of multifaceted aspects of a research question, logistical challenges in dealing with a more complex project, as well as disagreements about the appropriateness of methodologies and analyses, can result in acrimony. Addition of a recognized name to a proposal to enhance a submission's credibility must be followed up by real participation, rather than in name only. Relying too heavily on technology to promote communication is no substitute for a shared commitment to accountability in following through on all assigned tasks in a collaborative project.

Conclusion

International mutual research collaboration between African and North American institutions holds great promise for spurring long-term positive economic growth. The benefits envisioned in collaborative partnerships include optimizing project outputs and impact and attracting much-needed research funding.

Research collaboration will enable sharing of skills and technology as well as opening of new avenues of resource availability, including funding instruments that would be unavailable without such partnerships.

In the long term, international research collaborations are expected to go a long way toward positively mitigating the existing resource asymmetries between North American and African institutions.

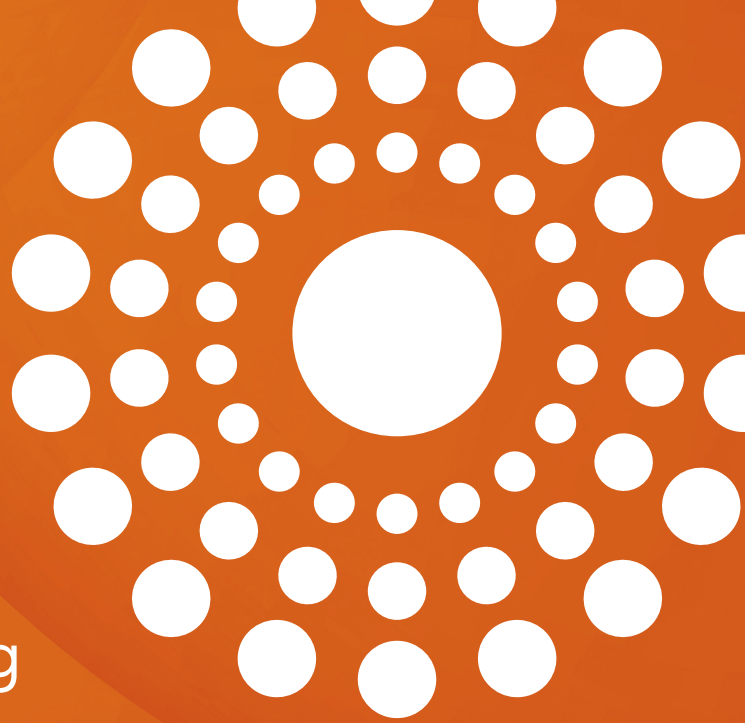
The numerous advantages of research collaboration far outweigh the disadvantages. These advantages strongly suggest that focus now needs to shift toward pursuing and accelerating relevant policies aimed at fast-tracking collaboration frameworks and improving the quality and quantity of STEM education across all levels of educational systems, especially in African governments, to incorporate enhanced research and research-based curricula.

For greater success, collaborators will need to enter into comprehensive, accountable and transparent collaborative cooperative research agreements or MoUs that are well designed to properly guide projects.

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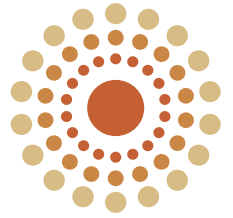
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Policy Implications for Higher Education
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Students with Disabilities in Higher Education in Africa: Trends, Challenges, and Practical Strategies for Inclusion

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ABSTRACT

Over 90% of children with disabilities in low- and middle-income countries do not attend school. In sub-Saharan Africa, less than one percent of students with disabilities (SWDs) have access to higher education. Although there is a gradual increase in the numbers of SWDs in higher institutions worldwide, these numbers are relatively small in low- and middle-income countries, which account for 80% of the world's population of persons with disabilities (PWDs). Endemic poverty, unfavorable home situations, lack of trained teachers, absence of political will, and limited access to instructional resources during the formative years, among other factors, often result in SWDs' inadequate preparation for higher education. Once admitted, SWDs face multiple architectural barriers, inappropriate curricula, negative attitudes of lecturers, social isolation, etc. The objectives of this presentation are to highlight the trends and challenges for more equitable and sustainable inclusion of SWDs in tertiary education in Africa, and to discuss practical strategies African scholars can implement in their home countries to improve the status quo.

Introduction

In general terms, education can be described as an instrument for national development and social change designed to maximize the creative potentials and skills of the individual for self-fulfillment and overall development of the society. In this context, one of the goals of education should be the development of appropriate skills; mental, physical, and social abilities; and competencies to empower an individual to live in and contribute positively to the society. This implies that education must be compulsory and seen as the right of every child regardless of gender, social status, religion, ethnicity, background, disability, and any particular individual challenges. In this paper, the focus is on higher (tertiary) education—that is, the education given after secondary education. The goal is to describe how such education can contribute to national development through high-level personnel training, promote and encourage scholarship, advance national and international understanding, and provide accessible and affordable quality learning opportunities in response to needs and interests of all African children, including those with disabilities.

Background Information

According to UNESCO (2020), approximately 15% of the world's population of 7.7 billion (U.S. Department of Commerce, 2021) comprises persons with disabilities (PWDs). In numerical terms, this translates into 1.1 billion PWDs worldwide. Worldometers.info (2022) estimates Africa's population to be nearly 1.39 billion people, of which about 208 million are PWDs. This percentage increases in communities and nations due to a variety of factors, including but not limited to: chronic poverty, congenital abnormalities, illnesses, inefficient assessment

procedures, road and industrial accidents, wars, natural disasters, environmental toxins, and aging (Ajuwon et al., 2020; Malakpa & Spann, 2012). Given the bleak situation in which PWDs in Africa find themselves, it becomes more daunting for them to benefit from the education system. On many levels, these negative experiences have the potential to exclude PWDs from lifelong formal and informal processes of equipping themselves to be fully aware of their environment and to exploit, manage, and dominate the same for their benefit and for society at large (Hughson & Uditsky, 2007; Obasanjo & Mabogunje, 1991). Yet ample evidence indicates that only a small fraction of the world's population of PWDs—especially those in low- and middle-income countries—attend schools (Kochung, 2011; UNESCO, 2020). The evidence further demonstrates that few students with disabilities (SWDs) attend and/or graduate from institutions of higher education (Belch, 2004; Hill, 1996; Lightner et al., 2012; Orr & Goodman, 2010).

For decades, most African governments have been unable to admit, retain, and graduate SWDs beyond a nominal percentage. This is unconscionable because, aside from providing knowledge, skills and experience, postsecondary education confers additional benefits such as encouraging accessible, lifelong learning as a means of attaining a better future for most young people; satisfying personal goals; allowing for effective competition in the job market; and contributing to independence and financial autonomy (Fichten, 1988; King & Hill, 1993; McMahon, 2009; Mourshed et al., 2013; Ross et al., 2013). These advantages are particularly relevant for PWDs for whom postsecondary education has been described as a crucial link between high school and successful adult life (Fairweather & Shaver, 1990; Hughson & Uditsky, 2007; Milsom & Thompson, 2004; Murugami & Nel, 2012).

The objectives of this paper are twofold: first, to analyze the trends and challenges for more equitable and sustainable inclusion of SWDs in institutions of higher learning in Africa, and second, to discuss practical strategies African scholars in the diaspora can implement to promote effective inclusion in their home countries' higher institutions. In support of the twin objectives, two case studies will be presented to illustrate how SWDs can be empowered or disenfranchised in the pursuit of quality higher education.

Trends in Educating SWDs in Africa

Policies governing educational rights of PWDs at the international level evolved gradually for several decades after the Second World War. Prior to the attainment of independence by most countries in Africa, entitlement to education was first introduced in the 1948 United Nations Universal Declaration of Human Rights (<https://www.un.org/en/about-us/universal-declaration-of-human-rights>). Indeed, for the first time, this historic document validated the fact that everyone has the right to education; that education shall be free and compulsory at least in the elementary and fundamental stages; that technical and professional education shall be made generally available; and higher education shall be equally accessible to all based on merit.

The 1960 UNESCO Convention against Discrimination in Education mandated that countries address barriers in education (1960). Article 1 prohibits unequal treatment in education based on individual differences or characteristics. In the 1989 UN Convention on the Rights of the Child, Article 23 recognized "the special needs of a disabled child," and urges all countries to set up programs to ensure that the child with a disability can access education which will maximize their individual development and social integration (1989).

In 1990, the World Conference on Education for All World Declaration on Education for All, written in Thailand, called for measures to "provide equal access to education to every category of disabled persons as an integral part of the education system" (Article 3). While the right of children with disabilities to receive an education was now recognized, it was not until the 1994 World Congress on Special Needs Education: Access and Equality, held in Salamanca, Spain, that the principle of inclusive education was enunciated. In unambiguous terms, the document asserted that "children and youths with special educational needs should be included in the education arrangements made for the majority of children" (World Congress on Special Needs Education: Access and Equality, 1994). Furthermore, the document urged states to "adopt as a matter of law or policy inclusive education." The principle of inclusive education for children with disabilities was reinforced in 2000 at the World Education Forum held in Dakar, Senegal (United Nations).

In response to global advocacy, the 2006 United Nations Convention on the Rights of Persons with Disabilities and Optional Protocol (UNCRPD) proclaimed in Article 24 the right to inclusive education of all children with disabilities. Its aim is the

development by people with disabilities "...of their personality, talents and creativities as well as their mental and physical abilities to their fullest potential." In reference to higher education, the UNCRPD asserted, "States Parties shall ensure that persons with disabilities are able to access general tertiary education, vocational training, adult education and lifelong learning without discrimination and on an equal basis with others. To this end, States Parties shall ensure that reasonable accommodation is provided to persons with disabilities" (Article 24).

Following along the preceding themes, on 25 September 2015, 193 countries of the UN General Assembly adopted the 2030 Development Agenda, entitled Transforming Our World: The 2030 Agenda for Sustainable Development (Agbedahin, 2019; Weiland et al., 2021). It became imperative to adopt the 17 new Sustainable Development Goals (SDGs) as the future global framework to succeed the Millennium Development Goals (MDGs), which ended in 2015 without much to show for the global initiative. In a bid to improve on the shortcomings of the MDGs, Goal 4 of the SDGs aims to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" (United Nations General Assembly, 2015).

A major African initiative to promote the education rights of PWDs occurred in 2018. The Protocol to the African Charter on Human and Peoples' Rights on the Rights of Persons with Disabilities in Africa established that "persons with disabilities have the right to education on an equal basis with others" (Article 16) with provision for reasonable accommodation, individualized support, training for professionals, and support for sign languages. Furthermore, the African Charter on the Rights and Welfare of the Child (ACRWC) protects children from discrimination and addresses the right of the child to education (Article 11), as well as the rights of children with disabilities (Article 13).

Based on available records, most African governments have signed and domesticated these international treaties. However, it is a well-known fact that these nations are experiencing formidable challenges that impede effective provision of quality education, particularly to SWDs at all educational levels, thus forcing these governments to jettison their commitment to an important segment of the population. The piecemeal efforts of African governments in the disability sector may well indicate an absence of a clear understanding and conceptualization of the important principles that govern inclusive education practices as seen in the Global North. This has resulted in marginalization and disempowerment of SWDs, especially in higher institutions throughout Africa, as illustrated in the following two case studies.

Why Does Inclusion Matter?

The concept of inclusion has become paramount in disability circles globally. Inclusion implies a way of acknowledging differences to foster a climate of belonging in which people are valued and celebrated for the improvement of our society and the world at large (Ajuwon, 2012). Clearly, the current state

Case Study 1: “Jane Ihuoma Ottah: The Face of Deafness and Discrimination in Nigeria”

Jane Ihuoma Ottah is deaf. She hails from Arochukwu local government in Abia State, Nigeria, but was born and raised in Port Harcourt. On 8 August 1996, at the age of six, she became deaf adventitiously while running errands for her mother. At that age, she was barely post-lingual, given the limited vocabulary of a six-year-old. Jane was expelled from primary school when she went deaf because her teachers lacked the knowledge and skills to instruct her. At the age of 15, she went back to school at Therapeutic Day Care Centre, Abakpa Nike, Enugu, where she resumed as a primary three student. She completed primary school at age 19 and proceeded to Hallel College, Port Harcourt, where the founder awarded her a scholarship from junior secondary until her final year. In her final secondary school examinations, Jane earned seven credits and a distinction—a truly remarkable feat.

Furthermore, Jane scored 205 points in the Joint Matriculation Exam and gained admission to study Educational Foundations at the Rivers State University of Science and Technology in September of 2014 at age 27. However, during the second semester of her 100-level courses, she was “deregistered” at the insistence of the Vice Chancellor, Blessing Didia, based on her deafness. Hitherto, she had been fulfilling expected standards of academic performance to continue with her studies at the university.

Regrettably, the authorities failed to show interest in Jane’s academic progress. She was simply asked to terminate her studies because, according to them, their team of medical personnel found it difficult to communicate with her and the university lacked special communication capabilities (Adémólá-Olátéjú, 2016).

Case Study 2: Dr. Olabode Olajumoke, “Father of Universal Design in Nigeria”

In a 2011 article in the 20 February edition of *The Tribune of Nigeria*, Dr. Olajumoke recalled to a reporter an incident which occurred during his tenure as the Pro-Chancellor and Chairman of the Governing Council of Adekunle Ajasin University in Ondo State, Nigeria. On his way to a council meeting, Dr. Olajumoke saw a young man with physical challenges walking on his hands and dragging his legs as he approached the campus gates. The chancellor stopped to question the young man, who explained that he was a university student who lived off-campus because there was no accessible housing on campus. Dr. Olajumoke took the young man in his car to his office that day, and subsequently donated and supervised the building of male and female accessible hostels on the campus. In explaining his generosity, the chancellor stated, “It is just my belief that one should love his neighbor as one would love oneself and that is what my Bible tells me. In doing all these, I am responding to that Biblical injunction.”

While a senator for Ondo North in the National Assembly, he sponsored a bill in 2011 to require that all public buildings in Nigeria be constructed following accessible design standards. His proactive and revolutionary stance has earned him the title of “Father of Universal Design in Nigeria” (Fasanmi, 2011).

of access to education for PWDs is unacceptable, whichever way one looks at it. We need to understand that provision of inclusive education, accompanied by comprehensive planning, trained personnel, adequate instructional resources, and robust budget, can lead to improvement in academic achievement, social and emotional development, self-esteem, and peer acceptance that will increase diversity in schools, colleges, and universities (Baboo, 2010).

There is empirical evidence in the industrialized world that even including students with intellectual and developmental disabilities in postsecondary education can prevent stereotyping, devaluation, and isolation. In these advanced countries, a number of these students are embracing opportunities to enroll in practical, hands-on programs in postsecondary institutions. For example, Bear POWER (Promoting Opportunities for Work, Education and Resilience) at Missouri State University offers a nondegree program after high school for students with intellectual and developmental disabilities. On completion of their training, the students are ready to find a job compatible with their skills and dreams (<https://www.missouristate.edu/BearPOWER/program-details.htm>).

Beacon College in Florida is an excellent example of a liberal arts institution that strives to be the model educational institution for every individual who struggles with a learning disability. Established in 1989, it is the first college in the country accredited to award bachelor's degrees exclusively to students with learning disabilities, ADHD, dyslexia, and ASD (<https://www.beaconcollege.edu/about-beacon-college/beacon-at-a-glance/mission-statement/>). Thus, in recognition of the exemplary programs at this Florida institution, Aleph Foundation in Nigeria has sought collaboration "to promote the education and training of persons who learn differently and/or with intellectual and developmental disabilities for the purpose of empowerment, social development, economic inclusion and the general well-being of those who support them" (Aleph Foundation, n.d.). The Foundation, which was incorporated on 15 December 2017, aims to actualize its programs of training teachers, parents and students with learning and attention issues (LAI) at primary, secondary, and tertiary levels in Nigeria (O. Daniel, personal communication, 18 August 2021).

Over the years, most African governments have formulated disability-related policies with a substantial element of protection and charity (Ajuwon, 2017; Ross, 1988; Tesemma, 2011), but not with the right to make choices that will empower PWDs and ultimately free them from decisions imposed by professionals (Brown & Faragher, 2014). No one will dispute the salient fact that empowering PWDs in Africa requires a paradigm shift through which various systems of society such as education, training and healthcare services can be deployed seamlessly. But such a shift necessitates the right of PWDs to access the education and social supports they need within the ordinary structures available in each country.

Practical Strategies for Diaspora Scholars to Promote Inclusion of SWDs

Despite a gradual increase in the enrollment of SWDs in postsecondary institutions in Africa (Ajuwon and Akighir (1989); Chiwandire & Vincent, 2019; Duma, 2019; Haastrup, 2015; Walton et al., 2016), there is an absence of concrete action to provide equal opportunities for them. In fact, to any keen observer, tertiary institutions in Africa are not well-prepared to accommodate SWDs in areas of academics, socialization, and practical job readiness skills. These issues frustrate some SWDs, forcing them to drop out of school. In the remaining section of this paper, the author advances some recommendations for improving the status quo. In other words, how can African scholars in the diaspora and international partners become better engaged in advancing inclusive practices in the continent's institutions of higher learning?

1. Develop Scholars' Knowledge and Understanding of Disabilities.

Most African governments have now formulated policies on disability and inclusion in line with signed international treaties. As commonly understood, there are many types of disabilities, of which 55%–85% are invisible or hidden (Izzo & Horne, 2017). Table 1 below lists the major categories of special needs persons as defined in Section 7 of the Federal Republic of Nigeria's National Policy on Education (2014):

TABLE 1

Categories of Special Needs Persons in Nigeria

- a. Visual Impairment (blind and partially sighted)
- b. Hearing impairment (deaf and hard-of-hearing)
- c. Physical and health impairment
- d. Intellectual disability
- e. Emotional and behavioral disorders
- f. Speech and language impairment
- g. Specific learning disabilities
- h. Multiple disabilities
- i. Gifted and talented
- j. Albinism

It is instructive to note that the national policies related to special needs education of most African countries are like the categories shown in Table 1. These categories also largely incorporate salient aspects of UNESCO's landmark special education policies. The classification of disabilities is significant because, in both developed and developing countries, the specific type of disability will shape the interventions (accommodations) required to enable affected students to succeed in education, including at the tertiary level. However, designing effective interventions necessitates developing accurate understanding and knowledge of each disability area.

The United Nations Children's Fund (UNICEF) and the Washington Group on Disability Statistics (2021) recently developed a Child Functioning Module to provide population-level estimates of the number and proportion of children with disabilities aligning with the UNCRPD and a biopsychosocial concept of disability. Current regional estimates for children 0-17 years in Africa are illustrated in Table 2 below (UNICEF, 2021):

TABLE 2

Regional Estimates of Childhood Disability in Africa

| REGION | PERCENTAGE OF CHILDREN WITH DISABILITIES | NUMBER OF CHILDREN WITH DISABILITIES (MILLIONS) |
|------------------------------|--|---|
| Eastern and Southern Africa | 10 | 28.9 |
| Middle East and North Africa | 13 | 20.9 |
| West and Central Africa | 15 | 41.1 |

The above estimates provide strong evidence of the magnitude of childhood disabilities across the continent. Furthermore, and coupled with the current COVID-19 pandemic situation and the aging population, the data clearly demonstrate the urgent need to provide universal quality education and training (among other essential services) to children with disabilities. These children will comprise a significant proportion of wage-earning adults in their respective countries in the future.

2. Adopt Policies for SWDs to Access Approved Academic Accommodations.

As practiced in high-income countries, SWDs are entitled to specific instructional, assignment, and examination accommodations. Typically, these accommodations guide instructors in the provision of service, and enable SWDs to optimize their learning potential. The accommodations stated in Tables 3 through 5 illustrate practical measures that have been documented in the literature (Burgstahler & Doe, 2006; Debrand & Salzberg, 2005; Hill, 1996; Leyser et al., 1998; Novakovic & Ross, 2015; Patrick & Wessel, 2013; Vasek, 2005), and which diaspora scholars can incorporate into their service engagement in their hosts' institutions.

TABLE 3

Instructional Accommodations

- Allow students to tape record lecture.
- Provide list of textbooks/readings prior to the start of class.
- Provide detailed syllabus/course outline.
- Speak directly to the student (not to the interpreter, human guide, friend, etc.).
- Offer opportunities to meet student to discuss issues/concerns.
- Regularly clarify points that could be misunderstood.
- Arrange for preferential seating, if needed.
- Provide rest breaks in classes longer than 90 minutes.
- Ensure class ends on time to allow travel for next class.
- Arrange for a classmate to take notes.
- Give student photocopies of overheads/lecture notes and read out material printed on chalk board.
- Provide additional orientation to learning environment (e.g., laboratory, gym, computer center).
- Arrange for classmate or another student in the same faculty to provide tutoring.

TABLE 4

Assignment Accommodations

- Provide student with a detailed syllabus/course outline to give ample lead time to complete course assignments.
- Loan students material from private library for research.
- Allow students to complete alternative assignments (if necessary).
- Extend deadlines for completion of assignments.
- Endorse student use of a proofreader in correction of grammar/punctuation.
- Allow student to give oral tape-recorded presentation rather than written.
- Allow student to do an extra credit assignment (option not available to non-disabled students).
- Allow student to give a written presentation rather than an oral presentation.

TABLE 5

Examination Accommodations

- Allow extra time for completion of exam.
- Allow/arrange for exam to be taken in an alternative location.
- Allow/arrange for exam in alternative format (e.g., braille, large print, tape).
- Allow student to use calculator, spell checker, computer, etc.
- Allow student to dictate answers to proctor/amanuensis.
- Allow student to tape essay questions.
- Base grade on process (i.e., correct computation) as well as product (i.e., correct answer).
- Allow student to take an alternative form of exam (e.g., multiple choice rather than essay).
- Allow a proctor to rephrase exam (e.g., for clarity).
- Allow misspellings, incorrect punctuation, poor grammar without penalty.

3. Organize In-Service Training for Lecturers.

Some diaspora scholars and their colleagues may possess experience in providing disability-specific in-service training. Such training has the potential to increase the knowledge and raise awareness of participants. It should be stressed that the amount of contact and experience in instructing SWDs will vary among lecturers, administrators, and staff. The scholars should conduct these workshops periodically throughout the academic year, to sensitize their host communities to the needs of SWDs.

There are two approaches to this. First, disability-specific in-service training can be organized before the beginning of the semester. The topics could focus on the needs of a particular group, for example, students with specific learning disabilities, hearing impairments, or albinism. Second, general training can be offered periodically throughout the academic year to sensitize lecturers, administrators, staff, and the student body to the needs of SWDs. Ultimately, the aim is to modify the attitudes of the university community toward the various groups that have often been perceived as problematic on campus.

4. Establish a Disability Resource Center on Each Campus.

From my personal and professional observations, most tertiary institutions in Africa have failed to set up Disability Resource Centers (DRCs) that could provide the much-needed guidance to facilitate their institutions' curricula and inclusion of their SWDs. In the few universities that have set up their DRC, they seem to lack the capacity to accurately track the number of SWDs who apply, are admitted, are retained, and/or graduate. Thus, when SWDs are admitted, they frequently rely on students, friends, and/or family members to explore halls of residence, lecture rooms, libraries, technology, recreation, and worship centers. Furthermore, SWDs often experience delays in obtaining vital resources and services which can negatively impact their ability to pursue a program of higher education. Diaspora scholars and professionals can leverage their knowledge and experiences to assist their home countries' institutions to establish viable DRCs. This implies that the staff of these newly created DRCs must be trained and encouraged to respond positively to needs of SWDs and faculty with special needs.

5. Encourage Active Research into Disabilities and Inclusive Practices in Africa.

Diaspora scholars and researchers have critical roles to play in collaborating with colleagues in home institutions to determine empirically the educational, cultural, social, psychological, and emotional effects of disabilities on inclusive education and other practices on children, youth, and adults with and without disabilities, their teachers, parents, counsellors, healthcare providers and others. As previously stated, there are learners and workers with various types of disabilities. There are also students and workers in nomadic and other special programs, including those identified as gifted and talented. Diaspora scholars can explore international grants and collaborate with qualified home-based researchers to access funds for multi-year, quantitative and qualitative research projects, as approved by each university's institutional review board (IRB).

6. Establish a Permanent Funding Plan for Research and Service.

Scholars should encourage host institutions to set aside substantial competitive grants each year to conduct comprehensive, methodologically sound research on disability-related issues affecting the universities and the wider society. Such rigorous research efforts should: (a) examine the various disabilities and their etiologies, including standardising names in all African languages for describing each disability to facilitate communication among medical service providers, parents and teachers; (b) establish culturally sensitive, ecologically valid assessments and instructional strategies for all PWDs; and (c) ensure that lecturers, social workers, counsellors, psychologists, medical specialists, and parents form mutually beneficial partnerships that will contribute to the social, psychological, and educational growth of all learners.

7. Promote Universal Design Principles Campuswide.

According to Edwards et al. (2022), universal design (UD) implies planning to build learning, physical, and work environments so that they are usable by a wide range of people, irrespective of age, size, or disability status. Ronald Mace, the late renowned American architect, was the originator of UD. He led a team of architects, product designers, engineers, and environmental researchers to formulate a set of seven principles, the full incorporation of which would mean that everyone would be able to access both the built and social environments. The seven principles are:

- Principle 1: Equitable Use—The design is useful and marketable to people with diverse abilities.
- Principle 2: Flexibility in Use—the design accommodates a wide range of individual preferences and abilities.

- Principle 3: Simple and Intuitive Use—Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.
- Principle 4: Perceptible Information—The design communicates necessary information effectively to the user, regardless of ambient conditions or the individual's sensory capabilities.
- Principle 5: Tolerance for Error—The design minimizes hazards and the adverse consequences of accidental or unintended actions.
- Principle 6: Low Physical Effort—The design can be used efficiently and comfortably and with minimum fatigue.
- Principle 7: Size and Space for Approach and Use—Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility (Centre for Excellence in Universal Design, 2020).

From the preceding narrative, one can readily see the far-reaching potential of UD to enhance students' academics and socialization, as well as workers' job performance and satisfaction. As an illustration, in undertaking my teaching and research tasks as a professor who is blind, I utilize the Blackboard learning management system retrofitted with speech access software to create and deliver online courses. In this context, I find that a website that is constructed with headings, well-organized content, and keyboard navigation is beneficial as a user of a screen reader and has potential advantages for those with learning disabilities. Furthermore, everyone else using the website will find it easier to follow because it is more visually appealing. Therefore, creating accessible electronic content, learning environments, and physical spaces entail additional thought and planning at the initial stages. Policymakers in institutions of higher learning in Africa must realize that it is much easier, however, to plan for accessibility at the outset than to attempt to retrofit an inaccessible course or program to make it accessible.

8. Inaugurate a Ten-Year Technology Plan of Action for SWDs in Africa.

Given the pivotal role that technology plays in higher education, and the current unsatisfactory state of specialized technology service for SWDs in all higher institutions, it is recommended that the Carnegie African Diaspora Fellowship Program (CADFP) initiate and fund a ten-year technology plan for SWDs. The proposed new initiative would capitalize on the foundation's strategic position to engage experts anywhere with pertinent techno-pedagogy. These experts would be charged with the responsibility to foster opportunities for SWDs to acquire hands-on training in the utilization of specialized miscellaneous devices and software programs

that would create a level playing field for them. Ultimately, this unique model of training would substantially increase the quality of learning and employability of SWDs.

In high-income countries, it is well-known that specialized technologies are easily accessible and widespread because of effective legislation and advocacy as well as philanthropic initiatives. The information and knowledge derived from the application of technologies in these countries clearly attest to the fact that there cannot be a single technological solution that will suit the myriad needs of SWDs. These are crucially important facts that policy managers in Africa must understand as they plan and set up technology programs for SWDs. The recent sudden outbreak of COVID-19 has taught us important lessons of our general state of unpreparedness for appropriate specialized hardware devices, software programs, and disability-friendly platforms for online course delivery models that accommodate the learning needs of SWDs. COVID-19 has exposed the deficiencies in the curricula of higher education, and in teacher preparation and continuing professional development activities. Therefore, it is no longer acceptable to use cost as a pretext to deny SWDs in Africa access to modern technology and training. Additionally, it is stressed that for optimizing the benefits of specialized technology service, lecturers and support staff involved must acquire the requisite knowledge and skills to remain relevant in the overall scheme of things.

Concluding Remarks

Education is a sine qua non to human survival because it serves as a conduit through which the knowledge, learning and skills of a society is passed from generation to generation, and SWDs should be encouraged to participate in postsecondary education experiences. In this context, existing institutions like the Association of African Universities, the African Union Agenda 2063, the Continental Education Strategy for Africa 16-25, the Science, Technology, and Innovation Strategy for Africa 2024, and the Global 2030 Sustainable Development Goals Agenda must all refocus their mission and vision to effectively respond to the general needs of our hitherto marginalized SWDs.

The desire for inclusive tertiary education is growing on the continent. The expectation for better futures increases and inspires the need for greater knowledge and understanding about best practices in providing inclusive primary, secondary, and tertiary education, even for students with intellectual and developmental challenges, as is currently being implemented in high-income countries. Tertiary education in Africa has the potential to enable SWDs to fulfill personal goals; to allow for effective competition in the workforce; and to contribute to independence, financial security, and political engagement. Thus, it is desirable that the continent's education authorities and their international partners gear their policies toward enabling SWDs to realize their dreams and aspire through the development of relevant curricula and quality tertiary education.

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Policy Implications for Higher Education
in Africa: Models for Engaging the
Academic Diaspora

Lessons from Alternative Models of Engaging the Africa's Academic Diaspora

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EXECUTIVE SUMMARY

Higher education services in Africa have been outpaced by the enormous demand of Africa's growing population. Higher education institutions are facing challenges such as acute shortages of faculty mentors and a lack of resources for conducting quality research training and outreach. This paper addresses three of the five themes of the Carnegie African Diaspora Fellowship Program (CADFP) 2021 conference, including: (1) building and enhancing research, teaching, and/or service capacity of host universities; (2) implementing mutually beneficial collaborations; and (3) mentorship of the next generation of faculty, researchers, and scientists. The collaborative engagement models shared include a consortium of six higher education institutions in the United States and Canada collaborating with six higher education institutions in East Africa to build human and institutional capacity in managing transboundary diseases; a dual Master of Science degree and joint study-abroad program between US and African universities; and joint conferences and workshops between the US, Canada, and Africa with integrated collaborative research, teaching, and outreach and mentorship for students and junior faculty, as well as professional development for female faculty. Furthermore, the authors share information on the following four of the five objectives of the 2021 CADFP alumni convening: (1) practices, learnings, challenges, and opportunities related to engagement with higher education institutions on the African continent; (2) collaborative projects completed that expanded academic communities across Africa; (3) ongoing and past projects the diaspora has engaged in resource mobilization for African higher education; and (4) new knowledge generated about diaspora linkages and how it was disseminated through various publications (peer-reviewed papers in a special-issue journal, *Pan African Medical Journal*), scientific conferences, workshops, policy reports, and community-engaged service-learning projects. The paper concludes by highlighting lessons learned, best practices in implementing mutually beneficial collaborations, challenges experienced in engagement with higher education institutions in Africa, and policy implications for Africa's higher education systems.

Background

In Africa, the capacity of governments and private institutions to provide the necessary framework to ensure an appropriate balance between the provision of private and public goods and services, such as education, has been outpaced by the enormous demand of the country's growing population. Higher education institutions are among the most stable and sustainable institutions on the continent, with an enormous untapped skilled human resource and infrastructure that can help address Africa's developmental challenges. Higher education institutions

are endowed with enormous high-value human capital, infrastructure, and partnerships, which when harnessed in an organized manner can accelerate the continent's growth in ways that propel Africa's steady growth and global engagement. Yet challenges exist such as an acute shortage of faculty mentors and a lack of resources for conducting quality research training and outreach at higher education institutions. Engaging the African diaspora through programs such as the CADFP, led by Carnegie Corporation of New York, can play a significant role in addressing some of these challenges.

Practices, learnings, challenges, and opportunities related to engagement with higher education institutions on the African continent

Case studies of engagement with higher education institutions in Africa

"Capacity Building in Integrated Management of Transboundary Animal Diseases and Zoonoses (CIMTRADZ)"

Partnership in higher education is now widely accepted globally. Various higher education institutions, mainly from developed countries, partner with institutions from low developing countries with the aim of preparing students to gain competencies in global and intercultural experiences and development (Olson & Kroeger, 2001; Graham et al., 2013). This trend is driven by global interconnectedness, including the ever-increasing population growth, climate change, diminishing natural resources, economic fluctuations, and more recently the scourge of emerging and reemerging infectious diseases that have no respect for geographical borders (Olson & Kroeger, 2001). Global and intercultural competencies have been broadly defined to include knowledge about several dimensions of global and international cultures; appreciation of cultural, racial, and ethnic diversity; understanding the complexities of issues in global context; and comfort in working with people from other cultures (Olson & Kroeger, 2001). To achieve these global, international, and intercultural competencies, partnerships in higher education institutions have used different approaches, including sharing and the adoption of curricular programs; providing opportunities for staff and student exchange programs; undertaking joint activities in terms of training, research, and outreach; and joint academic programs (Olson & Kroeger, 2001). With this realization, the United States Agency for International Development (USAID) awarded 11 partnership grants to universities in Africa and the United States to address national and regional priorities in sub-Saharan Africa (Ekiri, Khaita, & Kabasa, 2013a). One of the 11 grants was *"Capacity Building in Integrated Management of Transboundary Animal Diseases and Zoonoses (CIMTRADZ)"* (2011–2015) in eastern and central Africa (Khaita, Kabasa, et al., 2017). The goal of CIMTRADZ was to offer human and institutional capacity development in higher education institutions in Africa with an emphasis on animal production and health and food security. CIMTRADZ was led by Makerere University in Africa and North Dakota State University and Mississippi State University in the US. Participating institutions in Africa included the University of Nairobi, Kenya; Sokoine University of Agriculture, Tanzania;

the National University of Rwanda, Rwanda; Mekelle University, Ethiopia; and IGAD Sheikh Technical Veterinary School, Somalia. The five North American universities included Michigan State University, Mississippi State University, Washington State University, Columbus State University, and the University of Saskatchewan. A detailed description of the CIMTRADZ project, including the genesis, management structure, accomplishments, lessons learned, and challenges, was published in a special issue of the *Pan African Medical Journal* (Khaita, Kabasa, et al., 2017).

"RUMPELHA: Regional University-Mediated Partnerships for Enhancing Livelihoods and Health in Africa"

Regional University-Mediated Partnerships for Enhancing Livelihood and Health in Africa (RUMPELHA) is a university-led inclusive continental alliance for transformation and building capacity in higher education systems in Africa while respecting cultural, ethnic, and gender diversity (Kabasa et al., 2017). An outcome of CIMTRADZ, RUMPELHA's goals align with the African Union's higher education Agenda 2063: to harmonize curricula in higher education in Africa to allow quality assurance, mobility of faculty, joint and collaborative research, and training against locally, regionally, and internationally agreed benchmarks of excellence (African Higher Education Summit, 2015). RUMPELHA is a promising university partnership in Africa that was endorsed by the African Union–InterAfrican Bureau for Animal Resources on July 18, 2014.

Conventional African higher education systems failed to transform the common person, youth, community, business, or industry on the continent as a whole, and the growing population of unemployed youth is a serious security risk; yet the youth dividend if harnessed well can leapfrog Africa's development (Kabasa et al., 2017). Therefore, there is need for a presiding regional body to coordinate member state higher education efforts, including those of research institutions and higher education institutions, in support of the continental agenda. Currently, institutions are largely conducting efforts at a regional level singularly or informally. A framework for nurturing future African leaders and African citizens is critical. Moreover, no one is clearly articulating the goals and vision of the African Union to African youths in a coordinated manner. RUMPELHA provides the framework that will support the African Union's Higher Education Agenda 2063 and the United Nations 2030 Agenda for Sustainable Development.

Mentoring graduate students and junior faculty at Makerere University, Uganda, and Sokoine University of Agriculture, Tanzania

The Carnegie African Diaspora Fellows (Margaret L. Khaita, John B. Kaneene, and Florence Wakoko-Studstill) mentored

graduate students and junior faculty at Makerere University, Uganda (2014 and 2017), and at Sokoine University of Agriculture, Tanzania (2017). The Fellows strengthened the curriculum for the Master of Science degree in International Infectious Disease Management (MS-IDM) (Ekiri, Khaita, & Kabasa, 2013). Additionally, they participated in setting up a Center for Biosecurity and Global health (CEBIGHA) at Makerere University. Furthermore, the Fellows refined the MS-IDM degree and developed specializations/tracks in the program. They also strengthened the social science aspects of the curriculum, particularly women and gender studies at the Centre for Gender Studies at Sokoine University of Agriculture. Building on the work conducted by the Fellows at Makerere University, under CIMTRADZ, the Fellows scaled up that effort at Makerere University and Sokoine University of Agriculture through graduate student training and mentoring in research methods, leadership, and One Health competencies. Fellows Khaita and Wakoko-Studstill taught quantitative and qualitative research methods, respectively, to 15 graduate students enrolled in the MS-IDM program at Makerere University and research methods to 23 graduate students in the College of Social Sciences and Humanities at Sokoine University of Agriculture. Khaita also team-taught epidemiology at Makerere University with another CADFP Fellow, Dr. Patrick Pithua. Students were also trained in Model African Union (MAU), a culturally sensitive novel pedagogy for simulating leadership and One Health competencies in African contexts. Fellows mentored researchers at Makerere University and Sokoine University of Agriculture in grant writing and collaborative research. A short course on grant proposal writing was offered to about 50 scientists at Sokoine University of Agriculture (graduate students and academic staff), and the students submitted five small grants (\$20,000 each) to the U.S. Department of State, Dar es Salaam, Tanzania.

The Fellows also participated in collaborative research projects. Both Fellows participated in joint research and grant writing with Makerere University, Sokoine University of Agriculture, and Higher Education Resource Services—East Africa (HERS-EA). At Sokoine University of Agriculture, the Fellows collaborated with researchers at the Centre for Gender Studies and submitted two small grants (\$20,000 each) to the U.S. Department of State, Dar es Salaam, on July 31, 2017. Also, Sokoine University of Agriculture and the Fellows submitted a proposal to the USDA Foreign Agricultural Service (FAS) (\$40,000) in June 2017 that was funded. The project trained women smallholder farmers in Tanzania in poultry production. The Fellows successfully organized the HERS-EA ACADEMY for women in higher education institutions in East Africa (July 2–8, 2017). A total of 70 women from HERS-EA (Burundi, Kenya, South Sudan, Tanzania, and Uganda) attended. The ACADEMY was completed in collaboration with HERS-EA, a nongovernmental organization (NGO) that provides leadership and management development training

for women. The Fellows Khaita and Wakoko-Studstill, both alumnae of HERS Denver, were instrumental in starting HERS-EA in August 2014, with partial support from CADFP. The fellowship enabled the Fellows to participate in the ACADEMY as resource persons and to facilitate signing of a memorandum of understanding between Sokoine University of Agriculture and HERS-EA for Sokoine University of Agriculture to host a HERS-EA office in Tanzania.

Diaspora engagement in One Health

The Food and Agriculture Organization of the United Nations (FAO), the World Organization for Animal Health (WOAH, formerly the Office International des Epizooties—OIE), and the World Health Organization (WHO) have developed One Health core competencies that have been recommended as skills and knowledge that all One Health professionals should possess (OIE, 2012). The tripartite organizations have recently been joined by The United Nations Environment Program (UNEP). These four intergovernmental organizations (IGOs) or quadripartite currently lead global efforts in One Health, advised by the newly formed One Health High Level Expert Panel (OHHLEP) (WHO, 2021).

One Health technical skills incorporate the fundamental values of veterinary, human, and environmental health, whereas One Health soft skills include management, communication, values and ethics, leadership, teamwork and collaboration, research, systems thinking, policy and advocacy, and cultural competency. The American Veterinary Medical Association (AMVA) Council on Education (COE) has recommended that graduating veterinarians possess these competencies to ensure quality veterinary services nationwide (AVMA, 2008). The African diaspora coauthors of this paper—collaboratively with colleagues in host institutions in Africa and other institutions outside of Africa—have played a key role in implementing One Health competencies in African academic institutions, particularly in eastern and central Africa.

The One Health approach was implemented through several projects, such as the USAID-supported CIMTRADZ project (Ekiri et al, 2013a, Khaita, Kabasa, et al., 2017); the USDA-funded joint/dual MS-IDM (Ekiri et al, 2013b, Majalija et al., 2017); and the joint study-abroad course, Tropical Veterinary Medicine and One Health (Ekiri, Aceng, Khaita, et al 2013; Khaita, Ejobi, et al., 2017). Also, Khaita serves on the OHHLEP (WHO, 2021).

One of the most recent strategies for conducting biomedical research efficiently and cost effectively is the application of a One Health approach. Kaneene at Michigan State University and co-collaborators in Tanzania (Sokoine University of Agriculture and Muhimbili University of Health and Allied Sciences) are conducting research and training of

graduate students in One Health. The research and training, funded by the Kolschowsky Foundation, focuses on a comparative study of brucellosis in farmers and their livestock in Monduli District in northern Tanzania.

Select examples of diaspora engagement in Ghana, Malawi, Ethiopia, Rwanda, South Africa, and Uganda

Over the past 15 years, we have engaged in research, graduate training, and capacity building programs in all regions of sub-Saharan, eastern, central, southern, and western Africa. Examples of such programs warrant mentioning here. Using grants from the USDA-FAS, the Bill & Melinda Gates Foundation, and the International Fund for Agricultural Development, Kaneene and co-collaborators conducted research and training of graduate students and junior faculty members in Malawi (Kaneene, Thiagarajan, et al., 2016), Uganda (Kaneene, Ssajjakambwe, et al., 2016; Kaneene, Majalija, et al., 2017), South Africa (Kaneene et al., 2015), and Ghana (Johnson et al., 2019). At Makerere University in Uganda and at Mississippi State University, the CADFP Fellow Wakoko-Studstill introduced a simulation model (MAU) in One Health curriculum (Wakoko-Studstill, Khaita, et al., 2017); conducted research with students and junior faculty to promote gender mainstreaming in veterinary education (Wakoko-Studstill, Kiguli, et al., 2017); developed a curriculum that integrated socioeconomic pedagogies in the Master of Science degree program, trained students and junior faculty in service-learning pedagogy, and engaged them through rabies vaccinations (Isiko, Okech, Nakanwagi, et al., 2017); and served on the FAO/OIE/WHO expert team to develop a guide for countries on taking a One Health approach to addressing Zoonotic diseases (WHO, 2019).

Collaborative projects completed that expanded academic communities across Africa

Collaborative research projects that have built capacity of host universities

In the past few decades, African universities have been under intense pressure to increase their research productivity. To do so, these institutions will need to secure extramural grants, hire faculty with training and research skills, or train current faculty in skills in grant writing, conducting research, and publishing their work in refereed journals. The authors therefore conducted research and training activities between East African and North American universities under the CIMTRADZ project to develop mutually beneficial and sustainable research and training collaborations (Kaneene, Khaita, et al., 2017). Research covered major zoonotic and

transboundary animal diseases in East Africa, improving laboratory capabilities for development of molecular diagnostic tests and establishment of standard operating procedures for the laboratories (Mukiibi, et al, 2017; Muzoora, et al, 2017). Training programs for faculty and graduate students included ethical conduct of research, grant writing, presentation of research findings at scientific conferences, strategies in publishing papers in peer-reviewed journals, and financial management of research grants. Major accomplishments of the research and training activities included increased awareness and adherence to ethical conduct of research and the use of standard operating procedures, increased rate of participation in joint grants applications, joint publications, understanding of grant budget management, creation of joint master's degrees, and development of short courses. A model for implementing a multifaceted research and training program involving universities from high- and low-income countries was developed. Using major funding from USAID, we conducted collaborative research and training programs involving five African universities (Makerere University, the University of Nairobi, Sokoine University of Agriculture, the National University of Rwanda, and Mekelle University) and five North American universities (Michigan State University, Mississippi State University, Washington State University, Columbus State University, and the University of Saskatchewan). The research and training focused on CIMTRADZ. The program was such a success that a special issue of the *Pan African Medical Journal* was published dedicated to that volume of work (Khaita, Kaneene, & Kabasa, 2017).

Collaborative training projects that have built capacity of host universities

Joint/dual degrees (e.g., MS in International Infectious Disease Management and Biosecurity) between Makerere University and North Dakota State University

Globally, it is estimated that, one billion cases of illness and millions of deaths occur every year from zoonoses (WHO, 2021). As the world is inter-connected, emerging zoonoses in one country are potentially a threat to global health security. As institutions of higher learning train the next generation workforce, they need to be equipped with skills needed to address complex problems of the future including emerging and re-emerging infectious diseases. As a way of providing such skills to students, Makerere University and North Dakota State University partnered (with support from USDA Higher Education Challenge grant) in developing the first United States-Africa trans-Atlantic dual degree using an integrated disease management approach that addresses emerging and re-emerging infectious diseases. The MS degree in

International Infectious Disease Management and Biosecurity developed was approved in 2011 (Ekiri et al 2013b; Majalija, Owiny Okello, Khaita, Freeman, et al, 2017). Many graduates of this program have participated in managing global health challenges, such as the Ebola and COVID-19 pandemics. The detailed curriculum of this program, challenges experienced, and lessons learned to inform future similar endeavors in internationalizing curricula in higher education were published elsewhere (Ekiri et al 2013b; Majalija, Owiny Okello, Khaita, Freeman, et al., 2017).

With support from USAID, Makerere University and North Dakota State University led a consortium of at least 10 other institutions of higher learning from the US and East Africa under CIMTRADZ project. Several activities were conducted under CIMTRADZ including faculty exchange and joint short-term training to students, such as workshops, fellowships for graduate students' stipends and research, and joint mentorship of students by faculty at both institutions. Annual workshops (termed Cultural Bomas) and scientific conferences were initiated at Makerere University, Uganda with support of the USAID grant and continued beyond the life of the grant. The Cultural Boma was the name coined to depict the inter-generational knowledge exchange platform that happens in the African context (Okech, Majalija, Okello Owiny, et al., 2017). Details of how CIMTRADZ project supported institutional and human capacity development efforts were described in detail in a special issue Pan African Medical journal (Khaita Kabasa, Kaneene, et al, 2017).

Joint summer study-abroad course (Tropical Veterinary Medicine and One Health)

A "Tropical Veterinary Medicine and One Health" course was developed jointly by Mississippi State University, College of Veterinary Medicine and the Makerere University, College of Veterinary Medicine, Animal Resources and Biosecurity in 2014. The course involves international travel by Mississippi State University students to Uganda and is delivered in a format involving lectures from international experts and experiential field trips. Students from both institutions normally join the course (Khaita, Ejobi, et al, 2017). With support from USAID funded CIMTRADZ project, students from participating institutions in East Africa were able to participate in this course. Students successfully completing this course are able to contribute to a globally engaged science workforce. The course provides a foundation for tomorrow's global citizens, global career development opportunities, and ability to work and understand diverse animal production, food safety and public health systems. Students engage in service-learning activities in various communities in Uganda using a One health approach (Okech, Tumwine, Majalija, et al., 2017). Additionally, the course provides an opportunity for cultural immersion & exchange (Khaita, Ejobi, et al, 2017).

A paper published in the *Pan African Medical Journal* summarizes experiential learning opportunities offered in tropical veterinary medicine and One Health, including sample itineraries and One Health service-learning activities completed by students from higher education institutions in the US and East Africa and central Africa (Khaita, Ejobi, et al., 2017).

Collaborative outreach and service-learning projects that have built capacity of host universities

With support from the USAID, Fellows implemented several community-service projects as part of a multidisciplinary One Health student training approach. Select projects included community education on control of Newcastle disease in poultry, rabies in dogs, brucellosis in cattle (in Uganda) using vaccinations and a local radio talk show on control of brucellosis (Okech, Tumwine, et al., 2017; Isiko, Okech, et al., 2017), and control of Rocky Mountain spotted fever (in the US). Participants comprised junior faculty, graduate students, and professional students in the following disciplines: veterinary medicine, public health, biomedical laboratory technology, and microbiology. In Uganda, the students were joined by the local area District Medical Officer and District Veterinary Officer.

Four exchange graduate students from Uganda participated in the Rocky Mountain spotted fever intervention in Arizona in collaboration with the U.S. Centers for Disease Control and Prevention (CDC). As a result of networking at the CDC Veterinary Day, the CDC and students from Virginia Tech, North Dakota State University, and Makerere University participated in Rocky Mountain spotted fever intervention in Arizona. This outreach activity was led by the CDC's Rickettsial Zoonoses Branch in the Division of Vector-Borne Diseases, as part of the National Center for Emerging and Zoonotic Infectious Diseases.

Ongoing and past projects the diaspora has engaged in resource mobilization for African higher education

Sample past projects

Promoting global expertise in emerging infectious diseases of animals, funded by USDA, HEC Grants Program

Makerere University and North Dakota State University developed the first United States–Africa transatlantic joint degree addressing integrated disease management and

international biosecurity. The two institutions received a collaborative grant from the USDA HEC Grants Program to develop a joint MS-IDM degree. This grant helped develop the joint MS-IDM program and graduate certificate, as well as support four graduate students' stipends and research (Majali et al., 2017).

CIMTRADZ in central and eastern Africa, funded by USAID (2010–2015)

The CIMTRADZ collaborative project involved a consortium of higher education institutions from Africa and North America that was focused on sustainable human and institutional capacity development in management of transboundary diseases and zoonoses in East Africa and central Africa (Khaita, Kaneene, & Kabasa, 2017). A paper published in the Pan African Medical Journal (Khaita, Kabasa, Kaneene, Ekiri, et al., 2017) provides an overview of CIMTRADZ by describing the genesis, rationale and organization, management structure, accomplishments, lessons learned, and challenges.

Sample ongoing projects

Training smallholder poultry farmers in East Africa using poultry (Uganda and Tanzania)

CADFP Fellows Khaita, from Mississippi State University; Odoi, from the University of Tennessee; and Wakoko-Studstill, from Columbus State University, in collaboration with Jeckoniah from Sokoine University of Agriculture and Lumutenga from HERS-EA and supported by the USDA-FAS, have: (1) developed a curriculum for and trained women smallholder farmers in Tanzania and Uganda in best practices in poultry production; (2) secured extension pamphlets on best practices on poultry production; and (3) identified challenges and prospects facing these women. The team has translated extension publications into local languages (Swahili) and established cooperatives or Savings and Credit Cooperative Organizations for better access to information on poultry production. HERS-EA, with researchers at higher education institutions in East Africa, as well as Michigan State University and the University of Tennessee, has conducted action research on constraints to poultry production that women smallholder farmers in East Africa face (Khaita, et al., 2021).

Harmonizing sanitary and phytosanitary regulatory regimes across the eight regional economic communities of the African Union, sponsored by the USDA-FAS

This project is premised on the knowledge that a key barrier to the adoption of the African Union Sanitary and

Phytosanitary Policy Framework is a lack of human capital with knowledge, support, and leadership to implement policy instruments at national, regional, and continental levels. Challenges also exist with oversight, understanding and expressing value, streamlining across regional economic communities and within member states, and developing a coalition of support from key stakeholders for adoption and implementation. The project seeks to develop such leaders through training and support to augment knowledge and skills with the connections necessary to be change agents at the regional economic community and national level. The project aims to recruit 24 Fellows from the continent of Africa to work with USDA-FAS and Michigan State University faculty to build and streamline efforts within the regional economic communities toward adoption of a unified sanitary and phytosanitary framework. Eight Fellows (one from each of the eight African Union regional economic communities) will conduct collaborative research with faculty at Michigan State University.

New knowledge generated about diaspora linkages and how it was disseminated through various publications

Pan African Medical Journal special issue

Today's world has increasingly interconnected economic, political, cultural, and scientific systems, resulting in rapid movement of goods, people, and ideas, and offering unprecedented opportunities for many countries especially those in sub-Saharan Africa. However, there are considerable challenges, including global pandemics, such as COVID-19. At least 70% of the known human and animal pathogens affecting production, public health, global trade, and security are resident in sub-Saharan Africa, and in particular eastern and central Africa. This region has therefore become a risk incubator for Africa and the world. The *Pan African Medical Journal* special issue summarized accomplishments of the project "Capacity Building in Integrated Management of Transboundary Animal Diseases and Zoonoses (CIMTRADZ)," implemented by three CADFP Fellows (Kaneene, Khaita, and Wakoko-Studstill). The 24 peer-reviewed papers published in this special-issue journal were assembled in five major themes related to the various approaches and major accomplishments of the USAID-supported CIMTRADZ project. The five themes were: (1) Partnership Models of CIMTRADZ; (2) The CIMTRADZ Approach to Teaching, Curriculum Development, and the Cultural Boma; (3) Original Scientific Research Conducted under CIMTRADZ; (4) Surveillance and Outbreak Investigations in CIMTRADZ; and (5) CIMTRADZ Approach to Outreach and Service Learning.

Diaspora CADFP Fellows Kaneene and Khaita served as editors for this special-issue journal.

Scientific workshops (Boma) at Makerere University

With support from the USAID funded CIMTRADZ project, annual workshops (termed Cultural Bomas) were initiated at Makerere University, Uganda and continued beyond the life of the grant. During these workshops collaborating faculty from CIMTRADZ participating institutions offered workshops in their areas of expertise to students who attended the workshops. Topics covered included Disease outbreak investigation, Research methods, Data analysis, diagnostic techniques for diseases such as rabies. The African context of the term "Boma" is explained in detail in another paper by Okech, Majalija, et al (2017). Apart from offering workshops, the boma provided opportunity for faculty from multiple institutions to network, share research, mentor students, and develop further research collaborations. Additionally, students from multiple institutions and disciplines, including, veterinary medicine, public health, wildlife, medical laboratory technology, microbiology, animal production and food safety worked collaboratively using the one health approach. This intergenerational engagement of faculty and students resulted into faculty and student exchange, student mentorship, joint research, publications, and grants. The Boma successfully contributed to development of the Global One Health Workforce and The Global Health Security agenda goals.

Scientific conferences

CADFP Fellows from Uganda (Kaneene, Khaita, and Wakoko-Studstill) and others (Pithua and Odoi) have participated and presented papers at the annual scientific conferences led by Makerere University and organized under RUMPELHA. These conferences were initiated and supported under the CIMTRADZ project (2010–2015); however, the conferences have been one of the successful project outcomes that have been ongoing sustainably thereafter.

Furthermore, the CADFP Fellows and hosts have presented collaborative projects at scientific conferences with the support of CADFP alumni grants. For instance, in 2021 Khaita and Majalija presented a collaborative research paper at the 2021 Engagement Scholarship Consortium (ESC) Conference (September 13–15, 2021) (Majalija, Tumwine & Khaita, 2021). The ESC is a 501(c)(3) nonprofit educational organization composed of higher education member institutions, a mix of state-public and private institutions. ESC's goal is to work collaboratively to build strong university-community partnerships anchored in the rigor of scholarship and designed to help build community capacity (ESC, 2021). Several Fellows and student mentors have also presented at scientific conferences in Africa and abroad.

Mentorship of the next generation of faculty, researchers, and scientists

Mentorship for undergraduate and graduate students and junior faculty at Makerere University (Uganda) and Sokoine University of Agriculture (Tanzania)

With support from CADFP, the Fellows Kaneene, Khaita, and Wakoko-Studstill conducted mentorship for undergraduate and graduate students and junior faculty at Makerere University, Uganda (2014 and 2017), and at Sokoine University of Agriculture, Tanzania (2017). The Fellows strengthened the curriculum for the MS-IDM degree at Makerere University. They refined the degree and developed specializations/tracks in the program. Additionally, they participated in setting up a Center for Biosecurity and Global health (CEBIGHA) at the College of Veterinary Medicine Animal Resources and Biosecurity at Makerere University. They also strengthened the social science aspects of the curriculum, particularly women and gender studies at the Centre for Gender Studies at Sokoine University of Agriculture. Dr. Khaita and Dr. Wakoko-Studstill facilitated a one-week HERS-EA Leadership ACADEMY—a workshop for women in higher education institutions at Makerere University.

Mentorship for graduate students and junior faculty from Makerere University (Uganda) at Mississippi State University and Michigan State University

In 2014, eight junior faculty from Makerere University attended four months of training at Mississippi State University and Michigan State University. The training was varied and extensive and included laboratory capacity development, food safety, grant writing, and policy development. Two of the eight junior faculty submitted collaborative grants with faculty in the U.S. higher education institutions that were funded during this time (Muzoora et al., 2017). On return to Makerere University, the junior faculty have continued engaging in collaborative research, teaching, and outreach with U.S. counterparts, as well as developing teaching labs and improving pedagogy in their courses.

Mentorship for junior faculty from English-speaking African universities at Michigan State University: Faculty Exchange Program in African Veterinary Science, funded by USDA-FAS (2016–2019)

From 2016 to 2019, six to eight junior faculty members from different African universities spent one semester each year at Michigan State University to learn new research strategies, detailed course instruction, grant writing, and laboratory skills, as well as gain professional relationships with Michigan State University faculty for future collaborations. Michigan State University hosted junior faculty from 10 English-speaking

African veterinary institutions through the USDA Faculty Exchange Program, including Makerere University, Uganda; Sokoine University of Agriculture, Tanzania; Haramaya University, the University of Gondar, Jimma University, Mekelle University, and Addis Ababa University, Ethiopia; the University of Nairobi, Kenya; the University of Ghana and Kwame Nkrumah University of Science and Technology, Ghana; and the Federal University of Agriculture, Abeokuta, and the University of Ibadan, Nigeria.

Mentorship for graduate students and junior faculty in conducting research, practicing diplomacy, following formal rules of parliamentary procedure, drafting resolutions, and formulating debate agendas and policy mandates using MAU simulation

The MAU simulation is a pedagogy that integrates social sciences in veterinary medical training through active and problem-based learning. The MAU addresses global trends using contemporary African issues related to One Health, trade and economic growth, gender empowerment, human development, peace and security, democracy, institution building, and human rights issues (Wakoko-Studstill, Khaita, Okech, et al., 2017; SEMAU, 2013). The MAU simulation engages students in conducting research, practicing diplomacy, following formal rules of parliamentary procedure, drafting resolutions, and formulating debate agendas and policy mandates along the lines of the African Union (SEMAU, 2013; African Union, 2014). CADFP Fellows Wakoko-Studstill and Khaita collaboratively with CIMTRADZ partners conducted MAU simulation at Makerere University in Uganda (with participation of students from five CIMTRADZ African higher education institutions and Mississippi State University) and with about 100 Doctor of Veterinary Medicine (DVM) students at Mississippi State University's College of Veterinary Medicine.

Mentorship and professional development for women faculty through HERS-EA, a professional development model for women

A report of the Association of Commonwealth Universities (ACU) indicated that women were underrepresented at senior levels of the academic and administrative hierarchies of Commonwealth universities; men outnumbered women by 4:1 at middle management levels and 10:1 at senior levels (Lund, 1998). In 1998, the ACU, through its Commonwealth Higher Education Management Service, published a report entitled "A single sex profession? Female staff numbers in Commonwealth universities" that highlighted the underrepresentation of women in the academic and administrative structures of Commonwealth universities (Lund, 1998).

Despite the exponential growth of higher education institutions in East Africa, women are persistently underrepresented in leadership and managerial positions

in East African universities (Carnegie Corporation of New York, 2019). Although some institutions, such as Makerere University, have implemented affirmative action measures to increase enrollment of girls in universities, there is a disproportionately low number of female role models on the faculty and staff (Wanyenze, 2019). Women who occupy administrative positions often face the challenge of a glass ceiling, which keeps them from rising to higher positions irrespective of their qualifications or achievements (Longman & Madsen, 2014). Moreover, in most African higher education institutions, sexual harassment and gender-based violence occurs, increasing the vulnerability of newly enrolled female students and of women in general (Dranzoa, 2018).

HERS-EA is an educational nonprofit organization advancing women leadership and management in East Africa (Burundi, Ethiopia, Kenya, Rwanda, South Sudan, Tanzania, and Uganda). Established in 2014 as an outcome of the CIMTRADZ project, HERS-EA is an affiliate of HERS based in Denver, Colorado, and established in 1972 (Khaita, Lumutenga, et al., 2017). The goal of HERS-EA is to raise the proportion of women in leadership and management positions in higher education institutions in East Africa to at least 50% (Khaita, Lumutenga, Muwazi, et al., 2017). The specific objectives of HERS-EA are: (1) to develop women leaders in higher education institutions in eastern Africa and (2) to empower women at multiple tiers of leadership and integrate the results to change systems (Khaita, Lumutenga, et al., 2017). HERS-EA's broad goals are to empower more women to finish primary and secondary schooling (through traditional and alternative routes)—both as a pathway to higher education and as a more immediate route to self-sufficiency, better health, and community development for a majority of women in the region. The core of the HERS-EA leadership model is for empowering (rather than just "helping") women across different tiers and connecting women researchers in higher education institutions to address unique research issues pertaining to women at all tiers (Khaita, Lumutenga, Muwazi, et al., 2017). A book on HERS-EA from Peter Lang Publishers is in progress, scheduled to be published by end of 2023.

Mentorship of graduate students in policy brief development and communication

Collaboration between higher education institutions and IGOs such as United Nations agencies (e.g., FAO, WHO, UNEP) is desirable to produce professionals with global competences in animal health, public health, and food security. The missions of these IGOs and their strategic plans normally align well with those of higher education institutions, making the two factors natural partners. These IGOs can participate in training students on global animal public health and food security. These collaborations benefit both the academic institutions and IGOs. Academic institutions could collaborate with IGOs in various ways, including utilization of IGOs'

information materials, relationship and awareness courses, distance learning courses, experiential learning courses, collaborating centers, and academic programs. Several graduate students from Makerere University participated in policy courses conducted by collaborative partners such as North Dakota State University, Washington State University, and the University of Minnesota, in collaboration with IGOs such as FAO, OIE, and the World Bank Group through a national and global policy course offered in Washington, D.C. (Isiko, Khaita, et al., 2017; Tendo et al., 2014).

Challenges, lessons learned, and policy implications for Africa's higher education

Implementation of the CIMTRADZ project presented some challenges, which included insufficient infrastructure or resources at partner institutions (both US and African); inadequate institutional support (higher administration, trained personnel in international partnerships); a lack of support for project personnel (resources, cost share, release time); frequent turnover of administrative leadership; delay in institutional review approvals from legal and regulatory structures governing research in different institutions (the Institutional Review Board and the Institutional Animal Care and Use Committee); and inefficient communication between all parties involved in the project (Higher Education for Development, African and North American partners). Factors that contributed to success of the project included the ability to work with interdisciplinary teams using a One Health approach across several institutions; the consortium model, which helped the partnership succeed as each institution contributed different strengths to the project; long-term relationships and networks in East Africa and central Africa; professional development, including leadership training and cultural sensitivity; institutional support (such as hiring additional personnel); and patience and maintaining a positive attitude.

Key lessons learned and advice for future implementers

The following factors are key to the success of such partnerships: (1) long-term relationships to ensure commitment and mutual respect of partners; (2) training at the beginning of the project to ensure a clear understanding of expectations from all parties involved; (3) host country ownership, leadership, and overall institutional support for collaborations to assess development challenges at the higher education and national levels; (4) commitment of staff and faculty members on both sides to accomplish results; (5) focus on a well-defined and mutually agreed upon problem solving plan to advance institutional capacity and address national development challenges, including aligning with national strategic priorities; (6) open and effective communication (including face-to-face meetings) and practice to share common goals and understandings and to deliver

desired results, including working with interdisciplinary teams (One Health); and (7) a well-defined results framework and monitoring and evaluation plan to track progress toward targets, make necessary adjustments, mobilize resources (including staff), and communicate with stakeholders (including funders).

Policy implications for Africa's higher education and sustainability plans

Future capacity development efforts in higher education in Africa could build upon current accomplishments and ensure sustainability of such efforts in Africa through: (1) strengthening and expanding access of higher education institutions to academic and training programs that have already been developed by previous projects and proven to be successful, such as the MS-IDM degree, the international summer course, and the international conference offered at Makerere University; (2) strengthening research capacity of higher education institutions to address local problems; (3) expanding service-learning programs and outreach activities in rural communities; (4) establishing strong collaborations and partnerships between academia and African governments and local, regional, and continental intergovernmental agencies such as the Inter-University Council of East Africa, the African Union, and IGOs and NGOs; and (5) working together to leverage resources collaboratively from different sources, including USAID, the Carnegie Corporation of New York, FAO, the African Union, and national governments.

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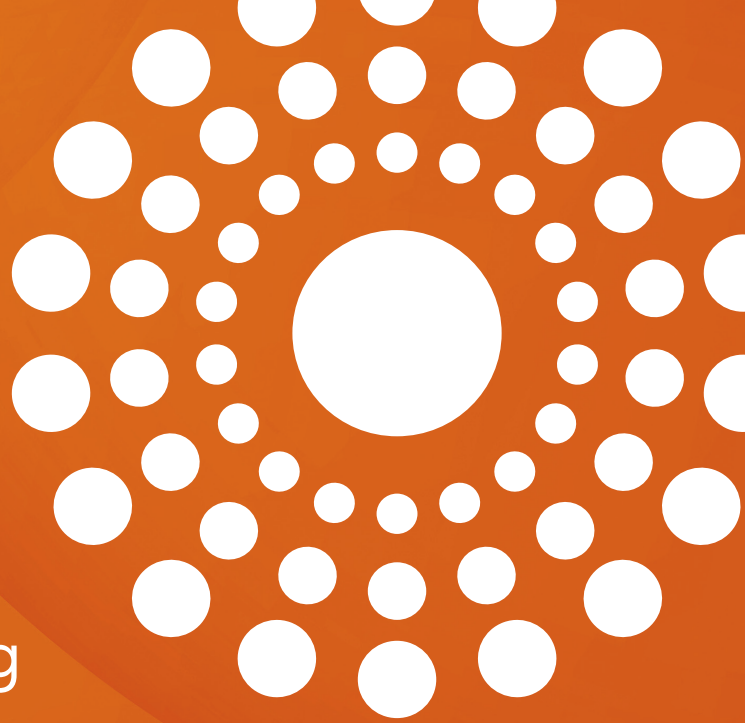
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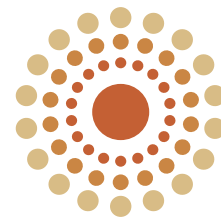
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A Vision for the Future

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Improving Academic Resource Capacity at African Universities Through the Development of an Integrated Africa Diaspora MOOCs Project

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ABSTRACT

Africa has faced several political and economic problems that have hindered its growth. Notable among them is the migration of Africa's greatest assets of human capital to the West. Today, Africa universities and colleges struggle with adequate and experienced faculties to train students to solve Africans' problems. The persisting lack of well-trained and experienced faculty produces graduates not qualified for employment nor capable of setting up on their own, resulting in massive unemployment among university graduates. While a physical return is impractical for most trained Africans in the diaspora, remote engagement through video lectures/online sessions provides enormous potential for Africa's educational transformation. Through a project called SankofaLearn, African diaspora teaching and research faculties are recruited to support teaching at African universities. The professor develops and delivers video courses online, both synchronously and asynchronously, which are made accessible to students across universities in Africa. An initial survey conducted in selected institutions in Africa suggests that students are ready to adopt Massive Open Online Courses (MOOCs) as an alternative to the traditional mode of training, known as the brick-and-mortar system. The findings of the study also show that students are willing to spend money on a MOOC with a diaspora focus. The paper discusses initial work done on a proposed MOOCs platform to support higher education in Africa.

Introduction and Background

Institutions of higher learning are charged to train skilled professionals to support the development of their nations. Due to challenges in Africa, many students travel to such countries as China, India, the U.K., and the United States to get higher education, especially in fields that are not in Africa. Online education, since its limited acceptance in Africa, has been filling part of this gap. While the acceptance of online education has been slow in most African countries, recent events have shown the world, especially Africa, that online education cannot be ignored. The need to have a robust and all-inclusive education system, especially at Higher Education Institutions (HEIs), has become apparent.

Previous studies have identified factors such as poor or no funding and access to higher education (Teferra & Altbachl, 2004), inadequate facilities and staffing issues (Mushemeza, 2016), poor internet connectivity, and unstable electricity and poor internet bandwidth (Bervell & Umar, 2018; Oyo & Kalema, 2014) have been widely documented. In the midst of all these challenges, some countries in sub-Saharan Africa are making the necessary move on online education. According to Oyo & Kalema (2014), countries like South Africa, Tanzania, Kenya, and Uganda are embracing online education as a viable option to support the traditional brick-and-mortar system.

With the increasing population in Africa, coupled with the enormous education resource challenges such as lack of trained teachers, accommodation (classroom and hostels), and textbooks, e learning in the form of MOOCs has the

potential to change the educational landscape of Africa's HEIs. According to the IEEE CS 2022 Report, MOOCs are one of the 10 technologies that could revolutionize the world by 2022 (Alkhatib et al., 2014). MOOCs provide the platform to provide highly structured, quality open educational resources to students anywhere at all times. MOOCs have become common and popular in institutions of higher learning. Even institutions that were initially reluctant to provide open educational resources (OER) have joined the MOOC phenomenon (Liyangunawardena et al., 2013). With the increasing youth population of Africa, the challenge of staffing, and the gradual increase of internet connectivity on the continent, MOOCs have the potential to change the education landscape of Africa.

For MOOCs to work in Africa, however, key challenges have to be addressed, including the shortage of quality instructors and the use of modern technologies to deliver course materials to the students. This is the area where the African professional in the diaspora can play a huge role in the transformation process. A significant number of African skilled people live abroad. In the past, countries saw emigration of skilled people from their countries to other countries as a loss. There has been a shift in this discussion, as more countries now see this as a potent force for development for their countries in such areas as remittance, trade, investments, research, innovation, and knowledge and technology (Plaza & Ratha, 2011). For instance, while the actual figure may be significantly larger, remittance flows to sub-Saharan Africa were recorded to be \$48 billion in 2019 (Brookings Institute, 2021).

Many developing countries have taken advantage of their diaspora resources to help boost their country's development. China, India, Israel, Japan, the Republic of Korea, and Taiwan are key examples of countries that have tapped into their diasporas as a source of knowledge (Plaza & Ratha, 2011). Countries have used several return initiatives to get skilled diaspora to return to their home countries. Examples of such successful initiatives include: the Chinese government's Hsinchu Industrial Park initiative, which attracted over 5,000 returning scientists in 2000 (Saxenian, 2002), and Thailand's monetary research funding initiative for returnees (Pang et al., 2002). Most of these returnee initiatives are in Asia. Information on Africa's returnee policies is scant, and the little information in the literature does not paint a positive picture. For example, Black et al. (2006) examined return policies on migrants in Côte d'Ivoire and Ghana. The author found that such policies that favor returnees above those who never left the country are likely to be counterproductive and cause resentment.

Experience from many of the government initiatives implemented by developing countries in Africa, Asia, and Latin America (for example, Mexico, Pakistan, Peru, and Turkey) has demonstrated that it is difficult to promote return, and particularly permanent return. Some returnees were not able to reenter local labor markets at a level appropriate for their skills and knowledge. For example, a lack of laboratories and equipment makes it difficult for scientists and researchers to keep up to date on the latest scientific developments worldwide. Some members of the diaspora may return with unrealistic expectations or may find it hard to readjust to local norms (African Development Bank, 2011; Plaza & Ratha, 2011). Physically returning permanently to support the development of home economies becomes a huge obstacle for most people.

The overarching question then is: While permanent return may not be an option for most of Africans' untapped skilled personnel in the diaspora perhaps until retirement, can the use of modern technologies like videoconferencing, such as Zoom, be the catalyst to open up MOOCs developed and managed by African professors/professionals in the diaspora to support education in Africa?

This paper presents the results of a project to support the education system of Africa through MOOCs. The process used to develop the MOOC, the perception of the current system through data collection and analysis processes are discussed in this paper.

The MOOCs Landscape

According to Shah (2020), there are over 16,000 MOOCs in the MOOCs marketplace. These MOOCs are provided by several MOOCs platforms. Table 1 provides some basic data of the top MOOCs providers.

In 2020, the modern MOOC movement globally (excluding China) included 180 million learners and provided over 2,800 courses, 19 online degrees, and 360 micro credentials (Shah, 2020). Coursera (Coursera, 2021), the number one MOOC-providing company, claims 77 million students, 4,600 courses, 200 partner institutions, 600,000 certificates awarded, 3,700 schools using Coursera for campus, and 6,000 using Coursera for business. Figure 1 shows a breakdown of Coursera's students by continent.

A proposed MOOCs framework for Africa

After critical review of the various MOOCs frameworks, Swayam, which is the government of India's national MOOC

FIGURE 1

Breakdown of Learners by Continent

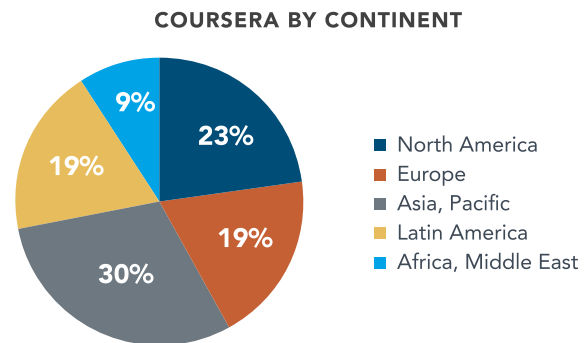


TABLE 1

Top MOOCs Providers

| MOOCs PLATFORM | WEBSITE | COURSES | LEARNERS (2020) | LOCATION | PARTNERS |
|----------------|---|---------|-----------------|----------|----------|
| Coursera | coursera.org | 5,540 | 76 million | U.S. | 200 |
| EdX | edx.org | 3,500 | 35 million | U.S. | 160 |
| FutureLearn | futurelearn.com | 1,158 | 15 million | UK | 16 |
| Swayam | swayam.gov.in | 2,150 | 16 million | India | 135 |

platform, appears to be a better model to support the development of a continent-wide MOOC platform to support education at HEIs in Africa. As reported by Swayam (2021), it currently offers over 2,150 courses to over 16 million learners, taught by close to 1,300 instructors from over 135 Indian universities, and allows students in India to earn academic credit online.

A review of the current MOOCs landscape and the current trend to overhaul the education system in Africa makes it clear that the support of the Africa diaspora professionals, especially university faculty, is critical. A MOOC that leverages both the professional and technological experience of the diaspora African will provide the needed technical and local skill requirement to develop a robust academic infrastructure to support the education systems in Africa.

Methodology

The project, which is still in its infant stage, has one basic research question:

While most African professionals in the diaspora (professors, medical doctors, etc.) will not relocate back

to Africa, can Massive Open Online Courses (MOOCs) developed and managed by these African professionals provide the needed educational support to advance the development of the continent?

The study had two key objectives:

1. to develop a test MOOC to test learner perceptions, and
2. to collect data from potential users in Africa to help answer the research question.

Developing the Test MOOCs (SankofaLearn)

This section details the methodology of the study. Sankofa in the Akan language of Ghana means go back to your roots. Using SankofaLearn as the test MOOC platform, a MOOC shell has been created (sankofalearn.org). Several test courses have also been created. The courses with respect to the SankofaLearn project have six course categories depicted in Table 2. The categorization approach is intended to help both students and facilitators easily identify and distinguish their areas of need or expertise.

TABLE 2

SankofaLearn Course Categories

| COURSE CATEGORY | DESCRIPTION | SUBCATEGORIES |
|----------------------|--|--|
| SL for Professionals | SankofaLearn for Professionals: Features professional development courses—certificate courses to enhance knowledge and skills for working-class people. | <ul style="list-style-type: none"> • Business certificate courses • IT certificate courses • Postgraduate certificate courses |
| SL for Campus | SankofaLearn for Campus: Courses are developed for students at the college level. They include subjects in taught in various disciplines in colleges and universities with practice exercises and solutions. | <ul style="list-style-type: none"> • Business • Computer science and IT • Arts and humanities • Engineering sciences • Health and wellness • Examination solutions |
| SL for High School | SankofaLearn for High School: These courses are intend-ed to help students at the junior and senior high school levels. | <ul style="list-style-type: none"> • Business • General arts • General science • English • Mathematics • Languages (electives) • Information technology |
| TURN | Technical University Education: Courses developed are intended to cover the technical university curriculum in Africa. | <ul style="list-style-type: none"> • Business • Computer science and IT • Engineering sciences • Build environment |
| Micro Courses | Micro Courses covers spe-cific topics in various subjects in all categories. This is to give detailed and better clarity of topics students have challenges. | <ul style="list-style-type: none"> • All categories |
| Degree Programs | Provides a platform to accredited universities to run and upload their courses online and access their students. | <ul style="list-style-type: none"> • All categories |

Data Collection and Analysis

To test the viability of a continent-wide MOOCs project, an 18-point questionnaire on a 1-to-5 Likert scale was developed. The survey, developed in Google Forms, was sent to two universities in Ghana as a test survey. The survey focused on issues such as challenges of online education in Africa, the potential advantages of a proposed diaspora MOOC, and some cost issues. Participants completed the survey using the Google Forms link provided to them. While data collection is still ongoing, this paper presents results from the initial responses from 50 participants. Basic descriptive statistics were used to answer the main research question of the study. Mean scores and standard deviation of the scaled questions were

calculated. To rank the key factors in order of importance to the survey participants, the Relative Importance Index (RII) was calculated for the 16 factors identified in the questionnaire. The last two questions, which addressed cost-of-usage issues, were analyzed using basic pie charts in Excel. The results are discussed in the Results and Discussions section of this paper.

Results and Discussions

The second objective examined how potential MOOC users will respond to a MOOCs platform developed and managed by African professionals in the diaspora. Table 3 summarizes responses to 16 items on potential MOOCs usage. On a Likert scale of 1 to 5, the mean scores ranged from 3.38 to

TABLE 3

Potential MOOCs Usage Statistics

| SCALE QUESTION | N | MEAN | SD | RII | RANK |
|--|----|------|------|------|------|
| The Afridemy MOOCs will provide experienced and quality instructors/lecturers. | 47 | 3.91 | 0.86 | 0.78 | 6 |
| The Afridemy MOOCs will expose students to needed modern and current educational concepts. | 47 | 4.09 | 0.80 | 0.82 | 4 |
| The Afridemy MOOCs will expose students to needed modern and current educational technologies and resources. | 47 | 3.98 | 0.82 | 0.80 | 5 |
| If adopted by the universities, the Afridemy MOOCs will eliminate the problem of over-crowding in the classrooms. | 47 | 3.66 | 1.20 | 0.73 | 11 |
| The Afridemy MOOCs will make technical university education affordable by reducing tuition cost | 44 | 3.52 | 1.11 | 0.72 | 15 |
| The Afridemy MOOCs will make technical university education affordable by removing the need for on- or near-campus accommodation | 47 | 3.72 | 1.10 | 0.74 | 10 |
| The Afridemy MOOCs will make technical university education accessible by providing reliable and state-of-the-practice learning platforms | 45 | 3.57 | 1.08 | 0.73 | 11 |
| The Afridemy MOOCs will make technical university education accessible by providing more programs that are generally not available at the local universities | 46 | 3.66 | 1.13 | 0.73 | 11 |
| The Afridemy MOOCs will make technical university education accessible by making self-paced, anytime and anywhere learning possible | 46 | 3.91 | 0.83 | 0.78 | 6 |
| Lack of reliable internet and connectivity | 48 | 4.36 | 1.03 | 0.86 | 2 |
| High cost of internet data bundles | 47 | 4.40 | 1.08 | 0.88 | 1 |
| Low internet speeds | 47 | 4.37 | 1.02 | 0.86 | 2 |
| Lack of locally created course content | 48 | 3.83 | 1.07 | 0.75 | 9 |
| Lack of training and support to use the systems | 47 | 3.79 | 1.25 | 0.76 | 8 |
| Lack of computer hardware to access online material (phones, computers, tablets, etc.) | 47 | 3.70 | 1.23 | 0.74 | 10 |
| I would like to take courses from here to supplement the courses I am taking in my local university, even for a fee | 45 | 3.38 | 0.90 | 0.68 | 16 |

4.40. Fifteen of the items were rated above 3.5, while only one item was rated below 3.5. No item was rated below 3.38. The highest rating (RII) related to one of the key challenges of online education in Africa: high cost of internet data bundles, with mean = 4.40 and RII = 0.88. The lowest-rated issue was on using MOOCs as a supplementary course material; here the mean was 3.38 with an RII = 0.68. The results suggest that while internet penetration is improving in Africa, the cost to get on the internet is still a major concern.

On the question of how much potential learners are willing to pay to use diaspora MOOCs to supplement their local courses (question 17), about 36 respondents out of 44, representing 82%, say they are willing to pay between \$10 and \$25. Considering the economics of Africa, that is significant.

Most MOOCs tailored to the academic community are free, with students opting to pay for a certificate. That is how Coursera (Coursera, 2021) and Swayam (Swayam, 2021) generate revenue to sustain their progress. On the question of how much learners are willing to pay for a course certificate, of the 45 respondents, 64% are willing to pay up to \$20 and 11% are willing to pay \$30. Only a small fraction of 7% said they are willing to pay over \$50 for a course certificate. Similar course certificates cost \$50 in Coursera (Coursera, 2021), and an in-person proctored exam to get a certificate costs \$14 by Swayam (Swayam, 2021). This response makes a preliminary business case for the establishment of a MOOC to support education delivery in Africa.

Conclusion

The purpose of this study was to investigate the viability of a continent-wide MOOC project to support education in Africa. While the project is in its infancy, the initial data coming from one country is encouraging. With the enormous challenges of e-learning still a major issue in the delivery of online education in Africa, there appears to be some enthusiasm among current students. The initial data suggest that not only do students in Africa support the reinforcement of their academic work with resources in the diaspora, they are willing to spend money to supplement what they get from their current instructors. This makes the overall picture of the establishment of an integrated MOOC using African diaspora resource personnel very positive. Sixty-four percent of students willing to pay \$20 to get a certificate is very encouraging. As a new project, new data will be collected across different African counties and in different languages.

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FIGURE 2

Payment for a MOOC as a Course Supplement

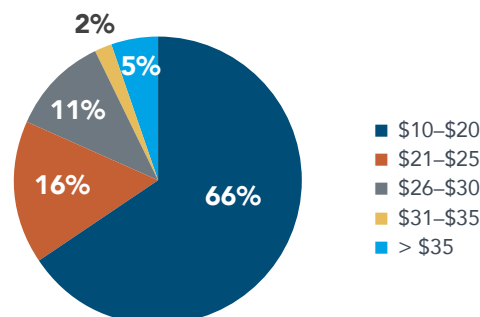
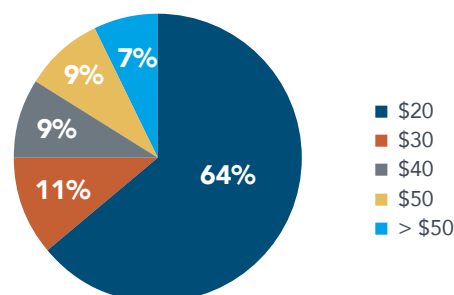


FIGURE 3

Payment for MOOC Certificate



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Online Education/Virtual Collaboration/
Mitigating the Digital Divide

Promoting Digital Learning in Africa's Public Universities During and After the COVID-19 Pandemic

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ABSTRACT

In the African context, it is difficult to imagine public universities facing a more intense set of challenges than what we are experiencing because of the COVID-19 pandemic. When the COVID-19 pandemic broke out in spring 2020, public universities in Africa closed while some private universities—like many universities globally—switched to online learning. The “digital divide” has been examined as a social and/or political issue referring to the socio-economic gap between communities that have access to computers and the internet infrastructure and those that do not have such access. The term also refers to gaps between groups regarding their ability to use these technologies due to differing levels of literacy and technical skills and access to high-quality and useful digital content. This paper seeks to accomplish three objectives. The first is to examine the need for online learning in Africa’s universities. The second is to discuss the policy, institutional, pedagogical, and quality assurance issues of such learning. The third is to provide a practical collaboration model for design and successful delivery of online learning programs in African universities.

Introduction

The onset of the global COVID-19 pandemic in spring 2020 not only threatened the well-being of individuals and communities, but also the very survival of business operations and higher education institutions that provide discovery and innovation services essential to the innovation ecosystem (Lanahan, 2020). In short, the COVID-19 pandemic disrupted every aspect of people’s lives (ILO, 2020). In a joint statement, the International Labor Organization (ILO), Food and Agricultural Organization (FAO), International Fund for Agricultural Development (IFAD), and World Health Organization (WHO) noted that the pandemic led to a dramatic loss of human life worldwide and presented an unprecedented challenge to public health, food systems, and the world of work (WHO, 2020). In the case of higher education, the crisis hit universities (both public and private) particularly hard. As COVIDEA (2020, p.11) noted, “The COVID-19 pandemic is far more than a health crisis—it is affecting societies and economies at their core and will have long-lasting consequences.” Given the difficult pandemic situation, one major tool for supporting and sustaining the learning process is the internet. Advances in technology have enabled students and professors to continue working and learning despite the challenges posed by COVID-19. Technology platforms such as Zoom, Skype, Google Meet, and WebEx, among others, have made it possible for universities and organizations to not only reduce the costs associated with delivery of training, but also to increase the effectiveness of the learning environment and help improve learning and teaching functions, especially for adult learners in colleges and universities. Thus, various virtual platforms

have become more sophisticated in recent years and now provide a videoconferencing environment with high-quality eye contact, voice, and body language contexts. For many public universities in Africa, obtaining financial resources to invest in digital learning infrastructure such as high-speed internet, learning management systems (LMSs), wi-fi, and computer hardware remains extremely difficult (Wangange-Ouma & Kupe, 2020). In addition, many universities in Africa suffer from limited digital infrastructure, capacity, and connectivity, which made the transition to online learning even more difficult (Zezeza & Okanda, 2021). This is especially true for universities with large contingents of underrepresented groups, such as ethnic minorities, women, learners in urban slums and rural areas, and those from low social and economic statuses in various African countries.

All university employees and students working face-to-face, virtually, or in a hybrid format must make a deliberate effort to understand how the virtual workplace affects work practice and productivity, and the morale of employees and learners. The relative importance of new internet technologies to those working and learning virtually is an open question that deserves to be studied. And, by extension, the question of how the virtual workplace has assisted the development and delivery of optimal teaching and learning also should be addressed post-COVID-19. There is an urgent need to study the lived experiences of employees, leaders, students, teachers, and staff who use virtual work settings. In addition, further research into the well-being of students, faculty, and staff during and after the COVID pandemic is necessary. The lessons learned would improve future face-to-face, remote, and virtual workplace

learning environments. To that end, this paper has three main objectives. The first is to examine the need for online learning in Africa's universities. The second is to discuss the policy, institutional, pedagogical, and quality assurance issues of such learning. The third is to provide a practical collaboration model for the design and successful delivery of online learning programs in African universities.

The Need for Online Learning in Africa's Universities

It has been observed that the terms e-learning, online learning, web-based learning, and virtual learning have been used interchangeably to refer to the same method of instruction using information and communication technologies (Nafukho & Park, 2004). Given recent advancements in technologies, especially the availability of many digital learning applications (apps) and mobile phones and easily accessible social media platforms such as WhatsApp learning groups, Twitter, LinkedIn Learning, Instagram, Facebook, and video animations, various digital and mobile learning modes for formal and informal learning are now prevalent (Bella-Bravo & Lutomia, 2019). The multitude of social media platforms can be used creatively and innovatively to augment or open up accessibility to remote learning, hybrid learning, and HyFlex learning modes. Therefore, the terms e-learning, online learning, web-based learning, mobile learning, and digital learning are used interchangeably in this paper.

Prior to the COVID-19 pandemic, there were educators who questioned the benefits of digital learning in higher education (Dhawan, 2020). Now, however, in large part due to the pandemic, the impact and benefits of digital learning are crystal clear. The first step for universities considering digital learning is to conduct a needs analysis involving key stakeholders such as students, faculty, curriculum developers, instructional designers, educational leaders, policy makers, teachers, and employers, among many other constituents.

Mungania and Nafukho (2005) found that a systematic needs assessment is the first step to ensure high-quality, successful design and delivery of online e-learning programs. The needs analysis "... helps clarify and define the institutional needs, strategic plans, target population, competition, technology, [and] human and fiscal capital issues, among others. ... The results emerging from a needs analysis will aid in the policy formulation and policy changes" (p. 3). Universities in Africa and elsewhere, therefore, should not necessarily rush to implement a digital learning mode in response to COVID-19 or any crisis, as was the case with remote learning. Instead, institutions should develop e-learning strategic plans based on students' learning needs determined in a systematic needs analysis. As Cyrs and Conway (1997, p. 385) correctly noted, "Distance learning

programs that are not given top priority in the mission statement will eventually falter." Nafukho, Thompson and Brooks (2004) established that employer support was critical to the success of working employees enrolled in online learning degree completion programs.

From the author's practical experience, one major way to prioritize and support online learning is to have a mission statement focusing on the importance of harnessing modern technology to support learning and teaching processes. The goals and objectives derived from the institution's overall strategic plan should be consistent and assist with the development of digital learning policies and practices. In order to realize the potential benefits of digital learning, some existing policies will need to be revised or replaced. University leaders will need to think—and rethink—policy shifts as a strategy for creating digital learning environments aimed at offering quality continuing education programs grounded in lifelong learning (Nafukho & Muyia, 2021).

Policy Considerations and Quality Assurance in E-Learning

As universities consider digital learning modes, they must address several issues: faculty and student readiness, strategic enrollment management, health, and safety; academic quality; budgets; peer competition; effective marketing; qualified faculty and staff; technology infrastructure; and the current digital divide. Identifying these issues is the first step toward quality assurance for any e-learning platforms that are implemented. Quality assurance refers to the need for a set of procedures and standards regarding the design, delivery, measurement, monitoring, evaluation, guaranteeing, maintenance, or enhancement regarding the quality of education provided through e-learning (Nafukho, 2007; Rwamasirabo & Beebe, 2005). After all, the likelihood of success in all learning endeavors, especially in higher education, depends largely on modern pedagogy. In the case of e-learning as a form of distance education in Africa, successful implementation has to be guided by a clear teaching and learning philosophy (Nafukho, 2007). Mishra (2002) and Villalba and Romiszowski (2001) noted that three schools of thought have been widely used in the use of technology for learning purposes: behaviorism, cognitive psychology, and constructivism. Of the three, constructivism has been identified as the most suitable for online learning (Hung, 2001; Kitainge, 2008; Mishra, 2002). The constructivist school of thought claims that teaching is more efficient and effective when students engage in activities within a supportive learning environment and when they get proper guidance mediated by learning tools. Constructivism is a philosophy of learning based on the premise that learners who reflect on their learning experiences are able to construct their own understanding of

their learning environments and the world (Nafukho, 2007). To ensure successful design and delivery of courses using digital learning, universities in Africa must pay attention to macro, meso, and micro policy issues, followed by policy formulation, policy implementation, and support (Gordon, 2003; Mungania & Nafukho, 2005). They must be willing to go beyond the so-called benchmarks or best practices, which too often are blind spots that make institutions complacent. Universities should instead seek better practices aimed at ensuring they are continuously improving their digital learning endeavors (Grant, 2021). They should at the same time seek to encourage learners to be committed to learning for a lifetime also referred to as lifelong learning – a key requirement for learning for success in life and work (Nafukho & Muyia, 2021).

Burke (2002) noted that universities, as institutions of higher learning, are open systems and thus are affected by the internal and external environments in which they operate. This means that e-learning policies may be influenced by macro forces beyond the institution, and in this case, these include health and safety issues resulting from the COVID-19 pandemic. Meso policy issues refer to national or regional issues, while micro policy issues relate to internal, institutional issues that must be addressed in order to have a functional and optimal digital learning environment. At the micro level, each university will need to pay attention to talent acquisition and development and compensation or financial aid support for students, as well as policies for evaluation, intellectual property, technological infrastructure, support services, and collaboration. Given that universities are made up of people (students, faculty, and staff), this paper focuses on the people component of digital learning.

People-Centered Policies and Practices

Talent Acquisition Policy

Universities in Africa that plan to adopt digital learning will have to strategically think about talent management and development policies. As Nafukho et al. (2017, p. 2) stated, “Talent has been identified as the only differentiator for an organization, nation or region’s success in this uncertain, complex, competitive and global environment.” Ulrich (2008) defined talent as the equation of 3 C’s: Talent = Competence × Commitment × Contribution. This will require further thinking about the faculty and staff competencies necessary for e-learning programs. As noted earlier, a systematic needs analysis should uncover any new or additional skills, knowledge, attitudes, and competencies required to design and deliver quality e-learning programs. In United States in the early 2000s, for instance, it was predicted that as e-learning programs became popular, the market for adjunct faculty or clinical faculty with heavier teaching workloads

would explode (Bonk, 2001). This prediction is now a reality and universities in Africa have some useful lessons to learn from the north.

Talent Development Policy

Given the ever-changing landscape of the technological infrastructure, faculty and staff who work with students will require continuous training and development to equip them with the skills, competencies, and confidence needed to utilize technology and social media tools in digital learning settings. In the United States for example, the early adopters of the World Wide Web for teaching were suspicious of the motives of administrators who promoted web-based education without appropriate technical and pedagogical support (Bonk, 2001). This may also be the case for faculty at African universities, despite the subsequent advances in technology. Institutional strategic plans will need to address faculty training and development in the optimal use of internet infrastructure and social media devices and platforms for learning purposes. To cite one example, “faculty teaching online are faced with new instructional design and curriculum development challenges” (Mungania & Nafukho, 2005, p. 5). In addition, faculty are faced with challenges regarding the selection, management, and optimal implementation of e-learning technology (given the digital divide), social media, instructional design, LMSs, learner support, and high-tech classrooms. Non-tangible factors to be addressed include becoming comfortable with new technologies, adapting traditional courseware for digital learning, providing sufficient time for course preparation and design, ensuring student engagement through meaningful immediate feedback and social presence, and providing avenues to address policy and other general management issues (Chakraborty & Nafukho, 2015).

Remuneration Policy

Faculty who had to switch to remote learning immediately due to COVID-19, or teach via face-to-face, hybrid, and HyFlex modes experienced additional workload, burnout and in some cases mental health issues (Chirikov et al., 2020). This added workload justifies incentives such as course releases or financial compensation based on good performance—what are referred to as merit raises elsewhere. While working in Africa the author found that faculty at most universities there do not receive performance-based merit raises. The economic situation has even been made worse by the negative impact of the pandemic on business and industry, especially with the lockdowns (Zezeza & Okanda, 2021). In Europe and the United States, the preferred modes of compensation for faculty teaching online include additional salary, non-discretionary stipends for course design, course

royalties, release time, and awards and recognition of exemplary teaching (Bonk, 2001). Thus, every university offering online learning courses should clearly stipulate their compensation policy aimed at motivating faculty, recruiting talented faculty, supporting online courses, and generally ensuring the overall high quality of e-learning programs.

Evaluation Policy

The design, development, and implementation of online programs should be supported by a formal evaluation policy to ensure that digital learning programs meet set goals, including access and quality imperatives. This helps determine the efficiency and effectiveness of the university's administrative, instructional, and technical and/or learner support services related to the program. Every institution should have a policy in place that directs when, how, and who will carry out program evaluation activities, who gets access to the results, and how the results are announced and disseminated.

Copyright and Intellectual Property Policy

In the African higher education setting, the issue of copyright and intellectual property as it relates to digital and mobile learning needs immediate attention. According to Cyrs and Conway (1997), policies that protect intellectual property rights and delineate the sharing of royalties derived from intellectual property need to be clearly stated before the project begins. Therefore, it is essential for universities considering offering e-learning programs to explore ways to protect intellectual rights (Broskoske & Harvey, 2000). Mungania and Nafukho (2005) noted that as e-learning programs surged through the African market, more faculty could end up teaching in more than one institution, hence the need for universities to develop clear guidelines and policies regarding the ownership of online course materials.

Learning Management System (LMS) Policy

Currently there exist many learning support systems, such as Blackboard, Canvas, eCampus, Blackboard, Moodle, and eLearnAfrica. Some LMSs are offered for sale commercially, others are provided for free, and some are designed by the institutions themselves. Prior to selecting an LMS, the needs of the learners and faculty must be considered. The technology adopted for instruction must be student centered and meet the institution's quality standards. The process to select the LMS should be inclusive, involving the entire campus, and should consider the advantages and disadvantages of the LMS eventually selected. Considerations include student access to computers, Wi-Fi, high-speed internet, mobile learning tools, and the learning apps implemented, as well as the specific institution's ability to sustain the related operational costs and manage time differences and geographic accessibility (Belanger & Jordan, 2000). In the case of faculty and staff in Africa, the particular

challenges often include the cost of quality LMS, the digital divide (in terms of access to, or ownership of, computers), and access to wi-fi and internet bundles (Odebero, 2015). In courses that involve inter-institutional collaboration, time differences could limit students' ability to interact or participate in synchronous activities, for example, leading to isolation. Students for whom communication is limited because they lack access to digital infrastructure or social media would find it very difficult to receive meaningful feedback from faculty, which is critical to success in digital learning courses (Galusha, 1998).

Diversity, Equity, and Inclusion Policy

Universities must create a policy aimed at creating a potentially successful learning environment for all students, regardless of students' age, race, disability/ability, ethnicity, and economic background (King, 1999). Acknowledging and recognizing students' diversity of background and of thought is important in higher education learning settings (Morris, 2018). Equity refers to the need for universities to provide access and distribute resources that allow everyone the opportunity to meaningfully participate in digital learning programs, while inclusion refers to the need to facilitate opportunities for learners to fully participate in, and contribute to, a digital learning environment that is welcoming, respectful, and supportive for all learners, staff, and faculty (Morris, 2018). Given that the needs of learners are diverse, and that the population of learners changes regularly, then it is important for student affairs experts to regularly evaluate (and re-evaluate) the support services needed for students' success (King, 1999). Examples of support services for students enrolled in digital learning programs include online admissions and registration, academic advising, virtual tutoring and mentoring, library services, financial aid services, financial counseling, mental health services, and career counseling, among others. As Mungania and Nafukho (2005, p. 7) noted, "There is definitely need to create an institutional culture and environment that is supportive of online learners and faculty teaching online."

Collaboration Policy

To successfully and positively impact the world, universities cannot work in silos and must cultivate and nurture collaborations within Africa and beyond. African scholars and educators need to collaborate with educators engaged in digital learning from within and without Africa. Faculty working in African universities must continuously be encouraged to work with their peers and colleagues in the diaspora. To have meaningful collaborations, every African university should implement a clear collaboration policy to guide faculty. Faculty actually deliver e-learning courses, so they should have a voice in the establishment of e-learning programs to be offered within their institutions and in collaboration with other institutions. For instance,

Brokoske and Harvey (2000) observed that partnerships are one way to function efficiently and effectively in the increasingly expensive and competitive e-learning environment. This still holds true twenty years later. This was reiterated by Mungania and Nafukho (2005, p. 8): "Since such collaboration could increase access to subject matter experts and to resources, there should be a policy in place on how to deal with such new partnerships. It is important to point out that given the complex nature of higher education, a comprehensive assessment of all the policies that impact e-learning programs is impractical. Given that, this section of the paper focused on people-centered (students, faculty, and staff) policies. People-centered policies deserve special attention before any institution designs, develops, and implements a digital learning program.

A Holistic Digital Learning Program

Empirical studies show that when designing learning programs for college students, the professors involved must first seek to understand the learners: their learning needs, the experiences they bring to the learning setting, their psychological needs, and their socio-economic needs (Caffarella, 2001; Fasokun et al., 2005; Indabawa & Mpofu, 2005; Knowles, 1980; Merriam & Brockett, 1996; Nafukho et al., 2005).

To facilitate this process, the diversity of adult learning needs can be explained in terms of a learner's socio-economic background, work and educational experiences, professional background, personality type, and learning style (Nafukho et al., 2011). Lieb (1991) argued that effective design and delivery of virtual learning programs requires an understanding of how college students learn best. Likewise, Bruner (1966) noted that the success of adult learners will depend on how the courses and curriculum are structured. He suggested a learning model that focuses on how to learn and not what to learn (a concept also known as metacognition).

Empirical studies show that each individual learner learns differently according to the various learning styles (Belenky et al., 1986; Dunn, 1990; Kolb, 1984). This means that while designing a digital learning curriculum for adult learners, designers must seek to accommodate the various learning styles represented. Keefe (1979) refers to the term learning style as the cognitive, affective, and physiological factors that affect how learners perceive, interact with, and respond to the learning environment, in this case, the e-learning environment. Examples of learning styles include visual, auditory, tactual/kinesthetic, and mixed modalities (Gardner, 1993). Reiff's (1992) study further noted that the learners in any classroom will fall into these major categories in the following percentages: 25–30% visual, 25–30% auditory, 15% tactual/kinesthetic, and 25–30% mixed modalities. These categories are critical when it comes to the design and successful delivery of virtual learning programs.

Closely related to learning styles are the different intelligences that learners possess. According to the multiple intelligences theory proposed by Gardner (2006), all learners possess one or more of eight modes of intelligence: (1) visual/spatial intelligence, or the ability to visualize objects and create mental images of the objects; (2) verbal/linguistic intelligence, or the ability to read, write, and listen to and remember information, and narrate stories; (3) logical/mathematical intelligence, or the ability to learn best through the use of reason, logic, and numbers; (4) bodily/kinesthetic intelligence, or the ability to learn best through hands-on tasks, games, and movement, and to create, build, and express emotions through the body; (5) musical/rhythmic intelligence, or ability to learn best through songs, patterns, rhythms, and musical instruments; (6) interpersonal intelligence, or the ability to learn best by relating to other people or learners; (7) intrapersonal intelligence, or the ability to learn best by self-examination and seeking to remain independent; and (8) naturalistic intelligence, or the ability to learn best through seeking to understand, comprehend, and explain things in terms of nature.

For the purpose of this paper, the eight intelligences are distilled into the concepts of cognitive intelligence, emotional intelligence, behavioral intelligence, and spiritual intelligence—what is referred to as body, mind, heart, and soul. Furthermore, those designing digital learning programs should pay special attention to the three domains of learning: cognitive domain, affective domain, and behavioral domain. The cognitive domain of learning aims to develop the mental skills and the acquisition of knowledge. The affective domain of learning includes the feelings, emotions, and attitudes of the learners. According to Anderson et al. (2001), the categories of affective domain include receiving phenomena, responding to phenomena; valuing; organization; and characterization. The psychomotor (behavioral) domain of learning includes the learners' ability motor skills and the ability to coordinate them. The sub domains of psychomotor include perception set; guided response; mechanism; complex overt response; adaptation; and origination (London School of Management, 2019). Digital learning curricula should be diversified, with the main focus on developing the learners' varied intelligences. In addition, the curriculum should be holistic in its design in that it develops synergy in the content that "engages fully all aspects of the whole person through the use of body, mind and spirit" (Fasokun et al., 2005, p. 134).

Digital Collaboration Learning Model

In this section, we discuss a holistic and practical digital/e-learning program development model developed by Barbara Hinton and a team of faculty at the University of Arkansas. The holistic virtual learning model (Hinton, 1998) was developed based on practical experience of developing e-learning programs in the state of Arkansas. The model has been translated from theory into research, policy, and

FIGURE 1

E-Learning Program Developmental Model



Source: Hinton, H. E. (1998). Paper presented at the Academy of Human Resource Development Annual Research Conference.

practice (Chun & Hinton, 2001; Chakraborty & Nafukho, 2015; Hinton, 1998; Nafukho, 2007; Nafukho et al., 2002). To successfully navigate the COVID-19 pandemic environment, all educators, and especially those at African universities, must engage in interdisciplinary, multidisciplinary, and transdisciplinary education and research enterprises. This means that educators and researchers in Africa need to collaborate with colleagues and peers in Africa and beyond, especially their colleagues in the diaspora – thus the need for the digital collaboration model advanced in this paper. Figure 1 illustrates the optimal development cycle for an e-learning model (Hinton, 1998).

As discussed, **Step 1, Needs Assessment**, should involve all relevant parties: educators who are subject matter experts in the institutions and countries involved in the partnerships, as well as vice chancellors, deputy vice chancellors, deans, department heads, program directors, program chairs,

faculty, and staff. In this step, subject matter experts identify any infrastructural, human, time, educational, and financial resources required for the design and successful delivery of digital learning programs.

In addition, a survey of faculty professionals in the program content areas should be conducted. **Step 2, Program Design**, should involve a task force of faculty and instructional designers to be involved in the partnership. The partnership degree programs should not benefit one institution at the expense of another. The role of this task force should be to use the needs analysis results to design a digital learning degree program that aims at ensuring academic quality while accommodating the needs of the learners, faculty, departments, and institutions involved, and external stakeholders such as parents and others.

Step 3, Curriculum Design, likewise should be conducted based on the needs analysis findings. The curriculum should

be designed to reflect the core competencies and skills identified by subject matter experts, current students, former students, employers, prospective employers, and key community stakeholders.

Step 4, Delivery System Design, involves building the technology and internet infrastructure necessary to deliver the courses through platforms such as AAU-eLearnAfricaLMS, Blackboard, Canvas, Moodle, and others. In this step, the issues include identifying faculty qualified to successfully deliver the courses, securing the technical resources required to support the delivery of online courses, and recruiting and training (or untraining and retraining) staff. Resources needed are software and platforms such as high-speed internet, internet bundles, Wi-Fi, Learning Support Systems, and email capabilities, and hardware such as relevant educational videos, computers, printers, servers, and copiers.

Step 5, Program Approval, involves approval of the e-learning program at the program, department, college, and the university levels, continuing up through the university boards of trustees in the case of the United States universities, or university councils in the case of African universities. The approval process should be guided by a well-articulated information and communication technologies (ICT) and distance learning policies. In addition, the respective ministries of education in the countries concerned should be involved.

Step 6, Partnership Development, ensures that program delivery does not benefit one institution at the expense of the other. For example, African universities should not be used solely to provide a market for their partners in the north. They should not be used only to collect fees for their foreign partners. It is also important that partnerships between well-established universities in digital learning with less-established universities should aim at developing the less-established universities (Nafukho, 2007). A win-win relationship between the international universities in the north and the host institutions in the south must be established at this stage. Important items to be considered may include training faculty and staff in African universities to teach using ICT. Finally, this step involves the negotiation and formal signing of Memoranda of Understanding (MOUs) between the institutions involved. The MOU serves as a legal and guiding document, outlining the details of the collaboration and the responsibilities of each institution.

Step 7, Staffing and Scheduling, involves the selection of faculty with the academic expertise (credentials) to teach online. Credentialing includes a demonstration that the faculty have the appropriate academic expertise, training, and experience in delivering e-learning courses, as well as training faculty who have no skills or experience in this area. Furthermore, technical staff must be recruited, trained, or

retrained. Thus, reskilling and upskilling will be needed as technology changes.

Step 8, Marketing and Recruitment, involves communicating to relevant audiences through several venues, particularly those that are the most powerful for recruitment in Africa: faculty members speaking at professional organizational meetings; social media such as LinkedIn, Twitter, and Facebook; newspaper articles, op-eds, and advertisements; and flyers. Enrollment packets containing guidelines for admission to the programs and program requirements, and application forms, have to be disseminated to prospective students (Nafukho & Burnett, 2002). The websites of the partner institutions similarly should promote the program's clearly defined vision, mission, and priority goals.

Step 9, Academic Advising, involves all the e-mentoring services that must be provided. Student advising is especially critical in African universities, where faculty workload does not include this task. With the complexity associated with the use of ICT for learning purposes, student academic advisors, faculty advisors and e-mentoring as a form of advising must be made available to all certificate, undergraduate, graduate, and professional students. To assist students as they navigate the complex world of higher education, professional academic advisors must be recruited, trained, and deployed.

Step 10, Program Delivery, pertains to coordination, class scheduling, and student registration. Technology staff should assist with the mechanics of delivering instruction via technology. Information on courses and the sequence in which they must be taken should be available on the institution's website.

Step 11, Evaluation, is as critically important as the needs analysis conducted before program design and delivery. Both internal and external evaluators should be involved in the formative and summative evaluations of the e-learning programs. Evaluation should focus on traditional output measures such as how many collaborating institutions were involved, how many courses were offered, how many students enrolled in the courses, who taught the courses, how the students performed, what problems the students encountered, and how these problems were addressed. Evaluation should also seek to establish the relevance of the course content and to compare the performance of this cohort of students to those enrolled in hybrid or face-to-face learning programs. The summative evaluation should use longitudinal studies to provide key quantitative data and should assess periodically every aspect of the learning programs. Some of the most important questions include the following: What aspects of the e-learning programs were most beneficial? Should the programs be revised, expanded, or recreated? What barriers, if any, do the students and faculty face, and how can they be resolved to

ensure optimal learning? What are the short-, medium-, or long-term impacts, if any, of the programs offered? How many current professors created and taught new courses? The evaluation findings should be analyzed and shared with key stakeholders. To popularize e-learning, the evaluation stage may also require a monthly online newsletter, updates on the websites of the institutions involved, and informational communications to employers, funders, students, and other key stakeholders (Nafukho, 2007).

Conclusion

For e-learning to benefit Africa, universities there should collaborate directly with well-established universities in the areas of digital learning and mobile learning within Africa and outside Africa. The COVID-19 pandemic underscored the positive impact of technology in ensuring the continued operation of universities around the world. As educators, we must use technology and computers as tools to build

better learning processes aimed at improving the learning and teaching processes. African universities, as centers of excellence in teaching, research, and outreach, should take up the challenge of promoting distance education while keeping in mind the cardinal principle of education: quality assurance. The provision of higher education through ICT should not be left to economic entrepreneurs alone, however; instead, higher education professions should respond to the urgent need to collaboratively work with business and industry peers to harness technology for the purpose of advancing learning aimed at improving the human condition. As professional educators and researchers, faculty should take the lead in digital and mobile learning innovations in education, training, and development. After all, technology can only support the teaching and learning process if the teacher facilitates the process. Even with the advancement of artificial intelligence, there is no way that technology will replace the human teacher, at least for many years to come.

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Online Education/Virtual Collaboration/
Mitigating the Digital Divide

Integrating Technology Despite Its Absence: Lessons Learned in Tanzania

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Introduction

This paper is about my experiences integrating technology in an institution with very limited access to technology in Tanzania. While there is an abundance of support and justification of the role of technology in the classroom as a teaching and learning tool, there is a global digital divide within and between countries (Gureshi, 2012). Despite the narrowing of this divide, there are still countries and communities that are being left behind (Ndunda & Malecela, 2018). Prior to the coronavirus pandemic, many institutions in Africa had incorporated little technology in teaching and learning. The pandemic intensified the digital divide between countries, which had been narrowing (Steele, 2019).

This paper will focus on the lessons learned about integrating technology with my colleagues in my host institution from 2012 to 2018 as a Fulbright Scholar and as a Carnegie African Diaspora Fellow. The paper will present how the process began and ended, emphasizing the importance of using any available technology, such as mobile devices/smartphones, as teaching and learning tools. This journey progressed in phases.

Theoretical Framework

Several bodies of knowledge, including literature on co-teaching, technology integration, Technology Acceptance Models (TAMs), and Theory of Planned Behavior (TPB) concepts relating to organizational change and learning, inform this experience of integrating technology despite the odds. The literature on co-teaching shows that students and instructors benefit from co-teaching experiences (Ndunda & Malecela, 2018; Mofield, 2020). In a co-teaching context, the students have more support and a more meaningful connection with their instructors (Graziano & Navarrete, 2012; Harris & Watson, 1997; Mofield, 2020). Literature on TAM (Davis, 1985), the Unified Theory of Acceptance and Use of Technology (UTAUT), and TPB models are important lenses for understanding the experiences discussed in this paper. The Perceived Usefulness (PU) of the technology and Perceived Ease of Use (PEOU) are perceptions of beliefs that users hold about the system (Dillon & Morris, 1996, as cited in Koul & Eydgahi, 2017), provide an important framework for understanding technology adaptation.

In addition, theories of organizational change, leadership, and learning provide important perspectives for interrogating how change is experienced (Fullan et al, 2021). Knowledge of the processes of educational change provides a critical lens through which to understand educational innovation and reforms, including the adoption of technology. The attitude one holds toward adoption determines the adopter's positive or negative behavior concerning the adoption. The Diffusion of Innovation (DoI) model developed by Rogers in 1962 is helpful in explaining why some people are more apt to adopt an innovation than others (cited in Ndunda & Malecela, 2018).

Researchers have found that people who adopt an innovation early have different characteristics than people who adopt an innovation later. When promoting an innovation to a target population, it is important to understand the characteristics of the target population that will help or hinder the adoption of the innovation (LaMorte, 2019, paragraph 2). These frameworks serve as lenses for understanding the factors that affect the use of mobile devices and, in particular, the adoption of smartphones as teaching and learning tools (Dong-Hee et al., 2011; Darko-Adjei, 2019).

Literature Review

Technology integration entails using resources, such as computers, mobile devices (e.g., smartphones and tablets), digital cameras, social media platforms and networks, software applications, and the internet, in daily classroom practices and school management (Edutopia, 2007). Successful technology integration is achieved when the use of technology (a) is routine and transparent, (b) is accessible and readily available for the task at hand, (c) supports the curricular goals, and, (d) helps the students effectively reach their goals (Edutopia, 2007).

Mobile learning devices and apps have been used to transform other sectors and have become increasingly affordable and powerful. In research published about the use of smartphones, there is evidence that they are powerful tools that can be used for teaching and learning (Darko-Adjei, 2019). However, they have remained underutilized in education (GettingSmart, 2020). Although educators and students use mobile technologies for personal communications, these devices have not been considered legitimate teaching and learning tools despite their obvious prevalence and capacity to be used as an efficient learning platform. Darko-Adjei (2019) notes that "smartphone usage ensures flexible course delivery, makes it possible for learners to access online learning platforms, access course resources, and interact digitally" (paragraph 1).

Africa's population is one of the fastest growing in the world, and access to educational opportunities continues to be a challenge. Despite African countries devoting significant resources to education, the region has the worst education spending efficiency (Gandhi, 2020). There are huge disparities along gender and regional lines (UNESCO, 2021). Lack of teachers and print material is a challenge many schools face. For example, in Tanzania, especially in rural areas, classes can have as many as 200 students, most of whom sit on the floor (Mtahabwa & Rao, 2010).

E-learning has the potential to address lack of access to education, as it would make education available to more children anytime and anywhere (Ischebeck, 2020). However, there are still barriers to adoption of mobile learning. These include lack of electrical power, internet connectivity, training

and professional development, value of teachers, and affordability of these devices, especially in rural communities (Wright, 2014). There is also a dire need for proper digital infrastructure. These challenges are compounded by the fact that the majority of the population lives on less than \$2 per day (Ischebeck, 2020), especially in the rural areas. Access to a decent education has become something that only a minority of the population can truly afford. E-learning offers an opportunity to provide access to high-quality learning materials that can be used to abate the existing discrepancies in quality and access to learning at all levels of education.

According to Elliott (2019 a), 75% of sub-Saharan Africans possessed a mobile device in 2017, and by 2025, 84% of the population (1 billion people) will have access to a Subscriber Identity Module (SIM) connection, a 3.7% increase from 2017. A survey by Silver and Johnson (2018b) showed that a majority in sub-Saharan Africa own mobile phones, but smartphone adoption is modest. Ownership and usage gaps were particularly pronounced in smartphones.

Globally, in 2018, the world had over 253 million children and youth out of school, and the majority of those were in Africa (UNESCO UIS, 2021). In 2020, the COVID-19 pandemic caused a majority of countries to temporarily close schools, and by April 2020, close to 1.6 billion children and youth were out of school (UNESCO, 2021). Currently most countries are behind in Sustainable Development Goal 4 (SDG4), which aims to provide free access to primary and secondary education for all children and youth by 2030 (UNESCO UIS, 2021). These statistics have certainly been exacerbated by the pandemic. However, due to the vast numbers of people owning or having access to mobile devices, it makes sense to use these tools for teaching and learning. In most African countries, there has been a major delay in implementing technology in the classrooms, largely due to lack of resources and support for the use of mobile devices in the classroom by educators, schools, and politicians (Mayega, 2019). Despite the resistance, there is still a proliferation of new technologies being introduced in classrooms in lower-income countries. For example, Twitter Lite was introduced in 2017 to allow use of the social platform while using less data (Workman, 2017).

Background

This paper discusses the experiences I had in Tanzania as a Fulbright Scholar and Carnegie African Diaspora Fellow. I received the Fulbright Scholar award in 2012 to go to Muslim University of Morogoro (MUM). My goal was to share my expertise as a technology and math educator with an institution in Africa, in a culture that was different from mine. I chose MUM because it is an Islamic university and, as a non-Muslim, I would have a unique experience teaching and living in this context. There were other differences between MUM

and the College of Charleston. For example, the College of Charleston has a Teaching and Learning Team whose main goal is to support faculty members' integration of technology. At MUM, there is one technician and a computer lab with 20 broken-down computers for over 3,000 students. Internet connectivity was very limited. College of Charleston was started in 1770, and MUM was established in 2004. Therefore, at MUM, I would have plenty of opportunities to share my experiences, learn how to adapt to such conditions, and develop and enhance my intercultural competencies. MUM is a private university founded on Islamic values to which all Muslim students and faculty members are required to adhere. Everyone has to follow the conservative Islamic dress code. I was not exempted.

I was assigned to teach math methods and educational resources media courses. The media course had 1,200 students. I was to teach half of the students, while the other half was assigned to my colleague, who had been teaching at MUM for four years. Each one of us was assigned to teach at different times during the same day. We decided to co-teach each section at the assigned times.

The decision to co-teach was the result of (a) teaching experiences in different contexts; (b) the opportunity to share ideas to enhance the quality of learning for a large class, (c) the opportunity to use co-teaching as a model, and (d) the opportunity for professional development for both instructors. The co-teaching experience was mutually beneficial. The guidelines for collaboration included acknowledgment of each instructor's knowledge and contributions to the overall teaching and learning experience, and the freedom for each instructor to play multiple roles during the lectures. For example, if one instructor was leading the lecture, the other was free to elaborate ideas without the other instructor feeling disrespected (Ndunda & Malecela, 2018).

Co-Teaching and Introduction of Technology as a Teaching and Learning Tool

The wireless network was installed in MUM at the beginning of 2012 with a goal of enabling students and faculty members to access electronic resources. However, there was one computer lab that had about 20 computers for 3,000 students. Most of the computers were not working. Very few students had personal computers and modems, and rarely used them to access online resources because this was not modeled to them.

At the College of Charleston, we had been using the WEBCT learning management system, and I was also using PBworks' free Educational Hub. My colleague and I decided to require our students to open an email account and join PBworks as our educational hub. Notes and information were posted in PBworks for our students to retrieve. Normally, we

would have had to give a hard copy to the class president to take to the stationery store for students to purchase. We found that many students did not pay to get copies of the notes, and they did not come to class prepared. Out of the 1,200 students, 368 students (31%) registered to use PBworks and 188 (~16%) regularly accessed information through PBworks. Consequently, more students accessed the notes and other course materials in a more timely manner, and more students were better prepared for seminar discussions. Students with laptops did not have to print the notes and shared them with classmates who did not have them. This strategy significantly improved our teaching and learning in this course (Ndunda & Malecela, 2018).

Another change that we implemented through our co-teaching was the use of two microphones to increase student-instructor interactions. During our course planning, we divided the topics that each one would lead. We decided who would play the supportive role, ensuring that the students, crowded in the small, climate-uncontrolled hall and others sitting outside, were attentive. I brought an additional microphone and projector with a better resolution that we used instead of the old, portable projectors the university provided. The supporting lecturer would make their way into the hall and give the students the microphone to ask questions or answer them. This made the learning more interactive. A survey given to the students about their experiences with co-teaching showed that the experience was positive. In total, 102 students responded to the online survey. Approximately 89% of respondents noted that the co-teaching approach was either very effective or effective, and 61% of them said they liked the interactive format of the course despite the large number of students (Ndunda & Malecela, 2018). Approximately 93% of the students noted that the online component was either very important or important because they were able to access the information and prepare for class without waiting for the class president to take the notes to the stationery store. The students recommended that other lecturers use online collaborative sites like PBworks to share learning materials and other resources with them.

Distance Readiness Training for Instructors

In 2015, I received a Carnegie African Diaspora Fellowship to return to Tanzania to continue what I had started during my Fulbright Fellowship. My colleague and I decided to share our co-teaching experience, especially the impact of technology implementation. We conducted a workshop for instructors on distance education readiness so that they could prepare their course materials for online delivery. The training focused on (a) course development, including how to create effective syllabi; (b) how to build an online classroom; (c) components of an online classroom, including designing

student activities in the online environment; (d) training students to access the online materials; (e) copyrights and intellectual property; and (f) open educational resources. This was work I had done in my institutions since 2004, when Dr. Cozart and I received \$998,000 from the U.S. Department of Education (Ndunda & Malecela, 2018).

The specific goals included (a) revision of dated content, (b) development of assessments and rubrics, and (c) integration of technology, including nontraditional technologies. Only 10 of the 30 instructors participated in the workshop. The low participation was due to lack of resources, including heavy teaching loads; internet accessibility; and over-reliance on adjuncts, who sometimes have to teach in different institutions within the same day. In addition, the university's WiFi was weak and unreliable. The faculty members were forced to purchase expensive internet bundles and use their phones as hotspots. I used some of my subsidy from Carnegie to pay for the internet bundles.

Lessons Learned from Co-Teaching and Introduction of Technology

My work with colleagues at MUM caused me to realize how privileged I was to be teaching in an institution where technology was readily available. The availability of technology in high income countries made me ignorant of the reality of my colleagues. I learned to be flexible, understanding, adaptable, and most of all appreciative of the challenges that my colleagues have to overcome to ensure that their students learn. I also learned to appreciate the dedication of my colleagues to teach in circumstances that were very challenging. In fact, at that time, the lecturers had not been paid for over three months. Available lecturers were extremely burdened with heavy teaching course loads. I learned from them how to use other types of apps (e.g., WhatsApp) that were not familiar to me at that time. I realized that if I wanted the instructors to participate in the workshops, I needed to provide data bundles and small stipends, and involve my colleagues in scheduling workshop dates. I learned that my colleagues would accept change and adopt technology only if they saw it as useful and easy to implement.

Workshop on Use of G-Suites for Education

My last opportunity to work with my colleagues at MUM was in 2017, when I was awarded another Carnegie African Diaspora Fellowship Program Award to go back to MUM to work with the instructors. The two main goals of the award were (a) to interview and observe instructors' integration of technology (computers, laptops, and handheld devices, including tablets and smartphones) in their teaching, and (b) develop and conduct workshops for lecturers to learn how to design courses that integrate technology to

enhance instruction using portable devices—in particular, smartphones. We focused on how to use G Suite’s free productivity tools to help students and faculty interact seamlessly and securely across devices..

Before the workshop, I had the opportunity to observe one instructor teaching. What I saw happening in the classroom reinforced the need for use of mobile technological devices in teaching. Classroom observation showed very limited use of technology. I observed a measurement and evaluation course that was taught by an adjunct faculty member. He was explaining how the coefficient correlation formula is derived on the whiteboard. He had over 200 students in a crowded hall at midday just before the midday prayers during Ramadan. This was a particularly hot day. The content and the conditions made it extremely difficult for the students and the instructor. He did not set up the computer to use the projector. Many students were completely lost, and he had no way of interacting with them to gauge their understanding. Students made a great effort to understand what was being taught. I could appreciate their anxiety given that I have a math degree and was struggling to follow his explanations. As I walked around, I saw students holding their smartphones, reading messages on WhatsApp.

The instructor did not set up the projector on this day. The process of setting up the projector was always a challenge for many lecturers, especially adjuncts who come in to teach one or two courses, then leave to teach elsewhere on the same day. The use of smartphones to search for information, such as the formula (in this case, the correlation coefficient formula) and its meaning, would have been helpful to the students. As I walked among the students, some asked me how to interpret the correlation data; they wanted to know what positive, negative, and zero correlations meant. I asked one student to make a guess, then look up the meaning on his smartphone. He made a guess that gave him an idea of what the best choice was. When he checked the answer using his smartphone, he found that his interpretation of the data was correct, and he was very satisfied to receive this feedback. He would not have had a chance to ask his instructor this question because the lecturer left immediately after delivering the lecture, most likely to head to another institution.

To support more instructors to use technology in their teaching, we developed a three-day workshop focusing on the integration of educational technologies in teaching and learning. We specifically focused on Google suites for education. Initially, the workshop was supposed to be for two days. However, the Deputy Vice Chancellor of Academics requested that we add a third day to the workshop. The workshop was attended by 30 lecturers.

A post-workshop survey given to the participants was completed by 18 out of the 30 participants. The results

showed that almost all lecturers (94%) own a smartphone and use it mostly for personal communication or money transfer, but not for educational purposes. As Matinde (2016) observes, there is an increase in global smartphone proliferation, especially in Africa. Unfortunately, the instructors did not use theirs as teaching or learning tools. There was an over-reliance on the laptop and projector when it worked. In the workshops we showed instructors how to use Google apps, such as Google Docs, Google Slides, and Google Drive.

The lecturers noted that they need regular professional development opportunities as well as reliable interconnections. Their comments about the workshop included “I myself got eger [sic] to open it and learn more than before”; “technology integration is very important to facilitate teaching, but in order to get its fruits fully there should be time for workshops for teachers and a thorough training for students so as to ensure a good product in teaching and learning process”; and “we need to cope with changes in academic arena—today technology is everything in education.” The instructors noted that such workshops should be provided quarterly or every six months (Survey, 2017, as cited in Ndunda & Malecela, 2018).

Discussions

I learned many valuable lessons from working with instructors at MUM. The co-teaching experience provided a rich environment for my colleague and I to learn from and with each other. My colleague served as a language and cultural interpreter/

mediator/broker for me. There were many times when I could have reacted/responded to students or things that happened in the classroom, such as a female student fainting, in ways that could have been very offensive in an Islamic context. The instructors who attended the workshop also had the opportunity to review their syllabi and learn some new strategies of integrating technology in their content. We updated the educational media course and aligned the goals with 21st-century skills for students.

I do not know how many instructors continued to integrate technology in their teaching between 2017 and 2019. However, we can deduce that these instructors had a head start and were better equipped to use smartphones during the pandemic. We did not explore the extent to which technology was accepted as per the Unified Theory of Acceptance and Use of Technology (UTAUT). The online survey completed at the end of the workshops indicated that the instructors thought that technology integration is important. However, they needed more frequent professional development opportunities and resources to fully prepare to integrate technology.

Overall, the instructors were very positive about integrating technology in their content areas and using Moodle as the

learning management system. They agreed that technology can make a difference in teaching and learning in a country where there are limited resources. Smartphones and other mobile technologies can be used to deliver instruction. How much change then took place? As Fullan (2001) noted, change should be understood as a journey, not a blueprint; problems should be accepted as inevitable and should be embraced as friends; and the individual should not be lost in the collective.

The biggest lesson learned is the importance of using any technology that is available—improvise it and be creative, adaptable, and flexible. Also, train students about safety and how to use smartphones to access information online. Teach them about selecting the most relevant choice, sources of information, and copyright issues.

- i) Teach students to be responsible and independent learners and allow them to use their smartphones in class to look up information.
- ii) In class, ask the students to look up words—teach them to use Google and select the meaning that is most appropriate for the context.
- iii) Have students use smartphones for collaborative brainstorming, using simple collaboration and polling tools, such as Google Docs, Jamboard, Poll Everywhere.

Conclusion

I learned many lessons from my experiences working with my MUM colleagues. It became clear that smartphones are readily available and have great potential for providing educational opportunities. It is important to harness this technology as a teaching and learning tool. To do so, it is important to train educators how to use tools and access online resources for teaching and learning. Over-reliance on dated textbooks is restrictive and contrary to a teaching and learning approach that values creativity and innovation, and promotes critical thinking skills.

The use of technology like smartphones as teaching and learning tools can address some educational access gaps that exist in many African communities. The significant growth in the number of students going to school in East African countries, such as Tanzania, is not matched with resources/textbooks for these children. It is common for a classroom of 100 students to have only one textbook. In addition, there is still a large population of children who do not attend formal education or drop out of elementary or secondary school.

Distance education is not a new phenomenon in Africa. Providing access to technology and online learning resources is the first step. The end goal is to efficiently use these tools to ensure that students' levels of competence are maintained even when in-person learning is not an option. There are existing challenges that need to be overcome. Such hurdles

include the lack of broadband internet connectivity, especially in rural areas and among the urban poor. Other challenges are unavailability of locally created courses, language barriers, lack of training and professional development opportunities, and the production of mobile-friendly course materials (Ischebeck, 2020).

University of South Africa (Unisa), a long-distance-dedicated university, provides a great example of sustained long-distance education and e-learning. Unisa currently offers educational opportunities to over 400,000 students from across South Africa, Africa, and other parts of the world, and enrolls almost one-third of all South African students. Founded in 1873 as the College of the Cape of Good Hope, the institution became the first public higher learning institution in the world to teach exclusively by way of distance education in 1946. Throughout the years, Unisa was possibly the only university in South Africa to have provided all people with entry to education, irrespective of race, color, or creed, and has recently adopted e-learning as one of its main platforms. The importance of this lies in Unisa's conviction to overcome the socioeconomic, political, race, and gender issues prevalent in South Africa and Africa today (Facts & Figures, 2020).

Given what Unisa has achieved, as well as the lessons learned from the pandemic, it is safe to conclude that e-learning in Africa is a necessity. It can serve as an essential part of breaking down the barriers to higher education in Africa. E-learning can potentially create the desired impact of efficiently widening access to higher education, as it is a much cheaper alternative to the traditional in-person setting (Department of Higher Education and Training, 2021). Well-prepared e-learning content can enable institutions to provide education to a larger population and differentiate course materials pedagogically, where different learning styles can be more readily accommodated. (Ischebeck, 2020). For example, Coursera provides high-quality education to a multitude of students across the world.

However, the existing hurdles that widen Africa's education gap, such as internet and connectivity issues, especially in rural areas, have to be addressed. When I am in the village, I spend over \$2 per day for data only. This is too expensive for someone who lives on \$2 per day. However, rural communities do not have broadband internet connectivity.

Partnerships with large internet companies and edtech providers are steps to building teacher skills. For example, in South Africa, Microsoft has trained thousands of instructors on distance learning using information and communication technologies. This will impact thousands of learners. These types of initiatives need to be rolled out across other parts of Africa for e-learning to succeed (Ischebeck, 2020).

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Online Education/Virtual Collaboration/
Mitigating the Digital Divide

A Model for Transforming Traditional Instruction to Online Learning Environments in Africa

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ABSTRACT

Effective teaching and learning online pose several institutional challenges worldwide. The philosophy of teaching at any institution should influence teaching online. Should courses be taught entirely online, or in a hybrid of the traditional classroom and online? What kinds of hardware, networks, and software are available for online course delivery? How should courses be developed or converted for effective online teaching and learning? What alternative platforms and tools are available for use in an effective online classroom? This paper examines current theory and practices of online teaching, in efforts to promote the best practices of effective online teaching and learning at African institutions. A comprehensive model is presented for exploring alternative resources and techniques that can be used to set up courses, teach and assess learning in an online classroom. The paper features examples of effective online course design, syllabus, discussion forums, student activities and assessment for use at African institutions. The paper details free and commercial online web resources for incorporating best online teaching practices into existing traditional classroom instruction, to help more African faculty members to engage in effective online teaching and learning.

Introduction

Online teaching and learning principles are important depictions of hypotheses for predicting and explaining current and emerging best practices. All advocates of online teaching, particularly in Africa, ought to investigate the goals, environments, supporting tools that are essential to online learning in individual academic disciplines (Barab & Duffy, 2000; Dick & Carey, 1990; Jonassen, 1999). Certainly, online learning involves the use of tools and procedures to manage activities in learning environments.

Today, there is a variety of online courses and degree programs via the internet. But what are the crucial components of real-time online instruction? Creators of online courses are faced with the challenge of knowing the subtleties of discovering and partaking in asynchronous mediums (Xin & Feenberg, 2005). Online instruction should stimulate crucial learning and engage learners in computer-supported collaborative learning (Xin & Feenberg, 2005). Online learning is also called E-Learning with some well-defined theoretical foundations (Anderson, 2008; Xin & Feenberg, 2005). Based on the existing theories of effective online teaching and learning, this paper presents practical strategies for creating new and converting existing traditional courses for delivery in online modes at African universities. The paper discusses the current and ongoing online activities at Bugema University in Africa, and the continued challenges of implementing real-time online courses.

Models for Online Teaching and Learning in Africa

Online course contents at African institutions can be effectively delivered in technology enhanced learning environments that are amenable to foster telecommunications

and assessments of learning among learners with synchronous and asynchronous communication tools for collaboration. African universities that require personal individual student interaction, authorship, peer mediation and reviews should consider these alternative tools for communication in online courses. Fortunately however, African educators can become facilitators in alternative environments such as knowledge building via critical inquiry; collaborative learning and problem solving that includes online discussions, clarifications, and debates on tasks that facilitate personal constructive engagement in which the locus of control is in the hands of the students. We need online African learners to become more inherently ambitious, autonomous, and serious intellectuals.

Online teaching and learning principles include: distributed and embodied cognition (group assignments, involvement in questions about ideas and practices); promotion of areas of study with communities of practice; use of discussions and posts to encourage social interactions; exploration of questions, individual reflections with discovery learning, tolerance, adaptation and steadiness processes (Scardamalia & Bereiter, 1994); and wholistic interactions with materials and individuals with the principle of connectivism (Siemens, 2004).

Course Management Systems with Software and Hardware in Africa

At African institutions, course management systems (CMSs) or learning management systems (LMSs) such as Blackboard, Moodle, Desire2Learn, Angel Learning Management, Scholar 360, and coVis will provide tools for instantaneous chatting, discussion forums and administration, and file and folder exchanges among students and teachers; they are valuable for promoting collaborative learning among students and

teachers in Africa. There is a variety of software for supporting synchronous and asynchronous communication beyond the CMS or LMS because the available shell tools in a LMS might not be appropriate for voice- or video-enabled chat. There are web-based (w), client-based © for installation on a local machine, server-side (s) software, or hardware (h) or a combination of tools for supporting communication in LMS. At African institutions, here are tools that can facilitate communications in applications such as (1) text and audio/video chat, for example Web Messenger (w), iChat (c, s), and Skype (c); (2) whiteboard applications and hardware, for example Mimio (h, s) and Smartboard (h, s); (3) sharing computer desktop platforms such as Windows Remote Desktop Connection (c), Apple Remote Desktop (c), and Virtual Networking Client (c); and (4) collaboration and meeting platforms, such as Elluminate (w), MediaWiki (w, s), WetPaint Free Wikis (w).

Practical Samples of Online Course Creation Strategies and Online Self-Learning Tools

Questions natural arise on how African teachers should be creating courses to promote effective teaching and learning online. Online instructors should be capable of designing a course backward template that details the course description, learning objectives, short module objectives, learning activities, assessments and resources as outlined in Appendix A for a course module of an Advanced Cryptography course. A generic model for presenting effective online courses in a uniform format is outlined in Appendix B. The comprehensive details for crafting effective online course contents are illustrated in Appendix C.

Self-paced online learning tools are valuable for students to learn difficult course materials such as quantitative security risk assessments and elements of number theory in Cryptography. In fact, we have implemented a tool called MySecurityLab to facilitate security risk assessments by faculty and students in Cybersecurity, Information Technology, and Information Security degree programs, and by security practitioners in industry. The online tool contains a variety of learning and practice modules of security risk assessment scenarios, comprehensive case-based and scenario-based quantitative security risk assessment learning, and practice modules. The generic online tool allows students, faculty members, and industry personnel to define their own security risk scenarios and to perform quantitative risk assessments. We have implemented another self-paced learning tool called Another MySecurityLab for use by information technology students and employees in organizations to learn the administration of technical security controls in stand-alone and network systems.

Challenges and Opportunities for Online Teaching and Learning in Africa

Without a doubt, African institutions will continue to be restricted in implementing effective online teaching and

learning strategies in classrooms due to the lack of available modernized hardware, software, and technology. According to Ruth Wilson (2003), there is a fear that “increasing the quantity of course material delivered electronically may actually inhibit access: students’ technical skills vary, and less competent computer users could be disadvantaged.” The lack of time, skills, and support for implementing electronic learning ideas will remain a challenge at African institutions.

Online learning arises mainly in asynchronous environments (Anderson, 2008; Garrison et al., 2000) with the risks of timely available visual and verbal communications required for clarifications in e-learning (Xin & Feenberg, 2005). Consequently, African teachers will continue to face the barriers of understanding and collecting data about student engagements for learning. Students in online learning environments often sieve and select pertinent information for use in navigating through problem solving of real-world task with exemplar application materials and knowledge building, augment existing cognitive processes. However, there are alternative avenues for African teachers to use for providing access to process, interact and retain the information of students (Driscoll, 2005; Schunk, 2008).

The worldwide debate on less teacher-centered to become more focus on student-centered learning is alive. Constructivist strategies and principles have been advocated for moving the roles of teachers worldwide to become arbiters of acquiring knowledge, rather than the facilitator sources of information for online learning (Reigeluth, 1999; Xin & Feenberg, 2005). Rapidly changing course information are often conveyed to students via site links and hyperlinks that change with times. African teachers ought to level up with the dynamically changing information on the Internet and be capable of providing examples of switching into current course materials and websites of information.

Remarks

There are several interwoven constraints that may hinder the implementation of the models and strategies for delivering effective teaching and learning presented in this paper. Clearly, at many African institutions, there is no release time for faculty members to develop online course. Moreover, there might be the lack of training, support, and incentives for faculty members in Africa to engage in cumbersome developments on online training tools, courses, and environments for students. Learning management systems are expensive to acquire and maintain. How will African institutions sustain the need to maintain their hardware and software given the limited budget constrains?

With our current Carnegie African Diaspora Fellowship Program (CADFP) funding, the design and implementation of effective online courses for graduate programs in the areas of data science and cybersecurity will be phased in at Bugema University beginning in January 2022.

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APPENDIX A

Backward Course Design Template for Advanced Cryptography

Cyber Module Description

This module covers cryptographic properties, mathematical ideas, complexity theoretic principles, privacy, and digital signature algorithms for complete understanding of advanced cryptographic methods.

Cyber Module Learning Objectives

After completing this module students will be able to:

1. Appraise the security of advanced cryptographic properties
2. Identify the mathematical principles underneath advanced cryptographic algorithms
3. Describe the complexity-theoretic foundations of cryptography
4. Implement advanced cryptographic algorithms to provide privacy and verification
5. Implement advanced two-party and multi-party protocols in cryptographic systems

| SHORT MODULE LEARNING OBJECTIVES <i>(List the Module Learning Objective(s) that align with the corresponding Course Learning Objective)</i> | ASSESSMENTS <i>(List the Assessment(s) that align with the corresponding Module Learning Objective(s))</i> | ACTIVITIES <i>(List the Activities that align with the corresponding Assessment(s))</i> | RESOURCES <i>(List the Learning Materials/Resources necessary to complete corresponding Activities)</i> |
|---|---|--|--|
| 1. Cryptographic Properties 2. Mathematical Principles 3. Complexity-Theoretic Principles 4. Privacy and Verification Algorithms 5. Two-Party and Multi-Party Protocols | 1. Assessment for students to demonstrate mastery of Course/Module Learning Objective 1 2. Assessment for students to demonstrate mastery of Course/Module Learning Objective 2 3. Assessment for students to demonstrate mastery of Course/Module Learning Objective 3 | 1. Activities to help students practice for Assessment 1 2. Activities to help students practice for Assessment 2 3. Activities to help students practice for Assessment 3 | 1. Resources needed for students to complete Activities/Assessments for Course/Module Learning Objective 1 2. Resources needed for students to complete Activities/Assessments for Course/Module Learning Objective 2 3. Resources needed for students to complete Activities/Assessments for Course/Module Learning Objective 3 |

APPENDIX B

A Template for Designing Uniformly Formatted Courses for Online Instruction

| | |
|--|------------------------------|
| Module Name | |
| # Module Description and Learning Objectives | |
| # Learning Objectives | |
| # Quizzes | |
| # Assignments | |
| # Discussions | |
| Faculty Name/s | |
| Email Addresses | |
| Pre-Req Knowledge or Courses – What should students know prior to taking this module? | No prior knowledge expected. |

Module Description and Learning Objectives
Description (1-3 sentences)

This module covers/introduces...

Learning Objectives

(List of the 3–5 Learning Objectives that will be covered in this module) After completing this module students will be able to:

- 1.
- 2.
- 3.

Module Introduction—Module Name

APPENDIX B (CONTINUED)

LEARNING OBJECTIVE 1—LO SHORT TITLE

Introduction

Knowledge

Key Points to Remember

Practice

Reflection [Topic Title] {Forum Title will be LO Title} {Discussion Topic Title and Description}

Assessment—Assignment 1

Assessment—Quiz 1

LEARNING OBJECTIVE 2—LO SHORT TITLE

Introduction

Knowledge

Key Points to Remember

Reflection [Topic Title] {Forum Title will be LO Title} {Discussion Topic Title and Description}

Assessment—Assignment 2

Assessment—Quiz 2

LEARNING OBJECTIVE 3—LO SHORT TITLE

Introduction

Knowledge

Key Points to Remember

Reflection [Topic Title] {Forum Title will be LO Title} {Discussion Topic Title and Description}

Assessment—Assignment

Assessment—Quiz 3

Test Your Knowledge

Provide a case study or assessment that covers aspects of all learning objectives within this module – a final assessment of learning for the module.

APPENDIX B (CONTINUED)

FINAL ASSIGNMENT FINAL QUIZ

Summary and Additional Resources

Summary

Brief overview of what was learned in this module

Additional Resources

Links to additional articles, videos, or resources

Instructor Resources

Faculty Notes

If there are keys or answers to given problems in the learning objective practice and assessment, please provide the keys of assessment or answers to be used for faculty.

APPENDIX C

Detailed Sample of Online Course Module for Advanced Cryptography

| | |
|--|---|
| Module Name | Advanced Cryptography |
| # Module Description and Learning Objectives | 1 |
| # Learning Objectives | 5 |
| # Quizzes | 5 |
| # Assignments | 5 |
| # Discussions | 0 |
| Faculty Name/s | Amos Olagunju |
| Email Addresses | aoolagunju@stcloudstate.edu |
| Pre-Req Knowledge or Courses – What should students know prior to taking this module? | Students should have completed a bachelor's degree that requires the knowledge of cryptography. |

Module Description and Learning Objectives

This module covers cryptographic properties, mathematical ideas, complexity theoretic principles, privacy, and digital signature algorithms for complete understanding of advanced cryptographic methods.

Learning Objectives

After completing this module students will be able to:

1. Appraise the security of advanced cryptographic properties
2. Identify the mathematical principles underneath advanced cryptographic algorithms
3. Describe the complexity-theoretic foundations of cryptography
4. Implement advanced cryptographic algorithms to provide privacy and verification
5. Implement advanced two-party and multi-party protocols in cryptographic systems

APPENDIX C (CONTINUED)

LEARNING OBJECTIVE 1—CRYPTOGRAPHIC PROPERTIES

Introduction

Cryptography offers techniques with characteristics that allow a party to communicate securely in the presence of antagonists.

The design of information like equipment blueprints or cryptographic algorithm specifics cannot be protected. The Kreckhoffs's second condition (Kahn, 1967, p.235) of a cryptosystem was that "compromise of the system should not inconvenience the correspondents."

Knowledge

The sought-after security characteristics of cryptosystems consist of:

- Privacy that guarantees no enemy can find out any pertinent information about the transmitted message.
- Authentication that ensures the arriving message to the recipient came from the claimed transmitter.
- Signatures that enable the message recipient to prove to a third party the inward message came from the claimed signatory.
- Instantaneous exchange of signatures that guarantees secure delivery of transactions and goods between a sender and receiver.
- Harmonization that enables communication parties match up activities despite the existence of foes.
- Cooperation tolerance that allows sought after security characteristics to remain in effect if the number of adversaries is below the limit.
- Randomness required to perform randomized computations (Gill, 1974).
- Physical protection that enables each party to protect secret keys from enemies. The security design properties of information systems are:
 - Channel properties for communication can occasionally be taken advantage of; for instance, Alpern and Schnider (1983) illustrate how to securely communicate on channels in ways that a listener cannot recognize the broadcaster of each bit. Eavesdropper with less reliable reception than the receiver, can be conquered (Wyner, 1975), or when the channel is analog instead of digital (Wyner, 1979a; Wyner, 1979b).
 - The characteristics of important consequences of ill-used channels (Bennett et al., 1983). Moreover, adversaries without the specifics of application of spread-spectrum channels cannot discern them (Gerhardt & Dixon, 1977).
- Information-theoretic property that make systems like Vernam one-time pad (Kahn, 1967) secure since an adversary has insufficient information to break the code.

Key Points to Remember

- Computational complexity theory is used to design resilient systems to make the work of an enemy computationally infeasible.
- Cryptographic operators such as one-way functions and pseudo-random sequence generators are used to construct secure cryptographic systems.
- Cryptographic protocols are used to indicate initiation and response to messages, and initialization requirements.

APPENDIX C (CONTINUED)

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Assessment—Assignment 1

Compare and contrast the RSA algorithm and RSA-ECC Algorithm in terms of usage for signatures, authentication, and privacy.

Assessment—Quiz 1

Discuss how the designs of protocols and operations are independent.

LEARNING OBJECTIVE 2—MATHEMATICAL PRINCIPLES

Introduction

Most cryptographic methods rely deeply on notions of number theory. This module reviews certain rudimentary number-theoretic and computational details. More in depth coverage of simple number theory is available in Niven and Zuckerman, Le Veque, and Angluin (1972; 1977; 1982). An outstanding review of the difficulties with factoring integers, testing primality, and computing discrete logarithms is presented in Lenstra and Lenstra (1990).

The foundation of various cryptosystems is the computational complexity of factoring a large composite number into two large prime numbers. It is easier to determine whether a given number is prime or composite than to compute the prime factors of a composite integer. The creation of cryptographic operators often relies on the discovery large prime numbers.

There are two types of effective algorithms that execute in polynomial time to generate random k-bit prime numbers (Adleman & Huang, 1987; Adleman et al., 1983; Goldwasser & Killian, 1986; Rabin, 1980; Solovay & Strassen, 1977): Monte Carlo probabilistic algorithms do end in polynomial time all the time but may go wrong with small probability—they are reasonably efficient in practical applications. Las Vegas probabilistic algorithms always produce an accurate deterministic polynomial-time verifiable evidence of correctness—they execute in probable polynomial time. Moreover, Bach (1988) has designed an algorithm that makes use of primality testing to construct a random k-bit composite number in a factored format.

APPENDIX C (CONTINUED)

Knowledge

Suppose Z_n is the set of residue classes modulo n , and Z_n^* is the multiplicative subgroup of Z_n of those residues that are relatively prime to n . the Euler's totient function $\phi(n) = |Z_n^*|$. Suppose Q_n is the set of all quadratic residues (or squares) modulo n . That is, $x \in Q_n$ if-and-only-if there exists a y such that $x \equiv y^2 \pmod{n}$.

The Jacobi symbol $(\frac{\cdot}{n})$ is defined for any $X \in Z_n^*$ and its values are in $\{-1, 1\}$. The law of quadratic reciprocity is used to compute (x/n) even when the factorization of n cannot be determined. Suppose J_n is the set $\{x | x \in Z_n^* \text{ and } (\frac{x}{n}) = -1\}$, and Q_n is the set of pseudo-squares modulo n (values of J_n that do not belong to Q_n). If n is the product of two primes then $|Q_n| = |J_n|$, and the function $f_y(x) = y \cdot x$ maps Q_n one-to-one onto Q_n for any pseudo-square y .

The foundation of some cryptosystems is the difficulty in solving the quadratic residuosity problem. That is, for any composite n and $x \in J_n$, investigate if x is a square or a pseudo-square modulo n .

Forming and obtaining square roots modulo n are useful operations in the design of cryptographic operators. X is a square root of y modulo n , only if $X^2 \equiv y \pmod{n}$. with ϕ prime factors of n , X can have up to 2^ϕ square roots. It has been ascertained by Rabin (1979) that factoring n is comparable to computing square roots modulo n in polynomial-time. In other words, with an efficient for obtaining square roots modulo n , it is possible to create an efficient algorithm for factoring n , and vice versa.

Key Points to Remember

- If $n = pq$, with p and q primes, and $p \equiv 3 \pmod{4}$ and $q \equiv 3 \pmod{4}$, then squaring modulo n effects a permutation of Q_n .
- The modular exponentiation, $X^e \pmod{n}$ is one-to-one over Z_n if $\gcd(e, \phi(n)) = 1$, (Rivest et al., 1978). Modular exponentiation function is useful in public-key cryptosystems.
- The inverse operation to modular exponentiation will depend on whether to solve for e or x . the discrete logarithm of y modulo n with base x , $X^e \equiv y \pmod{n}$ is used to compute an e (if any exists). Computing the e -th root of y modulo n is used to solve for x (if any) such that $X^e \equiv y \pmod{n}$.

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APPENDIX C (CONTINUED)

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Assessment—Assignment 2

One algorithm for Computing $YX \bmod n$ Function ModulusExp (Y, X, n) is as follows:

```
{ int a=X, b=1, c=Y;
  While ( a != 0)
  { if ( a % 2 == 0) /* a mod 2 = 0 implies a is even
    { a = a/2;
      c = c*c mod n; /* square c and do nothing with b
    } else /* a is odd
    { a = a-1;
      b=b*c mod n; /*do nothing with c
    }
  }
};
return b; }
```

Implement this algorithm using a conventional programming language and evaluate its efficiency.

Assessment—Quiz 2

List and justify the mathematical principles underneath AES, Diffie-Hellman, Rabin, and RSA algorithms.

LEARNING OBJECTIVE 3—COMPLEXITY-THEORETIC PRINCIPLES

Introduction

Computational complexity theory is the fundamental basis of recent cryptography. Today, there are cryptographic theories that are predicated on unproven postulations of complexity. These theories are used to solve some difficult problems by relying on operators such as one-way and trapdoor functions. This module is focused on a review of cryptographic operators.

Knowledge

Checksums and one-way functions

Checksums are the easiest functions for use in validating whether transmitted messages have been altered. For instance, a function $f(M) = M(x) \bmod P(k)$ over a polynomial $M(x)$ in Galois Field 2, $GF(2)$ can be used to interpret bits of M as a checksum. When the pair $(M, f(M))$ is conveyed over a noisy channel, transmission errors can be sensed for the inward pair (x, y) that does not fulfill $y = f(x)$. Unfortunately, this strategy cannot be used to ascertain any mischievous meddling by an antagonist, even though the tactic is very effective in identifying random errors. Consequently, checksums are inappropriate for use in classic cryptographic applications.

A one-way function takes a message M and effectively generates a value $f(M)$ in a way that it is computationally impossible for an enemy, given $f(M) = z$, to discover any message M' at all (as well as $M' = M$) such that $f(M') = z$. Moreover, given f , it is infeasible for an enemy to derive any pair of messages (x, y) such that $f(x) = f(y)$. The function f is said to be claw-free since it is impossible in practice to invert f at a given point z (Yuval, 1979).

There is an openly accessible one-way function that is suitable for many applications (Evans et al., 1974). In a time-shared computer system, for each password w , the value of $f(w)$ is stored rather than keeping a table of login passwords. Passwords can be validated at login and even the system administrator cannot infer any password by looking at the stored table (Evans et al., 1974).

APPENDIX C (CONTINUED)

Trapdoor functions

A trapdoor function f has a secret inverse function f^{-1} (trapdoor) that enables its owner to efficiently invert f at any time. Note that f should be easy to compute but computationally infeasible to invert without the awareness of f^{-1} . Trapdoor functions are the foundation for public key cryptography.

One-way and trapdoor predicates

A one-way predicate (Goldwasser & Micali, 1982, 1984) is a Boolean function $B: \{0, 1\}^* \rightarrow \{0, 1\}$ such that (a) with input $V \in \{0, 1\}$ and 1^k , in probable polynomial time it is possible to select an X such that $B(x) = V$ and $|x| \leq k$, randomly and uniformly from all sets of X ; (b) for all $C > 0$ and all adequately large k , no enemy in no polynomial-time, given $x \in \{0, 1\}$ such that $1/2 + 1/K^C$.

A trapdoor predicate is a one-way predicate in which for every k , the size of trapdoor information t_k is bounded by a polynomial in k and its knowledge allows the polynomial-time computation of $B(x)$ for all x such that $|x| \leq k$.

Crafting accurate complexity-theories suppositions

Asymptotic complexity is the basis of computational complexity theory. So as the size of a problem gets huge what transpires? The concepts of computational complexity theory are applicable to a family of cryptosystems or cryptographic functions characterized by a security parameter k . There may be a specific cryptosystem or function, or a family of cryptosystems or functions for each value of the security parameter k . A cryptosystem with security parameter k might have all strings of length k or an appropriate polynomial function of k for the inputs, outputs, and keys. The larger the security parameter becomes, the more the complexity of mathematical problems underneath the cryptosystem, and consequently the more security provided by the cryptographic algorithm in the system. But, since $P \neq NP$, a “proof” of security will rely on the hypothesis that specific computational problems become difficult as the inputs get larger.

As an illustration, the conjecture that factoring integers is difficult can be reinforced as: for any probabilistic polynomial-time factorizing algorithm f , for all constants $C > 0$ and amply large k , the probability that f can generate a nontrivial divisor of its input (the product of two randomly selected k -bit primes) is at most $1/K^C$. Then a creative proof of security that demonstrates the ability of an enemy to setback the cryptographic system in a far less time will negate the presumed hard difficult problem.

Key Points to Remember

- In public-key cryptosystems, it is more efficient to sign $f(M)$ instead of M itself because M may be very lengthy but f can be designed to result in a fixed-length, result $-f(M)$ is called a message digest or fingerprint for M .
- In the one-way predicate, the probability is taken over the random selections by the enemy and X such that $|x| \leq k$.
- The basics of one-way and trapdoor predicates are the foundation for the probabilistic creations for providing privacy and generating pseudo-random numbers.

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APPENDIX C (CONTINUED)

Assessment—Assignment 3

1. It is possible to prove that there is an algorithm that given a Turing machine M (of the type with a read/only input tape and a work tape), an input x and a space bound s , decides whether $M(x)$ accepts and uses $\leq s$ bits of space; the algorithm uses $O(s)$ bits of space. Using the above result, argue that if $s(n) > \log n$ is a function computable in $O(s(n))$ space, then $SPACE(s(n) \log n) \subseteq SPACE(s(n))$.
2. Design and implement an algorithm for validating whether a string of ones and zeros is a palindrome. What is the efficiency of your algorithm and why?

Assessment—Quiz 3

1. Show that if $P = NP$ for decision problems, then every NP search problem can be solved in polynomial time.
 2. Describe a function f for electronically signing a message and the issues it must resolve.
-

LEARNING OBJECTIVE 4—PRIVACY AND VERIFICATION ALGORITHMS

Introduction

The objective of privacy is to make sure that an enemy that eavesdrops on a message transmission cannot discover any tangible information from it. The conventional secret-key cryptosystems such as DES and AES use straight forward techniques to provide privacy for message transmission.

The problem with the secret-key cryptosystem is the distribution of the shared secret key to the communicating parties. To overcome this problem, Diffie and Hellman (1976) developed a clever exponential key exchange procedure. Suppose the two communicating parties A and B agree on a large prime P and generator g of the multiplicative group Z_p^* . Then A and B select large secret integers a and b respectively, and interchange $g^a \bmod p$ and $g^b \bmod p$ with each other. Consequently, A and B can compute the same key $g^{ba} \bmod p = g^{ab} \bmod p$.

Knowledge

There is a variety of key verification algorithms in the literature. In 1977 Rivest, Shamir, and Adleman propositioned a public-key cryptosystem in which a pair (e, n) of integers, such that $n = p \cdot q$ with p and q two large primes, is the public key of each user, and $\gcd(e, \phi(n)) = 1$. The encryption operation $C = M^e \bmod n$ is used to encrypt a message M to obtain the ciphertext C . The decryption operation is $M = C^d \bmod n$, where the private key is the pair (d, n) with $d \cdot e \equiv 1 \pmod{\phi(n)}$.

There is a range of public-key cryptosystems for providing privacy that are based on the knapsack problem. Given a vector $a = (a_1, a_2, \dots, a_n)$ of integers and a goal value C , the NP-complete (Garey & Johnson, 1979) knapsack problem is to decide if there exists a length- n vector x of zeros and ones such that $a \cdot x = C$. The knapsack problem is used as public-key cryptosystem as follows: create a knapsack vector “ a ” as a public-key and publish it; a sender can transmit a length- n bit vector message M to you by computing the inner product $C = M \cdot a$; to decrypt the ciphertext C , construct a trapdoor function into the knapsack to make the encryption operation one-to-one for easier decryption.

The probabilistic cryptosystems make use of one-way and trapdoor functions primitives to provide verifiable public-key encryption. Goldwasser and Micali (1982, 1984) pioneered the use randomized techniques to achieve a provable level of security in a probabilistic cryptosystem. In the probabilistic public-key encryption scheme Bob can send $M = m_1, m_2, \dots, m_k$ in binary to Alice as follows:

APPENDIX C (CONTINUED)

```
For (i= 1 to k)
{
  Bob randomly selects  $r \in \mathbb{Z}_n$ ;
  If  $M_i = 0$  send  $C_i = r^2 \bmod n$  to Alice;
  If  $M_i = 1$  send  $C_i = y.r^2 \bmod n$  to Alice.
}
```

Bob is either sending a random square or a random pseudo-square to Alice. Alice needs to include y in her public key for Bob to use in generating random pseudo-squares. Since Alice can recognize squares modulo n , she can decode the message.

Key Points to Remember

- Many knapsack schemes are susceptible to ingenious analysis and the use of powerful L^3 algorithm (Lenstra et al., 1982) for performing in Lattices; see Merkle and Hellman (1978), Shamir (1979), and Odlyzko (1984).
- Some knapsack schemes, such as the Chor-Rivest scheme (1988) and the multiplicative versions (Merkle & Hellman, 1978), remain unbroken.

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APPENDIX C (CONTINUED)

Assessment—Assignment 4

1. Write a program that makes use of the probabilistic encryption for Alice and Bob to exchange keys.
2. Design and implement a simple public-key cryptosystem using a knapsack scheme. Comment on the strengths and weaknesses of your algorithm.

Assessment—Quiz 4

1. Why are probabilistic encryption schemes immune to vulnerability of adversaries?
 2. Why are information and signatures hidden in trapdoor knapsacks unbreakable?
-

LEARNING OBJECTIVE 5—TWO-PARTY AND MULTI-PARTY PROTOCOLS

Introduction

A challenge-response protocol is useful in the identification of a friend or foe between X and Y as follows: (a) X and Y share a secret key k ; (b) X generate a random value V and transmits it to Y; (c) Y encrypts V using key k and transmits it to X; (d) X matches the inward ciphertext to the one X encrypts V with k —a match indicates Y is friendly party, otherwise the other party is an impersonator. Herein is a few two-party and multi-party cryptographic problems that have received attention in the literature.

Knowledge

The problem of flipping a coin over the phone has been recommended for use in trust validation by Blum (1982) supposes there is no trust between X and Y. They need an unbiased procedure that can generate a “head” or “tail.” X can apply probabilistic encryption to send encrypted types of the message’s “heads” and “tails” to Y. Y selects one of the ciphertexts and points out the choice to X. X finally discloses the secret encryption key to Y. There are fascinating variants and refinements of this problem in the literature (Cleve, 1986; Goldwasser & Micali, 1982).

An oblivious transfer is a strange protocol in which X transfers a message to Y in a way that: (a) the probability of Y receiving the message is 0.5, and the probability of Y receiving a rubbish is 0.5; (b) X has no knowledge that Y received the message at the end of this protocol. Although this protocol seems weird, there are some useful applications of it in the literature (Berger et al., 1983; Rabin, 1981). Indeed, Kilian (1988) demonstrated that the capability to execute oblivious transfers is an adequately resilient primitive for implementing any two-party protocol.

The contract signing problem deals with the instantaneous, interchange of digital signatures. How should a two-party protocol to support instantaneous signatures, (in which no party can get the signature of the other prior to exchanging signature), be designed? There are some exciting solutions to this problem in the literature (Ben-Or et al., 1985; Even et al., 1983).

Chaum promoted the use of anonymous transactions and digital pseudonyms to safeguard the records and transactions of persons in a database. With the use of pseudonyms, individuals are guaranteed of confidentiality of the transactions input into electronic systems (1981; 1983).

Shamir pioneered the development of a protocol for sharing a secret among n people by dividing it into pieces such that, only subsets of k persons can reconstruct the key (Shamir, 1979). Chor et al. (1985) noted that the protocol failed to cope with a dishonest secret dealer and some deceitful player. Consequently, they designed a verifiable secret sharing protocol based on the intractability of factoring.

APPENDIX C (CONTINUED)

Key Points to Remember

- In the usual multi-party protocol problem, a few parties work harmoniously on undertakings toward common goals.
- Multi-party protocols can be used in secret sharing, voting, anonymous transactions, and activities by honest parties.

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APPENDIX C (CONTINUED)

Assessment—Assignment 5

How might one play a game of cards, such as poker over the telephone? Design and implement a strategy to allow Bob and Alice to use the two-party protocol of RSA to securely play poker over the phone.

Assessment—Quiz 5

Is the challenge-response protocol secure? Why or why not?

Test Your Knowledge

1. List three approaches to message authentication.
 2. List and briefly define three applications of a public-key cryptosystem.
 3. What is a digital signature, and how is it implemented?
-

FINAL ASSIGNMENT

1. Suppose $H(m)$ is a collision-resistant function that maps a message of arbitrary bit length into n -bit hash value. Is it true that, for all messages x, x' with $x \neq x'$, we have $H(x) \neq H(x')$? Explain your answer.
2. Write a program to read a plaintext (PT) such as "good", and a key (K) such as "huge", convert each character of the PT and K to the decimal, binary and base 3 number representation, and generates the ciphertext (CT) as $PT [XOR] K$, display the encrypted CT and K as binary, base 3 and decimal numbers. The program should also provide the option to read a CT and K, generate $PT = CT [XOR] K$, and display the PT and K as binary, base 3 and decimal numbers.
3. Let n_1, \dots, n_k be integers greater than 1, which are often called moduli or divisors. Let N be the product of the $n_1 \dots n_k$. The Chinese remainder theorem asserts that if the n_i are pairwise coprime, and if a_1, \dots, a_k are integers such that $0 \leq a_i < n_i$ for every $i=1$ to k , then there is one and only one integer x , such that $0 \leq x < N$ and the remainder of the Euclidean division of x by n_i is a_i for every i . This may be restated as follows in term of congruence equations: If the n_i are pairwise coprime, and if a_1, \dots, a_k are any integers, then there exists an integer x such that

$$\begin{array}{l} x \equiv a_1 \pmod{n_1} \\ \vdots \\ x \equiv a_k \pmod{n_k} \end{array}, \quad \text{and any two such } x \text{ are congruent modulo } N$$

Here is an example of a problem that can be solved with Chinese Remainder Theorem (CRT).

Some jolly friends are planning to celebrate your graduation at Red Lobster. When the waitress decides to sit four to a row, two friends are left over; when she decides to sit five to a row, three friends are left over; when she decides to sit three to a row, one friend is left over. What is the smallest possible number of jolly friends? Write a program to use the CRT to solve these kinds of problems.

APPENDIX C (CONTINUED)

SUMMARY AND ADDITIONAL RESOURCES

Summary

This module presented the cryptographic properties, mathematical ideas, complexity theoretic principles, privacy, and digital signature algorithms for complete understanding of advanced cryptographic methods.

Additional Resources

Mathematical Principles

- 1) Basic Mathematics behind Cryptography

Complexity Theoretic Principles

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Instructor Resources

Solution to Quiz 1

The implementation of an abstract data type may be independent of its use. Protocol designers assume that operators with specific security properties exist prior to constructing protocols. Operator designers put forward the realization of operators, and then show that the intended operators satisfy the worked-for properties.

APPENDIX C (CONTINUED)

Solutions to Assignment 5 and Quiz 5

- 1) An eavesdropper will probably learn nothing about K from inquiring several values of r encrypted with key K .
 - 2)
 - a. Alice (A) and Bob (B) choose 52 different messages M_1, \dots, M_{52} as the cards, and a large prime p .
 - b. A and B select e_A and e_B , and encryption functions $E_A(M) = M^{e_A} \bmod p$, $E_B(M) = M^{e_B} \bmod p$. A and B compute decryption function exponents d_A and d_B and define decryption functions $D_A(C) = C^{d_A} \bmod p$ and $D_B(C) = C^{d_B} \bmod p$.
 - c. A, the dealer encrypts M_1, \dots, M_{52} , permutes their order a shuffling scheme d . B chooses 5 cards and returns them to A who decrypts them for her hand.
 - e. B chooses 5 cards from the remaining deck as his own, encrypts them and sends the result to A. note that each card is of the form $E_B(E_A(M_i)) = E_A(E_B(M_i))$ because E_A and E_B commute.
 - f. A decrypts the 5 cards with D_A and return the result to B who decrypts them with D_B to obtain his hand.
- At the end of the game, the parties reveal their secret keys to verify no cheating occurred.

Euclidean GCD Algorithm

In mathematics, the Euclidean algorithm[a], or Euclid's algorithm, is an efficient method for computing the greatest common divisor (GCD) of two numbers, the largest number that divides both without leaving a remainder. If $(a < b)$ then swap (a, b) /* Make $a > b$, and compute

$$a = q_1 b + r_1$$

$$b = q_2 r_1 + r_2 \quad r_1 = q_3 r_2 + r_3 \quad r_2 = q_4 r_3 + r_4$$

:::

$$r_{k-2} = q_k r_{k-1} + r_k$$

$$r_{k-1} = q_{k+1} r_k + 0, \text{ GCD}(a, b) = r_k$$

APPENDIX C (CONTINUED)

Examples

1. Compute GCD (5, 46)

$$46 = 9(5) + 1 \quad q_1 = 9; r_1 = 1$$

$$5 = 5(1) + 0 \quad q_2 = 5; r_2 = 0; \text{GCD}(5, 46) = 1$$

2. Compute GCD (96, 14)

$$96 = 6(14) + 12 \quad q_1 = 6; r_1 = 12$$

$$14 = 1(12) + 2 \quad q_2 = 1; r_2 = 2$$

$$12 = 6(2) + 0 \quad q_3 = 6; r_3 = 0; \text{GCD}(96, 14) = 2$$

3. Computing $a^{-1} \bmod b$ and $b^{-1} \bmod a$ using Euclidean GCD Algorithm

If $\text{GCD}(a, b) = 1$, that is a and b are relatively prime then $(aX + bY) = 1$

Set $X_0 = 1; X_1 = 0; Y_0 = 0; Y_1 = 1$; Compute $\{ X_i = -q_{i-1} X_{i-1} + X_{i-2}; Y_i = -q_{i-1} Y_{i-1} + Y_{i-2};$

$\}$ for $i = 2$ to $k+1$

$\text{GCD}(5, 46) = 1$; Note that $q_1 = 9$ and $q_2 = 5$

Set $X_0 = 1; X_1 = 0; Y_0 = 0; Y_1 = 1$;

$X_2 = -q_1 X_1 + X_0 = -9(0) + 1 = 1$ –the solution for X $Y_2 = -q_1 Y_1 + Y_0 = -9(1) + 0 = -9$ –the solution for Y

$X_3 = -q_2 X_2 + X_1 = -5(1) + 0 = -5$ –computed to validate X $Y_3 = -q_2 Y_2 + Y_1 = -5(-9) + 1 = 46$ –computed to validate Y ($aX + bY = 46(1) + 5(-9) = 1$)

Note that $5^{-1} \bmod 46 = -9 = -9 + 46 = 37$ and $5(37) \bmod 46 = 1$

Note that $46^{-1} \bmod 5 = 1^{-1} \bmod 5 = 1$ and $46(1) \bmod 5 = 1$

Online Education/Virtual Collaboration/
Mitigating the Digital Divide

Narrowing the Digital Divide in Higher Education in LMIC

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ABSTRACT

To narrow the digital divide that has negatively affected mentee-mentor interactions, we proposed developing new tools and resources to support virtual education in resource-limited settings. EpiConsultAfrica (<https://epiconsultafrica.org>) is a virtual center for digital inclusion and education in Africa. It is a one-stop mentorship hub staffed by volunteer faculty to help graduate students and junior faculty develop their research skills. The program provides mentees access to a dedicated informal mentor willing to meet with the candidates virtually. Mentors are drawn from all over the world in a cloud environment. Mentorship is voluntary, and candidates are matched with the appropriate mentor. Upon completion, graduates will have gained skills in research methods, data management and analysis, and scientific communication.

Background

The COVID-19 pandemic in 2020 kept approximately 826 million students worldwide out of the classroom as nations desperately locked down to control the spread of the virus. Many lacked access to a household computer, and a majority lacked broadband access. In Africa, school closures due to COVID-19 and a lack of digital-based distance resources necessary for learning continuity has worsened the existing educational, economic, and gender inequalities that affect most of the continent.

Due to the high costs of internet and limited access to remote learning resources, the majority of students in higher education institutions in Africa have been hit particularly hard. In Uganda, where several colleagues and I have voluntarily mentored students as part of our post fellowship effort, a wide digital divide exists. The term digital divide refers to a gap between those groups who have good access to digital technology, including broadband, and those who don't. The digital divide is particularly acute in sub-Saharan Africa, where 89% of learners do not have access to household computers and 82% lack internet access. Most undergraduate and graduate students in Uganda fall into the latter category.

Though the urgency to narrow the digital divide is well recognized worldwide, the huge investments needed to build the necessary platforms and infrastructure have been lacking in sub-Saharan Africa. A survey of 10 African countries, conducted by Research ICT Africa between 2017 and 2018 as part of the Global South AfterAccess study, found that Uganda has one of the lowest (24%) internet penetration rates, far exceeding Rwanda (9%) and Mozambique (10%). In Uganda, although ownership of mobile gadgets that can enable access to information and communication has grown considerably, more than 86% of Ugandans live in locations without mobile networks.

The critical job of easing the digital divide for students in low income and access countries can be achieved through (1) providing students with low-cost take-home technologies (e.g., smartphones, tablets) that can be used remotely to access online learning resources; (2) increasing student access to learning resources through community centers and hubs equipped with computers and internet; (3) developing and implementing an online digital platform to provide access and a virtual environment for mentors and mentees to engage and access online resources to support learning; and (4) improving access to technology, including the quality of that access in their universities.

EpiConsultAfrica

EpiConsultAfrica (<https://epiconsultafrica.org>) is a nonprofit virtual organization that seeks to ease the digital divide. This digitally inclusive platform is at the center of the post pandemic education efforts in Africa. Through its virtual community hub of well-qualified educators, EpiConsultAfrica will provide students in resource-limited settings increased access to mentorship.

EpiConsultAfrica was conceived and incorporated by Drs. Abel Ekiri (University of Surrey), Margaret Khaita (Mississippi State University), and Patrick Pithua (Virginia Tech). Its goal is to improve the quality of research conducted in the field of biomedical sciences at higher education and research institutions in Africa.

The mentoring hub will be staffed by volunteer faculty that will help masters, doctorate, and postdoctoral students as well as junior faculty develop their research and other academic skills. These mentees will have access to a dedicated team of informal mentors willing to meet with the candidates virtually. In this program, mentors with the right qualifications will be drawn from all over the world in a cloud environment. Mentorship will be voluntary, and candidates will be matched with the appropriately qualified mentors depending on their academic needs.

The academic fields targeted include human medicine, veterinary medicine, public health, nursing, pharmacy, dentistry, and other relevant disciplines in the broader fields of biomedical sciences. Mentees will gain significant exposure to academic guidance and materials developed by the mentors at their respective institutions of higher learning. Upon completion, mentees will have gained skills in research methods, data management and analysis, and scientific communication.

Figure 1 outlines the structure of EpiConsultAfrica.

To address one of the key needs necessary to ease the digital divide for students in low income and access countries, EpiConsultAfrica proposes to develop and implement a web portal to provide a virtual environment for mentors and mentees to engage and address mentees' academic and research needs. In addition, creation of the web portal will increase student access to learning resources. All these services can be accessed directly on smartphones, tablets, and computers or via community centers and

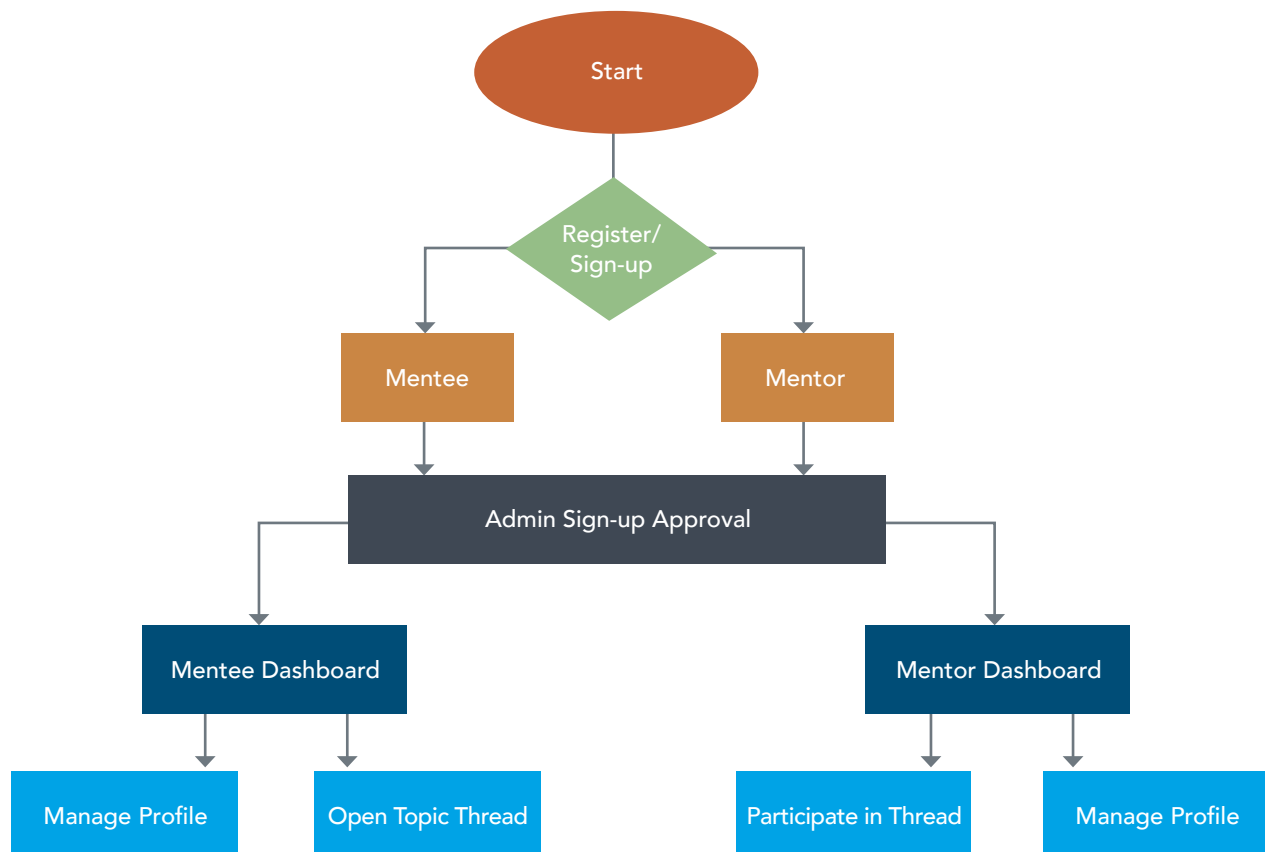
hubs equipped with computers and internet—or through technologies at home university institutions if available.

A high-level overview of the mentor-mentee web portal structure and functionality

Mentoring services and activities will be offered using an online platform managed by EpiConsultAfrica. The platform is a common point where mentors and mentees meet and engage. Mentors and the mentees seeking assistance must sign up and register online with EpiConsultAfrica. Registered mentees will be able to view expertise profiles of mentors and engage with the EpiConsultAfrica community initially by posting questions to a select topic thread in appropriate subject-specific forums to which mentors with the relevant expertise will respond. If needed, one-on-one mentor-mentee online chats will be arranged for in-depth discussions.

FIGURE 1

Basic platform structure of EpiConsultAfrica



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Online Education/Virtual Collaboration/
Mitigating the Digital Divide

Online Delivery of Civil Engineering Courses in Tanzania— State-of-the-Practice

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ABSTRACT

The Coronavirus (COVID-19) pandemic caught many African higher education institutions off guard. On March 17, 2020, the Tanzanian government ordered the closure of all schools in the country, including higher learning institutions, to limit the spread of the pandemic. As a result, instruction stopped until June 1, 2020, when schools were allowed to reopen. Surprisingly, by the time of the COVID-19 outbreak, some institutions had procured similar e-learning platforms used in more developed countries, but instructors had not started using them. This paper is aimed at presenting the e-learning resources that Tanzanian higher learning institutions have at their disposal. It also discusses the extent to which online tools are used for instruction in Tanzanian higher learning institutions, specifically for civil engineering programs. The discussion is based on a survey distributed to the department heads and leaders of various sections within the civil engineering departments of the seven colleges that offer civil engineering in the country. The study reports the progress that has been made by comparing the use of e-learning tools pre- and post-COVID-19. This study could help administrators develop a roadmap for offering online and hybrid courses in civil engineering programs.

Introduction

On March 17, 2020, all schools in Tanzania closed to limit the spread of the Coronavirus disease (COVID-19). Because most schools were not prepared to teach online, instruction was stopped until June 1, 2020, when schools were allowed to reopen. After the COVID-19-induced campus closure, higher learning institutions in Tanzania explored the possibility of implementing e-learning technology. Dar es Salaam Institute of Technology (DIT), for example, procured an e-learning platform known as Canvas. This platform enables DIT to offer blended online courses when students are on campus and in case of campus closure, to continue instruction remotely using online tools.

Remote learning started gaining momentum in developing countries even before the pandemic. In 2019, a year before the COVID-19 outbreak in the United States, the Carnegie African Diaspora Fellowship Program (CADFP) supported a project in Ghana that explored the integration of massive open online courses (MOOCs) in engineering education (Table 1). In recognition of the importance of adopting

online teaching resources, CADFP supported the follow-up fellowship in 2020 by the same fellow and host. The funding cycle that preceded the COVID-19 outbreak had three CADFP-funded projects that involved online teaching. Due to increased online teaching throughout countries in the developed world, online-teaching-related fellowships have doubled since the COVID-19 outbreak. As shown in Table 1 (from three in the March 2020 cycle to six in the November 2020 cycle).

DIT was among the recipients of the CADFP fellowship in the summer of 2021, a year after the COVID-19 outbreak. The fellowship involved training civil engineering DIT lecturers on effective online delivery tools. The fellowship participants (fellow and host) saw a need to document the state-of-the-practice of the online delivery of engineering courses, focusing on civil engineering courses. This paper discusses the findings of the survey conducted by DIT in collaboration with the University of North Florida to determine the state-of-the-practice of online course delivery for civil engineering courses in Tanzania.

TABLE 1

Previous CADFP Projects Related to Remote/Online Instruction

| FUNDING CYCLE | PROJECT TITLE | COUNTRY |
|---------------|---|--------------|
| May 2019 | Curriculum Co-development for Integrating MOOCs in Engineering Education; Collaborative Research to Evaluate the Effectiveness of Using MOOCs to Support Engineering Education; and Building Research Capacity | Ghana |
| March 2020 | Curriculum Co-development for Integrating MOOCs in Engineering Education; Collaborative Research to Evaluate the Effectiveness of Using MOOCs to Support Engineering Education; and Building Capstone Project Supervision Capacity | Ghana |
| | Curriculum Co-development for Online/Blended Learning Courses and Develop Faculty for Online Learning and Teaching | Kenya |
| | Research Collaboration on Enhancing E-learning Using Artificial Intelligence Techniques and Mentor Graduate Students on How to Apply Machine Learning Techniques in Various Disciplines | Kenya |
| November 2020 | Online Curriculum Co-development for Human Rights and Politics Short Courses | Ghana |
| | Confronting COVID-19 Online Modality Instructional Challenges Through Sustainable Online Curriculum Redesign of Educational Research Modules and Mixed Methods Re-search: Addressing COVID-19 Teaching/Learning Disruption; Faculty Challenges and Innovations Online Curriculum Development; Train Junior Faculty and TAs to Redesign Postgraduate Research Modules into Effective Synchronous and Asynchronous Online, Blended, Remote Learning | South Africa |
| | An Intensive Hands-On Program to Facilitate Civil Engineering Remote Instruction at the Dar es Salaam Institute of Technology (DIT) in Response to the COVID-19 Crisis | Tanzania |
| | eLearning Curriculum Co-development, Women and Gender Studies, and Student-Research Mentoring | Uganda |
| | Mentorship for Research Collaboration and Curriculum Co-development for Online In-stitute Course Works for Women in School Leadership at Makerere University, Ugan-da. Curriculum Co-development for Women in School Leadership for a Short-Term Workshop, and a Long-Term Institute Combined with Mentoring, Using a Hybrid Deliv-ery Modality Mentorship for Research Collaboration and Development of Dissemination Plans | Uganda |
| | Co-develop New Online Courses and Tools, Enhance Research Capacity and Online Instruction in Information Technology | Uganda |

TABLE 2

A List of Tanzania Higher Learning Institutions Offering Civil Engineering Education

| INSTITUTION | DIPLOMA | BS | MS | PhD |
|---|---------|----|----|-----|
| University of Dar es Salaam (UDSM) | | ● | ● | ● |
| Ardhi University | | ● | ● | ● |
| Dar es Salaam Institute of Technology (DIT) | ● | ● | ● | |
| Mbeya University of Technology (MUST) | ● | ● | ● | ● |
| Arusha Technical College (ATC) | ● | ● | | |
| Saint Augustine University of Tanzania (SAUT) | | ● | | |
| Saint Joseph University in Tanzania (SJUIT) | | ● | | |

Civil Engineering Education in Tanzania

Until about two decades ago, the University of Dar es Salaam was the only institution that offered degrees in civil engineering in the entire country of Tanzania. Ardhi University started the civil engineering program about twenty years ago. In the mid-2000s, public institutions that were formerly known as technical colleges (diploma and advanced diploma level colleges) were converted to degree earning institutions to produce the much-needed engineering experts in the country. Two privately owned universities were later added to the list. Seven higher learning institutions currently offer degrees in civil engineering in Tanzania. Table 2 shows all seven higher learning institutions that offer civil engineering programs in the country. The last two are privately owned institutions.

Data Collection

This study used a questionnaire to gather information on the state-of-the-practice of civil engineering online course delivery in Tanzanian. The questionnaire was administered online using a web-based survey tool known as Qualtrics. The survey link was sent to heads of civil engineering programs, or their representatives, at all seven institutions. As shown in Table 3, the survey consisted of a total of 17 questions. The first five were nontechnical questions for the survey respondent identification purposes. For the most part, the respondents were supposed to select responses from a list of possible answers. As shown in Table 3, the survey consisted of questions related to the availability of e-learning resources, infrastructure, Internet access, and faculty readiness for online course delivery.

TABLE 3

Questions Asked in the Survey

| NUMBER | QUESTION | ANSWER OPTIONS |
|--------|---|---|
| 1 | Name of the participant | |
| 2 | List of courses that you teach at your institution | |
| 3 | Email address | |
| 4 | Phone number | |
| 5 | Name of the institution | |
| 6 | What e-learning resource/platform does your institution use for teaching? | |
| 7 | Do you use applications to share course content? (mention) | i. WhatsApp ii. Telegram iii. None iv. Other (mention) |
| 8 | Have you used tools such as Zoom or Microsoft Teams for teaching? | i. Zoom ii. Microsoft Teams iii. Other (mention) |
| 9 | Does your institution have content creation resources, such as a studio for recording lectures? (list them) | i. Yes ii. No |
| 10 | How do you teach students when you are away for official duties? | i. Cancel the class ii. Exchange with another lecturer iii. Find an appropriate time to cover the missed class iv. Record lectures v. Other (mention) |
| 11 | Would you consider offering a virtual laboratory course? (hybrid/completely virtual) | i. Yes ii. No |
| 12 | Does your institution have a room that students can use to listen to lectures offered either synchronously or asynchronously? | i. Yes ii. No |
| 13 | Is there free internet access to students on campus for them to use for accessing online content? | i. Yes iii. Maybe ii. No |
| 14 | Is the internet reliable on campus for students to use for online course delivery? | i. Yes iii. Maybe ii. No |
| 15 | Can students access content online at home? | i. Yes iii. Maybe ii. No |
| 16 | Do you think lecturers/professors can comfortably use e-learning resources to offer civil engineering courses? | i. Yes iii. Maybe ii. No |
| 17 | Is training needed for faculty members to be able to offer courses online? | i. Yes iii. Maybe ii. No |

Data Analysis and Results

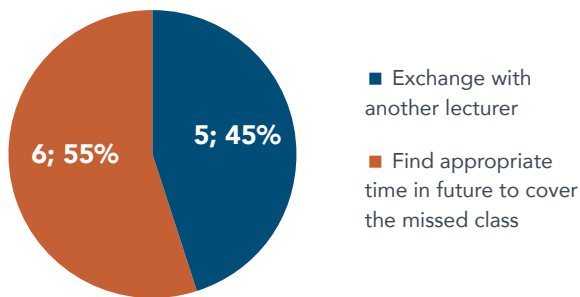
All seven higher learning institutions that offer civil engineering degrees responded to the survey. The following sections provide the analysis and discussion of the results of the study. The two numerals depicted in the pie charts are the number of respondents and the percentage of the total responses, respectively.

Missing Classes Due to Attending Other Official Duties

It is common for Tanzanian academicians to miss classes due to attending other official duties. The survey respondents were asked how they teach students when they are away for official duties. As shown in Figure 1, based on the survey results for this question, online teaching (including recording lectures) has not been implemented yet by any of the surveyed institutions. Instructors either exchange class periods with other lecturers or find an appropriate time to cover the missed classes. It has been observed that make-up lectures have sometimes been scheduled on the weekends due to the challenge of getting appropriate time slots during weekdays.

FIGURE 1

Responses on How Instructors Teach Students When They Are Away for Regular Duties



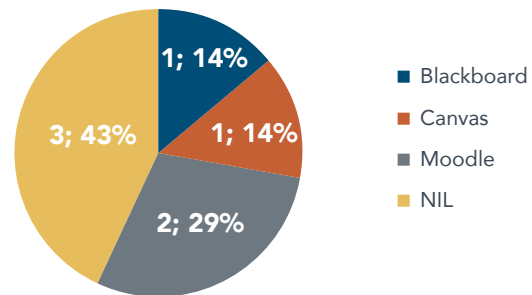
One of the major impacts of online course delivery is the potential to eliminate unnecessary canceling of classes, leading to inconsistencies in teaching and instructors not being able to complete the syllabus. It is common to cancel classes when an instructor is not on campus for various reasons, including work-related excuses such as travel to conferences and attending other university duties. Classes are also often canceled when an instructor cannot make it to class due to health or family issues. Virtual instruction will address these concerns because teaching can be done remotely, either synchronously (via live streaming) or asynchronously (using prerecorded lectures). Even students who are not able to attend a lecture due to unavoidable circumstances would benefit from recordings of live-streamed lectures.

E-Learning Platforms

One of the key resources for online course delivery is an e-learning platform. These platforms facilitate archiving and organization of instructional content. They also provide tools for communication, collaboration, assignments, and grading, among others. In Tanzania, an e-learning platform is commonly referred to as a learning management system (LMS). There are many such platforms; most of them are proprietary, but a few are open source. Figure 2 summarizes the survey responses regarding the e-learning resources (LMSs) used.

FIGURE 2

E-Learning Platforms Used by Tanzania Higher Learning Institutions



Only four out of the seven surveyed higher learning institutions use an e-learning platform, based on the results. University of Dar es Salaam, the largest and oldest higher learning university in the country, uses Moodle, an open-source LMS. After the COVID-19-induced campus closure, DIT procured an e-learning platform known as Canvas. According to the survey, Saint Joseph University in Tanzania, a small private university, uses Blackboard. The other three institutions (43%) do not yet possess any LMS.

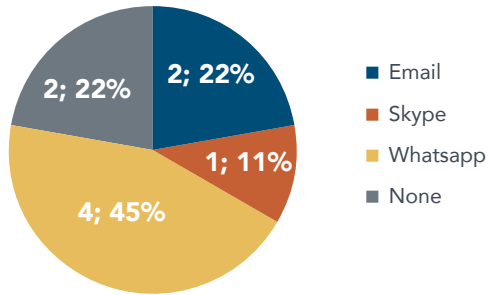
Use of Social Media Applications

One of the survey questions was aimed at gathering information on methods used by faculty for communication. Nearly half (45%) of the respondents reported using WhatsApp to communicate with students. Interestingly, less than a quarter of the respondents use email for communication (Figure 3). It was observed that only faculty and staff had official school emails. While students were not provided with school email addresses, faculty and staff preferred using personal emails for official communication, partly due to the instability of the school internet network.

According to the results presented in Figure 3, only one respondent reported using Skype. Two institutions indicated

FIGURE 3

Internet Communication Applications Used for Sharing Course Content



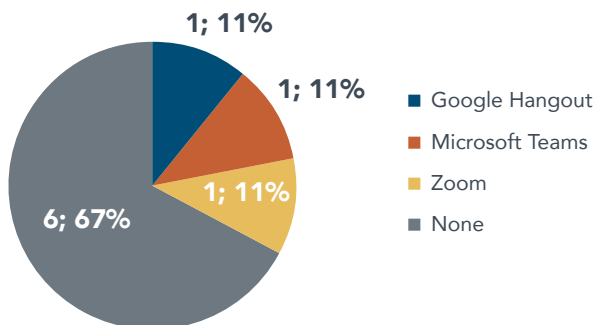
that they do not use any technology to communicate with students. While WhatsApp is an informal communication tool, mostly for social groups, it is used more widely in Africa than in the United States. This might have contributed to WhatsApp being the most preferred method of sharing course content. During the CADFP visit at DIT, it was observed that lecturers send course content to a class representative (student leader), who then distributes the content to the rest of the class. The course content sent through WhatsApp ranged from PowerPoint slides and assignment sheets to video clips.

Use of Video Conferencing Tools

Most administrative meetings became virtual after COVID-19 induced campus closures in Tanzania. Higher learning institutions in Tanzania adopted platforms, such as Zoom, that allowed administrative activities to continue when the campuses were closed. However, the schools were not prepared to deploy the same tools to create virtual classrooms. Figure 4 summarizes the survey

FIGURE 4

Survey Responses on the Use of Conferencing Tools for Teaching Civil Engineering Courses



responses on the use of video conferencing tools. The survey asked to list some video conferencing tools that they have used for instruction. Only a third (33%) of respondents indicated using several video conferencing tools, such as Google Hangouts, Microsoft Teams, and Zoom. Two-thirds (67%) of the respondents have never used video conferencing for teaching.

Internet Access

Internet access is a necessity for remote instruction. Students and instructors need a reliable and affordable internet source. Also, they need a reliable device (smartphone, tablet, or computer) to connect to the internet. Most college students in Tanzania have devices, at least smartphones, that can connect to the internet. Some institutions have free Wi-Fi for students to use for academic purposes. According to the survey results depicted in Figure 5, most institutions (72%) indicated that students have free internet access on campus to use for remote instruction. However, the responses for the follow-up question, which aimed to determine the reliability of the internet on campus, showed that less than 60% of the responding institutions have reliable internet access on campus. Interestingly, although the study did not examine the stability of the internet connectivity at home, 71% of the responses indicated that students could access online instruction content from home. The remaining 29% of the respondents were not sure (they answered maybe).

Instructor Readiness

The success of remote instruction largely depends on faculty preparedness and familiarity with online teaching resources. The results of the survey on this topic are summarized in pie charts depicted in Figure 6. Some engineering educators would argue that civil engineering laboratory courses are hands-on and cannot be taught online. It was revealing to observe that most institutions (86%) indicated their willingness to consider offering virtual laboratory courses (hybrid or completely virtual). Only two institutions (29%) indicated that the faculty could comfortably use e-learning resources to offer engineering courses. Four institutions (57%) were not sure (they answered maybe). Furthermore, the response from one institution suggested that the academic staff was not ready to use e-learning resources. When asked about the need for training, responses from all institutions (100%) overwhelmingly noted the need for faculty training to facilitate online teaching. The survey results clearly show a need for institutional support for faculty to be ready to offer remote instruction effectively.

FIGURE 5

Survey Responses on Internet Access

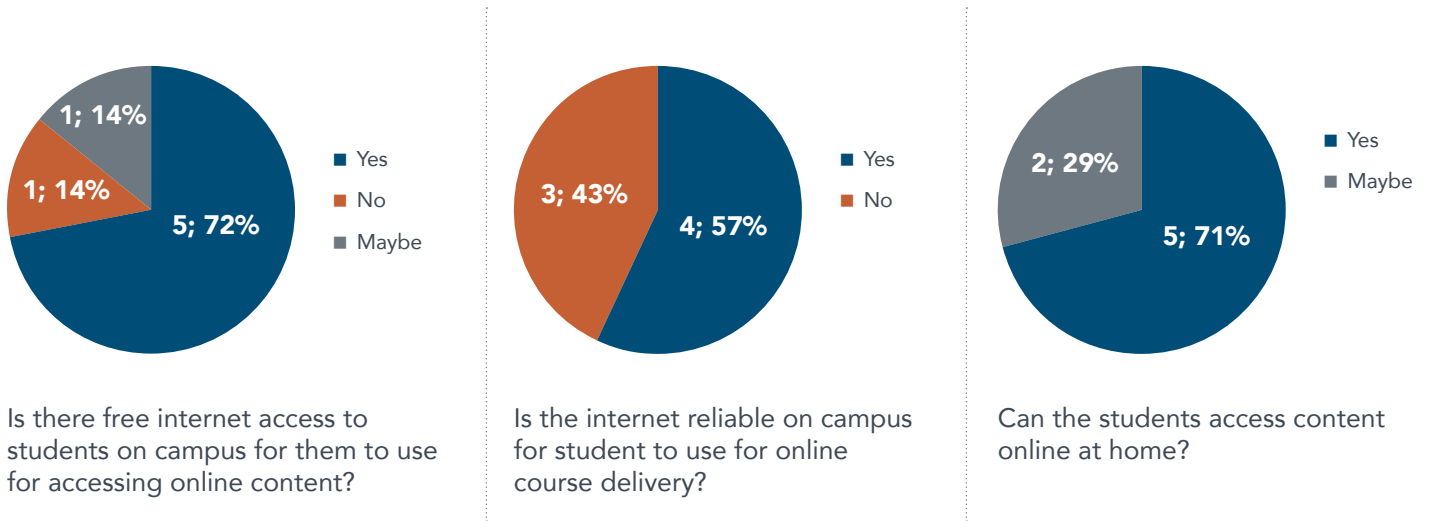
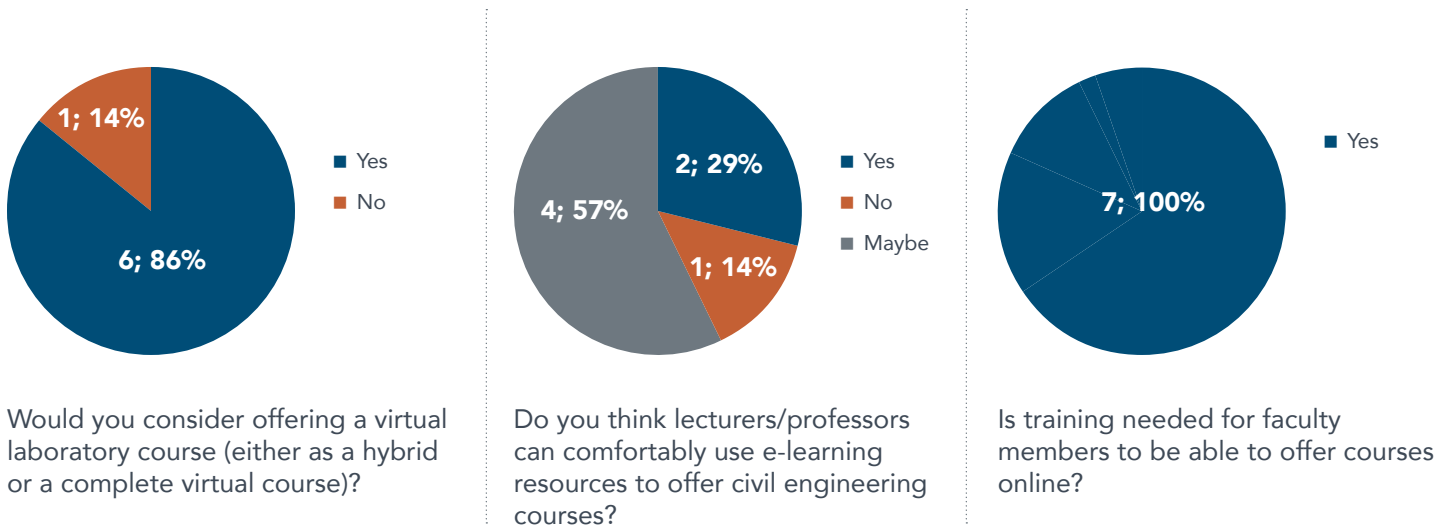


FIGURE 6

Survey Responses on Instructor Readiness



Concluding Remarks

This paper documented the state-of-the-practice of online course offerings for civil engineering programs in Tanzania. The study was based on a survey that was conducted on seven institutions in the country that offer civil engineering degrees. Overall, the results of this study show a clear digital gap that exists in the use of e-learning to enhance teaching in higher learning institutions. The results show that institutional readiness stems from lack of resources and less emphasis on online teaching.

The results show that most institutions in Tanzania do not have e-learning platforms. These platforms are essential for effective online teaching. They support content sharing, online assessments, student and instructor feedback, and are built to replicate classroom student-to-student and instructor-to-student interaction.

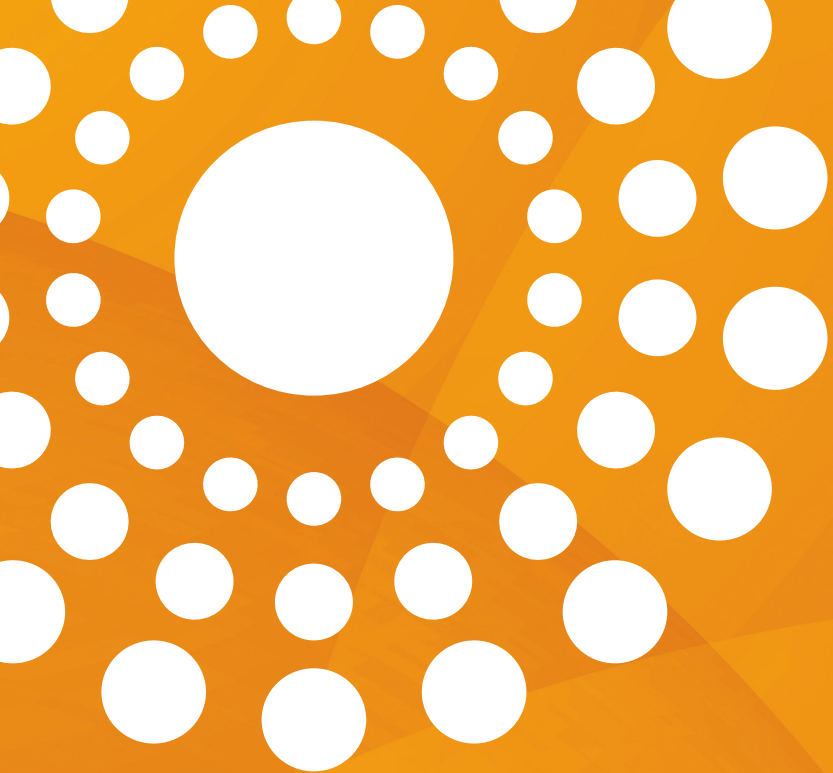
The results revealed individual efforts from some instructors who use internet applications such as WhatsApp to enhance communication with students. There was less usage of video conferencing platforms such as Zoom and Microsoft Teams that have tools for replicating a virtual classroom. Based on the results of this study, internet access on campus is an issue that needs to be addressed to facilitate online teaching. While the survey suggests that students may access the internet off campus, affordability may still be an issue for most students.

Last but not least, the results show that instructors need training before they can comfortably and effectively teach online courses. Training should not be limited to using online tools for teaching; it should extend to pedagogies that are effective for online teaching.

In closing, the COVID-19 crisis has disrupted academic timetables all over Tanzania, and it is unlikely to be the last crisis to cause disruption. Starting to move some of the course content online and provide remote instruction would enable the continuation of instruction should another crisis occur in the future that would cause the schools to close. Based on emerging teaching technologies that have been widely adopted post-COVID-19 in the developed world, the future of engineering education will involve online instruction. Higher learning institutions need to set a comprehensive online teaching agenda to avoid being left behind.

Once remote instruction is mainstreamed in Tanzanian higher learning institutions, it will be easier to leverage the expertise of academicians in the diaspora who can then either teach an entire course remotely or co-teach a course with a local lecturer (e.g., diaspora lecturer teaches the lecture part and the local lecturer administers a laboratory session).





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