Postgraduate Research Engagement in Low Resource Settings

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A volume in the Advances in Educational Technologies and Instructional Design (AETID) Book Series

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MISSION

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two cohorts of the students (N = 102). The work-life balance of the students was generally low (M = 107.48, SD = 23.56). Though the majority of the students, 94 (92.2%), reported high levels of proficiency in research skills (M = 68.96, SD = 10.44), they indicated low levels of communication skills. Significant differences in research engagement existed among the students of different religious affiliations ($\chi 2 = 0.823$, p = .05), marital statuses (U = 370.00, p = .027), and levels of research skills proficiency (U = 88.00, p < .01). Implications for educational policy and practice include careful selection and training of adult learners at master's degree level, and staking the students in the research process through effectively imparting 21st century skills.

This chapter presents physical barriers, lack of adequate funding, poor supervision, delay in feedback, communication difficulties, negative attitudes, and impairment-related disadvantages as the unique challenges confronted by students with disabilities when doing research in higher education in South Africa. Data were collected through scanning South African and international literature available on Google scholar, ProQuest, in books, journal articles, and online resources. Informed by decolonial theory, the invisible underlying causes of the challenges are discussed. Suitable assistive devices, listening to students with disabilities' voices, and more time allocation are suggested as strategies that could improve research engagement for students with disabilities.

Globally, there is a high quest for graduate education with many prospective students aspiring to attain advanced qualifications to obtain a better career path and higher income. Besides, postgraduate education fosters skills development. However, in Uganda, many students enroll in different graduate programs but fail to complete them in the stipulated timeframe. Furthermore, most of the master's students tend to successfully finish their first year which basically has the coursework component yet fail to complete the second year that has the research component. Doctoral students make little progress when it comes to their research. The authors will examine general research preparation, writing, and methodology skills that are critical to graduate studies and research. With the necessary support, mentoring, and planning, graduate research can be made a better process for students and supervisors.

Foreword

In both developed and developing countries, postgraduate education in the present knowledge economy is strongly associated with socioeconomic transformation. However, the landscape of postgraduate study in general and research in particular, especially in low income settings, is characterized by low efficiency levels. Many postgraduate students from disadvantaged backgrounds often do not complete their studies on schedule or drop out entirely owing to a myriad of factors, including financial, social, psychological, institutional and other environmental factors that hinder their progress. There is often little, if any, support to the students partly due to lack of a comprehensive guide to draw such support from. There is need to proffer strategies for such and intending students as well as other stakeholders, particularly research supervisors, sponsors, and the general academia to support students on their research journey to completion. This requires a multipronged approach, which this book has is contributed to.

Contributors to the volume have touched on pertinent issues of research skills support, social and institutional support, and the more individualized student-faculty interaction. The chapters on research skills support provide useful insights into the curricular and general research skills' proficiency aspects that the students and faculty need to should critically consider before postgraduate students embark on their studies and as they progress with research. The section on institutional and social support examines how students of various demographic backgrounds can be supported to develop sustainable research competences so as to sail relatively efficiently through the research process. Issues of disability, administrative gaps, financial constraints, and contextual factors are addressed in the section. Specific strategies for navigating supervisor-student relationship challenges are suggested in the third section on student-faculty interaction. The fact that these chapters are drawn from typical challenging contexts pitches this book as an excellent and handy volume of reference for postgraduate students and faculty, as well as persons who support postgraduate research in all other disciplines of study in low resource settings.

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Preface

The general academic progression and particularly research engagement of postgraduate students in low resource settings is characterised by serious internal inefficiencies as reflected by high dropout rates, high repetition or retake rates, longer completion times, low graduation rates, and transfer between programmes. These inefficiencies are coupled with poor quality of outputs including low scores in course work, examinations, and research work. Such progress deficiencies are attributed to various programme, environmental, and student quality factors, although many disciplinary and other complex factors too contribute to these outcomes. This means that there are far fewer students pursuing postgraduate studies at higher educational institutions in low resource settings than there are at the lower levels of education. Yet there is growing demand for postgraduate education given its strong projected association with socioeconomic transformation at national and international levels, among developed and developing countries alike. Therefore, there is need to proffer critically conceptualised and/or researched practicable strategies to enhance postgraduate research engagement in low resourced higher educational institutions. This handbook comes in handy to address this need.

The book provides strategies for fostering efficiency of research conduct among the students and faculty so as to enhance high quality output for the envisaged personal, societal, national and international socioeconomic transformation. It focuses on dispositional student, staff, and other personnel motivational factors; instructional, learning, and assessment theories and research strategies; student-faculty-personnel interaction; intra-institutional and extra-institutional student support; twenty-first century research skills; work-life balance; and research engagement in low resource settings.

The target audience of this book includes postgraduate students, postgraduate research supervisors, academic staff of higher education institutions, and researchers working in low resource settings in all fields of scientific inquiry. The chapters contain

rich practicable content that will be useful for these researchers to harness the scarce resources in the low resource settings to enhance their research journeys. The book also provides insights and support to executives concerned with the management of expertise, knowledge, information and organizational development in different types of work communities and environments.

The book chapters are categorized into three sections: (1) research skills support, (2) institutional and social support, and (3) student-faculty interaction. The first of these sections contains seven chapters while the second and third contain four chapters each.

The section on research skills support contains chapters that elaborate how various stakeholders can enhance the acquisition of skills and competences relevant for the execution of research. In Chapter 1, Fredrick Ssempala explicates how addressing curriculum gaps can enhance research engagement among postgraduate students in low resource settings. He argues that research is an essential factor that generates knowledge necessary to solve the problems of humanity by producing the necessary goods and services that are required for the development of any nation in the world. He notes that most goods and services consumed today are a product of research conducted in developed countries by post-graduate students. Unfortunately, most post-graduate students in developing countries face a lot of challenges that limit their ability to engage in original research that should be published in refereed journals and acquire necessary patent accordingly. There exist curriculum gaps that inhibit most of the postgraduate students in low resource settings to engage in productive research which is a prerequisite to transform the developing countries' economies. Hence, the chapter discusses the curriculum gaps in the postgraduate programs, importance of research engagement and strategies necessary to address the curriculum gaps in order to enhance research engagement among the post-graduate students in low resource settings.

In Chapter 2, James Lagoro Lam propounds the importance of ICT knowledge and skills in postgraduate education in the era of massification of education. He posits massification as one of the greatest challenges experienced at higher education today. He argues that the use of ICT mitigates massification by enhancing the efficiency and quality of teaching and learning in the large postgraduate classes.

Goodness Wobihiele Orluwene and Ibrahim Ajala present how postgraduate students can determine research design and data analysis techniques that are appropriate for their socioeconomic context in Chapter 3. These authors similarly note, as does Fredrick Ssempala in Chapter 1, that research provides an essential framework for the development of human social and scientific progress. They

argue that the foundation for improved scientific thinking is often established at the post-graduate level where students undertake independent investigations aimed at exploring a chosen topic within their chosen area of specialization. Irrespective of the discipline, institution or topic chosen, post-graduate students often adopt specific research framework(s) and processes which involves selecting design(s) and data analysis procedures, which are often challenging to many post-graduate students. The chapter offers insights on how to select the appropriate methodology: design, data collection and analyses procedures, selection of a sample from population and discussion of findings in line with existing literature or controlled observation.

Chapter 4 by Denis Sekiwu promotes qualitative methodologies, especially The Grounded Theory and Interpretative Paradigms as appropriate choices for conduction educational research in low resource settings. The paradigms discussed in the chapter are shown to abate the challenges of resource-intensive methodologies involving expensive instrumentation. The chapter begins by defining qualitative methodologies, the history of, and the significance of qualitative methodologies in education research. The author specifically discusses the science of coding right from the views advanced by the classical founders of grounded theory like Barney Glaser, Anselm Strauss, Corbin and Catherine Charmaz. The chapter also examines the important elements in content analysis and the interpretative paradigm, providing practical illustrations on how these qualitative methodologies can be used to analyze data in education research.

In Chapter 5, Johnson Ocan offers useful suggestions on how the English language ability of the postgraduate students can be enhanced for effective research engagement at higher education in low resource settings. The paper discusses how the knowledge of grammar can be improved among the post-graduate students, detailing how the students can choose an appropriate writing style to suit the research audience. The author argues that the students need to shift from being consumers to becoming producers of language, from analysis to synthesis.

Chapter 6 by Nathaniel Mayengo on overcoming the viva voce examination obstacle at postgraduate research contains techniques that can be adopted for preparing the students for viva voce (also known as oral examination or thesis defense) as a mandatory form of research assessment. This chapter explains the meaning of viva voce examination, its importance in the assessment of postgraduate students, the way it should be managed, the challenges it presents to the students as well as the staff, and how to overcome it as an obstacle. The chapter provides a handy tool for the guidance and preparation of students and faculty in low resource settings in the viva process, arguing that the students should be gradually and systematically introduced to viva voce examinations as a formative assessment, rather than being subjected to it suddenly as a terminal assessment.

In Chapter 7, Dennis Zami Atibuni, David Kani Olema, Grace Milly Kibanja, Joseph Ssenyonga, and Karl Steffens discuss how work-life balance and research skills proficiency affect research engagement. The chapter highlights how differences in levels of research engagement arise with respect to levels of work-life balance and research skills proficiency among postgraduate students, drawing from an empirical study conducted among Master of Education students in Uganda. The authors argue that there should be careful selection and training of adult learners at postgraduate level, and that the students should be well staked in the research process through effectively imparting 21st century skills.

The second section on institutional and social support contains chapters that prescribe how the various administrative/managerial, social, psychological, financial, and other resource challenges can be overcome among the postgraduate students. In Chapter 8, Sibonokuhle Ndlovu identifies the general challenges faced by students with disabilities in research engagement in South Africa and how these can be overcome.

Chapter 9 by Joseph Ssenyonga and Proscovia B. Nakiganda posits some research realities faced by postgraduate students in Uganda. The authors observe that globally there is a high quest for graduate education with many prospective students aspiring to attain advanced qualifications as a way of attaining better career paths and higher income in addition to advanced skills development. However, in the case of Uganda which is a typical low resource setting, the authors note that there are many students who enroll for different graduate programs but fail to complete in the stipulated timeframe though they tend to successfully accomplish the coursework component timely. The authors proffer general research preparation, writing and methodology skills that are critical to graduate studies and research. They further suggest the necessary support, mentoring and planning requirements that can be made to better the research process for the students and supervisors.

In Chapter 10, Edward Andama offers suggestions on how to improve administrative support for graduate education success under resource poor and culturally challenging environment from his rich experience as a Dean of Faculty. He argues that for any university to become successful in producing knowledge there is need to heavily invest in graduate education. He laments the inadequate support postgraduate students receive from programme administration and management, noting that there are no deliberate efforts made on the part of management and administration to understand the cultural, socio-economic, political and historical backgrounds of the students. In effect, there is limited understanding of the causes of the high dropout or delayed completion schedule of the postgraduate students,

typically among students studying in-country in the developing world. The author provides tailored strategies for administrative and supervision support to graduate units at various levels to abate the challenges affecting the high inefficiency and attrition rate at graduate school. He proffers that the strategies should be honed to the backgrounds of the students with a focus on preparing, supporting and enabling successful complete among the students.

Chapter 11 by Moses Muhindo Kibalirwandi, Adrian R. Mwesigye, and Clive Maate examines how constraints of financing postgraduate students' research can be relieved. They note that financial constraints in financing research for Master's and PhD students remain a drawback in implementing quality assurance policy in African universities. The chapter explores ways and means of financing research and publications to promote quality assurance as a global marketing strategy for universities.

The section on student-faculty interaction contains chapters which specifically address concerns of how to harness supervisor-student relationships in order to enhance postgraduate research efficiency. In Chapter 12, Dennis Zami Atibuni offers insights into negotiation of the institutional support and student-faculty interaction for postgraduate research engagement. The author argues that quality institutional support and student-faculty interaction are critical to effective research engagement and efficient completion among higher education students. Suggestions for fixing institutional support gaps in resources, operating procedures, organisation and communication, supervision, curricula, and student financing; as well as for student-faculty interaction gaps in supervisor absenteeism and emotional and behavioural dereliction are offered in the chapter.

Chapter 13 identifies and suggests solutions for specifically overcoming supervision challenges among students with disabilities in South African Higher education. The chapter is underpinned by the Decolonial Theory. The author argues that postgraduate students with disabilities are noted to face more challenges than the regular students and therefore require far deeper engagement than the regular students.

In Chapter 14, Proscovia Namubiru Ssentamu and Florence Bakibinga Sajjabi share experiential and empirical reflections on the need for a pedagogy for supervising postgraduate research. The authors make a critical argumentation that supervision is a personally-intensive knowledge sharing, utilization and management undertaking between a supervisor and supervisee.

Phefumula N. Nyoni, the author of Chapter 15, presents an argument on the notions of pedagogy and agency in post graduate student supervision in a rural South African University. The chapter is based on a combination of informal interviews with supervisors and doctoral students, observing student supervisor interactions, as well as personal experiences within the doctoral study trail. The author notes that

postgraduate studies in South Africa's higher education and the world over have come to occupy an important position not only due to the high level of professional development attached to it but also due to the significance of post graduate research towards the university's research output. He argues that the notions of agency and pedagogy are related to the complexities surrounding supervisor-student interactions that may be enabling or constraining within the research journey, particularly with respect to poorly resourced universities.

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I am very grateful to the members of the Editorial Advisory Board for their constructive comments and critiques that saw the book attain its final structure and content. I also dearly thank Dr. Sibonokuhle Ndlovu – my colleague postdoctoral research fellow at Ali Mazrui Centre for Higher Education Studies – for her words of encouragement, tireless effort to personally review articles and source for reviewers for some articles, and helping me with numbering of the chapters and organisation of the sections. I also thank Deborah Manyiraho, Eustance Wandera, Johnson Ocan, and Abraham Elasu of Busitema for similarly helping me with the organisation of the book chapters and sections.

Chapter 1
Addressing Curriculum Gaps to Enhance Research Engagement Among Postgraduate Students in Low Resource Settings

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ABSTRACT

For any country to develop, it should be able to conduct research to generate knowledge necessary to solve problems of humanity by producing necessary goods and services. Research is essential for any nation's success. Most goods and services consumed today are products of research conducted in developed countries by post-graduate students. Unfortunately, most post-graduate students in developing countries face a lot of challenges that limit their ability to engage in original research that should be published in refereed journals and to acquire necessary patents accordingly. Curriculum gaps inhibit most graduate students in low-resource settings from engaging in productive research necessary to transform the developing country's economy. Hence, the chapter discusses the importance of research engagement and strategies to fill curriculum gaps in the postgraduate programs to enhance research engagement among the post-graduate students in low-resource settings.

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INTRODUCTION

The human race has succeeded in controlling and managing the rest of other animals on this planet mainly due to its ability to conceptualize and produce theories via the complex language. This is possible because human beings have the ability to think in an abstract way and then operate in concrete terms to change/improve their environment. Hence, the ability of human beings to think in an abstract way is the foundation of research and production of new knowledge.

Historically, human beings used to depend on revealed and authoritative knowledge. However, these types of knowledge were limited and unreliable to solve the real problems that faced the human race. This is one of the reasons why the Roman Empire collapsed. Therefore, training the adequate work force that can engage in quality research is essential for any country. However, many developing countries lack the necessary resources required to train the competitive post-graduate students that can engage in productive research solve the problems/challenges facing their society. This is due to the existing curriculum gaps in most of the post-graduate programs. Hence, this chapter discusses the curriculum gaps in low resource settings post-graduate programs and the strategies needed to address the gaps to enhance research engagement among post-graduate students in the low resource institutions.

The author strongly believes that the strategies discussed in this chapter, if successfully utilized, will go a long way to improve the quality of post-graduate students in developing countries. The postgraduate students will be able to think critically, read analytically and write clearly. This in turn will improve the quality of research engagement and knowledge generations in these countries and hence help to solve the problems/challenges facing these countries. Consequently, more goods and services will be produced so that the human race is able to live a happy and successful life on this mother planet earth.

BACKGROUND

What is a Curriculum?

There are several definitions of the word "Curriculum," none of which seems to be universally acceptable. These definitions have been criticized as either too narrow or to broad, depending on the purpose which the definition is serving. The narrow definitions of the word Curriculum include reference to the following: syllabus, list of subjects, course of study, topics, items of knowledge to be covered, content, organization of teaching and learning methods, time tables, etc. All these are ingredients of a curriculum. However, a curriculum is much wider and transcends

the boundary of the classrooms of schools. The word "curriculum" originates from the Latin word "*currere*" which means a race-course, a track followed by the racing horses (Bishop, 1994). Some wider definitions of curriculum include the following:

- Curriculum is the sum total of all the experiences a pupil undergoes (Bishop, 1985).
- It is all the learning which is planned and guided by the school, whether it is carried on in groups or individually, inside or outside the school (Kelly, 1999).
- Curriculum is the total effort of the school to bring about desired outcomes in school and out of school (Stenhouse, 1975).

The author thinks that a Curriculum is the software of the education system.

Generally, a curriculum should have clear goals/aims, objectives, learning outcomes, content, learning experiences, methods of delivery/instruction strategies, and assessment strategies. Hence, a curriculum is the software or DNA (Deoxy Nucleic Acid) of any education system/teaching-learning program. If there is a gap between the intended curriculum goals/aims and the actual achieved goals/aims, then there exist a curriculum gap accordingly. In other words, a curriculum gap is the difference between the intended learning outcomes and the actual learning outcomes. For instance, in case of post-graduate programs, we expect the graduate students to be able to conduct quality research after completing their studies.

However, many postgraduate students in developing countries commit extensive plagiarism in their dissertations because they are unable to conceptualize original research problems. This is an evidence of a curriculum gap in our postgraduate programs. Therefore, any curriculum gap may lead to a deformed or dysfunctional education system. This is observed in lack of essential knowledge, skills, and values of the products of the teaching-learning programs, and hence a dysfunctional society with many products of the education system unable to solve their day-to-day problems. The same analogy applies in ICT (Information and Communication Technology) when the software is dysfunctional or attacked by a virus, or in the biological system when some changes in DNA may lead to cancerous cells or deformed organism accordingly. For example, sickle cell disease is caused by the abnormal gene that leads to the production of abnormal red blood cells.

Hence, to address such curriculum gaps, the post-graduate students are expected to engage in learning experiences that will enable them to think critically and creatively, read analytically, and write clearly. However, most postgraduate students in low resource settings face many challenges that inhibit them to engage in productive research, lack qualified staff to teach research method courses, lack updated literature, and face poor quality of internet services. Therefore, there is an

urgent need to utilize the necessary strategies to help postgraduate students in low resource settings engage in quality and productive research to solve the challenges/problems facing their societies. This will go a long way to reduce the gap between the developing and developed countries.

CURRICULUM GAPS IN POSTGRADAUTE PROGRAMS IN LOW RESOURCE SETTINGS

Most post graduate programs in low resource settings are characterized by curriculum gaps in terms of the inputs, process, and outputs. For example, most universities in developing countries lack adequate qualified staff, latest literature (textbooks, journal articles, etc.), reliable internet services, and adequate teaching/learning technology in their classrooms. This leads to the dependence most postgraduate students have on lecturers and handouts (printed lecture notes from their lecturers) instead of training in the skills of investigation required to engage in quality research.

Most of the learners learn through lecture method, where the lecturers stand in front and deliver the lecture. The students then passively write the notes. This makes many postgraduate programs appear more like primary/elementary education. Also, the nature of assessment does not focus at high level of learning, that is, analysis, thesis, and evaluations instead they focus on lower level of learning, that is, basic knowledge, comprehension, and some application. This type of assessment is inadequate, and produces graduates that are unable to engage in critical and analytical thinking. Hence, they will not be able to conceptualize original research in order to come up with visible research proposals. As a result, most postgraduate students decide to plagiarize the research topics and dissertations of other scholars.

All in all, due to the curriculum gaps in low resource settings, the post graduate programs in developing countries end up producing graduate students that are unable to conceptualize and conduct original research. This is because most postgraduate students lack essentials skills like critical and creative thinking, analytical reading and analytical writing that are essential for them to engage in research. This constitutes further evidence of the curriculum gap in post-graduate programs.

IMPORTANCE OF RESEARCH IN POSTGRADUATE PROGRAMS

The report of the visitation committee on Makerere University (2017) notes that research and innovations are core activity in any university. The main difference between high school education and university education is that, learners in high

school are given the existing knowledge, whereas university students especially postgraduate students are expected to generate new knowledge by engaging in original research. This necessitates that postgraduate courses be conducted in such manner as to engage the students in critical thinking, analytical reading, analytical writing and skillful presentation to colleagues.

In other words, students should be engaged in science practices like

- Asking questions
- Planning and carrying out investigation
- Analyzing and interpreting data
- Developing and using models
- Engaging in augments from evidence
- Constructing explanations (for science) and designing solutions (for engineering)
- Obtaining, evaluating and communicating information
- Using mathematics and computational thinking (Framework for K12 Science Education, NRC, 2012)

The above science practices are essential to help postgraduate students engage in research so that they are able to produce useful original knowledge necessary to solve the problems facing the community. Research engagement is important because it helps the postgraduate students to develop into scholars that are able to criticize and improve the existing knowledge. Research engagement helps postgraduate students to develop emotionally and socially because they are able to practice the necessary social skills when collecting data, analyzing data, and writing research reports / paper for conferences, and presenting their findings in international conferences. It also helps postgraduate students to learn how to plan their studies, and manage human and financial resources.

CHALLENGES POSTGRADUATE STUDENTS FACE IN LOW RESOURCE SETTINGS

Most postgraduate students in low resource settings lack the necessary facilities to engage in productive original research. Most of the universities lack the latest textbooks, qualified staff, conducive classroom environment, and reliable internet facilities. This makes many postgraduate students in low resource settings unable

to exploit their full potential by engaging in the critical research. As a result, many post-graduate students resort to plagiarism of research reports by copying and pasting any related literature. This is because most of the postgraduate students cannot purchase the latest literature/journal articles that cost about forty United States dollars per article.

Also since there are limited number of qualified staff in most of the low resource setting institutions, the supervisor to student ration ratio is too low. For instance, you may find one professor supervising about twenty (20) postgraduate students in addition to teaching in more than one university. This has led to inefficiency of the professors concerned and frustration on the part of students because the professors are unable to create quality time to help them to appropriately focus their research proposals. Then the students may resort to either hiring research consultants to help them write the research proposal and report or plagiarize research reports. Unfortunately, most of the universities in developing countries lack the updated software to detect the plagiarized proposal/report, and also the professors are too busy to detect plagiarized dissertations presented by postgraduate students.

STRATEGIES TO ADDRESS CURRICULUM GAPS TO ENHANCE RESEARCH ENGAGEMENT AMONG POST GRADUATE STUDENTS IN LOW RESOURCE SETTINGS

In the above sections, the author discusses the curriculum gaps and challenges like lack of essential literature, poor teaching-learning facilities, and unreliable internet services among many others, that postgraduate students face in low resource settings. Below are some of the strategies the author thinks should be utilized to address curriculum gaps to enhance research engagement among post-graduate students in low resource settings. The authors believe that there is an urgent need to adopt the 21st century curriculum and constructivism approaches in all the postgraduate programs.

Integrate the 21st Century Skills in the Postgraduate Programs

In 2007, the National Academies held the *Workshop on Research Evidence related to Future Skills Demands* (Araceli Ruiz-Primo, 2009). The research discussed at that workshop highlighted five broad skills that appear valuable across a range of jobs, from low-wage service work to professional work: adaptability, complex communication/social skills, non-routine problem solving, self-management/self-development, and system thinking.

The five 21st century skills were adapted from a set of six broad competencies initially proposed by Houston (2007), of which two (self-management and self-development) were collapsed into one. Hilton (2008) defined the five competencies from the workshop as follows:

i) **Adaptability**

The ability and willingness to cope with uncertain, new, and rapidly-changing conditions on the job, including responding effectively to emergencies or situations of crisis and learning new tasks, technologies, and procedures. Adaptability also includes handling work-stress, adapting to different personalities, communication styles, and cultures, and physical adaptability to various indoor or outdoor work environments.

ii) **Complex Communications/Social Skills**

Skills in processing and interpreting both verbal and non-verbal information from others in order to respond appropriately. A skilled communicator is able to select key pieces of a complex idea to express in words, sounds, and images, in order to build shared understanding. Skilled communicators negotiate positive outcomes with customers, subordinates and supervisors through social perceptiveness, persuasion, negotiation, instructing, and service orientation.

iii) **Non-Routine Problem Solving**

A skilled problem-solver uses expert thinking to examine a broad span of information, recognize patterns, and narrow the information to reach a diagnosis of the problem. Moving beyond diagnosis to a solution requires knowledge of how the information is linked conceptually and involves metacognition – the ability to reflect on whether a problem-solving strategy is working, and to switch to another strategy if the current strategy is not working. It includes creativity to generate new and innovative solutions, integrating seemingly unrelated information and entertaining possibilities others may miss.

iv) **Self-Management/Self-Development**

Self-management skills include the ability to work remotely, in virtual teams; to work autonomously; and to be self-motivating and self-monitoring. One aspect of self-management is the willingness and ability to acquire new information and skills related to work.

v) **System Thinking**

This refers to the ability to understand how an entire system works, how an action, change, or malfunction in one part of the system affects the rest of the system, and adopting a "big picture" perspective on work. It includes judgment and decision-making, system analysis and system evaluation as well as abstract reasoning about how the different elements of a work process interact.

There is an urgent need to have activities that help postgraduate students develop the above 21st century skills so that they will be able to engage in productive and original research.

"School", "Teacher", "Learner" and "Curriculum" for the 21st Century

How should education be structured to meet the needs of students in this 21st century world? How do we define "school," "teacher," "learner," and "curriculum"?

Schools in the 21st Century are faced with project-based curriculum for life aimed at engaging students in addressing real world problems, important issues to humanity, and questions that matter.

This is a dramatic departure from the factory-model education of the past. It is abandonment, finally of textbook-driven, teacher-centered paper-and-pencil schooling. It means a new way of understanding the concept of "knowledge" and a new definition of the educated person. A new way of designing and delivering the curriculum is hence required.

The following definition for "school", "teacher", "learner" appropriate for the 21st Century were obtained from (21st Century Education, n.d.):

- *School* will go from 'buildings' to 'nerve centres' with walls that are porous and transparent, connecting teachers, students and the community to the wealth of knowledge that exists in the world.
- *Teacher* from primary role as a dispenser of information to orchestrator of learning and *helping out students turn information into knowledge, and knowledge into wisdom.*

N.B. The 21st century require knowledge generation, not just information delivery, and schools will need to create a "*culture of inquiry*".

- *Learner*: In the past, a learner was a young person who went to school, spent a specified amount of time in certain courses, received passing grades and graduated. Today, we must see learners in a new context. First, we must

Table 1.

	20th Century Classroom	21st Century Classroom
1.	Time-based	Outcome-based
2.	Focus: Memorization of discrete facts.	Focus: Students know, can do, and after assessment, all the details are forgotten.
3.	Lesson focus on the lower level of Bloom's Taxonomy – knowledge, comprehension and application.	Learning is designed on upper levels of Bloom's taxonomy – Synthesis, analysis and evaluation (and include lower levels as curriculum is designed down from the top).
4.	Textbook driven.	Research driven.
5.	Passive learning.	Active learning.
6.	Learners work in isolation – classroom within four walls.	Learners work collaboratively with classmates and others around the world – the global classroom.
7.	Teacher-centered: teacher is center of attention and provider of information.	Student-centered: teacher is facilitator/coach.
8.	Little to no student freedom.	Great deal of student freedom
9.	"Discipline problems" – educators do not trust students and vice versa. No student motivation.	No "discipline problems" – students and teachers have mutually respectful relationship as co-learners, students are highly motivated.
10.	Fragmented curriculum.	Integrated and interdisciplinary curriculum.
11.	Grades averaged.	Grades based on what was learned.

maintain student interest by helping them see how what they are learning prepares them for life in the real world. Second, we must instill curiosity, which is fundamental to lifelong learning. Third, we must be flexible in how we teach. Fourth, we must excite learners to become even more resourceful so that they will continue to learn outside the formal school day.

Comparison of 20th and 21st Century Classrooms

There is an urgent need for all Professors teaching the postgraduate programs in developing countries to adopt the characteristics of the 21st Century classrooms outlined in the above table. This will greatly improve the ability of our graduate students to engage in quality research accordingly.

What is the 21st Century Curriculum?

Twenty first century curriculum has certain *critical attributes*. It is *interdisciplinary, project-based* and *research-driven.* It is connected to the community – local, state,

Table 2.

12.	Low expectations.	High expectations – "if it is not good it is not done". We expect, and ensure, that all students succeed in learning at high levels. Some may go higher – we get out of their way to let them do that.
13.	Teacher is judge. No one else sees student work.	Self, peer and other assessment. Public audience, authentic assessments.
14.	Curriculum/school is irrelevant and meaningless to the students.	Curriculum is connected to students' interest, experiences, talents and the real world.
15.	Print is the primary vehicle of learning and assessment.	Performance, projects and multiple forms of media are used for learning and assessment.
16.	Diversity in students is ignored.	Curriculum and instruction address student diversity.
17.	Literacy is the 3Rs reading, writing and Arithmetic (Math).	Multiple literacies of the 21st Century – aligned to living and working in a globalized new millennium, (7-R's-Reading, Writing, Arithmetic, Rights, Responsibilities, Research, and Recreation).
18.	Factory model based upon the needs of employers for the industrial age of the 19th Century Scientific Management.	Global model, based upon the needs of a globalized, high-tech society.

Source:

national and global. Sometimes students are collaborating with people around the world in various projects. The curriculum incorporates *higher order thinking skills, multiple intelligences, technology and multimedia*, the multiple literacies of the 21st Century, and authentic assessments. Service learning is an important component. The classroom is expected to include the greater community. Students are self-directed and work both independently and interdependently. The curriculum and instruction are designed to challenge all students, and provides for differentiation.

The curriculum is not textbook-driven or fragmented, but is *thematic, project-based* and *integrated*. Skills and content are not taught as an end in themselves, but students learn through their research and application in their projects. Textbooks, if they have them, are just one of the many resources. Knowledge is not memorization of facts and figures, but is constructed through research and application, and connected to previous knowledge, personal experience, interest, talents and passions. The skills and content become relevant and needed as students require this information to complete their projects. The content and basic skills are applied within the context of the curriculum, and are not ends in themselves.

Assessment moves from regurgitation of memorized facts and disconnected processes to demonstration of understanding through application in a variety of contexts. Real-world audiences are an important part of the assessment process, as is self-assessment.

Hence there is need for Professors training the postgraduate students in developing countries to reform training curriculum to match the attributes of the 21st century curriculum, if the graduates are to remain relevant in this 21st century and able to engage in productive original research.

Improve Teaching And Learning By Adopting Constructivism Teaching Approaches In Postgraduate Classrooms/Lessons

The professors teaching postgraduate students need to change their teaching approaches from lecture centered to learner- or activity-centered. They should structure their lessons in forms that postgraduate students are able to read before the lesson and come in the lesson to discuss and make presentation to their colleagues instead of the professors coming in the class and lecture to postgraduate students. Lessons should be conducted in seminar manner. This approach is where each postgraduate student engages in analytical reading, analytical writing and presentation skills in every lesson. This will go a long way to help postgraduate students to engage in research from the taught courses instead of waiting for time to do this when they are already writing their proposals.

In addition, the professors should utilize some of the constructivism teaching approaches to help students develop research skills accordingly. These include the following:

- **Cooperative Learning**

Peer interaction in small group work has become an important area of research in education and the opportunities for dialogue found in these cooperative learning situations are thought to provide a meaningful context for students to connect their new experiences to prior knowledge. Studies of cooperative learning in science have indicated that: “Group dialogue permits students to present their notions about the world and have them challenged. The challenges can lead to cognitive development as individuals realign their thinking as a result of having participated in the dialogue. Cooperative group work also serves to build peer relationships that foster learning” (Coble & Koballa, 1996, p. 466).

- **Problem-Based Learning (PBL)**

Problem based learning is a constructivist approach, which combines problem solving and group work. It emphasizes the use of real-life problems or scenarios as a stimulus for learning. The students are divided into groups of up to ten and meet (say) twice a week under the guidance of a tutor (Berkel & Schmidt, 2000). The process of PBL firstly involves presenting the students with a scenario, case, or vignette, which relates to real life, as a departure point for the learning process. The students then brainstorm themes and questions – this process is designed to allow them to clarify their preconceptions about the topic and to identify their learning needs (Dahlgren & Oberg, 2001). The advantages of this type of learning are that it is authentic (in that the problems are taken from real practice) and it involves cooperative learning. Studies have shown that PBL can be motivating for students and can develop their problem-solving abilities (Berkel & Schmidt, 2000).

- **Hands-on Inquiry**

The shift towards a constructivist theory of learning has placed added emphasis on inquiry as a learning activity. Inquiry involves making observations; posing questions; obtaining information from books and other sources to establish what is known; planning investigations; using tools to gather, analyze and interpret data, proposing answers, explanations and predictions, and communicate the results (Keys & Kennedy, 1999).

Twyford and Burden (2000) have, in a UK study, shown how design and technology, with its creative components, can have the power to effectively engage students in learning. They argued that hands-on creation or experiment is a powerful tool that technology teachers can employ in the classroom even at primary level. The emphasis in Australia on engagement of students in hands-on tasks reflects this approach (Ginns, McRobbie, & Stein, 1999).

- **Integration**

Integration involves making links between different learning areas by studying the ways that each is relevant to a particular issue or theme. Burlbaw et al. (2001) saw compartmentalization of knowledge as a concern in the sciences, where it has also been noted that narrowing or specialization of knowledge may be accelerating as scientific knowledge continues to grow at a rapid rate. However, by integrating between learning areas, it is impossible for learners to make important connections

across disciplines. This involves a recognition that natural connections exist across subject matter areas, and that students' real-life experiences do not reflect the sort of artificial barriers created by different subject areas.

FUTURE RESEARCH DIRECTIONS

Basing on the above suggested strategies, there is an urgent need to conduct empirical research among the postgraduate students to establish the challenges they face in their programs. Also, we need to conduct qualitative studies by getting the stories of those students who fail to complete their research in record time, those who plagiarize, and those who succeed in their research. The author believes these types of studies will inform the key stakeholders how to improve postgraduate curricula to help postgraduate students engage in productive research.

CONCLUSION

All in all, there is an urgent need to address the postgraduate curriculum gap by improving the inputs, processes and output of the curricula in developing countries. This can be attained by adopting the 21st century curriculum and constructivism teaching-learning approaches in postgraduate classrooms.

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KEY TERMS AND DEFINITIONS

Curriculum: A software of any education system that influence the inputs, process and outcome of the training program.

Curriculum Gap: A gap between the intended and implemented curriculum.

Low Resource Settings: A study environment with limited teaching-learning resources like necessary literature, internet facilities, and adequate qualified academic staff.

Post-Graduate Student: A student undertaking studies after obtaining a Bachelor degree.

Research: A process of arriving at effective solution to problems through systematic collection, analysis and interpretation of data.

Research Engagement: The ability to identify the research problem, design the appropriate study design, collect data, analyze data, write the report and publish the findings in referred journals/conferences.

Chapter 2
ICT in Teaching and Learning and Management of Massification

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ABSTRACT

Massification is among the greatest challenges in higher education. In this chapter, the use of ICT was identified as a quality tool for efficient and effective teaching and learning of science and how it mitigates massification; where the ratio of educational resources and class numbers become incompatible, giving rise to stressful learning conditions resulting in loss of quality and lowering standard (Mohamedbhai, 2008). Using the qualitative and quantitative research paradigms, the survey, and single-case and parallel cross-sectional designs, the study involved 294 respondents out of 395 sampled population. The sampling techniques used were purposive, random and stratified. Data was collected through closed-ended questionnaires, oral interviews, direct observation, focus group discussion, and the use of archival records. Analysis was by use of descriptive statistics. Major findings indicated that use of ICT-enhanced quality of teaching and learning in the science-based faculties at Gulu University mitigates the burden of massification.

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INTRODUCTİON

This chapter explains the importance and achievement of ICT mediation in overall management and facilitation of University core functions (teaching, research and community engagement) in Sub-Saharan Africa and more particularly in Uganda. Amidst this huge success are challenges of low funding, inadequate and ill-trained human capital, inadequate education resources as well as the explosion in students' enrollment. The chapter draws examples from many Universities in the region on how ICT intervention boosted management and development of academics more especially at postgraduate level. The paper also highlights on how Universities in Sub-Saharan Africa have met various challenges in the utilization and adaptation to ICT and how they have tried to cope up with these challenges.

BACKGROUND

Universities the world over and especially those in Africa and more particularly in Uganda are faced with numerous challenges including low funding, ill-trained human capital, inadequate education facilities and high students' enrollment. *The Economist, 2005* (cited in Mohamedbhai, 2008), advanced four main reasons for students' explosion, viz; the democratization of education, the rise of the knowledge economy, the phenomenon of globalization which is turning higher education into an export industry, and competition for students, funds and research grants. This quantitative increase in enrollment resulted into situation of massification where the ratio of educational resources and class numbers become incompatible giving rise to poor quality standard (Mohamedbhai, 2008). Furthermore, overcrowding of lecture rooms, laboratories, students' residences and libraries results in deterioration of the physical infrastructure and wearing out of equipment (Adu & Orivel 2006; Chevaillier, 2000; *The Economist,* 2005). Indeed, Ajayi *et al.* (1996) confirmed that "many of the older universities were planned when much smaller numbers of students and staff were envisaged." Effah (2005) gives the example of Ghana where "a University built for 3,000 students is currently coping with about 24,000 without corresponding expansion in academic and physical facilities, overstretching existing facilities to their elastic limits." The University of Yaoundé, Cameroun, which in 1993/1994 had over 40,000 students on a campus originally intended for 5,000 students. Calderon (2012) forecasted that by 2035 it is likely that South and West Asia will have about 125 million enrollments in higher education – a global share of 24%, making it the region with the second highest number of enrollments.

In a research carried out by the Federal Ministry of Education in Abuja, Nigeria (Education Status Report, 2005), it was observed that overpopulated classrooms are considered to be un conducive for both Teachers and Students when it comes to the issue of continuous assessment marking and the ability to give individualized attention to Students needing extra help and vice versa. Furthermore, Onwo (1998) contended that class size is a big factor in determining the attainment of educational goals and objectives. UNESCO (2000) recommends that Students' population in a single classroom should not exceed 1:30, or at most 1:35 in order to foster provision of quality teaching and learning. Edge (1980) in his study on teaching writing skills reported that in large classes, the provision of an opportunity for discussion or any kind of oral input to the written work is difficult. Powell (1969) observed that, large numbers of students in a class allow almost no opportunity for genuine exchange of opinions or arguments. In the Education Government White Paper (1992) the recommended teacher-student ratio is 1:45 to enable efficient and effective teacher-learners interactions. Class enrollment that so far goes beyond that recommended number outside any other policy framework is thus considered high. Musisi et al., (2003: 43) cited in the Uganda Vice Chancellor' Forum [UVCF] (2013), re-echoes the foregone statement in a report issued by the Makerere University Academic Staff Association which found that more than half the registered students in some courses did not attend lectures because of lack of seats and poor audibility in the lecture halls. Such insufficient facilities and high student-lecturer ratios compromised academic quality as the report noted. Confirming the foreseeable, the NCHE (2011) interpolates thus:

There is little money for educational inputs. Study areas (classrooms, laboratories and libraries) are overcrowded because of a mismatch between student numbers and facilities...there is little money for the maintenance of the infrastructure and few institutions have comprehensive internal quality assurance mechanism.

In view of the escalating situations enumerated in the foregone paragraphs, management of massification in higher education by use of ICT mediated approaches have become critical. This will not only address the situation now, but also forecasting into the future as predicted by Calderon, A. (2012) that population growth in 30 years from 2000 to 2030 is likely to be higher than that experienced between 1970 and 2000. The number of students enrolled in higher education by 2030 is forecasted to rise from 99.4 million in 2000 to 414.2 million in 2030 – an increase of 314%. Calderon (2012) further divulged that up to 2002, more students were enrolled in higher education in North America and Western Europe than in any other world region. Furthermore Baty (2009) reports that the percentage of the

age cohort enrolled in tertiary education in recent times grew from 19% in 2000, to 26% in 2007; meaning that there are about 150.6 million tertiary students in the world today. In China alone, gross enrollment of the age-cohort (18–22 years) had reached 17% by 2003 indicating that China has entered the stage of mass higher education. The Economist (2011) reporting on massification trends, noted that the United States of America has moved further than most countries in the system of mass higher education with graduation rates in University education striking over 40% nationally by 1994. Indeed Parmley et al (2009) confirmed the American situation thus; "US. higher education system is large and diverse with over 4,300 degree-granting institutions of higher education and an additional 2,200 non-degree granting institutions in which more than 18million students are enrolled."

In France, the total number of students enrolled in universities exceeded two million in 1996 as compared with just over 1 million in 1980. Meanwhile, in Germany, all school-leavers who passed the *Abitur* (the qualifying examinations at the end of the 12 or 13 years' schooling), are in principle entitled to study the subject of their choice in the University of their choice and this more than doubled enrollment numbers in 30 years to the extent that Germany's students nowadays have to fight their way into overcrowded lecture halls and personal contact with teachers is rare (*The Economist,* 2011). In addition, it was noted that since 2003, there have been more students pursuing higher education in East Asia and the Pacific. It is projected that East Asia and the Pacific is likely to remain the region with the largest volume of enrollments globally. In part this is explained by population growth, but it is also in part due to economic growth in the region over the past three decades. North America and Western Europe traditionally had the greatest share of global enrollments. In 1999 there were 28.2 million enrollments in the region, which comprised 30% of all global enrollments. While the number of enrollments grew to 35.5 million by 2009, the share as a proportion of total global enrollments has progressively declined and by 2009 stood at 22%. This share is projected to drop below 20% by 2014 and by 2035 will represent 10% of global enrollments. In the same vein, student enrollments in North America and Western Europe are projected to be 52 million by 2035. Countries with the largest number of enrollments are the United States (projected to remain in the world's top 10 by 2035), Germany (top 20 by 2035) and the United Kingdom (top 30 by 2035).This is quite alarming and huge. This quantitative increase in enrollment is assumed results into situations where the ratio of educational resources and class numbers become incompatible giving rise to stressful teaching and learning conditions which eventually lead to loss of quality and lowering of standard (Mohamedbhai, 2008). Similarly, the implementation of

Table 1. Number of universities and other higher institutions of learning in Uganda by 2018

S/N	CARTEGORY OF INSTITUTION	TOTAL
1.	Public Universities	09
2.	Public University Colleges	09
3.	Public Other Degree Awarding Institutions	05
4.	Private Universities	43
5.	Private University Colleges	03
6.	Private Other Degree Awarding Institutions	14
7.	Private Tertiary Institutions	121
8.	National Teachers Colleges	05
9.	Health Institutions	031
10.	Military Training Institutions	04
11.	Commercial Hotel Institutions	043
12.	Technical Institutions	010
13.	Public Tertiary Institutions	054
TOTAL		**353**

Source: NCHE, 2018

the University core functions namely; teaching, research, community engagement, publications and the ultimate storage of this information in repositories will be greatly affected. In Uganda, University education has shifted from being a preserve of the elites to a service open to the masses. To date university education has become a right of all those who qualify and can afford it. This growth has culminated into a boom in university education and the resultant increase in students' enrollment, with recorded progress of only one university in the 1980's with about 10,000 students to the current number of nine established public universities and 43 private recognized universities today. The total enrollment at higher institutions, i.e. universities and other tertiary institutions are now standing at over 240,000 (Ministry of Education &Sports [MoE&S], 2017). This is tremendous progress and growth in the higher education sector, noting that by 1962, Uganda was known to have had only about 500 students at Makerere University College (President Museveni's 50th Independence Anniversary Speech, 2012).

Teaching, Research and Publication in Universities in Sub-Saharan Africa an Overview

Knowledge generation through teaching, research and publication are main stream functions crucial for improving University quality education (Materu, 2007). Biggs (2003) reviewed by Paulo and Bota (2004) accentuated that quality of teaching in higher education relies upon what students do both in and outside the classroom. He claimed that at last a shift has occurred in the focus of teaching and learning from what teachers do to what students do in the classroom in higher education. He argued that this shifting is liberating. The main theme of his paper is that the quality of teaching can be enhanced by aligning objectives, teaching styles and assessment tasks. Tikly and Barret (2007) in their paper, '*Educational Quality-Research Priorities and Approaches in the Global Era,*' on the other hand asserted that research and publication functions are one of the most central and integral part of a university's core function and all over the world, Universities are held in high regards because of a strong research base. Unfortunately, in the research domain, growth is equally slow in Sub-Saharan African Universities in an environment grossly dominated by teaching. A couple of these Universities however, mentioned that lack of funds was rather the serious constraint.

In the University of Ghana as affirmed by Goolam (2008), in a bid to encourage research, the creation of the annual Faculty Colloquium which gives teaching staff, post-graduate and final year students an opportunity to present their research results to the scientific community was introduced. The Colloquium stimulates research in the Faculty and the publication of the proceedings of Faculty Colloquium contributes in some ways to the promotion of publications in the Faculty. Accordingly, funding of research at the University which used to be mainly from the University's Research and Conference Committee has since turned into history. The situation has now changed and, since 2005, research funds are available through the Ghana Education Trust Fund, which will undoubtedly encourage research. The budget allocation to the Research Board has increased from 4% of the University's budget in 2005 to 9% in 2006. At University of Ouagadougou, in order to encourage research, a financial incentive is given to each academic staff who can show, in an annual report submitted to management, that s/he has been undertaking research activities during the year. The financial incentive has been doubled since 2006/07. The University has two journals for the publication of research papers of academic staff. Also, to encourage the supervision of postgraduate research, academic staff are allowed between 10-25 hours per supervised postgraduate student, depending on whether the student is preparing a Master's or Doctoral thesis.

At University Edouardo Mondlane, until about a decade ago, most of the research was undertaken by academic staff reading for higher degrees under the supervision of foreign scholars as part of their training. They were thus involved in individual research projects. Subsequently, the University established thematic research programmes of an inter-disciplinary nature, encouraging the interaction of researchers from different departments to study some of the major developmental problems facing the country. In 2007 there were some 50 lecturers/researchers undertaking research leading to either a Master's or PhD degree under those research programmes. Those staff who prefer to undertake small research projects outside the established programmes were encouraged to do so under the 'Open Fund for Research' which, currently, finances some 50 lecturers/researchers. Research at University of Edouardo Mondlane is financed almost entirely by foreign donors, including governments, agencies and foundations, the most important one being the Swedish SIDA/SAREC, and the funding has been fairly generous. The University's governing body has recently given a further boost to research by approving a research policy and implementation strategy. In order to revive research at the University of Nairobi, a Research Policy Committee was set up in 2006 to propose clear policy and guidelines for research, especially with regard to Intellectual Property Rights of research. An effort is also being made to revive and strengthen the local research journals.

At Gulu University in Northern Uganda according to the study carried in 2014, Research and Publications still lacked the attention they deserve in the Science-based Faculties. It was noted by the time of the study that Gulu University had yet no standard research agenda or portfolio developed. In that respect, the Respondents' opinion indicated that only 26.43% agreed that research and publication were prioritized agenda in Gulu University against 54.18% who dis-agreed and19.39% who were undecided on the question. Similarly out of the other nine questions, that investigated the status quo, at the University, only Q4 sought to; "find out whether Lecturers encourage their students to do research?" scored high response rate of 78.6%. All the other questions scored very poorly, yielding an average percentage response of only 28.31%. The inadequate attention to research and publications were manifested in the following key areas; inadequate presentation of papers in Seminars, Conferences or Symposia by the staff and students. In that respect only 32.47% agreement was recorded against 25.97% that dis-agreed and 41.56% who were undecided. On the issue of research and publication of articles in Refereed Journals, 5.45 agreements against 55.26% dis-agreements and 39.29% indecision were recorded. On publication of books with ISBN/ISSN numbers in the department, 15.58% agreement against 63.64% dis-agreement and 20.78% indecision were recorded. See table on page 6 for details:

Table 2. Respondents' opinion on impact of research, publications and ICT in the science-based Departments at Gulu University in 2014

ITEMS	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	% Agreement
1. The University has a clear research agenda/portfolio that students are aware of.	5.73	20.70	19.38	25.55	28.63	26.43
2. Lecturers in the University are promoted largely because they do research and publish.	3.57	1.88	39.29	19.20	16.07	25.45
3. Lecturers in the University present papers in seminars.	3.06	31.88	35.37	21.40	8.30	34.93
4. Lecturers in the University encourage student to do Research	20.52	58.08	6.99	8.30	6.11	78.60
5. Lecturers in the University have published many academic papers	1.32	16.30	33.48	33.04	15.86	17.62
6. There are articles from the department that have been published in local and international journals	3.96	21.59	26.87	25.11	22.47	25.55
7. Students are involved in a number of research projects won in the University	3.96	21.59	14.54	33.48	26.43	25.55
8. There are books with ISBN/ ISSN published by staff in the University	0.88	11.45	27.31	31.28	29.07	12.33
9. Some percentage of University budget is allocated to research and publications	1.32	14.98	30.84	26.87	25.99	16.30
10. Some percentage of the University budget is allocated to staff and students for research and publications	2.65	17.70	14.60	23.45	41.59	20.35
11. Whether ICT is integrated in teaching and learning, research and publications	60	40	-	-	-	100
Average	**9.72**	**23.29**	**24.87**	**24.77**	**22.05**	**28.31**

Source: Primary data

Further Discussion with the Heads of departments revealed that they lacked basic equipment and Laboratory facilities to conduct scientific researches. In the Department of Human Anatomy, the Researcher physically counted 8 Cadavers,

8 Microscopes of which only five were in good working conditions, a dozen of broken Histology slides to serve about 112 students; this would give equipment to learners' ration of 1: 14. In the department of Bio-System Engineering, a newly constructed laboratory was standing, but not provided with basic equipment. The Lecturers in addition opined that their greatest drawback in the area of research and publications hinged so much on the volume of work created due to the demand on the time table. They further revealed that the few research concepts they wrote had failed to be sponsored or selectively sponsored because of inadequate funding in the Sub-sector. Management corroborated this point of low funding raised by the Lecturers by revealing that only about 60% of their budgetary expectations were funded yearly by government. The overall implication of these various studies indicate that in Sub-Saharan Africa, the funding of Postgraduate Research is still low, irregular and should be revamped. The question of the explosion in enrollment is yet another matter which draws concerns of these governments and Universities to tackle.

ICT Mediation in Universities in Sub-Saharan Africa

The role of Information Communication Technology (ICT) cannot be over emphasized and has been taken as critical step in teaching, learning, assessment, research, management and community engagement in Universities in Sub-Saharan Africa and which is why the past few years have seen tremendous growth and development in the use of information and communication technologies (ICT) in higher education in Africa, notably in Sub-Saharan Africa, even if there is still a lot more room for improvement. Darkwa & Mazibuko (2000) mentioned Botswana, Namibia, South Africa, Tanzania and Zimbabwe as pioneers in the application of ICT in higher education in the said region. Other countries, including Côte d'Ivoire, Togo and Congo, are joining the distance education train with the commencement of pilot virtual programmes in their Universities. In South Africa, the Stellenbosch University stands out as one of the examples of this success as reported by the Task Team output document in teaching and learning (2013) which emphasized the use of Web studies, Blackboard, Moodle, Turnitin, clickers and or twitter as fundamental in Faculties' Learning Management Systems (LMS). Prof. Majumdar, S. (2006) complements the foregone view, but adds that not only mastering ICT skills, but also utilizing ICT to improve teaching and learning is of utmost importance for teachers in performing their role of creators of pedagogical environments. Muzaki, F & Mugisha, F. (2005) strengthens this argument thus; "online learning provides a strategy to respond to

three major challenges in provision of University education: Cost, demographics and quality". According to Smeets and Mooij (2001), cited in (Kaino, M. L. 2004) studies have shown that ICT can contribute to innovative student-centred learning environment where teachers act as coaches, while remaining in firm control of the learning environment. In Mohamedbhai (2008), the Francophone countries; the Agence Universitaire de La Francophonie (AUF), an association of over 400 Francophone higher education institutions, including most of those in Africa, reportedly contributed significantly in promoting the use of ICT in Africa. The AUF initially planned to set a Virtual University for Francophone countries and the project subsequently evolved into the Campus Numérique Francophone, a network ICT centres established with the assistance of AUF in the 1990s. According to UNESCO, the best known centre in Africa is the Campus Numérique Francophone de Dakar in Senegal which was established in 2000 and which functions as a well-equipped resource centre, promoting distance and ICT-enabled education, as well as digital literacy in Students and Staff (UNESCO, 2007). The ICT situation is less satisfactory at Kenyatta University and University of Ouagadougou. At Kenyatta University the computer-student ratio is 1:31 which falls far short of the demand. Also, only 15% of the computers have internet connectivity. The absence of broad bandwidth constrains the institution from developing its networking programme. At University of Ouagadougou the computer-student ratio is 1:65 with the result that a significant number of the students are computer-illiterate. This severely handicaps them when they have to prepare their project report or thesis. Also, there are frequent breakdowns of the University server. Omwenga, E. I. & Rodrigues, A.J (2005) however contended in their report that the application of ICT to education in developing countries at both the experimental and development levels have often been characterised in general, by inconsistent, weak or non-existent evaluation methodologies thereby increasing risk that the role of ICT in the improvement of education in developing countries is not sustainable. The Visitation Committee on Public Universities in Uganda (2006) while addressing itself on methods of teaching and assessment, clearly expressed regrets that most Lecturers in Ugandan Universities are still using old and traditional teaching methods with lack of ICT integration and little capacity in e-learning which needs to be addressed. Most Universities in Sub-Saharan Africa and in Uganda in particular still have to develop their ICT supply driven ingenuities, but more predominantly resonate to the thinking of developing their ICT policies and agendas.

ICT Utilization and Adaptation in the Management of Massification

ICT is a powerful tool for coping with massification. Mohamedbhai (2008) in the several of his writings on massification and its management drew examples from many Universities; here are excerpts: In the University of Cheikh Anta Diop an interesting approach of the inter-connection of several lecture rooms so that a lecture delivered in one can be simultaneously transmitted in the others by video-transmission was developed. This he contended solved the problem of a Lecturer having to deliver the same lecture to different groups. In the same University it is reported that ICT is innovatively used in two ways: First, through the creation of an online database of resources, including lecture notes, which is linked to other resources, for use by students for a particular subject, as for example in the case of the department of History and department of Physics. Second, it uses e-learning to complement face-to-face learning. Similarly he noted that at University of Ghana multidisciplinary laboratories have been equipped to enable lectures of different courses to be handled in one laboratory and to be projected in the others. Video conferencing techniques facilitate live interaction between the laboratories. University of Ghana also uses LCD projection of live practical through close-circuit television so that practicals can be watched by a much larger group of students. Prof. Craig, M. (2003) of the Centre for the study of Higher Education in the University of Melbourne opined that today teaching and learning in Universities have shifted from the traditional routine to a more friendly and flexible one where students are more likely to study in multiple settings; in large lecture theatres, in groups on collaborative exercises, in computer laboratories or by use of ICT with two or three others in an online tutorial, or simply working at home alone. ICT can also be very useful in processing examinations. Because of the very large cohorts of students, in the Faculty of Science at University of Ghana an interim assessment of the students is carried out twice in a semester through a multiple-choice type of test using the Learning Management System Software. At University Edouardo Mondlane an optical reader is used to mark multiple-choice questions of the large number of admission examination scripts. In the department of Extra Mural Studies at the University of Nairobi, which has to teach large groups of students in all its regional centers, e-learning materials have been developed for Diploma courses, which are posted on the University website. Some of these materials are in audio-visual form and are downloaded through multimedia facilities. The mode is used to offer business-related studies and, currently, over 300 students are enrolled in the programme. Also posted on the internet are

teaching notes and other materials. The Department of Computer Science and the Department of Sports Science and Coaching have also made use of computer-based training for tutorials, quiz simulation or games. The University is a bona fide host open courseware of the Massachusetts Institute of Technology (MIT), USA, giving access to academic staff of MIT lecture materials, assignments, tests, etc. In order to promote wider use of online learning, in 2007/08 the university plans to train a selected group of Lecturers on how to develop and teach online courses. Kenyatta University runs several programmes of the African Virtual University (AVU). It has set up the Kenyatta University e-Learning/AVU (KUEL/AVU) Centre which offers 51computer and business management related programmes using interactive and online learning. Most of the institutions have started using ICT to facilitate their administrative work. University of Nairobi, for example, has computerized all its administrative units at all levels to improve the efficiency of processes such as admission of students, registration for programmes and examinations. Now, all Faculties generate transcripts and other student data using ICT systems with software packages such as Students Information Management System (SIMS). Kenyatta University, too, has computerized its student admission, registration and examination records which are all networked, thus providing quick and reliable information. Also, in 2003, the University of Nairobi computerized the operations of its Student Welfare Authority (SWA) which significantly improved the efficiency of the SWA in such matters as allocation of rooms in the residences, monitoring of expenditure, accessing past records, etc. The use of technology has also enabled the SWA to improve revenue collection by about 85%, as well to make more efficient use of the funds collected. ICT also greatly helps in automating library services. The University of Nairobi library is using the *VubisSmart* software to convert manual catalogues into an electronic database, including all the theses available at the main library, which is accessible through the internet. Another on-going project at the University of Nairobi is the Electronic Supply of Academic Publications (eSAP) Project, which works closely with the International Network for the Availability of Scientific Publications (INASP). The project aims at promoting electronic publishing among participating universities, enhancing exchange of research information, and promoting access to international scientific journals through the internet. Finally, an interesting innovation at Kenyatta University is that it has set up and operates its own cyber-café on campus.

ICT Utilization and Adaptation at Gulu University

In Uganda, the NCHE has developed general checklist of quality and capacity indicators for assessment of Universities and Programmes (NCHE, 2011 pg 32, 33). In this framework, parameters for assessment have been identified under five descriptive

headings: **Ideal; Good; Acceptable; Can be improved** and **Unacceptable.** According to the NCHE (2005), the lecturer/student ratios are among the indicators of quality education in any modern university. In the developed countries, the Lecturer/Student ratios in higher education institutions range from 1:12 in Japan to 1:18 in the United Kingdom (OECD, 2003). In Uganda, the NCHE has set the general Lecturer/Student ratio at 1:15 (Statutory Instrument 80 of NCHE, 2005). Important to note is that Mbarara University of Science and Technology (MUST) and Gulu University had the best Lecturer/Student ratios at 1:8 and 1:12 respectively (VCPU, 2006), which in the terminology of the Uganda NCHE is rated good and arguably, would imply that quality standards should be higher in MUST and in Gulu other than in any of the Public Universities, taking all factors constant. At Gulu University the result of a study conducted in 2014 recorded an overwhelming agreement of 100% on the integration of ICT to support teaching and learning, research and publication (Refer to table on page 6). This included the use of the internet, mobile phones, desktops and laptops computers, tablets, etc. These gadgets were used for information delivery both by Lecturers and Students, surfing, communicating course work assignments, etc. In the department of Computer Science, the Head of Department confirmed that the department uses ICT platforms for various purposes including sending text and email messages to students and staff as reminders for prompt reporting; apart from using it for teaching and learning and other academic management and engagements. The serious problems he noted however were twofold: First was the inadequate numbers of computers and the low internet bandwidth from the institutional point of view, and secondly was the incapacity of the Learners to own their own gadgets- laptops, iPad, tablets, kindle E-book readers which eventually reduce students' capacity on the usage of ICT. However, on the report whether practical disciplines were given due attention as recommended in the various syllabi, most of the respondents dis-agreed that practical disciplines in the science-based faculties were organized as stipulated in the course outlines and given the desired attention. There was a 66.82% dis-agreement of all respondents. Meanwhile 52.63%, 75.44% and 73.25% were levels of disagreements expressed by the departments of Human Anatomy, Bio-system Engineering and Computer Science respectively. The major short comings quoted by most of the respondents cited the inadequacy of the necessary science equipment and facilities due to inadequate funding of the departments. The other outcry was on high students' numbers that exceeded the available education resources. The equipment to student ratio was discovered high in all the departments studied e.g. In the department of Computer Science only 20 desktop computers were aligned for use in the lab to serve over 500 students. This

gave a computer/student ratio of 1:25. The Uganda NCHE dictates stipulates that computer/student ratio of less than 1:10 is unacceptable. However, what was also noted and reported was that a few students had their own gadgets. The Dean therefore opined that Learners should acquire their own laptops, own better capacity smart phones, acquire kindle E-book readers and adopt to on-line study programmes. At the community engagement level, the department of Computer Science rolled out the following programmes to support ICT capacity building:

a) The NUFFIC project that helped to train up to 250 various categories of women (Teachers, Police Officers, UPDF Officers and Local Councilors) in computer skills,
b) Supported the Invisible Children in improving ICT skills amongst secondary school teachers,
c) TULANE and the Uganda Fund; all of which propagated empowering the community in ICT capabilities.

Constraints in the Use of ICT and Virtual Education in Sub-Saharan Africa

According to ITU (2008), the major constraint in extending and expanding the use of ICT in African higher education which makes the round in the minds of all developers is the poor ICT infrastructure in Africa. It further asserted that in 2006, there were about 3 fixed line telephone subscribers per 100 inhabitants in Africa, compared with over 30 in the developed world. There is also considerable disparity among the African countries. 75% of Africa's 26 million fixed lines are found in just 6 of the 55 African countries, mostly in North and South Africa. Also in 2006, less than 5 out of every hundred Africans had access to the Internet, compared with an average of 1 out of every 2 inhabitants in the industrialized countries. The other major constraints are the very low Internet bandwidth and the very high cost of it. Furthermore, (Tusubira and Mulira, 2004) accentuates that majority of the Universities have not set strategies/policies to address factors such as resistance to change, inadequate skilled personnel, infrastructure among others that are barriers to implementation of online programmes. Kasigwa and Baryamureeba (2005) identified several other constraints amongst which were:

a) Weak and inadequate policies which have led to lack of development (social, economic, political) and to problems of ICTs in many developing countries;
b) Weak institutional capacity and insufficient coordination amongst ICT development partners;

c) Many ICT supply-driven initiatives fail to specify and address local and cultural impediments and opportunities, they don't take account of the dynamics of the global ICT industry; and
d) The over optimism of the ICT promoters about the productivity improvement ICT can bring in traditional industries without clear and meaningful coordination with government.

At Gulu University, the following constraints were recorded:

a) Non-customized structures to support ICT framework (classrooms, seats, electrical pots, etc.),
b) Non standardized equipment (analogue vs digital systems),
c) Inadequate internet bandwidth to sustain users' demand,
d) Divergent interest of users (Facebook, Twitter, Clickers, WhatsApp, etc.), and
e) Ill training and exposures by users.

The above enumeration supported the report of the Uganda Visitation Committee on Public Universities UVCPU (2006) which noted with regrets that the state of facilities in all our Public Universities are either broken down owing to lack of repairs and maintenance, short in supply, outdated or the laboratories are too small to accommodate the ever increasing numbers. It further noted that the increase in students' numbers had not been matched by a corresponding increase in physical and educational facilities or human and financial resources…to the detriment of quality education provision. The Committee was emphatic to observe that for any modern University to deliver quality education, it must have adequate educational resources including books, journals, scholastic materials, computers, including internet access and lab/workshop. The committee encouraged computer users to acquire their own laptops, adopt on-line studies and possibly possess kindle E-book readers.

CONCLUSION

This research investigated the Utilization of ICT in Achieving University Core Functions and Quality Management of Massification. The research was part of a PhD study carried out at Gulu University, Northern Uganda. The study used a survey approach and recorded an overwhelming agreement of 100% ICT integration in the implementation of the University core functions at Gulu University. Extensive

literature was reviewed in related area of study in other countries of Sub-Saharan African. The interesting jigsaw fit of this study which relates well with others studies in Sub-Saharan Africa is that ICT integration is widely deployed in academics, research, and community engagement as well as in Management and Administration in most universities across Africa. The study also revealed that Universities in Sub-Saharan Africa are experiencing huge enrollment of students against a backcloth of reduced funding from their governments. It was also found out that these Universities are faced with situations of inadequate education facilities, ill-trained human capital and undergoing massification. The research also emphasized that ICT integration and adaptation by Universities in Sub-Saharan Africa has helped to mitigate to a great extent the challenges posed by massification.

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KEY TERMS AND DEFINITIONS

Core Functions: These are tasks that guide functions of an entity without which that entity fails to achieve its prescribed strategic objectives and roles. At University level the core functions include: Teaching and Learning, Research and Publications, Community Engagement and Library Services.

ICT: ICT in brief is the acronym for Information Communication Technology. Santhi, K. R & Kumaran G, S. (2005) refers to it as the broad range of digital technologies.

Massification: Conceptually, the term massification once mentioned, provokes a variety of meanings. To a greater extent it refers to the escalating expansion and widening of access to tertiary education (Kajubi, 1997). In another context massification is looked at as diversity of institutions and programmes. Mohamedbhai (2008) views massification as a situation where the ratio of educational resources and class numbers became incompatible giving rise to stressful learning conditions thus loss of quality and lowering of standard. In this study massification will be perceived in the context of widening access and increased enrollment in higher education and how it has influenced the quality teaching, learning and management.

Quality Management: Management is the process of working with and through people and other resources to implement decisions and to accomplish organizational goals (Nwankwo, 1982 and Mafabi, 1992). The Merriam Webster dictionary defines Management as the act or art of managing: the conducting or supervising of something such as a business. In this report quality management will be viewed: First as a process of getting activities completed efficiently and effectively with and through other people, i.e. Management which "fits the purpose" for which it is done; Secondly, as a process of setting and achieving goals through the execution of the basic management functions: Planning, organizing, staffing, directing and controlling which in operational principles puts management into three components, i.e. plan, execute and measure.).

University Education: University education or post-secondary education as many may refer to it draws a number of meanings from different scholars. Harvey (2004) perceives University Education also (Higher or Tertiary education) to mean that non-compulsory education provided via a specialist institution. The word "University" in particular is derived from the Latin expression: *Universitas Magistrorum et Scholarium*, which roughly means "community of teachers and scholars", or the Union of Scholars. In Uganda, the term higher education is used interchangeably with the term tertiary education to refer to the advanced level of education offered beyond full courses of secondary education (EPRC, 1989).

Chapter 3
Determining Research Design and Data Analysis: Suggestions for Navigating Postgraduate Research

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ABSTRACT

Research is the framework for the development of human social and scientific progress. Foundations for improved scientific thinking is often established at the post-graduate level where students undertake independent investigations aimed at exploring a chosen topic within their chosen area of specialization. Irrespective of the discipline, institution, or topic chosen, post-graduate students often adopt specific research framework(s) and processes which involves selecting design(s) and data analysis procedure. This seemingly routine task has been the bane of many post-graduate students. This chapter focuses on research methodology involving the selection of appropriate design that aims to establish the general data collection and analyses procedures, selection of a sample from population, and discussion of findings in line with existing literature or controlled observation. This chapter provides suggestions for improving the research engagement process through the adoption of appropriate research design and selection of statistical tool for data analysis.

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INTRODUCTION

Postgraduate research often involves the development of new knowledge, often through a rigorous and systematic process, which is generally referred to as research. From a general perspective, research provides the fundamental framework necessary for the promotion and advancement of knowledge and understanding, clarification of doubt, provision of insight for actions as well as the development of self and the society. Research activities are as varied as the researchers and it is conducted in a wide array of settings all with the ultimate goals of developing the self and the society.

Despite research being an integral part of post-graduate studies, it's not one of the areas students consider meaningful. On their own design, most postgraduate students will not involve in research activities as it is considered cumbersome. However, because involving in research methods course and research project are prerequisite in for academic graduation, students give only minimum attention to their research practice. Considering the fact that research thinking and the development of critical thinking skills are established and strengthened at the postgraduate level it becomes necessary that students are helped to develop the skills needed for to undertake independent investigations aimed at exploring a chosen topic within their area of specialization. Irrespective of the discipline, institution or topic chosen post-graduate students often adopt the scientific method which involves step-by-step procedures which often culminates in the selection of appropriate research design(s) and data analysis technique(s). This seemingly routine task has been the bane of many post-graduate students. On the basis of this all too common challenge, this chapter is geared towards providing suggestions for improving the research engagement process through the adoption of appropriate research design and data analysis techniques.

Operationalizing Research Design

A research design is a general sketch on the process involved in conducting a scientific study (McQueen & Knussen, 2006). It refers to a plan or strategy on how to conduct the research, in order to address the issues related to the identified problem(s). Research design, therefore, is the conceptual blueprint, the road map, which is akin to the skeleton (backbone) that guides and shape the conduct of the study.

Just like the architect prepares the building plan before commencement of the building that is how a researcher determines the design of the study before all other components of the research study can be meaningfully integrated. This research design is the scheme of work the researcher act on. It helps in the following ways:

1. To provide answers to the research questions.
2. To control variance mostly in quantitative research (Kerlinger & Lee in Wiersman & Jurs, 2005).
3. The drawing of apposite conclusions from research results
4. It helps to enhance the smooth conduct of the study through proper data collection and analysis.
5. It enhances the internal validity of the study.

The validity of the research findings depends so much on the appropriateness and adequacy of the design selected. Inappropriate research design can mar other aspects of the study leading to wrong decision making further leading to invalid conclusions. However, to be properly guided, some factors are to be considered when selecting a research design. Research designs are chosen not based on familiarity or likeness but on their suitability and appropriateness to the study purpose, Post-graduate students and research practitioners need to take the following factors into consideration before selecting the research design:

Determinants of Appropriate Research Design

The validity of the research findings depends so much on the appropriateness and adequacy of the design selected. Inappropriate research design can mar other aspects of the study leading to wrong decision making further leading to invalid conclusions. However, to be properly guided, some factors are to be considered when selecting a research design. Research designs are chosen not based on familiarity or likeness but on their suitability and appropriateness to the study purpose, Post-graduate students and research practitioners need to take the following factors into consideration before selecting the research design:

- **The research approach:** There are different approaches to carrying out research, such approaches are quantitative, qualitative and mixed methods. Quantitative research is a research study that involves the use of numbers and statistical tools to determine the solution to its problem. Qualitative research involves the collection and analysis of non-numeric data instead of number or quantitative data to describe its phenomena. Mixed method is a research that uses the combination of quantitative and qualitative data in the same study to meet the needs of the study. Based on different research method, the aim of the study varies, for instance, the qualitative research is focused on "how" and "why", while the quantitative research focused on the "what" and "when". Due to this fact, the appropriate research design to be adopted is dependent upon the nature of the study either it is exploratory or confirmatory. The

approach adopted for a research study directs the aim of the study which could be to analyze and represent the relationship that exists between or among variables mathematically through statistical analysis. In such instances, any of the research design associated with quantitative research would be adopted after considering other issues like the problem statement and the structure of the research question. If the study aims to examine, describe and understand a phenomenon, when numerical data is not feasible, the researcher needs to adopt any of the design associated with qualitative research. Such designs include grounded theory, ethnographic, narrative, historical, case studies and phenomenology (Leonard, 2019).

- **Aim and objectives of the study:** The aim of the study is the statement of what is the broad goal to be achieved at the conclusion of the study, while the objectives are the specific action one will take that will lead to the actualization of the general aim. Objectives guide how data will be collected and the development of the research methodology and selection of adequate data analytical tools. Objectives provide the foundation on which the research questions and hypotheses are stated which further guide the definition of the construct. For instance, a study that seeks to establish relationship between or among variables will adopt a correlational design, while a study which to seeks to determine the effect of an independent variable on the dependent variable will adopt a quasi-experimental design, however the selection of specific design will be determined based on the need of the study. Furthermore, a study that seeks to determine the influence of a given independent variable on the dependent variable will adopt the ex-post-facto or descriptive survey research designs depending on the nature of the independent variable under study.
- Structure of Research Questions and Hypothesis: Research questions are issues within a given area of interest which provide the basis for any study (McQueen & Knussen, 2006). In most instances, research questions are drawn from and support the aim and objectives of the study. So the way they are structured determines the appropriate design to be adopted. For instance, if the research question isis framed as follows:
  i. To what extent does variable x relate with variable y?
  ii. How does variable x influence variable y?
  iii. What effect does variable x have on variable y?

The design of the study which its research questions are framed as in No 1 will be correlational because it seeks to establish the association between the independent (x) and dependent (y) variables. A study with research question in ii above may

take a descriptive survey design or ex-post-facto designs depending on the nature of the independent variable (x). Then for any research study which its research questions are framed as in No iii, it is likely to take quasi-experimental research design. Research questions dictate the nature of the study and also guided what the researcher will do and the nature of data to collect. To this end, the research question defines the investigation and determines the boundaries in a study. So, the choice of appropriate research design depends so much on how the research questions are framed. Different research designs may be applicable to studies with the same research problem if their research questions are framed differently (Checkoway, Pearce & Kriebel, 2007).

- **Nature of the dependent and independent variables:** Sometimes the research design(s) adopted for a given research study is dependent upon the nature of the independent variables, i.e. if the independent variable is feasible to be manipulated by the researcher or not. In other words, when it is impossible for the researcher to create or manipulate the independent variables such as gender, location, socio-economic status or religious afflictions, the study will likely adopt the ex-post-facto design and not any of the experimental or quasi-experimental study design. Thus, a researcher can not ask a male student to be grouped as a female or a student who is located at the rural part of a place to be grouped be categorized a locating in an urban vicinity. Summarily, the experimental or quasi-experimental study allows the creation or manipulation of the independent variable(s), while in ex-post-facto designs the independent variables are not manipulated.
- **Identified research problem:** Research problem is a clear expression of the condition and existing practice that call for attention, inquiry and investigation. It clearly states the specific needs of the study that enables the researcher to map out ways on how to structure the research questions, state the hypotheses and collect data. All these correctly defined and determine help the researcher to map out the appropriate design to be adopted for the study.

Basic Research Designs

There are some basic research designs associated with both qualitative and quantitative research. However, the focus of this chapter is on quantitative research. Generally, there are three main types of research designs, experimental, quasi-experimental and non-experimental research designs (Wiersms & Jurs, 2006).

Experimental Research: This is a research that involves a situation which allows the manipulation of the independent (experimental) variable(s) in order to determine their effects on the dependent variable. Experimental research allows the random

assignment of the participants into the experimental treatment groups as well as the control groups. There are different specific design associate with experimental research. They include post-test only control group design, pretest-posttest control design, Solomon four-group designs, factorial design, repeated-measure design, time series design etc. Their features are the same with those of quasi-experimental design except for random assignment of the subject in the quasi-experimental design.

- **Quasi-Experimental Research**: This is similar to experimental research where one or more experimental treatment groups are involved. It is a research where the independent variables are manipulated but the random assignment of participants in the groups is not feasible. However, the participants are grouped based on their naturally occurring setting. Examples are classes, school, city or temperature. In quasi-experimental research, the use of an intact group is allowed instead of the random assignment of the participants into experimental treatment and control groups. It should be noted that the main difference between experimental research and quasi-experimental research is that random assignment of the participants into groups is feasible with true experimental research but it is not feasible with quasi-experiment research. Thus, Fraenkel and Wallen (2002) defined the quasi-experimental study as a type of experimental research design in which the researcher does not apply random assignment of subjects to groups. To McQueen and Knussen (2006), the quasi-experiment is a design that is not true experiment because it makes use of naturally occurring groups such a religious group, gender, location, instead of random assignment of the participants into groups. There are some specific different designs associated with the quasi-experiment. They include and not limited to the following:

    - Post-test only nonequivalent control group design.
    - Pretest-posttest nonequivalent control group design.
    - Solomon four-group design.
    - Factorial design.
    - Repeated measure design.
    - Time series design.

Note that these quasi-experimental designs are very similar to those of experimental designs except that in the quasi-experimental research there is non-application of random assignment of participants into groups. Again the non-equivalent-group

design indicates that the groups are not statistical or probabilistically equivalent. The non-equivalent groups result from the absence of random assignment of participants into groups in the quasi-experimental research. To this end, the different quasi-experimental designs are explained.

- **Post-Test Only Non-Equivalent Control Group Design:** As the name implies post-test only non-equivalent control group design is a design that contains as many experimental treatment and control group which are not always pre-tested but are only post-tested after their treatment. So, there is no pre-knowledge of the level of the dependent variable before treatment was given hence no before and after treatment comparison, so the gain mean scores are not possibly obtained.
- **Pretest-Posttest Non-Equivalent Control Group Design**: In this design, the researcher can accommodate as many experimental treatment and control groups like the posttest-only design. However, the difference between the posttest only and pretest–post design is, that the groups in the pretest-post-test non-equivalent control design are pre-tested to determine the extent of group similarity and also their pre-level of the dependent variable before conducting the experimental treatment. This design helps to determine the gained level from the pretest to the post-test period.
- **Solomon Four-Group design:** This is an experimental design obtained by the combination of the posttest only non-equivalent control group and the pre-test–posttest non-equivalent control group design. It is made up of four-group containing two experimental groups and two control group where the same treatment is given to all the groups. This design enables the researcher to check the possible effects of pre-testing because one experimental and control group are not always pre-tested, while the other remaining experimental and control are always pre-tested. However, all four groups are post-tested.
- **Factorial Design:** This is a design used when two or more independent variables are included in the design. Factorial design allows the manipulation or control of more than one independent variable called factors which categories are determined by their levels. A factional design always involves an interaction effect between the two independent variables (factors A and B). Thus, analysis of the data collected in this kind of research is possible with 2-way analysis of variance on covariate depending on how the hypotheses are framed.
- **Repeated Measures Designs**: This is also known as within-subject design. It is a research design where each member of the experimental and control groups is tested for different conditions over different time intervals. This is

Table 1. Treatment schedule for cross over repeated measure design

Group 1	Pretest	Treatment A	Post-test	Treatment B	Post-test
Group 2	Pretest	Treatment B	Post-test	Treatment A	Post-test

a design which involves the measurement of the participant on the dependent variable for more than once. Example of study that will adopt repeated measures designs is the effect of item arrangements on students' academic achievement: students' academic achievement will be tested on three different item arrangements (inconsistent, ascending difficulty order and descending difficulty order) giving rise to three sets of scores for each student that are related. At last, the scores will be assemble based on the arrangement type to give three related samples scores that will be analysed using one-way-related sample analysis of variance. Generally, the selection of any design is based on the suitability of the design to the specific needs of the study. There are two forms of repeated measure design:

- **Ordinary Repeated Measure**: Is where the participants are all assigned to only one treatment group and then tested repeatedly on the same condition or different condition over a time interval.
- **Cross-over Design**: Is a research where the participants are assigned to different groups that will receive all the treatments group after another. For example, the first group may receive treatment A before receiving treatment B while the second group will receive treatment B before receiving treatment A. At the end of each treatment they are tested to yield two sets of scores that are related. This can be illustrated

That is when group one will be receiving treatment A, group two will be receiving treatment B vice versa.

Non-Experimental Research Design: Non-experimental research design is a research in which there is an absence of control or manipulation of an independent variable. It is also a research that lacks random assignment of participants to condition or orders of conditions or both random assignments into the treatment group. Experimental research encompasses a wide variety of research studies such as ex-post-facto, descriptive survey, instrumentation and correlational research designs. However, the choice of one depends on the aim of the study, how the research questions are structured and the nature of the independent variable in relation their scale level of measurement (categorically or continuously).

- **Ex-Post Facto Design:** The word ex post-facto means from a thing done afterwards. Thus, in ex-post facto research, the independent variable is studied in introspect of possible cause-and-effect relationship by carefully observing an existing variable. On a general note, it is used as an alternative to true experimental, quasi-experimental and correlational study. It is used in a research when:
- The independent variable cannot be manipulated with such examples as gender, age, intelligence and socio-economic status.
- The independent variables are categorical data in nature and are pre-existing before the study, i.e. they are naturally occurring variables.

Ex-post-facto research design is a research adopted when the groups that represent the independent variable possess qualities that exist that are used to compare on some given dependent variables which must be continuous data. It is an alternative to quasi-experimental design because it is used when independent variables cannot be manipulated practically. It is also an alternative to correlational design because it is used when one of the variables mostly the independent variable to measured at the categorical scale of measurement. Both ex-post-facto and correlational study involve neither random assignment of subjects into groups nor manipulation of the independent variable. However, in contrast, correlational study involves the use of two variables that are continuous in nature while with ex-post facto design one out of the two variables must be categorical data especially the independent variable.

- **Correlational Research Design:** This is adopted when the researcher intends to determine if two or more variables relate in one way or the other. It is the type of research in which the researcher measures two variables (dependent and independent) with little or no control of the extraneous variables for the singular purpose of determining the relationship that exists between/among them. However, it is a non-experimental research design on the basis that it does not involve manipulation of the independent variable nor the random assignment of the participants into groups. A correlational study is a scientific study in which the association of two or more non-manipulated variables are investigated.

Generally, in a correlational study, the researcher investigates the direction and magnitude of the relationship between/among variables. It can exist in the form of simple or multiple relationship/prediction e.g. (i) Relationship between IQ and academic achievement of students (simple predictors). (2) Critical thinking skills as predictions of academic achievement (multiple predictions).

The choice of simple or multiple correlation/prediction depends on the number of independent variable in the study. When there is only one independent variable simple prediction should be adopted while when more than one independent variables are involved, then multiple predictions become appropriate. It is worthy to note that sometimes a combination of both simple and multiple predictions can be adopted in the same study based on how the research questions are structured. That is if some of the research questions covered only one independent variable and some others in some study covered more than one independent variable. For instance, in a study where one of the research questions is framed like this: To what extent does the inductive reasoning dimension of critical thinking predicts academic achievement of students? Another research question in the same study is framed as To what extent does inductive reasoning, deductive reasoning and value jointly predict academic achievement of students? A study that the research questions were framed like these two research questions should adopt both simple and multiple prediction/correlation design.

- **Descriptive Survey Design**: This is a research design that is adopted whenever the researcher is interested in describing existing conditions. It involves the collection of data from a large sample drawn from a given population of interest and then describing certain features of interest as they exist as at the time of the study. It does not involve the manipulation of the independent variable in the study.
- **Instrumentation Research Design**: This refers to any study that involves the development of a new scale for measuring a given trait. It is used when the researcher is interested in developing a new scale for the measurement of one traits or the other. As practical example involves the development and validation of chemistry achievement test for use among senior secondary II students.

Data Analysis

Data analysis is the process of organising, structuring and incorporating meaning to the data collected. Data analysis is the process of using systematic and logic approach to convert raw data into meaningful information for a better conclusion and authentic decision making. Data obtained in the form of raw score do not speak for themselves rather they are meaningless until they are analyzed using the appropriate method. Data analyzed using appropriate method helps to proffer answers to research questions, test null hypotheses provides adequate scientific means of describing

and summarising data and drawing of valid and reliable conclusions. Finally, data analysis transforms raw data into meaningful and useful information for scientific decision making. Data collected are processed through editing, coding, classification and tabulation for easy analysis, which follows different methods.

Method of Data Analysis

There are two main methods of analysing data based on the research approaches earlier discussed. They are qualitative and quantitative methods.

Qualitative Method of Analysing Data: This is usually applied in qualitative research where numerical data are not feasible. However, qualitative data are collected through interview, group discussion and observation and exist in the form of quotations, narrative and descriptions, where thematic analysis is done to extract meaning and congruence. The nature of non-numerical data, disallow the use of statistical tools for the analysis. Rather qualitative analysis is done through the following means:

i. **Content Analysis:** This is the process by which verbal or behavioural data are classified, summarise and tabulated. That is it is used to group ideas and views of different people on each there through the use of coding with a similar technique.
ii. **Grounded Analysis:** This method of analysing qualitative data begins with an analysis of a single case in order to formulate a theory. This is followed by an examination of one's view, idea and findings to see if they are in line with the study aim, objectives and theory.
iii. **Narrative Analysis:** This method of analysis involves revising or reorganising stories presented by the respondent's in-order to understand better how people think. There are four different narratives, such as bureaucratic, quest, chaos and postmodern.
iv. **Discourse Analysis:** This is the type of method used in analysing all forms of written text such as emails, letter and also body language and naturally occurring talks.
v. **Conversation Analysis:** This type of qualitative data analysis method is largely used in ethnographic research. It involves a detailed investigation of data in relation to determining which word was used, how it was used, the order to which it was used and also where the emphasis is placed. Again conversation analysis also involves transcribing of words.

vi. **Social Network Analysis:** This method of analysing qualitative data utilized network diagram indicates the relationship between members of a network. It is a very advance method of analysis that involves feminizing, identifying, a thematic framework coding, clarifying, concept mapping and interpreting.

Quantitative Method of Data Analysis: Quantitative data are numerical in nature hence quantitative data analyzing is the process of using a systematic and logic approach of using the statistical procedure to convert raw data into meaningful and useful information for better decision making. In other words, it is the process of using a statistical procedure to describe, illustrate and evaluate data for the purpose of better decision making (Nwankwo, 2016). There are different statistical tools for data analysis, they include:

- **Descriptive Statistics**: are set of statistical tools used to describe the distribution of data and the relationship that exist between them, they include the following measures of central tendency, measures of dispersion, measures of association, skewness etc.
- **Inferential Statistics**: are part of statistical procedures that are used for making inferences from a given sample to population, examples include the following independent t-test one sample, t-test, independent sample t-test, paired simple t-test, one-way analysing of variance, two-way, three-way multivariant analysis of variance analysis of covariate, chi-square simple and multiple linear regression

Both the descriptive and inferential statistics are further grouped into two statistics tests: Parametric and non-parametric test. Based on the normality of the data distribution, a parametric statistical test is test used when the data collected are normally distributed and the dependent variables are measured at either ratio or interval scale, on the other hand, the non-parametric test used when the assumption of normality of data distribution are violated. Again, it is used when data collected are either nominal or ordinal in nature.

Obviously, to make an appropriate choice of one depends on some factors. If the dependent variable is measured continuously and the independent variable measured categorically parametric statistics would be used if the assumptions of the test are met. However, the specific parametric test to be used depends on how the research questions and hypotheses are framed.

Selecting Appropriate Statistical Tools for Quantitative Data Analysis

One of the challenges faced by post-graduate students when conducting research of any kind is how to select the appropriate technique(s) for data analysis. The availability of different statistical software's such as SPSS, SAS, Minitab etc. has made analysing data relatively easy but the selection of the appropriate statistical test is still very challenging to many post graduate students (Karan, 2019). However, in this chapter, some factors worthy of considerations for appropriate selection of statistical tool for data analysing are discussed. These factors, which are not mutually exclusive, are the information needed, the objectives of the study, the design of the study, nature of the data collected, assumptions of the test (Kpolovie, 2010).

- **The Information Needed:** This has to do with the interest of the researcher. The researcher's interest in describing information or drawing inference determines whether a descriptive statistic or inferential statistic or sometimes both should be employed for data analysis. Specifically, when the interest is in describing information descriptive statistics are used while when the interest is on drawing inference on whether a pattern of difference, effect, relationship and impact observed is by chance or the study intervention inferential statistics is the most appropriate tool to be used. However, the specific descriptive or inferential statistics to be used depend on other factors such as how the research question or the hypotheses are framed, distribution of the data, the level of the scale used in measuring the variables and the assumption of the test met.
- **The Objective of the Study:** The objective of the study determines how the research questions and the null hypotheses are phrased. Research questions or hypotheses guiding the study can be framed differently depending on the research problem. The determination of how they are phrased is key to using the appropriate statistical tool. Typically, research questions are phrased in relation to determining effect, finding difference, relationship or predicting.
- **Research Question on Determining Difference**: When a research question focuses on determining the difference and phrased as "How does the academic achievement of male and female students differ? This type of research question will be analysed and answered using mean and standard deviation while its corresponding null hypothesis will be appropriately tested using independent t-test if the independent variable (gender) is measured categorically and the

dependent variable measured continuously. On the other hand, if both are measured categorically the non-parametric test equivalent to independent t-test which is Wilcoxon rank-sum test will be used. This is because the independent variable genders were categorized into two groups (male and female). For research questions determining difference but the independent variables have more than two categories a higher parametric test and non-parametric tests will be adopted if the assumptions for the test are met, data are independently exe, see the detail in the table.

- **Research Questions on Relationship**: In a research study, when research questions are phrased with relationship, the appropriate statistical tool will be determined if the following are clarified: Number of variables are to be correlated, the scale of measurement used, the normality of data collected. Wiersma and Jurs (2006) stated that when the researcher is interested in determining how variables relate with each other, the correlation coefficient is used. Different correlation coefficients are used under different conditions. For instance, the relationship between two continuous variables (measured using interval scale) is determined using Pearson Product Moment Correlation Coefficient while when it involves two ordinal data spearman rank order is the most appropriate correlation coefficient and the condition of their usages are displayed in the table.
- **Research Questions on Prediction:** Research study which aims at predicting is also a correlational study but it estimates one variable from the knowledge of the other. Again for a prediction study, an equation of a straight line that fits the scattergram is needed. Thus, to analyze the research question related to prediction study simple linear, multiple linear, ordinal and multinomial regressions are used based on the level of measurement of the variables are and how many independent variables are involved. For instance, one dependent and one independent variables measured continuously via interval and ratio scales measurement will be appropriately analysed with simple linear regression while the study that involves more than one independent variables measured with interval scale will be analysed with multiple linear regression. However, when the data are not normally distributed their non-parametric equivalent test will be used respectively. In another perspective, in a study that focuses on prediction, where the dependent variable must be measured continuously, the independent variable can be measured using any scale. That is ratio, interval, ordinal and sometimes nominal scale is allowed if the variable has just two categories as in gender male or female (Brace et al, 2002). See the table for illustration.

- **Research Questions on Effect:** Research study that aimed at determining the effect of an intervention on the outcome variables occur at varying conditions. Such conditions are: Were the samples are paired? Were the samples independent? Were the samples repeatedly measured? Were there two or more groups? Were means either adjusted or not? Were the assumptions guiding the research meet?

To determine the appropriate statistical tools clarification of the above factors is a very good guide. For instance, in a research question phrased as "what is the effect of set-induction teaching strategy on chemistry achievement of students" can be answered using mean and standard deviation while the corresponding null hypothesis will be tested using pared t-test. This is because the same groups of students exposed to set-induction were tested before and after treatment producing two sets of scores that are dependent or related. This otherwise indicates that when the performance at repeated, the measure is compared between 2 related sample groups, paired t-test is employed for the data analysis. Then, when repeated measure involved more than two related samples a higher parametric test repeated ANOVA or non-parametric statistics will be employed depending on the assumption of the test met; and the normality of the data. Furthermore, when a study aimed at adjusting for the mean; or adjusting for the effect of the covariate, analysis of covariate is employed for data analysis but in the absence of adjustment for mean analysis of variance ANOVA can be used if the assumptions met are otherwise the non-parametric equivalent of ANOVA will be used. See the table for a more detailed description of the use of a statistic tool.

Design of the Study: The design of the study is also a determinant of the statistics tool to be used when analysing data collected. This is because the design of the study is adapted to suit the statement of the research problem and the way the objectives of the study are stated (Kothari & Garg, 2014). A study which aimed at determining the relationship between two variables or among variables will always adopt a correlational design where mean and standard deviation cannot be used to answer research questions rather correlation techniques such as Pearson Product Moment Correlation Coefficient.

In a pre-test-post-test design with two or more independent groups measured categorically and the researcher is interested in the adjustment of means on the dependent variable, the best statistical tool to analyse the hypothesis is analyzing of the covariate. Analysis of covariate is mostly used for analyzing data when there is a pretest-posttest design (Brace, Kemp & Snelgar, 2003). Again, there are some

statistical tools that cannot be used for data analysis unless the design of the study is a repeated measure design. For instance, in a repeated measure design involving two related groups resulting from twice repeated measure on a single group, paired t-test is commonly used for the analysis of data, while when more than two related groups are involved, resulting from more than two repeated measure on an interval scaled variable on the same group, then a repeated measure analysis of variance (within group analysis of variance) is used. However, if the assumptions of the parametric test are violated or more than two repeated measurements are taken on an ordinal or nominal variable on the same group, a non-parametric equivalent of repeated one-way analysis of variance, which is Friedman test will be the appropriate statistical tool. To crown this, McQueen and Knussen (2006) asserted that there are instances when we have data that do not meet the assumption of independence of samples but for related samples, for such case, no other design is feasible except repeated measure design. In a research study where the design is of the within-subjects variety and a single sample is tested on more than one occasion, the paired t-test is employed for analyzing the data collected. Then for two or more repeated measure, within-subject one-way or two-ways analysis of variance is appropriate depending on the number of factors available. In other words in a factorial design study, only two-way, three-way or multivariate analysis of variance or analysis of covariate are feasible for data analysis, the choice of the specific one depends on the number of factors or classification. For example, in study on the effect of three teaching methods on the academic achievement of male and female students, the design will take 3x2 factorial design hence 2-way analysis of variance or covariate will be the right statistical tool for data analysis depending on the specific quasi-experimental research that was adopted as well as the assumption of the test met. For instance, if the post-test only design was adopted 2-way ANOVA will be appropriate but if it is pre-test-post-test design 2-way ANCOVA will be appropriate.

Assumptions of the Test Met

An assumption is an assertion that is assumed to be true for a test to be valid. Every statistical test has its own assumption hence it is very important to check if the assumptions of a given test are, met by the data collected before its application in analysing data. This is because checking the assumption of a test and keeping to it enhances the validity of the results and decision taking based on the outcome of the analysis. On the contrary, if assumptions are unmet and the test is used for analysis invalid conclusion will be drawn. A statistical test has its own assumptions but the general assumptions for the use of parametric statistics as in Weirsma and Jurs (2006) are summarised as:

i. The dependent variable must be measured using interval-scale.
ii. The population must be normally distributed. This assumption is very necessary when the sample size is less than 30 (small).
iii. The population must have homogenous variance when two or more groups are involved. That is the population must have the same dispersion in their distribution.

The violation of any data on the parametric assumptions indicates that the obtained data are ordinal or may be interval but are not normally distributed hence no parametric test will be used to analyze them but the non-parametric tests (McQueen & Knussen, 2006). For between-group designs, the groups must randomly independent: that is the independent association of scores.

Note that for higher or complex parametric tests, additional assumptions may be required. For instance, for analysis of covariate, there are other assumptions needed, these include:

i. The covariate must be pre-measured before treatment commenced using the interval scale.
ii. There should be a linear relationship between a covariate and the dependent variable.
iii. There should be homogeneity of regression slopes- This means that there should be no interaction between the covariate and the independent variable.
iv. The independent variable must be categorical data consisting of two or more categorizes/group. There should be homoscedasticity.

Checks for the Assumptions for Normality of Data: In the first-place normal distribution of data is only checked for continuous data (interval and ratio scaled measurement data) and not for discrete data nominal and ordinal scaled measurement. A normally distributed data is neither positively nor negatively skewed did rather it have dumbbell shaped. To check for normality of data the following procedures are employed: plotting of histogram, box and whiskers plot, measuring skewness and kurtosis, the use of two Shapiro-Wilk tests of normality. The first one to test the within group residual and the second one to test the overall model fit.

- **Homogeneity of Variances**: This is tested using Levene's test of homogeneity with the aid of SPSS: In testing this if the calculated probability value (P-value) is less than 0.05, the data are said to violate the assumption of

homogeneity of variances, then if the P-value is greater than 0.05. (P>0.05) then the assumption of homogeneity of variances are met and not violated check for homogeneity of variances can also be tested using Fligner-Killen (medium) test of homogeneity of variances and Barlett test of homogeneity of variance.

- **Check for Homoscedasticity**: This is tested by plotting a scatterplot of the standardized residuals against the predicted value, a straight line indicates homoscedasticity.
- **Check for a Linear Relationship between the Covariate and Dependent Variable:** This is tested by plotting a group scatterplot of the covariate, post-test scores of the dependent variable and the independent variable. To determine if this assumption has been met, the slopes of the regression lines should be roughly paired (Brace et al, 2003). The parallel slopes of the regression lines indicate that the relationship between the covariate and the dependent variable are similar for all the groups.
- **Check for Homogeneity of Regression Slopes**: This can be tested using the transformed general linear model via SPSS to run analysis using the model bottom, on the output table, if the interaction between independent and the covariate variables is significant (i.e. P< 0.05), then the assumption of homogeneity of regression slopes is violated by the data collected. In other words, for the parametric test particularly ANCOVA to be used, the interaction between the covariate and the independent variable must be in significant (p>0.05).

Nature of Data Collected: Although data collected in a quantitative research study are usually numerical, they still vary in some aspects. So data can be described based on the following:

- **Level of the Scale Used to Collect the Data**: Scales of measurement are the ways in which variables and numbers are defined and categorized. Thus, scales of measurement are the pattern in which variables are measured. There are four main types of scales used for measuring variables (dependent and independent variables) based on their level of measurement ranging from the least refined to the most refined, that is from least to most information contained scale. They are the nominal, ordinal, interval and ratio with the acronym (NOIR) in their ascending order. The researcher needs to know whether the dependent and independent variable are measured categorically

or continuously. A categorically variable is a variable that is measured using either a nominal or ordinal scale that lacks an equally-spaced unit. On the other hand, a continuous variable is measured using an interval or ratio scale that possessed equally – spaced units. So, the level of a scale used to measure the dependent and the independent variables in a study determines the right statistical tool for the analysing.

For instance, in a study that involves a relationship between one dependent and one independent variables (bivariate), Pearson Product Moment Correlation technique will be used to analyse the data if only both variables are measured continuously (interval scale). Invariably when both variables are measured categorically (using ordinal scales) spearman rank order correlation technique will be used (Wiersma & Jurs, 2006). Again in a test of the difference between two independent variables where the dependent variable is measured continuously and the independent variable categorically, the independent t-test is a statistical test for the analysis if the assumption of normality of data and homogeneity of variance of the dependent variable are not violated. On the contrary, if the dependent variable is measured on an ordinal scale and the independent variable takes the nominal data, the right statistical tools become the non-parametric test of the independent t-test which is Mann-Whitney test.

- **Number of Groups that the Data Collected Represent**: The number of groups in any research also helps to determine the right statistical tool for data analysis. For instance, in a prediction study where there are more than one independent variable measured continuously, multiple linear regression, is the right statistical tool for analysis. Then where there is only one independent variable, multiple linear regressions are no longer feasible but simple linear regression. Again in a study where the researcher is interested in comparing means, if there are only two independent groups, the independent t-test can be used but if the groups are more than two, the analysis will be beyond the power of t-test, but that of analysis of variance.
- **Type of Measure Conducted to Obtain the Data**: To choose the appropriate statistical tool to analyze the hypotheses of stated in a study is dependent to some extent on the type of measure conducted to obtain the data. This because the statistical tool used to analyze two sets of data from a related sample will not be the same with independent samples. The trend is the same with related three groups and independent three groups.

Table 2. Determining appropriate statistical test

Purpose of Statistics		Dependent Variable (Level of Measurement)	Independent Variable (Level of Measurement	Parametric Statistics (Variable meets normality of data)	Non-parametric test Dependent variable violates normality of data
Comparing	Means of two independent groups	Interval	Nominal	Independent t-test	Mann-Whitney test
	Mean of two related samples	Interval	Ordinal	Paired t-test	Wilcoxon signed rank test
	Means of more than two independent groups	Interval	Nominal	One-way ANOVA	Kruskal-Wallis test
	Means of more than two related samples from one independent variable	Interval	Ordinal	Repeated one-way ANOVA	Friedman Test
	Means of two independent variables each with two or more related samples	Interval	Ordinal	Two-way repeated ANOVA	Friedman 2-way ANOVA for Rank
Relationship	Relationship between two variables	Interval	Interval	Pearson Product Moment Correlation Technique	Spearman rank order correlation
	Relationship between two variables	Ordinal	Ordinal	-	Spearman Rank Order Correlation
	Relationship between two variables	Interval	Nominal or Ordinal	Point Biserial	-
	Relationship between two categorical variables	Nominal	Nominal	-	Chi-square of association and Coefficient of contingency
Predicting	One independent and one dependent variable	Interval	Ratio, interval, (ordinal and nominal if only two categories)	Simple linear regression	Logistic Linear Regression
	One dependent and more than one independent variable	Interval	Ratio, interval, (ordinal and nominal if only two categories)	Multiple linear regression	

- **The Size of the Sample from which the Data was Collected**: The size of the sample the data was collected helps to determine the right statistical tool. For instance, when the sample size is less than 30, and the data violates the normality of distribution, the parametric test will not be used for data analysis

rather the non-parametric test equivalent of the parametric test will then be used. For instance, when the sample size is small (less than 30) and it is suspected that the requirements of the DAC- way analysis of variance (normal distribution and homogeneity of variance of the dependent variable) can be violated; the interval measures can be converted to ordinal measures and the Kruskal-Wallis test will be used instead of the parametric test equivalent.

On the other hand, when the data size is greater than 30, and the assumptions of normality of distribution are violated, the choice of the parametric test will be change. Departure from the normality distributed can be tolerated by test if the sample size is large will not affect the result (Vowler, 2007). This is because, with small sample size, the chances of non-normal distribution are increased while with large sample size the chances of non-normal distribution reduced (Karan, 2010). In another dimension, the z-test of an independent sample is only applied when the sample size is greater than 30. See the table for schematic representation.

CONCLUSION

Determining the selection of appropriate design and selection of statistics has been a discouraging task for most students, especially in social sciences related fields. The suggestions and recommendations offered in this paper will significantly contribute to making the research process relatively easy for them by providing a handy reference for research design and data collection.

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Chapter 4
Vocalizing Qualitative Methodologies in Education Research:
The Grounded Theory and Interpretative Paradigm

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ABSTRACT

This chapter explains the significance of grounded theory and the interpretative paradigm as powerful qualitative methodologies used in data analysis in education research. This chapter defines qualitative methodologies and their history and significance in education research. Authors discuss the science of coding from views advanced by the classical founders of grounded theory like Barney Glaser, Anselm Strauss, Corbin, and Catherine Charmaz. The chapter examines the important elements in content analysis and the interpretative paradigm, and provides practical illustrations on how qualitative methodologies could be used to analyze data in education research.

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INTRODUCTION

Qualitative research methodologies are given minimal attention in education research in most higher education institutions within the East African region. Most educationists and career researchers in education fancy quantitative methodologies most, yet even qualitative methodologies play a significant part in developing social science research. The aim of this chapter, therefore, is to encourage early career researchers and postgraduate students in education to appreciate the significance of qualitative methodologies in data analysis, learn them and utilize them in their research and professional experiences. This chapter tries to vocalize the importance of qualitative methodologies in education research. Finally, the author explains the interpretative paradigm by emphasizing inductive and deductive methods, symbolic interactionism as well as hermeneutic-phenomenology. The objectives of the chapter are specifically to explain the meaning and nature of qualitative methodologies in the context of their historical and philosophical perspective. Again, to examine the significance of grounded theory and coding as a data analysis tool in qualitative research. The chapter also describes inductive, deductive, symbolic interactionism and hermeneutic-phenomenology in interpretative data analysis.

BACKGROUND

In the background of this chapter, the author defines qualitative methodologies from a historical context. Using several scholarly arguments, he discusses the concept of grounded theory from the perspective of Barney Glaser, Anselm Strauss, Corbin, and Catherin Charmaz as the proponents of the methodology. He uses this classical explanation to derive the significance of the coding technique in qualitative data analysis in education research (Sekiwu, 2013). Coding is the basis of qualitative data analysis in the humanities, social sciences and education in particular. Therefore, this chapter is timely to vocalize its significance in postgraduate research in universities in Africa.

What are qualitative methodologies? Literature provides a vivid history about the qualitative methodologies in social research. However, from this historical evolution of the subject of qualitative research, the meaning and key characteristics features of qualitative methodologies are articulated. For example, scholars note that qualitative research paradigms date back to 2000 years ago when the Greek scholars, like Thales (640-550 B.C.) and Anaximander (611-547 B.C.), used formal and disciplined

research inquiry to investigate the nature of society through understanding social problems, in order to produce impressive accounts of social life (Koul, 2007). The Greek scholars attributed knowledge production to what occurs in social life be it government, religion, family, the military or even in science and technology. These Greek philosophers established a form of intellectual inquiry through displaying a sum of fundamental beliefs and convictions about social experience (Kothari, 2003). Using philosophy, the Greek scholars looked at the qualitative research paradigm in their time as an exoneration of the ontological meaning of existence. They questioned life topics such as human life, death, God, right and wrong, beauty and ugliness, government, the military, family, science and technology. Philosophy is a guide for living because the issues it addresses are basic and pervasive, determining the course we take in life. Hence, in qualitative studies investigation of all the aspects of human life is influenced and governed by the philosophical consideration (Muwagga, 2006).

Philosophers always ask these questions about human identity, existence and its determinants, the cause and effect of existence, nature and human beings, as well as what is the meaning of life. This search for knowledge depends on how human senses are reliable in telling about the truth of the universe—how do we get to know about the world? What is spectacular about this early Greek definition and contextualization of qualitative methodologies is that they examine social life experiences from the philosophical perspective. Therefore, qualitative studies are philosophically bound. When analyzing occurrences in qualitative studies, philosophers seek to know the ontological meaning of social life from the deeper understanding and comparisons between experience and truth (Kothari, 2003; Ary, Jacobs, Razavieh & Sorensen, 2006). In philosophy, experience is synthesized through employment of logical rigour. In qualitative research inquiry, we seek to explore and understand the philosophical meaning behind those social and educational experiences (Muwagga, 2006). To get this reality perfectly, ontological inquiry in qualitative studies is a face-to-face interaction between the researcher and the phenomenon under investigation (Kulbir, 2001; Kakooza, 2002).

Through qualitative inquiry, studies further show that Greek scholars described, explored, critically observed, and narrated life surrounding them in order to find meaningful answers (McMillan & Schumacher, 2001). The inquirer can make knowledge claims based on socially and historically constructed experiences and meanings (Creswell, 2007). However, the data collected in qualitative inquiries is usually subjective because interpretations of philosophical experiences is varied; it depends on an observer's own interpretation (Berg, 2004; Sifunda, 2001).

Therefore, vocalizing qualitative research in education is a matter of philosophical inquiry (Kutesa, 2019). This chapter tries to explain two qualitative methods of data analysis in education—grounded theory and the interpretative paradigm as some of

the philosophical inquiry methods in education. These two methodologies attempt to examine human experiences within the data with a view to discerning common ontological threads that give a vivid explanation of the world inherent in the data. The author observes that many young scholars and early postgraduate students do not know how to analyze data using the grounded and interpretative paradigms. Most studies they conduct are largely quantitative with a lot of numerical procedures. However, it is pertinent that the use of some of these qualitative paradigms like grounded theory and the interpretative method be explained. The scholarly beauty and significance of grounded theory and the interpretative paradigm in qualitative studies in education needs to be strongly painted. The main focus of this chapter is to explain how grounded theory and the interpretative paradigm are used in qualitative data analysis in education.

MAIN FOCUS OF GROUNDED THEORY

The major argument for the use of grounded theory in qualitative research is basically to generate theory from empirical data through a continuous and interchangeable process of qualitative data collection and analysis (Ngubane, 2009). The key issue here is that data is collected in order to generate emerging themes that explain the meaning in the data until information saturation. The researcher tries to make inquiry into inherent life experiences from the participants' world in order to form a unified intellectual schema that explains all this divergent experience (Creswell, 2007). From this debate, the central perspective is that grounded theory aims at developing theory out of empirical data collected from multiple participants. Actually, the process of theory development from a set of qualitative data requires a reasonable amount of subjective judgment. Therefore, the controversy is to verify how objective the researcher would be in the process of theory development from the volumes of data at one's disposal.

The word "grounded" means that the theory is generated based on data and grounded in data. The experiences that participants reveal to a researcher are pointers to the sort of theoretical feelers inherent in the data. Like in philosophy where the philosopher king studies life experiences to extract truth about human existence, in the same way a grounded theorist aims at extracting truth about participants' lived experiences. Theory means that the objective of collecting and examining empirical data is to generate theory to explain the data (Punch, 2009). Theory confirms that 'grounded philosophy' in the data that is accessed through the synthetic abilities of the researcher. Combining the two concepts, grounded theory then becomes a strategy for deriving theory of human experiences using symbolic interactionism and hermeneutic methodologies (Urquhart, 2011).

Another important issue in grounded theory is that the researcher derives mental symbols or meanings out of the data which he then refers to as theoretical codes. For example, the qualitative researcher can try to understand student smoking in secondary schools by first conducting interviews about the phenomenon of smoking in schools. He then analyses the data mainly to get possible themes and symbols of interaction within the data. These themes are the threads that refer to the classical interpretation of the data. Student smoking in secondary schools is the social phenomenon under critical inquiry using grounded theory.

However, in most cases, the ability of postgraduate students to synthesize data and get central themes and symbols out of the data is often hindered by their inability to think critically and be able to identify the central intellectual point that is hidden in the data (Urquhart, 2011). If the researcher is unable to identify conceptual patterns in the data, the it becomes difficult for the researcher to ensure make sense of the information gathered which will eventually affect the discussion, recommendations and conclusions for the entire research report. Even Charmaz (2006) puts it clearly that in grounded theory, two steps are critical:

a) The researcher collects participants' descriptive stories about social phenomena;
b) The researcher then interprets social phenomena by extracting themes from participant transcripts.

HISTORY, DEBATES AND CONTROVERSIES ABOUT THE USE OF GROUNDED THEORY

Historically, the use and interpretation of grounded theory as a qualitative methodology has faced major controversies. The first of these controversies is one by Barney Glaser and Anselm Strauss as the first proponents of the method. In their book, "The Discovery of Grounded Theory", they developed a research methodology that aimed to systematically derive theories of human behaviour from empirical data which they referred to as "theoretical constructivism". Theoretical constructivism, according to Glaser and Strauss, is about meaning-making to develop theory out of multiple experiences derived from multiple respondents (Sekiwu, 2013). The researcher gathers volumes of lived experiences from many people, perhaps, from diverse backgrounds until information saturation.

The central issue here is to formulate theory based on several experiences and backgrounds which would make such theory binding. However, the controversy is that one cannot determine the authenticity of information provided by the participants

unless the instruments are triangulated (Kothari, 2003). Secondly, in some cases, the number of respondents may be limited which is likely to hinder access to multiple participant experiences to ensure balanced meaning-making. Thirdly, the gathering of multiple experiences until information saturation pauses serious problems with regard to navigating a resource constrained research environment. Going for data collection multiple times, for instance, is quite expensive a case likely to hinder the progress of a postgraduate student in an African university setting, where research grants are quite limited and most of his or her studies are privately financed.

However, the debate on grounded theory as a data analysis tool has had three classical controversies which arose after a disagreement between the proponents of the method, Glaser, Strauss, Corbin and Catherine Charmaz. Out of this controversy, three debates about grounded theory emerged and these are:

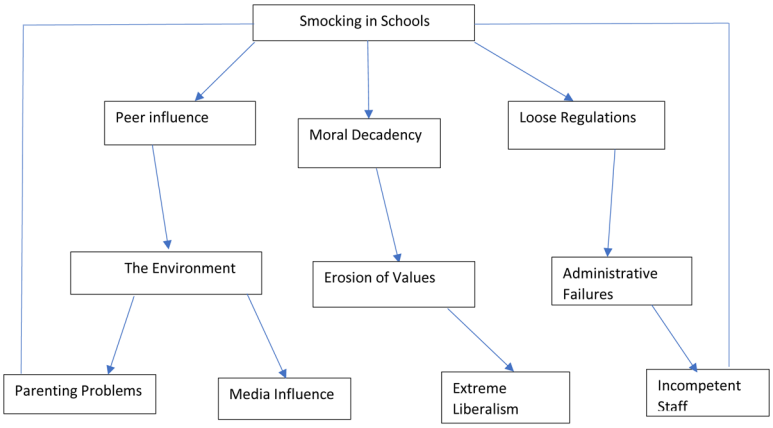
a) Glaser's classical approach to grounded theory
b) Strauss and Corbin's approach to grounded theory, and
c) Charmaz's approach to grounded theory.

Glaser's Classical Approach to Grounded Theory

With Glaser's classical grounded theory, coding is the central thing. Firstly, let us define coding. It means naming segments of data with a label or labels that, simultaneously, categorizes, summarizes and accounts for each piece of data. It is the first step in moving beyond concrete statements in the data to making analytical interpretations (Punch, 2009). The data from the different memos are broken down, conceptualized and put back together in new ways. These labels are either manifest in the data or are latent meanings in the data. Glaser talks about three types of coding—open coding, selective coding and theoretical coding. In this method, Glaser considers theoretical coding to be the weaving of hypotheses into theory, and it helps to focus substantive codes into an analytical and coherent story through mind mapping and clustering processes. The researcher draws a series of hypotheses or assumptions in the lived stories of participants, then finds a unifying thread or idea in the assumptions, joins them together to create a new meaningful story (Punch, 2009). A researcher, for example, can analyze a story or transcript with the aim of getting that all-embracing idea behind the story. He then analyzes the possible causes, conditions and consequences behind the idea (See figure 1).

The diagram above shows the causes and consequences of smoking in schools. Each of these aspects developed in the factor tree above are theoretical ideas denoting theoretical saturation or theoretical coding as suggested by Glaser. The

Figure 1. Mind-map showing causes, conditions and consequences of smoking in schools



sub-categories given above tend to support the main theme "smoking in schools". These sub-categories are theories that are assumed to explain the logical story why there is smoking in schools and the possible consequences that might arise due to this vice. A factor tree therefore is one of the best ways of clustering theoretical ideas from a major theme or social phenomenon.

Each of these sub-themes or theoretical ideas denotes a researcher's understanding of the data on smoking in schools. They are symbols or labels of the participant voices in the empirical data. Again, these sub-themes can each be explained in detail and logically linked to provide a vivid analytical story. These sub-categories or themes in the diagram above and their linkages are what Glaser calls coding families or groupings and they are used to aid code development. In developing an analytical story from the coding families, Glaser considers that the following characteristics must suffice:

- Code or sub-themes must be interactive. Each code is mutually dependent on another, with mutual effects of one code to the other code or category. In order to come up with this mutual effect, the researcher can ask himself/herself the following question "What is the unifying thread in all this data set or transcript?"
- When beginning theoretical coding, the researcher looks for concepts, theory and themes in the memos or transcripts and these he calls the reading families.

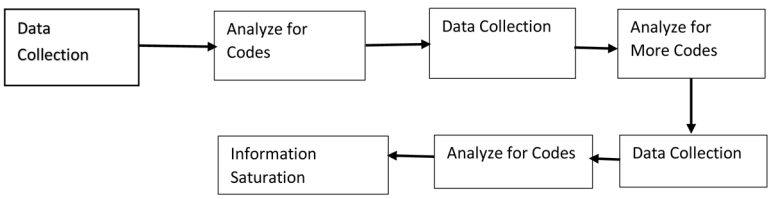
Strauss and Corbin's Approach to Grounded Theory

Anselm Strauss and Juliet Corbin came up with their own theoretical understanding of grounded theory which they call theoretical sensitivity (Strauss & Corbin, 1990:41). Theoretical sensitivity refers to the attribute of having insight into data thereby constructing an ability to give meaning to data, the capacity to understand and capability to separate the pertinent to what is not pertinent through the data (Strauss & Corbin, 1990:42), and mastery of this attribute requires high level analytical skills. As the researcher reads through the transcripts or memos, he must aim at segmenting the data into smaller bits which are mental pieces that could be joined into some factual or theoretical picture depicting the whole. The analytic process, itself, provides an additional source for theoretical sensitivity where insight and understanding about a phenomenon increases as a researcher interacts with data (Strauss & Corbin, 1990:43). Interacting with data means that codes are either manifest in the data or latent representations of data about a particular social phenomenon.

The requirement for Strauss and Corbin would be that, the researcher collects data, analyses it by identifying codes or themes in the data. From the themes or codes analyzed, the researcher identifies gaps and goes back to collect more data and analyses it to see emerging themes. He then compares the new themes with earlier themes from original data to see if he can get themes that are common to all data sets collected (See figure 2).

According to Strauss and Corbin, coding is a process repeatedly done until there is information saturation. The researcher seeks to develop small theoretical frameworks about concepts and their interrelationships. The relevance of this theory of coding to research in education is that research participants are very significant in data collection and data analysis. But the role of the researcher or observer is to gather as much data as possible and analyze it for new insights which will lead him to go back and make more investigations among participants. The voices of the study participants dictate the theoretical process because it is from their opinions and experiences that new themes are derived and then an analytical story is developed from those themes.

Figure 2. Strauss and Corbin's coding process



In addition, Anselm Strauss employs selective coding to grounded theory. For selective coding, the analyst limits himself or herself to one particular aspect of the data which is called the "core category" that defines theory. When this selection is made, it delimits the theoretical analysis and development to those parts of the data that relate to this core category. The analysis now proceeds around the core category which becomes the centre piece of the grounded theory. The core category is similar to a thesis statement; it is chosen by the researcher to be the main argument that explains all the participant voices. Building the core category requires a process of inductive analysis and logical reasoning.

Koul (2007) argues that inductive analysis is used to interpret, draw meanings and conclusions, and make generalizations based upon looking at the nature of facts assembled.

Charmaz's Approach to Grounded Theory

Charmaz (2006:21) adopts a constructivist grounded theory where she discusses properties critical to grounded theory. It is a contemporary revision of Glaser and Strauss's classical grounded theory. It assumes a relativist approach, acknowledges multiple standpoints and realities of both the grounded theorist and the research participants, and takes a reflexive stance toward our actions, situations, and participants in the field setting, and constructions of them in our analyses. She remarks that grounded theory is a qualitative methodology which assumes the construction of analytical codes and categories from data. It also assumes the use of the constant comparative method, which involves making comparisons during each stage of the analysis. When a researcher analyzes several documents for codes, he then compares the codes got from one document with those of other documents to select a set of codes common to all the documents as one. We say, he has been engaged in a process of constant comparison in grounded theory. Because the aim is to get core categories in all documents or transcripts for the entire data collection process, comparison of codes from each of the different transcripts is necessary and it is done constantly until a stage when no more coding process can take place. The trick is that when the researcher identifies codes from a transcript, he has to keep on comparing codes from one transcript with others for two reasons: one, to get an all-embracing code (core category) for all the data sets. Two, to test the credibility of codes identified by constantly comparing them with other codes got elsewhere. Because of the need for constant comparison, the process presented in figure 2 is necessary to be done; to collect data, analyze it for codes, then go back and collect data until information saturation.

Grounded theory, according to Charmaz (2006), indicates that theoretical sensitivity in the grounded theory approach can also come from literature review. In this way she is confirming the need to cross-reference data findings with literature reviewed, especially on philosophical and theoretical viewpoints. Codes identified from empirical data must be cross-referenced with literature as the building block for theoretical saturation. Like auto-ethnography where participant voices have to be compared with the researcher's lived experiences and with existing literature, in the same way to Charmaz theoretical sensitivity could be best achieved when the codes from the data are then compared with existing literature for similarities and any differences. When coding is compared with existing literature, a grand theory is built whereby codes emanating from participant experiences relate naturally with those from literature review, in the end, coming up with new forms of interpretation of the whole process. Eventually when codes from the participant experience with those from literature review come together, a conceptual scheme of these emerging codes or themes is developed, and this conceptual scheme explains the theory behind the qualitative study.

Charmaz also looks at initial and focused coding. Initial coding is an attempt to code line-by-line or sentence-by-sentence to avoid making extant theories before doing the necessary analytical work. Charmaz thinks that initial coding tries to avoid biased analysis. When you code word-by-word, you stand a chance of delivering significant meaning in every sentence because whatever word that is used in the transcript carries productive meaning in the world of analytical exploitation. For instance, consider the sentence:

*"**Students smoke every evening after supper and before they go for evening study**"*.

From this sentence, we can get two possible codes. One is "***students smoke every evening***". The other is "***they smoke after supper and before they go for prep***". These two statements or codes have hidden meaning about the nature of smoking in schools. The first statement or code shows that smoking is a daily routine and it is done in the evening hours when students that do it are sure that it is hard to get them smoking because it is dark or getting dark. The time when smoking is done symbolizes that the act is bad and it is discouraged by the school administration and the entire society. The second statement "***they smoke after supper and before they go for prep***" indicates that the time "***after supper***" is the best time to smoke. Students cannot smoke during preps because at that time, the teacher on duty supervising preps is monitoring every student activity at that time that it is hard to

smoke during prep. The only time is immediately after supper. These are some if the interpretations that could be deduced from these two statements or codes. The core category that could be extracted from these two statements is "***Appropriate time for smoking***". It is that category that unifies both statements or codes (categories) extracted from the sentence, and this is what is referred to as sentence-by sentence coding (initial coding or open coding). Corbin suggests that every sentence that carries the participant voices has greater meaning to the flow and development of the analytical process in grounded theory.

She also explicates that in initial coding the researcher explores in-vivo codes by paying attention to language used by the participants. Such language, especially new terminology, would denote cardinal experiences in the data. Words used in a participant's voice carry immense messages; they denote the hidden intentions and actions of a participant. The words convey the participant's experiences about social phenomena, that they are so important in the coding process as advocated for by Charmaz. This kind of coding is very vital for those scholars of 'language' disciplines. A word in a sentence or paragraph indicates symbolic interactionism; the word carries a lot of meaning or expressive power. Therefore, words should not be taken for granted in coding processes. For example, when a participant wants to express a moody situation within his or her lived experiences, the words selected denote the mood. The words may be filled with bitterness, satire, they may be moody and many other such melancholic expressions. On the other hand, a good mood will be denoted by words of happiness and brightness of expression. So, as a researcher, it is important to look at the language used with a keen eye to detect any expressions about the phenomenon.

Focused coding is using the most significant or frequent codes to sift through large amounts of data. Those codes that appear most in the transcript denote the centrality of the entire analysis process. In other words, the common usage of language or words in a transcript speaks volumes to the interpretation of the entire transcript—it is a form of emphasis on what the participant wants to convey as the message. Focused coding is about which initial codes make the most analytical sense in drawing a final theory. It strengthens what we call concept analysis. For example, if a researcher is undertaking a study about "***the nature of colonial girls' education in Uganda between 1900 and 1930***".

After gathering data and during the analysis process, he finds that girl's education restricted them to the home, doing home chores, and the teachers were interested in imparting vocational and life skills education to the girls than to the boys. The boys were often encouraged to study in order to work in offices (civil service). Focused

Table 1. Summary description of the elements for the three coding approaches

Coding Approach	Cardinal Elements	Description
Glaser's Classical approach to Grounded Theory	■ Theoretical Sensitivity	Identify sub-themes or theories from social phenomena using clustering or mind-mapping. This forms a factor tree (fig.1).
Anselm Strauss & Corbin's Approach to Grounded Theory	■ Information Saturation	The researcher collects data, analyzes it for codes, identifies new gaps, then collects data, analyzes it for codes, identifies any possible new gaps, then collects data. The process continues until information saturation (fig.2).
Charmaz's Grounded Theory	■ Initial Coding ■ Focused Coding ■ Constant Comparative	Sentence-by-Sentence Coding; Word-by-word coding. It is that core category got through studying the language in the participants' voices. It is referred to as concept analysis. Getting codes from a transcript and then relating these codes with the literature review. The literature has other codes that may be relating with the codes from the participant voices similar to auto-ethnography.

coding here would be that girls' education emphasized domesticity—the teachers emphasized home education and the confinement of girls in the homes. Therefore, domesticity is the final theory or concept in this study on colonial girls' education between 1900 and 1930. This final theory is a description of the nature of education that the colonial teacher used to give to the girls than the boys— "doing home chores, vocational skills and life education". These words or this language in the data that is gathered zeroes down to one concept—domesticity which is a common theory in gender studies. Therefore, focused coding is quite important when a researcher or scholar wants to identify a theory or concept binding the entire narrative or story about social phenomena.

In all the three approaches to grounded theory, the coding process is central. This chapter therefore attempts to practically explain how coding is used in qualitative studies.

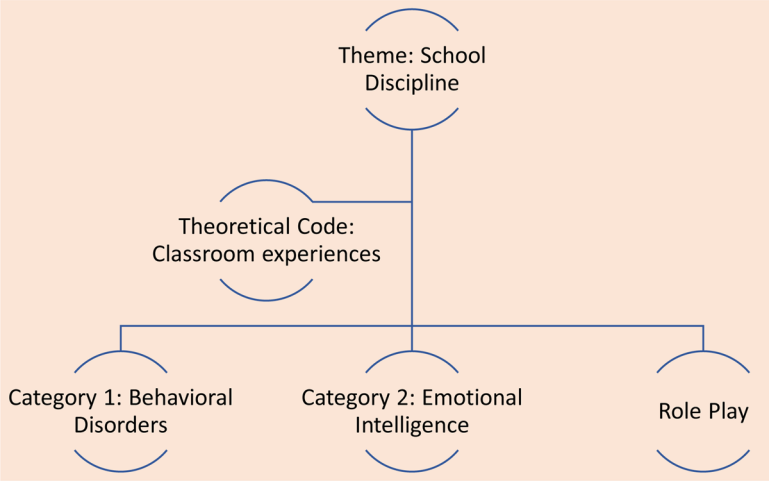
WHAT IS CODING AND HOW IS IT USED?

Coding means naming segments of data with a label or labels that simultaneously categorizes, summarizes, and accounts for each piece of data (Punch, 2009). It is the first step in moving beyond concrete statements in the data to making analytical interpretations. However, Straus and Corbin (1990:186) define coding as a process that represents the operations by which data are broken down, conceptualized and put back together in new ways. An easier process to do this is by clustering raw data—to find similarities and patterns in the data through selecting a word or phrase that suits the summary explanation of that data set. Using the clustering process (Figure 3), analytical stories are formed in the data. The researcher breaks down data from the different memos and transcripts into themes or sub-categories. He then seeks interconnections between the themes, which he later builds into a complete whole or theoretical programme for new knowledge.

This process of building new hypothesis or theories from the data is what is referred to as clustering or mind-mapping. It requires that when a researcher is sorting transcripts, he aims at understanding what is written and drawing a mental picture of the whole affair. He then breaks down the mental pictures he gets into sub-themes that relate to the core category.

In grounded theory, coding is centrally concerned with rendering the data theoretical interpretation or converting the data analytically. This means using the data to generate more abstract categories. Charmaz (2006:30) notes that there are two objectives that govern the coding process:

Figure 3. Configuring a hypothetical cluster-diagram developed through coding



a) To find conceptual categories in the data by drawing out concepts that would aid formulation of possible conceptualizations that create core-categories.
b) To find relationships between these categories as indicative to a higher level of abstraction.

In figure 3, the social phenomena under investigation is School Discipline. In fact, this becomes the study theme. In grounded theory, researchers look for theory (Theoretical saturation) inherent in the data, and in here classroom experiences loom as the core theory. Category 1, 2 and 3 are sub-codes representing the theoretical code and each in its own conglomerate. In fact, clustering is merely building a factor-tree out of a memo with the creativity it takes but objective enough. That factor tree must be interrelated to form an analytical story.

However, coding can be classically explained by three cardinal processes: "Open coding", "Axial coding" and "Selective coding" (Punch, 2009:187). It is important to describe each and know when and how each is utilized in qualitative studies.

Open Coding

Open coding is an initial coding process that builds substantive codes prior to categorization of data (Strauss & Corbin, 1998:62). Substantive codes or open codes, in the data or transcripts, are categories or labels which the researcher generates from the empirical data as "word-by-word" codes. The researcher aims at understanding the language used in the transcript as each word may be vital in the analysis process. Each voice presented in the data attracts special codes to enable the understanding of the hidden participant message—this is what is termed as memoing to extract in-vivo codes. To do justice to open coding, Punch (2009:134) writes that in open coding the researcher begins with opening up to the "theoretical possibilities" in the data with a view to generate abstract conceptual categories. These abstract categories are hidden in the facts, experiences and messages in the transcripts. To get these abstract visions of the data, one would utilize Glaser's theoretical sensitivity approach (table 1). The researcher reads and interprets the participant stories with a view to getting hypothesis or theory out of it. But to practically do this, he can do clustering or mind-mapping processes (See fig.1&3). It is all about the open coding method assigning a label or labels to each experience in the raw data. Follow the following transcript (figure 3) for practical examples of open codes:

Transcript For Open Coding

Theme: Classroom Management

Interviewer: *How do you handle truancy in your class?*

Teacher Response 1: *Haaa! I have put rules of engagement. When it is time for my classes, students must report 5 minutes before the actual time of beginning the class.*

Interviewer: How does that help you?

Teacher Response 2: *Well, instilling such sanctions is one way to creating fear and attentive seeking. You see, in any classroom environment, a teacher holds the control instrument [participant emphasizes with a sigh!]. This control must be sought right from the beginning and students get to know that classroom business is classroom business.*

Interviewer: What happens to students who report when the class has already started?

Teacher Response 3: *Failure to give viable reasons for coming late, would tantamount to foregoing the class or even doing some little manual labour as an early warning!*

Interviewer: Don't you think this approach demoralizes students?

Teacher Response 4: *That's what you think but discipline is discipline, and the setting must be managed right away. Be principled and you'll have the class at your best control!*

In the above excerpt, open coding is simply about line-by-line coding. In this case, the teacher's first response could attract codes like "rules of engagement", "reporting time" and "beginning of classes". In the second teacher response, "sanctions", "Creating fear", "control instrument", and "Classroom business". There are so many codes that can be developed in such an excerpt of a transcript. In simple terms, open coding engages with the live responses (in-vivo codes) of the participants, where concepts are directly picked from the voices of the participants. This coding method is intended to eliminate subjective interpretations which are likely to throw the "researcher's words", or own interpretation, into the mouth of the participant.

Axial Coding

Axial coding is the process of re-assembling data that were fractured or labelled during the open coding process (Strauss & Corbin, 1990). In other words, axial coding is the process of interconnecting codes and sub-codes to build categories or finding their relationships as developed from open coding (Urquhart, 2011: 29). This is the stage of building an outline or logical framework in the data by categorization of data, acquisition of differences in the data, and applying for constant comparisons in the various data sets (Robert & Sari, 2003:40). Axial coding is a crucial step that gets down to the actual connection of fragments of meanings from the raw data to assemble an analytical story.

The issue is after extracting open codes, how do these codes connect logically to build a story? The development of categories and relational statements revolves "around the axis of a category" (Strauss & Corbin, 1998:125). A conditional relational guide is built around questions such as: when, where, why, who, how and with what consequences/expectations about a category—a conceptual framework of ideas or concepts derived from open coding. In figure 4, axial coding could be used to find logical connectivity between the identified open codes. For example, let us get open codes (fig.4) identified from teacher response 1— "rules of engagement", "reporting time" and "beginning of classes". The axial code could be "Reporting time is a critical rule of engagement when beginning classes". This axial code is a logical connection of the three open codes built earlier into a phrase of concept that summarizes the analytical story. It is developing a theoretical assumption/hypothesis out of the data by interconnecting possible codes in the data. In the second teacher response (fig. 4), open codes like "sanctions", "Creating fear", "control instrument", and "Classroom business" can generate an axial code like "Classroom business is some sort of control by creating fear in students and sanctioning". This is also a sentence-story that emerges when the researcher tries to find logical/axial connections of open codes in the second teacher response. Let us then get down to selective coding which is sometimes, according to Glaser, known as theoretical coding.

Selective Coding

Selective coding is the "process of generating the core theory, integrating and refining the theory" (Strauss & Corbin, 1998:143). It involves the identification of the "core category" or the major theme of the research from which the theory emerged (Strauss & Corbin, 1998). The core category is central with all other categories

subsequently becoming sub-categories and frequently appearing in the data (e.g. in fig.1, smoking in schools is the core category and all the other codes developed in the factor tree are the sub-categories. Even in figure 3, school discipline is the core category). Selective coding means that the analyst limits himself or herself to one aspect of the data which is called the "core category" that defines the entire theoretical story, which becomes the centre piece of the grounded theory. Building the core category in selective coding requires a process of inductive analysis where the basic theoretical scheme becomes apparent from the data (Strauss & Corbin, 1998). Selective coding allows the researcher to account for variations both within and between the categories which are identified (Ezzy, 2002). One strong feature of selective coding is "constant comparative analysis" where repeated patterns in the data are identified and joined together for a describing theme (Duncan, Cloutier, & Bailey, 2007). In the past two examples, a concept common to axial code 1 "Reporting time is a critical rule of engagement when beginning classes" and axial code 2 "Classroom business is about and sanctioning" could be "Class Sanctioning" as the selective code or theoretical category (Duchscher & Morgan, 2004). The qualitative researcher could then develop a series of conditional concepts around that theoretical category using the questions: when, who, how, what are the consequences in order to forge an analytical story which he or she can support with live quotations from the transcripts.

Concept/Construct Analysis

Just like coding, concept analysis is another important method commonly used in qualitative studies. Berelson (2002:72) defines content/construct analysis as a technique for the objective and systematic description of manifest content. It is a research tool used to determine the presence and frequency of certain concepts, themes, characters within texts or sets of texts and to interpret this in an objective manner. To conduct a content/construct analysis, the researcher must have a criterion or list of concepts/themes to analyze from secondary data or from social phenomenon. In concept/construct analysis, the character of concepts is a longstanding philosophical issue, where concepts or constructs are sometimes called "the building blocks of theory" (Walker & Avant, 2005: 26). This implies that concepts or constructs are "theory-formed" (literature to generate constructs) rather than "theory-forming" (Morse, 1995: 42). There is the idea of "contextualism" (Risjord, 2008:3) which means that constructs cannot be formed without a context—the underlying idea is that concepts are flushed from a situation often informed by literature review or

experience. For example, if the researcher wants to analyze "Social Justice Spaces in Rural Schools" using concept/construct analysis, he or she needs to set the criterion/list to guide analysis which could be generated from readings on social justice education or from life experiences on social justice practices in schools. Concept analysis is a critically important qualitative analysis method that educational anthropologists ought to keep as a toolkit. There are three categorizations of concept/construct analysis:

a) **Conceptual analysis** which can be thought of as establishing the existence and frequency of concepts in a text.
b) **Criterion analysis** which is about analyzing content or phenomena using a criterion list generated before to guide analysis.
c) **Relational analysis** examines the relationships among concepts in a text to deduce meaning.

Generally, concept or construct analysis has similar analysis processes like those used in grounded theory as seen in the preceding pages. The frequent existence of concepts in conceptual analysis require word-by-word analysis whereby certain language usages denote some vivid meanings that could be instrumental to understanding the participant voice. In the same way, criterion or content analysis requires that prior to the analysis of documents, a researcher develops a criterion to guide in analysis of the document (some call it the checklist). This criterion could have question items or statements of intent that the researcher uses to analyze the document. The role of the researcher is to seek answers to the criteria, and the answers are either drawn from the documents reviewed or the interview responses. Finally, relational analysis is the last stage in the analysis process whereby the researcher seeks to connect together all the concepts gathered during the analysis process. As a researcher, you need to connect the concepts into that big-time story that tells it all. The connection is similar to that of axial coding where a logical sentence is derived from combining different codes into a logical theoretical assumption.

THE INTERPRETATIVE PARADIGM

Interpretative research methodologies have gained growing popularity in qualitative education research (Leitch, Hill & Harrison, 2010). Interpretative research paradigms are good in analyzing and interpreting qualitative data using two significant

concepts: symbolic interactionism and hermeneutic-phenomenalism. However, symbolic interactionism and hermeneutic-phenomenological traditions fall under the positivistic research philosophies, and both are interpretative in nature (Cope, 2005), and both can work together with one supporting the other to justify the beauty of the interpretative paradigm in qualitative data analysis.

In philosophy, interpretative paradigms are central tools of analysis which apply inductive and deductive analysis. The interpretative paradigm is a systematic procedure for analyzing qualitative data by primarily interpreting meanings inherent in the data (Thomas, 2006:240). To interpret meanings inherent in the data, it is important to know the forms of logical reasoning or analysis:

a) Inductive analysis
b) Deductive analysis

For inductive analysis, the qualitative researcher allows the theory to emerge from the data—theory, model or conclusions are drawn from a set of facts. The primary purpose of the inductive approach is to allow research findings and new knowledge to emerge from the frequent, dominant, or significant themes inherent in raw data, without the restraints imposed by structured methodologies. The purpose of inductive analysis is to:

a) Condense extensive and varied raw text data into a brief, summary format;
b) Develop a model or theory about the underlying structure of experiences or processes which are evident in the text data.
c) Derive conclusions from true premises based upon basic facts—going from the particular to the general.

With deductive analysis, the researcher goes from the general to the particular—sets out to test whether data are consistent with prior assumptions, theories, or hypotheses identified or constructed by prior investigation (Crabtree & Miller, 1992). Many evaluation projects use both inductive and deductive analysis. In deductive analyses, such as those used in experimental and hypothesis testing research, key themes are often obscured, reframed, or left invisible because of the preconceptions in the data collection and data analysis procedures imposed by investigators (Silverman, 1993).

To effectively conduct deductive and inductive analysis for the interpretative paradigm, qualitative researchers employ two major strategies which are "symbolic interactionism" and "hermeneutic-phenomenology". These two concepts drive the interpretative paradigm—they are central to the whole process. Let us look at each for an understanding of how each works.

What is Symbolic Interactionism?

Symbolic interactionism is an interpretative paradigm originated by John Dewey and Joseph Mead as influential founders of the pragmatist movement in sociology. Mead, a philosopher and social activist believed that for any theory to be effectual, it must be useful in solving complex social problems (Ponelis, 2015). In symbolic interactionism, Mead emphasizes the significance of the 'stimuli of gestures and social objects' existent there in the world. To understand raw data using the symbolic interactionism method, researchers must build mental objects or images into the data and these objects or images must symbolize something. The question is "can I see objects or physical images through this data?"

Every piece of writing can be interpreted using the mental picture displayed within the message behind the words. For example, raw data displays participants' voices which must be interpreted to attach logical meaning to the data. Therefore, the researcher can look out for unique symbols within the data and how these interact together to give a logical meaning to the data. The researcher, in this way, could study participants' lived experiences within their voices, critique these experiences, extract lessons, draw intellectual imaginations and see some world inherent in the words or the data. Mead's pragmatism is summarized by Schostak (2002) that in symbolic interactionism, researchers define the social "objects" they encounter in the data and these objects work as "the actors" in the social world. Therefore, in symbolic interactionism we must base understanding of the data on what the actor/object in the data do—the role of the mental object in the data. There are three ideas critical to symbolic interactionism:

1. The focus on the interaction between the actor and the world inherent in the data.
2. View both the actor and the world as dynamic processes and not static structures.
3. The ability of the researcher/reader to interpret the actions and roles of the "actor" inherent in the data. The actor's actions are dynamic interactions with the social world or his or her lived experiences.

Thus, to Mead and other symbolic interactionists, intellectual consciousness and interpretivism are not separated from action and with the mental world (Schostak, 2002). In addition, in symbolic interactionism people interact with things (events or situations) based on the meaning those things have for them; and these meanings are

derived and evolve from social interaction and are modified through interpretation. Symbolic interactionism attempts to provide an understanding of the internal meanings or essences of a person's experience in their life world by description rather than seeking for explanations of causes. At this time then, what does hermeneutic-phenomenology mean and work in qualitative studies in education?

What is Hermeneutic-Phenomenology?

The word hermeneutics is derived from ancient Greece (Hermes, the messenger). The origin of hermeneutics was in the interpretation of ancient texts, originally scriptural (exegis) and later the study of ancient and classic cultures. From medieval times, hermeneutics included the study of law and the interpretation of judgements in the context of when and where the judgement was made with an attempt to consider social and cultural mores of the times. In contemporary management research, marketing academics are comfortable with hermeneutic phenomenology as a research methodology and the term is used for qualitative studies in which interviews with one or a few people are analyzed and interpreted.

Hermeneutic-phenomenology is more ontological (Smith & Eatough, 2006). Hermeneutics tends to shift the focus from interpretation to existential understanding of other minds than simply as a way of knowing. In hermeneutic analysis, the written or spoken word cannot be studied using only numerical methods but interpretation of a text or participant interviews is also critical to the whole analysis process. In the Heidegger tradition, hermeneutic interpretation of a text will reveal something about the social context in which it was written, and more significantly, provide the reader with a means to share the experiences of the author in a hermeneutic circle. Reflection upon the text provide understanding and mastering of the author and participant's experience. Hermeneutic interpretivism is common in documentary and interview analyses, where the growth of individual comprehension is being important. However, it is also important to understand in Heidegger's realism that hermeneutics is ontology. It is about the most fundamental conditions of man's being in the world and these reflect on the definition of philosophical terms such as understanding, interpretation, and logical claim. In order to understand hermeneutics in qualitative studies, let us try to explain these philosophical terms.

Understanding is a pragmatic basic intuitive understanding of the world as we see it. Through the synthesizing activity of understanding, the world is disclosed as a totality of meaning, a space distinguished by its self-interpretatory endeavors. Interpretivism is a binding character in hermeneutic philosophy and understanding

a text using hermeneutics cannot be separated from its interpretation because the latter is the central point in hermeneutics. In contemporary educational research, the hermeneutic approach is centrally to interpret oral (interviews) and written (documents) text. After interpreting the text either derived from participant voices (interviews) or text based on secondary data (document review), attempt must be made to relate text to context in order to exonerate the relevance of the text to a particular world.

But the interpretation of the meaning of what has been said is first from the reader/observer's interpretation of what the originator (who is either the author or the research participant) of the text was meaning to communicate. However, the observer must deeply understand what the originator of the text really meant in his/her writing if strong interpretation has to be displayed. In most cases, however, the observer may not be fully in control of all the intentions of the text originator because he/she is limited by their own world which is referred to as 'bounded rationality'.

The biggest disadvantage of using hermeneutics to analyze data is that people's interpretations of the situation inherent in the data differ. Each observer interprets data in their own way depending on their own worlds or lived experiences (Sekiwu, 2013; Scott, 2004). However, the difference between hermeneutics and symbolic interactionism is that the latter is an approach to research used by sociologists in the form of participant observation to study social interaction and individual actions by looking for social symbols in the data, while the former is an ontology who main focus is to synthesize meanings in the text. In symbolic interactionism, the interest is to identify symbols in the data which may be hidden in the words conveyed in the participants' message. However, in hermeneutic-phenomenology the idea is to interpret texts from either interviews or documents by synthesizing their inherent meanings.

SOLUTIONS AND RECOMMENDATIONS

This chapter presents four major controversies and problems that need urgent solutions. The first controversy is that there is no single strategy on how to use grounded theory in qualitative data analysis. Over the years, four classical proponents of grounded theory, Glaser, Strauss, Corbin and Charmaz have all presented their own versions of what they think should constitute the key elements in the use of grounded theory. As modern researchers aiming at providing the most navigable patterns for postgraduate research in low-resourced settings, it is recommended

that a model on how to use grounded theory in data analysis is developed from all the views by Glaser, Strauss and Corbin, as well as Catherine Charmaz. The second controversy is that there are several coding methods— open coding, axial coding, selective coding, and theoretical coding. In order to make good use of the coding method, it is recommended that each researcher can adopt a coding system that seems easier to use and more relevant to the type of research and data that the researcher is interacting with. There is need to encourage postgraduate students to utilize both symbolic interactionism and hermeneutics to analyze qualitative data and provide an informed discussion of the findings. Oftentimes, students try to present data but fail to analyze it appropriately be it quantitative data. However, use of symbolic interactionism and hermeneutics requires a strong training in the use of these methodologies as well as communication skills and critical thinking skills.

FUTURE RESEARCH DIRECTIONS

Because qualitative data analysis methodologies are minimally emphasized in postgraduate research experiences and among early career researchers, there is need in future to provide more explanation and significance on other qualitative methodologies that are not tackled in this chapter. Some of these include but not limited to the following phenomenological analysis, narrative studies, and auto-ethnographies. There is also need for a publication on research ethics and the significance of human subjects in education research because often times the rights of human subjects in a research study are overlooked yet they are critical to mounting an honest intellectual investigation.

CONCLUSION

In conclusion, qualitative data analysis is gaining prominence in educational research today. Yet, qualitative data analysis methodologies are rarely used and known by most early career researchers and postgraduate students. This chapter attempts to identify and explain the workings of grounded theory and the interpretative paradigm in qualitative studies. One central thing about analysis in grounded theory is coding, and there are many ways data could be coded. Additionally, what is central to the interpretative paradigm is symbolic interactionism whereby the researcher identifies theoretical symbols in the participant experiences and then he interprets these symbols by either drawing logical conclusions through deductive analysis or deriving symbols out of existing theory using inductive analysis.

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Chapter 5
Enhancing the English Language Ability of Postgraduate Research Students

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ABSTRACT

The chapter discusses opinions about grammar as a prescriptive diction in academic writing. It also argues that the problem of personal pronouns can be used to analyze the language used by post-graduate students in low-resource setting and others whether in speech or writing, in non-literally discourse or literature. The chapter analyzes four maxims of good writing: Make your language easy to follow; be clear; be economical; and be effective. To successfully create knowledge, especially at postgraduate level, authors must communicate concisely to present their sense.

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INTRODUCTION

A person's native language is such an important part of his or her social existence that, like other institutions, it easily becomes a subject for argument. Language moreover is intimately connected with judgments about status and about what is good or bad, right or wrong, beautiful or ugly. This is why it is so hard for people to be unbiased and rational when they express opinions about their mother tongue. This chapter presents an impartial argument on problems of usage about which many speakers of English feel quite strongly. For example, many (especially older people who have gone through a traditional education in English grammar) feel strongly that infinitives should not be split (Bolinger, 2015). For them, to separate *to* from the infinitive verb with which it belongs, as in *to flatly refuse*, is a little sort of a crime.

Cannale (2003) points out that, in actual practice, split infinitives are quite common. So one reaction is to ignore arguing about matters of taste. Another view is the one we discussing prescriptive grammar we treated received opinions as to 'good' and 'bad' usage as sociological norms like rules of etiquette, (Quirk, 2013). In some situations (particularly more formal situations such as that of writing a letter of application) we shall want to be on our best linguistic behavior, and this means steering clear of pitfalls such as the split infinitive', if only to avoid usages which will stigmatize us in the eyes of other people. Some precepts of 'good grammar' come from the uneducated (Brumfit, 2018). Other precepts do have a basis of common sense, and merit serious discussion. One thing is certain: people will not give up arguing about language usage, and it is as well to be aware of their attitudes. Knowledge of grammar can help us to describe and understand the basis of these attitudes (Crystal, 1999).

PRESCRIPTIVE DICTION IN ACADEMIC WRITING

Here is a test, If you had to choose, which of the following alternatives would you use in a letter applying for a job?

{(1a) …the post I am applying for.
(1b)…the post for which I am applying.
{(2a) But more recently I have been attending classes in German.
(2b) More recently, however, I have been attending classes in German…
{(3a) I had to choose the least harmful of the two courses.
(3b) I had to choose the less harmful of the two courses.
{(4a) I will be able to take up the appointment after 1st June.
(4b) I shall be able to take up the appointment after 1st June.

If you want to increase your chances of creating a good impression in academic writing, you will prefer the (b) sentence in each case, thereby obeying the following prescriptive rules':

1. 'Do not end a sentence or clause with *a preposition*.'
2. 'Do not begin a sentence with a coordinator such as *and* or *but*'.
3. 'When comparing two things, use a *comparative construction*; when comparing more than two things, use a *superlative construction*.'
4. 'After *I* or *we* as subject, use shall rather than will to express futurity.'

All these are typical prescriptive 'rules' in that they are assumed to work without exception. In practice, however, they are frequently broken by native speakers; this is why we enclose the word 'rule' in quotation marks. Moreover, if we try to apply them in every case, the result can be awkward and totally un-English .For example:

a) *For what is it?* Is not an acceptable variant of *what is it for*?
b) *May the better man win* is abnormal and unidiomatic in comparison with *may the best man win.*

Such 'rules' may therefore bear a problematic outcome, when, in an attempt to strenuously avoid a supposed offence, we fail to produce clear, idiomatic English. (As a case in point, notice that the split infinitive in the last sentence could not be replaced by *strenuously to avoid a supposed offence or to avoid a supposed offence strenuously.)* The safest course, in such out-of-the frying –pan-into-the fire cases, is to reword the sentence so that the possibility of breaking a prescriptive 'rule' does not arise: for example, in a *strenuous attempt to avoid…* would solve the problem above. We shall not in general give solutions to problems of usage in this chapter, but we do offer one important piece of advice, which is a generalization of the evasive tactic just illustrated: When you are faced with the dilemma of either disobeying a prescriptive 'rule' or awkwardly and conspicuously obeying it, reformulate the sentence so that the dilemma does not arise. This may be called the PRINCIPLE OF GRAMMATICAL DISCRETION, because it avoids giving offence to one's addresses, whether their attitudes to usage are authoritarian or permissive. This principle applies chiefly to formal written English – the type of English in which prescriptive grammar tends to matter.

Prescriptive 'rule' like that of the split infinitive can reasonably be called superstitions: people have learned to obey them out of blind faith in authority and find it difficult to explain *why* they obey them, (Fowler, 2016). When attempts are made, however, to justify such 'rules', these are among the reasons often given:

a) The 'rule' helps one to communicate clearly, etc. (**A practical reason**)
b) The 'rule' is in accordance with logic (**an intellectual reason**)
c) The 'rule' is in accordance with good taste (**an aesthetic reason**)
d) The 'rule' is in accordance with tradition (**a historical reason**)

Such reasons rarely carry conviction on their own. If we search for the origin of such 'rules' we find that many of them began in attempt made, especially in the eighteenth century to describe English grammar in terms of the category of Latin grammar. The prestige of Latin was such that English constructions which differed from Latin model were disparaged (Young, 1980) . In other cases, we find that the early grammarians in their attempt to codify English and reduce it to rule, rationalized a situation which, in the language of their time, was variable and *un*-certain. So it was with the choice between *will and shall.* Nowadays with the decline of traditional grammar teaching, these rules if they exist in people's minds at all, are often no more than vaguely remembered folklore.

THE PROBLEM OF PERSONAL PRONOUNS

The main prescriptive 'rule' for subject and object pronoun runs as follows:

'RULE' A

a) 'Use the subject pronouns *I, he, she we, they, who,* in the function of subject or complement' *I am tired, It was she who spoke first.*
b) 'use the object pronouns *me him, her, us, them, Whom,* in the function of object or prepositional complement': *Sarah saw them; His sister spoke to us.*

But in (a) is frequently broken when the pronoun is a complement:

(5) Who's there? It's only me. (not: it's only I)

And (b) s frequently broken in the case *who/whom:*

(6) *Who* do you like best? Who were you speaking to? (rather than whom….)

Pronoun Usage in Formal and Informal English

There is considerable gulf between formal and informal English in the choice of pronoun forms. While formal written English follows the traditional Latin-based rules, informal spoken English follows its own rules, which are simple enough in their own terms. According to these rules, the subject pronoun is used in the normal subject position, preceding all or part of the verb phrase while the object pronoun is used in other positions in the clause. This means that the object pronoun is the UNMARKED, neutral forms in the pairs*/me, she, her, etc.* even being used for example in unattached 'absolute' positions such as:

(7) *How do you feel? Me?* I feel fine.

But *who/whom,* it is the subject from which is normal since the *wh-* pronoun normally precedes the predicator, behaving in this sense like a subject

(8) *Who were you talking to?*
(9) *I want to see you. Who? Me?*

Difficulties in pronoun usage occur because of the conflict between these two sets of rules-the formal and the informal.

The Generic Masculine

(10) 'Everyone can vote as they wish'

If we wish to alter the statement above in order to obey grammatical concord, we might choose between the following sentences:

(10a) *everyone can vote as he wishes*
(10b) *everyone can vote as he/she wishes*

Of these, (10b) is often felt to be awkward while (10a) is an instance of the generic masculine, that is to say the use of the pronoun he to refer to either male or female persons. The generic masculine he, although traditional is disliked by those who feel it perpetuates a masculine bias in the language.so by rejecting (10) in favor of (10a)

we jump out of the frying pan of grammatical concord in to the fire of feminism. The generic masculine is often used as a matter of convenience but the principle grammatical discretion would lead us to avoid the possibility of giving offence in either case, by evading the problem of pronoun choice. The problem can be evaded, for example by reformulating the sentence in the plural:

(11) All citizens can vote as they wish.

As a matter of interest, we have tried to avoid the generic masculine throughout this book, so you may judge our success.

Problems of Ellipsis

Many of the grammatical uncertainties which beset people in writing English have to do with ellipsis. (Halliday, Mackintosh & Strevens et al., 2014) Describing the rules of English in this area is not easy, and it's difficult to draw the line between prescriptive and descriptive grammar. Nevertheless, we may roughly enunciate a 'rule' as follows:

'RULE' B

A sentence with ellipsis is acceptable only if the same sentence is acceptable after the 'deleted' words are restored. To this an explanatory rider should be added:

The words which are deleted in the ellipsis must duplicate words occurring elsewhere in the context.

Here is a simple illustration of the 'rule'

Verse with ellipsis: (the place where ellipsis occur is marked by Λ)

The city can Λ, and always will, be proud of its achievements.

Version with Deleted Elements Restored:

The city can *proud of its achievements,* and will be proud of its achievements

And here are two examples which violate the 'rule'

(12) The city has Λ, and will always be proud of its *achievements.*
(13) They are *revising* the book more thoroughly than it has ever been.

The fault is clear when we try to insert the words in the italics in the spaces marked Λ in the examples. To make the resulting sentences grammatical, we should have to insert *been* instead of *be* and *revised* instead of *revising.* Here is a parallel case involving ellipsis of a noun:

(14) This car is one of the safest Λ, if not the safest *vehicle on the road.*

The rule requires the insertion of singular noun *vehicle,* while the grammar of the sentence requires a plural one *vehicles.* This mismatch is enough to make the sentence strictly ungrammatical. Though (oddly) the requirement is less strict if the elliptical phrase follows its sister construction:

(15) This car is one of the safest vehicles on the road, if not the safest.

The more complex a sentence is, the more liable it is to mismatches of ellipsis. It takes some time to work out what is wrong with this example:

(16) If only the litter laws were enforced, the disgrace of our present *rubbish-strewn high streets* would be eliminated overnight, and could even bring economies in the city's overstretched wasted-disposal services.

The ellipsis of the subject of the second clause, after *and,* is only allowable if the second subject is meant to be identical to the first one (the phrase in Italics). But it makes no sense to say the *disgrace of our present rubbish-strewn high streets could… bring economies….;* the intended meaning must surely be that the *enforcement of the litter laws could… bring economies…*this kind of lapse which fowler describes as 'swapping horses'- where the writer losses track of how the sentence began, and completes it as if it had had a difficult beginning

The major concern of this chapter is to point out that, if we know something about grammar, we can criticize and discuss our own writing, and learn to improve it (Candlin et al., 2017). Here are four maxims of good writing which the chapter discusses:

1. Make your language easy to follow
2. Be clear
3. Be economical
4. Be effective

Practical principles such as these cannot always be fulfilled at the same time. Sometimes they compete with one another. One example of this occurs whenever we open our mouths to speak: we have to speak enough and slowly to be understood (be clear), but we also have tried not to waste effort by speaking too slowly for the purpose (be economical). So, to hit the right level of delivery, we have to weigh up to competing demands of 1 and 2

Such principles are, in a way, precepts of good behavior in the use of language. They apply to both spoken and written English; but there is less excuse for ignoring them in writing, where we have the leisure to revise and redraft, and where the addresses does not have chance to reply and seek clarification. People understandably tend to be more critical of the style in writing than in speech-which is one reason why we concentrate in this chapter on style in written composition.

How to Make Language Easy to Follow

Time dictates over the way we compose and understand messages. We cannot say all that we have to say one moment, in one fell swoop: we have to choose which order to express things, often grammatical choices are choices which affect order, (Randolph & Greenbaum, 2013). Transformational choices such as that between an active and passive construction-for example, between *Columbus discovered America and America was discovered by Columbus.*

Our first principle, make your language easy to follow' is designed to help the reader make sense of a text in linear form. It has three aspects, **sentence length, subordination** and **ordering**

Sentence Length

For the reader's sake, a text should be suitably segmented into units, so that it can be understood bit by bit. In grammar, the largest unit is the sentence, and it is important to avoid sentences which are too long or too short, it would of course be wrong to prescribe an 'ideal sentence length' for all purposes, but recent studies indicate that the average sentence in English is about eighteen words long. In general, the longer the sentence is, the more complex it is, also the more the complex it is, the greater the burden it places on our attention and memory (Miller, 2000). On the other hand, if we go to extreme, repeatedly making use of simple sentences, the result may be monotonous, lacking in light and shade. As in the case with so many things, a happy medium is often the best. Consider.

i. *John Keats was fascinated by the art and literature of the current world. Just before his twenty-first birthday, he read George chapman's translation of Homer. He wrote a famous sonnet on the subject. The next year, he visited the Elgin Marbles. The painter Benjamin Haydon accompanied him. This developed his enthusiasm still further. He wrote notable sonnet after the visit. But his Greece was essentially Greece of the imagination. It was the Greece of John Lampriers classical dictionary. This he had read when young. He never visited Greece*.

Although its meaning is clear and easy to follow, this passage suffers from the flatness of a 'short-breathed' style, with brief, one-clause sentences. On the other hand we have.

ii. Although John had been fascinated by the art of literature of the ancient world ever since he read George chapman's translation of Homer (which produced a famous sonnet on the subject) just before his twenty-first birthday in october1816, and that enthusiasm further developed by his visit to the Elgin Marbles with the painter Benjamin Haydon the following year (which also produced a notable sonnet), his Greece was essentially a Greece of the imagination, inspired by his early reading of John Lampriers classical dictionary: he never visited Greece.

This passage is a much more difficult reading experience that the preceding one:

Crammed in to one sentence is all the content of the eleven sentences of (i) but (ii) has an advantage over (i) in that it indicates, through subordination and other grammatical relations, the relations of meaning between the different clauses. We see all the different ideas fitting in to a single complex thought, with clear indications of how one idea is linked to another, how one idea is subsidiary to another, etc. now here is a compromise between the two styles:

iii. Although John was fascinated by the art and literature of the ancient world, he never visited Greece. His Greece was essentially a Greece of the imagination inspired by his early reading of John Lampriers classical dictionary. Just before his twenty-first birthday, he read George chapman's translation of Homer, an experience which inspired one of his most famous sonnets. His enthusiasm was further developed in the following year by a visit to the Elgin marbles with the painter Benjamin Haydon.

Although there are occasions when we shall want to use simple sentences, as in (i) or complex sentences as in (ii), the most generally serviceable style will be one which, like (iii), avoids the disadvantages of both. Subordination helps the reader if we not only segment our message into units of suitable size, but also indicate the relative importance of ideas within those units. As (ii) and (iii) have already shown, subordinate clauses are one way of making idea less salient than another. Putting an idea in a main clause is like shining a spotlight on it; and putting it in a subordinate clause, by the same simile, is like placing it in the shadow;

iv. Although Keats spent the last month of his life in Rome, he never visited his beloved Greece.
v. Although he never visited his beloved Greece, Keats spent the last months of his life in Rome.

Contrasts between (*iv*), which spotlight the point about Greece, and (*v*) which spotlights that about Rome, is easy to notice. Often subordinate clauses state ideas which are well-known, or have been mentioned before. This 'backgrounding' effect is still felt if the subordinate clause is placed in a final position. Compare (*iv*) and (*vi*)

vi. Keats never visited his beloved Greece, although he spent the last months of his life in Rome.

Another maxim of good writing is the principle of clarity, which means avoiding ambiguities in grammar and also avoiding obscurity of expression which results not only in outright ambiguity as in delays and interpretation. For example:

i. The recruits *marched down the road* failed to return.
ii. Though Bert kept on watching *the film* frightened him.
iii. The woman shrieked at John *and his brother* started to cry.

In these examples, the constituent which is likely to mislead is in italics. In the analysis of (i) above of *marched down the road* as part of the main clause, instead of a relative clause (= 'who were marched..') in (ii) *the film* as object of watching rather than a subject of *frightened*; and in (iii) at the phrase John and his brother, rather than at the beginning of a new clause. In this case, there is an obvious remedy for muddle; before the offending words, we can insert in (*i*) and (*iii*) the words *who were* and in (it).

In grammar, the principle of economy can be paraphrased 'do not waste energy' (Leech, 1982; Waainer & Griffith, 1973). Avoiding unnecessary words is good because it means less work for the writer and the reader. This underlines the common objection to redundant words and structures which could be omitted without loss of meaning from the sentence, for example:

i. As a rule, the negotiators generally manage to reach a satisfactory compromise which satisfies both parties.

Furthermore, a saving occurs whenever we avoid repetition, or avoid using words whose meaning could easily be interfered. The general phenomenon of grammar whereby we save words and hence simplify structures may be called reduction (Leech, 1982). We have already met two kinds of reduction:

i. The use of PRO-FORMS: personal pronouns (*he, she, it, they* etc.) and other substitute words, such as (sometimes) *do, so, such, that*.
ii. The use of ELLIPSIS, i.e. the omission of words which are predictable in that they merely repeat what is said in the nearby context.

Both pro-forms and ellipsis are means of avoiding repetition: for example:

i. *My brother enjoys* football more than *my brother enjoys tennis*. REPETITION
ii. My brother enjoys football more *than he enjoys tennis*.
iii. My brother enjoys football more than tennis. (ELLIPSIS).

As well as reducing length and complexity, pro-forms and ellipsis help to connect one part of a sentence or text to another (O'Donnell and Loreto, 1988) Thus *he* in (ii) refers to my brother, which is called ANTECEDENT of the pronoun. The maxim we should follow, in accordance with economy is 'reduce as much as possible'. This means, all other things being equal 'prefer ellipsis to pro-forms'. However, all these alternatives need be available.

Similarly, be clear but concise, (Young, 1980), saving words can often lead to an unsuspected loss of meaning. So, we should not reduce where economy conflicts with clarity for example:

i. Einstein proved the theorem Blunkett has assumed to be true was false.
ii. They have been achieving their export targets and increasing home sales every year.

Does every year apply to the increase of home sales alone, or does it also apply to the achievement of export targets? The latter meaning is here more likely, so if we intended to convey the first meaning we should have to restore the omitted elements of the second clause, adding a comma for extra clarity.

iii. They have been achieving their export targets, and *they have been* increasing home sales every year.

Similarly, unclarity results when an ellipsis is too distant from its antecedent structure. The most obvious types of ambiguity and obscurity are those arising from the use of pronouns:

iv. The forwards shot hard and often but never straight till at last Hill decided to try his head. *It* came off first time.

Humorous examples like this point out the danger (increased hereby the ambiguity of *came off*) of placing a pronoun too near to a 'false antecedent'. Normally the antecedent of a pronoun will be preceding noun phrase which is either the nearest candidate, or the nearest candidate in a parallel function.

Having stressed these pitfalls, however, we should add that common sense frequently resolves a theoretical ambiguity. There would be little chance of interpreting (*iv*). The unclarity in such cases lies more in the possibility of a temporary tangle which will be resolved only by re-reading. So the maxim 'reduce as far as possible' we must always add the rider' unless unclarity results'.

CONCLUSION

Three principles discussed have to do with efficient rather than with effective communication. But to communicate effectively is to make good use not merely of the referential function of languages, but of all the functions of language. This takes us to the literary style, and reminds us that the artistic sense of style can be found in quite ordinary text; there is no gulf fixed between creative writing and practical writing. So the maxim 'reduce as far as possible' can be overruled for the sake of expressive repetition.'

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Chapter 6
Overcoming the Viva Voce Examination Obstacle at Postgraduate Research

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ABSTRACT

Most postgraduate programs have viva voce, or oral examination, or thesis defense as a mandatory form of research assessment. This chapter defines viva voce examination, its importance in the assessment of postgraduate students, the way it should be managed, the challenges it presents to the students as well as the staff, and how to overcome it as an obstacle. The chapter provides a handy tool for the guidance and preparation of students and faculty in low-resource settings in the viva process. The author recommends students be gradually and systematically introduced to viva voce examinations as a formative assessment, rather than suddenly as a terminal assessment.

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INTRODUCTION

With the new landscape in socio – economic and political work spheres, undergraduate qualifications are increasingly becoming invisible to potential employers. Many organizations are currently moving to the master's degree for staffing purposes and requiring their bachelor's degree staff to enroll for postgraduate studies. Worldwide, higher institutions of learning have hugged the challenge by developing and enrolling students for postgraduate studies. Institutions have appreciated the need to remain relevant by responding to what is happening and the speed of evolution partly through graduate studies, with emphasis on equipping students with research competencies.

Most postgraduate programmes have a research project as part of the requirements for the award. Generally, postgraduate students are expected to gain mastery of the area of specialization and also to complete the course on time. For many, classwork is completed in time but take longer to complete their research project.

Along the journey to completion of research project, candidates are required to defend their work before the graduate committee. In the case of a thesis defense, this constitutes an oral examination referred to as *viva voce* (or simply *viva*) examination. Ideally, proposal or thesis defense presents to postgraduates an academic opportunity to interact with research experts who consequently help them to conceptualize fully their research problem. Possible outcomes of these defense events might include gaining confidence, improving research or increasing research expertise needed to develop and conduct successfully future research. However, the defense is enfolded with numerous other negative emotions, especially fear and anger (Cheon & Reeve, 2015).

In the light of the Differential Emotions Theory (DET) by Izard (2007), thinking and talking about postgraduate research thesis defense will present a combination of basic emotions and higher-order thought processes. These manifest in terms of interest, joy/happiness, sadness, anger, disgust, and fear, which are generated by patterns of physical responding. The information in this chapter intends to answer common questions pertaining to viva process and give tips on how to handle it at institutional and individual (student, supervisor, administrator, examiner, and audience) level in order to minimize the negative emotions among the candidates.

BACKGROUND

The term *Viva Voce* is Latin for "by word of mouth," "orally," "by the living voice". It is often simply referred to as *viva*. According to Lewis (2014), it is "an examination conducted by spoken communication." D'Souza, Abdullah, and Mustapha (2016)

refer to it as a formal oral examination, or oral defence, mainly administered to postgraduate research students to assess their in-depth understanding of a given research issue through an oral presentation of their thesis on the issue. It dates back in the pre-medieval period as a formal way of assessing students (Bode, Ugwu, & Donkor, 2011). It gained grounds from Plato and Socrates arguments that word articulated orally was superior to written (Ross, G. M. (1996). This perception was supported by the rhetoric of Aristotle around 350 BC that commended robust oral arguments as a basis for logical conclusions (Lecker, 2011). Historically, certification of learners in their respective fields of training, relied on the satisfaction of panelists / assessor during oral presentations who examined the depth as well as scope of knowledge a candidate had about her chosen area. All this was long before the discovery of printing press (Simpson, & Ballard, 2005). With the invention of printing press, dependence on oral assessment reduced and this perhaps explains why in most universities in Uganda, vivavoce is a reserve for postgraduate programs.

Sometimes, the terms oral examination and *viva voce* are used distinctively while other times they are used interchangeably. In this chapter, they are used interchangeably. Certain undergraduate programmes such as medical programmes also test the oral presentation ability of their students using *viva*.

Theoretical Underpinning

The study draws upon "fear appeal theory" by Williams, K. C. (2012) to question and think deeply about how the fear of viva voce examinations purported to be nursed by the experts can be demystified. Fear appeal theorists postulate that, Fear is "an unpleasant emotional state characterized by anticipation of pain or great distress and accompanied by heightened autonomic activity especially involving the nervous system…the state or habit of feeling agitation or dismay…something that is the object of apprehension or alarm" (Merriam-Webster, 2000). From the description, fear though negative, it is usually accompanied by physiological arousals anchored by perceived efficacy. As averred by Witte and Allen (2000), fear appeals constructively entreaty positively to business success when the strength of threat and efficacy are proportionate. In other words, in face of emerging threat, there is a tendency by individuals to increase their control over the situation. Therefore, by sharing viva voce assessment experiences, graduate research students are prepared to face the process with great fervor. The fear of viva voce examination can be counter to research engagement especially when students experience strong fear appeal accompanied by low levels of efficacy.

Literature Review

Accessible literature in the context of viva voce examination experiences present sets of conclusions that, Viva Voce rates least among other popular examination methods on any scale of objectivity (Prakash, 2009); characterized by non-uniform questions implying a discrepancy in difficult levels, variation in scores emanating from the difference in research orientations of the panelists/ experts, prone to personal biases especially during the candidate – examiner interactions which may result in positive or negative outcomes of the assessment (Bode, Ugwu, & Donkor, 2011); perceived harassment especially when adversarial stances are held between parties; and the stage-fright (brain block, tongue-tie) especially where the panelists are perceived to be dreaded examiners. Other studies interested themselves in exploring viva traditions (Morley et al., 2003, Tinkler & Jackson, 2000, Watts, 2012) as well as tips on how to prepare for viva voce (Tribe, & Tunariu, 2016). Although the findings and conclusions seem to be general for all postgraduate students, they were not derived from the viva voce experiences of postgraduate students with African basis graduating from African universities and more specifically Uganda.

Methodological Stance

The study draws on an ethno methodological approach focusing on the question " why postgraduate students would fear vivavoce examination?". Ethnomethodology lay emphasis on the analysis of "every day sense making of people, situations and ways facilitated by inter-social interactions (Garfinkel, 1967). This method of inquiry stands an advantage of revealing meanings and structures that are deeply hidden (Macbeth, 2003) as well as generating practical reasons and actions. Henceforth, reflexivity as an ethno methodological stance (Lynch, 2000) was used. Reflexivity denotes to "the ingenious accountings of states of affairs" (Heritage,1984, p. 136) that people provide for each other. Therefore, the shared experiences about viva voce examination practices by experts revealed how both experts and postgraduate students understood and behaved during viva voce process.

Reflective conversations of four post graduate students who had previously (up to 2 years back) undergone viva voce were relied on by the study. Reflexive and Conversational analysis informed the themes and content discussed that follows.

CATEGORIES OF ORAL EXAMINATION OR VIVA VOCE

In this chapter we present two distinct categories of oral examinations or viva. The first category includes oral examinations purposed to assess students at the terminal end of a programme that has been designed to undergo such assessment (Harper Adams University, 2017; Newble & Elmslie, 1981). This is the category where postgraduate *viva voce* examinations articulated in this chapter fall. In the representative conversations, post graduate students are expected to 'defend' their theses and dissertations before a panel of examiners who would have read the work beforehand. The viva in this category is often described as the defining moment in the research experience; the final assessment of the thesis, the research, and the student. Higher institutions of learning in Uganda embraced this category of viva voce examinations in in the assessment of postgraduate programmes. Meanwhile during 'public' defence, especially at doctoral degree level, the viva is open to all members of the public.

The second category refers to an adhoc examination that is added to a formal assessment programme to determine the fate of a candidate at the brink of failing or one who has passed higher than expected in a course (Newble & Elmslie, 1981). This also includes cases where doubts exist as to the authentic ownership of a given piece of work by the candidate. Their performance in this examination will determine their fate in the course.

Another categorization of viva is based on the audience to which the work is presented. In some institutions, certain categories of postgraduate research such as honours and master's theses are presented 'in house', meaning the viva is not open to all members of the public. Only the departmental board, examiners, and chairperson constitute the panel. In the conversations, this categorization was popular and produced less anxiety among students.

Why and What Viva Entails

A *viva voce* examination involved a candidate presenting his or her work to a panel of examiners and sometimes a general audience, followed by the examiners and members of the audience asking questions about the work. The candidate is judged on the quality of the presentation and the depth of the answers to the questions. The examiners or panelists should have read the candidate's thesis thoroughly before the *viva voce*.

The panelists preferred to ascertain whether the work they read was done by the candidate by corroborating the quality of the written thesis and the candidate's ability to articulate and defend his or her research. Thus, viva voce required adequate

preparation from the candidates to overcome nervousness as they disseminate their work to the academic experts in their field. More positively, the candidates should take the viva as an occasion to showcase their work, ability, and confidence by detailing explicitly and succinctly what they wrote in the thesis. It is a moment for the candidate to demonstrate their ability and skills to engage in academic discussion with, and convince research colleagues to buy in to their viewpoints. The candidate should thus take it as an opportunity to talk in depth about their work with people who are knowledgeable and interested in it.

In more explicit terms, candidate shares in details the research they undertook, why they undertook it, how they did it, with what outcomes, what the outcomes mean, and how they have contributed to theory and practice. As the candidate shares all this, it occurs to them how best they could have written or undertaken certain sections of the study, thus serving as self-evaluation. The viva thus provides a platform for the candidate to investigate where their original work sits in relation to the wider research field and be able to recast the work better.

During Viva presentation, candidates who are better able to express what they mean in spoken words rather than in written words grab it as their greatest opportunity. The viva thus provides an opportunity for such candidates to clarify points that are not clear in the written work. They then get instant feedback since they are better understood, and corrections are suggested. Appropriate personnel such as a language editor or data analyst can be recommended to help them in their deficiencies. In other words, the viva provides the candidate an opportunity to clarify and develop the written thesis in response to the panelists' questions and comments.

Postgraduate studentship is meant to shape the student into a researcher capable to undertaking and communicating research findings. Writing a good thesis is but one aspect of the transformation process for the candidate. The candidate needs to be able to communicate convincingly the findings to other researchers in the field and across the board so as to make theoretical and practical impact. A viva voce in very important in this respect; it provides a platform for the candidate to practice presenting ideas to peers and the wider public.

The thesis writing process is usually not proctored like other examination formats. This makes it possible to be fouled with malpractice. The viva voce examination provides an avenue through which the thesis is audited. It provides an opportunity to ascertain whether the tone of the write-up of the thesis correlates with the presentation by the candidate. In this case, the viva voce examination is a quality assurance checkpoint at which the authorship of the work is verified as the student's own. It serves as a gauge to establish whether the quality of the thesis is adequate to merit the award for which it is submitted.

The question and answer phase of the viva is a classic setting of positing problems before the candidate so as to assess their problem-solving skills. It is at the viva that the cognitive skills of the candidate are proved worthy of the award of the degree they have pursued over the last dozen of months. For instance, in certain fields such as medicine, the candidates, then as professionals, will be presented with emergencies most of the time. A viva voce examination is a perfect simulation of how they will exhibit professionalism and care in handling such situations which require them to think and act very fast. The candidates prepare adequately to ensure they understand thoroughly well in order to respond appropriately to the unpredictable viva questions and save themselves embarrassment before the viva panel.

The viva experience is a rite de passage and an admission to the academia decorum. It's an undertaking meant to encourage academic development, debate and professional development for the candidates as well as supporting peers and profession. In this case, the viva purposes to verify whether the candidate is the author of the work, able to justify topical, methodological and theoretical decisions, able to discuss findings in the context existing literature and contemporary practices, able to clarify on what might be misconstrued as well as the ability to articulate the novel contribution of the study to the discipline. The oral expression and write up should sufficient merit the award of the degree for which it is submitted.

The Critical Issues Raised at the Viva

Some of the critical issues that emerged from reflexivity suggested that, panelists during the viva voce examination gyrated around the structure and components of the thesis. Therefore, Candidates are expected to demonstrate adequate knowledge of the thesis/dissertation from its beginning to its end. For that matter, it is important for the student and the supervisor(s) to ascertain the level of preparation in terms of originality, rigour, weightiness, and significance of the work; contribution of the work to knowledge; and readability and succinctness of the thesis/dissertation. Careful attention needs to be paid to the pragmatics of language usage. The thesis/dissertation should reflect the student's ability to undertake further research. If the student's work is part of a broader project, then the extent of collaboration and contribution made by the student should be clearly demarcated in the write-up and oral presentation.

The former arguments notwithstanding, the candidate is expected to link easily their topic of research to the broader subject of their study; be able to defend every choice of method, material, and sample they make; and defend the findings in light

of the choices made while acknowledging the limitations. The possible detailed areas of concern during the viva may include the candidate's own motivation to undertake the study; their level of maturation as a result of going through the research process; and their degree of proficiency in articulating the research background, problem, questions, significance, scope, and conceptual or theoretical framework. In addition, the panel wants to know details of methodological choices; fieldwork experiences; data analysis techniques; interpretation of results; and discussion of the implications of the results.

From the outset, it is critical to lay bare the research problem in its entirety in a stepwise manner. The conceptual, historical, contextual, and theoretical perspectives of the background should be delineated, smoothly transitioning to the problem statement. The problem statement should then inform the audience of what the ideal situation is expected to be like (with evidence from literature), what is then wrong with the extant state of the study variables relative to the ideal (also with evidence from literature), what could be the possible causes or gaps leading to the existing situation (this could be personal opinion), and what the expected negative consequences of the unresolved situation are likely to be.

The study aim, objectives, research questions, and hypotheses should logically draw from the problem stated, as informed by review of recent related literature. The candidate should be able to identify with experts in their field of study whose works had significant influence on their thinking about the research problem. How the investigation established a new theory, refuted an old theory, or developed an extension of an old theory should be spelt out in the theoretical perspective of the background and theoretical framework, if any. It is expected that the candidate states the significance of the study to the various stakeholders. The scope of the study in terms of geographical, population (units of analysis), content, and temporal (period of engagement with the study participants or units of analysis) aspects should be made clear in the presentation. Usually, a pictorial conceptual framework is a useful tool for giving an overview of the interaction between the study variables; identifying the independent, dependent, and extraneous variables, and how these affect each other in the envisaged relationship.

Another critical area during the viva relates to issues concerning the research methodology where scientific reasons to support the choice of research methods, design, population, sampling techniques, sample size, research instruments, procedure of data collection, data management and analysis, and ethical considerations are articulated. The philosophical underpinning of the study is supposed to be explicated, stating why other views could or could not be adopted. Candidates answered why they chose the approach they used and what were the methodological limitations and challenges of the study.

With regard to fieldwork strategies and experiences, the candidate is expected to demonstrate their understanding of the different approaches to evidence collection and the management thereof. They should clearly explain how they acquired and validated (e.g., through a pilot study) the measuring instruments they used, defend the representativeness of the sample they used, outline the ethical approach of entry to the participants/units of analysis, and explain in detail the procedure of interacting or interfacing with the participants/u its of analysis.

At the level of data analysis, the candidate demonstrate mastery of the quantitative and qualitative data analysis techniques chosen. Here, the candidate is expected to map the chosen technique to the objective and subsequent research question or hypothesis. They should show how their analysis resulted in generating a new theory, or supporting or disputing an existing theory.

At results interpretation, the candidate demonstrate creativity in elaborating their contribution to the already existing body of knowledge. At doctorate level, contribution to knowledge is a key prerequisite, often expected in terms of new theory generation and validation. Key questions for the candidate in this area include how their work contributes to the body of knowledge, how valid and reliable their findings are, and how generalizable the results are. Policy implications are a very useful contribution to praxis. Sometimes, candidates are expected to draft a policy brief to that effect.

The candidate should acknowledge that the study findings agreed and disagreed in many respects with findings of other similar studies, and be able to articulate why by way of discussion. Their personal take on the meanings and utility of the findings is very important in enabling the audience to appreciate the conclusions and recommendations of the study. They should outline the limitations of their study and hence suggest areas that need further research for addressing. This is often begged by questions such as where could take the research from the present state, or what they might change if they were to start all over again. In all this, time should be properly managed and kept, distributing it proportionately to all these critical aspects of the viva voce examination.

Membership of Viva Panels / During Viva

The *viva* panel is often made up of an independent chairperson, examiners as panelist, and sometimes an audience, as adopted in the institutional policy. One of the examiners is usually an external examiner, that is, external to the institution or country. Institutions try to ensure that at least one member of the panel has previous

experience of conducting a viva. To cater for gender parity where possible, panelists are usually of different sexes. One of the departmental or faculty secretaries is often assigned the duty to record the proceedings, especially panelists' concerns, during the viva, and these records are combined with reports from the thesis examination to be given to the candidate to address the concerns. The research supervisor(s) is/are usually in attendance to take note of the ensuing comments and to provide moral support, but often do not take part in the discussions. However, they could make a contribution if and when demanded by the panelists or chairperson. The onus is upon the candidate to decide whether the supervisor should be in attendance or not, in which case non-attendance should be discussed pretty much earlier.

During the *viva*, the candidate is usually called to the room and the ground rules are announced by the chair. Usually, the panel members and some key invited persons are introduced before the candidate is invited to take the floor. The chair usually ensures that the candidate is comfortable by creating a relaxed atmosphere, especially where a candidate appears nervous.

At this point, the presentation slides should be projected as earlier planned. Candidates should try to control their breath, speech, and emotions as much as possible, bearing in mind that they are the ones to set the tone of the examination by their manner of communication. They can easily sway the audience to their side by posturing as confident and speaking audibly, not too loud or too low, and being articulate – neither too fast nor too slow – in presenting their work. They should not get scared by serious look from the members of the panel and audience.

The presentation should be made in a matter-of-fact way, without preaching to or lecturing the audience, and without too much joke that kills time and distracts the flow of facts. Diagrams can be used to explain certain points if so required. It is important to refer to the plan of the presentation, but candidates should generally be dynamic to change as circumstances warrant, especially to fit within the time allocated. At the end of the presentation, candidates are usually offered a seat to take questions from the panel of examiners. In case the candidate develops the need to ease themselves, they should ask for an excuse to do so. This would relax them to pay closer attention to the questions and give appropriate responses.

Possible Post-viva Outcomes Experiences

At the end of the question and answer session, the candidate and sometimes the supervisor(s) will be requested to leave the viva room, and wait in a distraction free location nearby, for the panel to deliberate and reach a verdict. The examiners can

make a variety of recommendations basing on the quality of the book and the viva. It is possible for the candidate to obtain a high score on the book and low in the viva. After harmonizing their scores, the examiners will submit their recommendations to the chairperson who then ushers in the candidate and the supervisor(s) if out also. The chairperson will declare the verdict of the examination to the candidate, which will generally come in any one of the following recommendations:

1. The award is recommended with no corrections required (Distinction).

This recommendation is very rare, but is possible if the candidate's work is exceptionally excellent. In this case, the candidate goes ahead to print and bind their work in the recommended number and format of the institution, faculty, or department.

2. The award is recommended subject to corrections and revisions.

Here, the chair of the viva will announce the time period within which the candidate is expected to effect and submit the corrected version of their work under the verification of an internal examiner or external examiner. Minor corrections are given a shorter period of time (e.g., 30 days) to address them while major modifications are given more days (e.g., 60 days). Once the corrections are effected and verified, then the work is ready for binding as stipulated by the institutional policy. Here, additional tuition costs are generally not incurred.

3. The award is not recommended but a resubmission is allowed.

This verdict implies that the candidate has major corrections to make, which require a re-examination of the work. It may involve collecting more data to beef up the existing data, and generally a longer period of time is required to effect the corrections. The same or other examiners may re-examine the work. In this case a second *viva* may or may not be required. Additional tuition fees may be required.

4. Resubmission of PhD thesis as a Master's thesis

Though rare, it is also possible to recommend that a study undertaken for a PhD award merits an MPhil award. Here, the choice is often left to the candidate to proceed as recommended or withdraw their work for thorough improvement to merit a PhD award. In both cases, the corrections have to be attended to and institutional policy observed as the candidate proceeds.

5. Resubmission of a Master's thesis as a higher award (MPhil or PhD thesis)

In the very rare event that the panel judges a master's thesis as worth a higher award, the Candidate Is Advised To Withdraw The Work And Hone It To Suit The Requirements For The Higher award. The candidate has to work closely with the allocated mentors and address the suggested concerns as required to merit the higher award within a given period of time.

6. Rejection of thesis (Fail)

This recommendation is less common but possible. In this case, the candidate receives no award. The candidate should be stress-proofed to ensure that their post-viva life is not disorganized. It is important to be aware of the range of emotions that could set in following the viva, and be able to adjust to normal life as soon as possible. In case the outcomes are not favourable, it is advisable to seek professional help and not resort to negative coping strategies such as alcohol and drug consumption.

Perceived Drawbacks of Viva Voce Examinations

Unlike written forms of examinations that are standardized, the questions put across every student are not standardized. This consequently raises a critical question, "if an assessment cannot be standardized or structured, how can the quality or fairness of the assessment be ensured as high?" The instability of the object of measurement further raises another question, "if candidate X performed better than candidate Y, is that because he is better or because the case was easier?" Similarly, because of the time constraints, many a time it may be a ritual testing the recall form of knowledge, but when the questions are structured and standardized, they are useful in the evaluation of higher cognitive domains among the students.

Viva voce examination is subjective and student-driven as many candidates seem to be convinced that graduate awards are not merited but given. This is premised on the thinking that viva voce verdict depends on how the candidate has impressed the panelists. This suggests that, the interaction effect may influence the outcome and that the exact way viva voce examination will unfold is unpredictable beforehand. Every word said or behavior manifested by the candidate during viva may result into a particular reaction.

In the eyes of some candidates, viva voce examination is driven by past personal as well as viva experiences or research supervision orientation of the panelists. Leaning on the psychoanalytic understanding of adult behavior, a panel of academicians who might be sharing a tradition of viva hostility, may fail to visualize this as a learning, mentoring or knowledge sharing opportunity.

Similarly, passing Viva voce examination has been reduced to luck in some academic settings, sometimes referred to as fortune. This suggests that viva success is depended on factors outside a person's control. So, when a person is lucky, he or she sails through very fast. In the religious context, this might be thought of as grace.

The viva voce examination can be an anxiety provoking experience emanating from much preparation by both the student and the examiner, the numerous negative stories resulting into fear, anger, loss of academic humility, positivity as well as academic reasoning. This is perhaps hallowed in the terms used like "dissertation or thesis defense" that seem to sway candidates into a combative mood which interfere with academic consciousness and rigor. More explicitly, the purpose of the viva has been muddled in the misrepresenting terms used, like defense, which reduce the would be academic accolade event to perhaps an academic skirmish or clash. Therefore, academic reflection may be needed on the more convenient terms without losing out on the ideals of viva voce examinations.

Preparation for viva voce examination can be time consuming and requires a lot of energy as well as resources. It involves mastering the work or the book, attending presentations of other graduate candidates, presenting the work to different groups of scholars, facing mock viva arranged by the supervisors or peers as well as personal reading or reflections on the possible questions. The process has been considered to be intensive, rigorous and tiresome. Some candidates claim ailments, loss of property and income, social networks and marriages by the time they complete.

Sometimes internal and external examiners may give a completely different score raising concerns of inter-rater reliability. In extreme cases, one of the reviewers or panelist may fail the candidate as he or she is being passed highly by others. The unanswered question is why would this happen among experts? What is the potential influence of bias in the scoring of the candidate? The unequaled professional practices subjugate quality assessment as well as quality output.

Duration of the Viva is not anywhere close to uniformity. Some viva takes about one to two hours while others take the whole day. In other words, a candidate may be engaged for more than six hours. This possibly happens when examiners are deeply interested in the work, get involved in proving results, testing equations, and taking interest in the likely policy outcomes of the project.

There are also complaints leveled against some examiners that they are simply aggressive in character; want to see the candidate break, contradict themselves, fail to apply required listening skill, argumentative, and undermine students including fellow examiners/panelists. Sometimes, they fail to conceptualize the concepts or the problem right, misinterpret, and put the candidate on defensive or treat as a serious error. Some students approach the viva as a confrontational contest, as if the examiner is out to get them. They see traps in every question.

Strategies to Enhance Students' Performance in Viva Voce Examinations

As a candidate, pre-viva preparations should start from the very time the work is submitted for examination. The candidate needs to get in close contact with the supervisor and the department in order to be updated on developments with regard to the work. Besides, other opportunities to attend viva voce examinations of other students could pass the candidate by if they do not stay in close touch with the supervisor and department. Such opportunities are good eye-openers for to learn from the experiences of other candidates.

It is advisable to provide softbound copies of the work to other colleagues who could review it and provide objective feedback for the candidate. A mock viva with such colleagues would diminish the nervousness that would grip the candidate on the day of the real viva. Besides, a mock will give the candidate an opportunity to run through the key areas of their thesis, to gauge how well they can handle any difficult questions, and to get feedback on areas they need to work on.

The candidate is advised to familiarize thoroughly with the work in order to address precisely the critical issues usually raised at viva voce examinations. It is important to find out what the main areas of focus of the examiners of the department are in order to prepare adequately. This could involve looking at their research publications in order to familiarize with their research interests, methodologies, and uniqueness in the subject area. This will enable the candidate to appreciate their own work from the examiners' point of view. In addition, the candidate should look out for fresh research emerging in their area of specialty, which could be useful to inform their own work further. Key scholars in the area should be searched for new insights to inform the work.

In the period leading up to the call for the defence, it is good to read the thesis thoroughly as a whole to gauge how well it fits into one piece. Then a chapter by chapter reading to locate key issues and gaps should be done with highlights of important pages and sections. This reading and rereading should enable the candidate to forecast possible questions that are likely to arise, and to identify the strengths and weaknesses of the work. A list of such possible questions could be compiled as a guide to providing formidable answers in case asked at the viva. The thorough reading should be able to reveal errors and typos whose list should be populated and brought along in the viva.

If a PowerPoint presentation is required, the candidate should prepare quality slides, not too many or too wordy, in consultation with the supervisor. The services of a professional computer technician can be enlisted in this regard. Care should be taken to ensure enough backup copies are kept, including online as email attachments, on flash disks, saved on different computers, just like the thesis itself.

When invited for the viva, liaise with the supervisor and department to find out the institutional procedures regarding the conduct of students during the viva. Subtle issues to do with dress code, mannerisms, how to give answers, and the like, should not be ignored. It is important to keep a journal of dos and don'ts, but generally it is not advisable to add new information to the work – unless direly necessary – otherwise the new information may serve as a source of stress. It is better to focus on what is already known. In addition to the journal of errors, the candidate should prepare a one-paged quick factsheet of the main points of the thesis. This helps to declutter the flow of facts during the viva. Candidates should practice as much as they can before the viva, prepare answers in a structured way, and make bullet notes every time they practice. It is important to note that peers, family, friends, and sponsors will all have expectations of the outcomes of the viva. Therefore, the candidate should ensure that these are managed properly to receive whatever comes out. Candidates need to arrange for accommodation in a convenient location easily accessible to the venue of the viva so as to avoid inconveniences of traffic jam, mechanical breakdown or automobiles, interference from bad weather, accidents, and other such unforeseen events.

On the day of the viva voce examination, the candidate should ensure to bring a copy of the thesis (exactly as that submitted for examination), the journal of errors, summary sheet or quick factsheet, pens, notepads, tissue paper, water, of course not forgetting the computer and presentation, plus a few accessories such as simple and light extension cables. It is good to ensure that the computer and the projector to be used for the presentation are compatible and everything is working well before the viva begins. The candidate can jog their memory by going over their anticipated questions and expected answers.

Candidates need to prepare and freshen early enough and take a good meal before getting to the venue. They should familiarize with the viva room before the viva starts. This helps to distress them. They need to be aware of and follow keenly the programme of the day. This requires that they arrive at the venue way earlier before the start time. A brief interface with the supervisor and the viva chair should help them settle down, relax, and wait at the appropriate location as the venue gets set up for the viva. It is a dangerous idea at this time to try to concentrate on reading the work as this might result in forgetting and heightened stress at the last minute. The most logical thing to do is to browse through the summary sheet, question sheet, and answer sheet to jog the memory on the key components of the thesis: major strengths, limitations, contributions to knowledge and praxis, and future research. Depending on what works for the individual, most candidates would prefer some degree of quietude during the pre-viva moment. In this case, they should let their peers and friends know and obtain the peace of mind they desire.

All in all, the wider strategy requires preparing candidates to see viva as a discussion where panelists and members in attendance simply come to learn something new. They should be able to predict the likely questions and possible answers. The preparatory phase should tone down the unknowns that precipitate anxiety, and demystify the horror stories about viva. The recommendation is premised on the theory of readiness (Long, 1989) where the candidate should be prepared to receive the viva examination. It should not be a cause of blank mind syndrome (Brune, Blank, Witthaus, & Saft, 2011) where candidates are thrown into forgetting what they knew, and giving simply wrong answers because of the confusion.

Potential candidates should look out for the Viva guidelines beforehand, articulating hints and tips, dos and don'ts, as well as the fundamental doctrines of viva voce examination. The guidelines offer an answer to why the viva, clarify operational arrangements (length of viva, number of panelists, role of the audience among others), and the expected outcomes of this professional practice.

CONCLUSION

Viva voce examination is a formal academic that inputs academic rigour in the research process. Therefore, it necessitates adequate preparation by all stakeholders in terms of physical presence and an earnest mental attitude. In order to offset the negative emotions associated with the process, especially in Uganda, it should be effectively managed at pre-viva, during the viva, and post-viva stages. Recognizing that the examination is muddled with challenges, the managers as well as the candidate should ensure that formally documented strategies are in place and well disseminated to abate the challenges. The students should be gradually and systematically introduced to and prepared for *viva voce* examinations as a formative assessment, rather than being subjected to it suddenly as a terminal assessment

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KEY TERMS AND DEFINITIONS

Chair: independent chairperson of the viva voce examination panel, usually appointed by the director of research or academic registrar of the institution from a department that is very different from the one the candidate comes from, in order to exhibit neutrality.

Defense: another term for viva voce examination.

Examiner: A faculty who is an expert in the area of research undertaken by the candidate, who has been appointed to assess the thesis of the candidate. The examiner could be from the same institution as the candidate, hence termed internal examiner; or from another institution different to that of the candidate, hence termed external examiner.

Panelist: An examiner who serves as an assessor at a viva voce examination.

Viva Voce Examination: A formal oral examination, or oral defence, administered to postgraduate research students to assess their indepth understanding of a given research issue through an oral presentation of their thesis on the issue.

Chapter 7
How Work-Life Balance and Research Skills Proficiency Affect Research Engagement

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ABSTRACT

This chapter presents how differences in levels of research engagement arise with respect to levels of work-life balance and research skills proficiency among Master of Education students in Uganda. A cross-sectional survey was conducted among two cohorts of the students (N = 102). The work-life balance of the students was generally low (M = 107.48, SD = 23.56). Though the majority of the students, 94 (92.2%), reported high levels of proficiency in research skills (M = 68.96, SD = 10.44), they indicated low levels of communication skills. Significant differences in research engagement existed among the students of different religious affiliations ($\chi 2$ = 0.823, p = .05), marital statuses (U = 370.00, p = .027), and levels of research skills proficiency (U = 88.00, p < .01). Implications for educational policy and practice include careful selection and training of adult learners at master's degree level, and staking the students in the research process through effectively imparting 21st century skills.

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INTRODUCTION

Master's degree is acclaimed world over as the minimal formal education credential that high-skills employers require (Ewell, 2013; Graduate Schools and Educational Testing Service, 2010; Jibril, 2004). In response to this fact, many countries and regions of the world have embraced graduate education at Master's level as a vital component of economic development. The countries and regions have embarked on national investments of educating their populations to at least Master's degree level so as to produce innovative, critically thinking graduates who can devise solutions to extant challenges facing their nations.

In the developed world, the picture painted of formal education is that the more an individual has acquired it, the more paying will be the job he or she will get, the higher will be his or her income, and consequently the better will be his or her expected standard of living (Eurofound, 2005; Maxwell & McDougall, 2004). To this effect, many first-degree holding employees in Europe, irrespective of gender, register for Master's programmes with a hope of landing higher paying jobs after completion to earn higher wages wherefrom to improve their standards of living (Eurofound, 2005).

In the African context, the UNDP (2009) observes that African higher education in general is characterised by extremely low participation rates, that is, there are far fewer students at tertiary institutions and universities than there are at the lower levels of education. The gross enrolment ratio in higher education is pictured by the UNDP at 4% in Sub-Saharan Africa as opposed to the world average of 27%. These figures are mainly a reflection of the low resource settings characterising the Sub-Saharan Africa. Uganda is reported to have even a lower average of 3.5% (Musisi & Mayega, 2010), meaning that the socioeconomic status of the Ugandan population averages far below the continental average. However, according to Pillay (2010, p. 224), "even though participation rates remain low in the context of a growing population, enrolments (in higher education in Africa) are growing everywhere in absolute terms, in several cases quite dramatically." Many first-degree holders in Africa enrol for Master's degree programmes either within their own countries, or go abroad, or pursue sandwich programmes between universities within their own countries and other universities abroad.

In Uganda, the demand for higher education, including enrolment for Master's programmes, is projected to continue growing (Musisi & Mayega, 2010). This, according to the same authors, is attributable to (a) high population growth, (b) universal primary education and universal secondary education that continue to

produce more competitors for the existing job opportunities, (c) increased household income, (d) growing recognition of the role of higher education in national development, and (e) the expected high private returns to higher education. The projected higher enrolment can be explained further by the fact that the Government of Uganda posits and hence imparts formal education as a key determinant of the lifestyle and status an individual enjoys in a society (Uganda Bureau of Statistics [UBOS], 2010). In line with this, the enlightened Ugandan population has with time realized that the higher the level of education an individual has attained, the more knowledgeable the individual is about the need and use of available facilities in his or her community. Therefore, many first-degree holders venture to advance their academic credentials through pursuing a Master's degree so as to be better edged for social and economic upliftment in terms of salary and/or wage earnings.

In the public service in Uganda, covetable salary increments are on average three times higher among higher academic qualification than lower academic qualification positions (Teachers Initiative in Sub-Saharan Africa [TISSA], 2013). TISSA further notes that with particular reference to education service, some specific officers and upper level management such as head teachers and commissioners are targeted for additional increases triple their total nominal wage increase. In addition, the promotion modality of rising from lower positions to higher ones within the education service requires a lag of at least six years in service. The subsequent pay progression to the top of the scale is automatic for the majority of officers, and once they reach the top of the scale, the only avenues for increases are through promotions to higher managerial posts attainable through accumulation of additional academic qualifications.

Unfortunately, opportunities for promotion within the teaching profession are often so few that upgrading is not always followed by a systematic increase in salary benefits, which is often frustrating. For individuals already in head teacher positions at secondary schools, attaining a Master's degree is next to mandatory in order to retain their jobs. In response, first degree holding head teachers and other educationists who can afford sponsor themselves for Master's programmes to rise up the career in education ladder, leaving those unable to do so stagnate in the teaching profession. This implies a sudden surge in numbers of Master of Education students. However, the students are not spared the hurdles in the academic journeys.

Like in many other African countries, the academic progression of Master's students in Uganda is characterised by serious internal inefficiencies as reflected in high dropout rates, high repetition/retake rates, longer completion times, low graduation rates, and to a lesser extent transfer between programmes (Farrar,

2013; Pillay, 2010). These inefficiencies are coupled with poor quality of outputs including low scores in course work, examinations, and research work. Such progress deficiencies are attributed to various programme, environmental, and student quality factors, although many disciplinary and other complex factors too contribute to these outcomes.

Salient environmental factors that affect student performance at Master's level include institutional policy, systemic and organisational structures, and political climates. The most immediate and differentiating environmental factors that affect the students' progress include demands from family, study, work, and social as well as personal life (Allen, Herst, Bruck, & Sutton, 2004). Most of these factors are cross-cutting generic issues for all students in the same cohort. These factors establish the social context which sets the stage for student decision making and provides unique pathways to learning that depend on family, peers, culture, life events, and teachers (Toshalis & Nakkula, 2012). In other words, a proper balance in handling demands from the social contextual factors in which the student lives and works – called work-life balance – determines how the student will appraise himself or herself to handle Master's study demands.

Work-life balance is defined as the extent to which an individual effectively manages multiple responsibilities at work, at home, and in other aspects of life (Ahmad, 2008). The concept has been variously conceptualised over time, but most research adopts three main works-life balance constructs: (a) workplace support, (b) work interference with personal life, and (c) personal life interference with work (Banu & Duraipandian, 2014). An individual's work-life balance could be high or low. Students might view their simultaneous involvement in family, work, study, social, and personal life as stressful. In this case, their work-life balance is said to be low. Basing on the integration theory of work-life balance (Clark, 2000) which postulates that students require a healthy system of flexible and permeable boundaries between family-life, work-life, and community-life domains to pursue their programmes with utmost efficiency, it is expected that students will transfer emotions, attitudes, skills, and behaviours that they establish at work into their family life, study life, and personal life and vice versa.

Whereas a student may have positive work-life balance to handle research work, proficiency in certain key skills – the 21st century skills – is critically important to enhance the student's progress during research. These constitute the research skills proficiency construct in this study. Research skills proficiency is defined as a student's skillfulness in the command of fundamentals of computer applications, academic writing, data collection and handling, and communication skills deriving

from practice and familiarity (Word Web, 2007). These skills include basic computer skills, academic writing, data handling, and information and communication skills. According to Pacific Policy Study Centre (2010) in its publication "21st Century Skills for Students and Teachers," students need to acquire and utilize creative thinking, flexible problem solving, collaboration and innovative skills that are necessary for success in work and life. Research engagement is possible through the possession and actualization of the research skills and a good work-life balance. It was envisaged that a student with a high level of research skills proficiency would invest more time and energy in pursuing the demands of the research and hence have higher research engagement than students lacking grossly in the research skills.

Research engagement is defined as the feeling of positive emotions toward research work, doing research as a personally meaningful activity, considering the research workload to be manageable, and having hope that the research work will attract a better job and better pay in future (Ram & Prabhakar, 2011). According to Zekpe, Leach, and Butler (2010), research engagement involves students' cognitive investment in, active participation in, and emotional commitment to their learning. Measured on a high-low continuum, research engagement entails the active use of emotions and behaviours in addition to cognitions in undertaking research. A high research engagement is characterised by energy, involvement, and efficacy as opposed to low research engagement characterised by burnout and intentions to quit; evidenced by exhaustion, cynicism, and inefficacy (Ram & Prabhakar, 2011).

Zekpe et al. (2010) provide five benchmarks of learner engagement: (a) motivation and agency, (b) transactional engagement, (c) institutional support, (d) active citizenship, and (e) non-institutional support. The benchmarks most closely associated with degree/certificate attainment are active and collaborative learning, academic challenge, and student faculty interaction. In line with the Student Involvement Theory (Astin, 1999), the progress and achievement of Master's students in research is deemed to be directly proportional to the quality and quantity of the students' engagement in research. The main objective of the study was to examine the levels of research engagement as a function of work-life balance and research skills proficiency among Master of Education students in Uganda.

STUDY PROBLEM

Existing evidence indicates increasing enrolment rates, high dropout rates, high retake and repetition rates, longer completion times, and low graduation rates among Master's degree students in Uganda (Pillay, 2010). Reports from universities

and NCHE (2014) indicate that the average completion rate at Master's degree level in Uganda is generally below 50% as opposed to nearly 100% completion rate at undergraduate level. According to Muriisa (2015, p. 204), "Many students who register [to pursue postgraduate studies] in Africa are unable to complete the program in the stipulated time." Many of the students get caught up in the maze of family, work, social, and personal life facets. This degenerates into low work-life balance. Similarly, many of the students join with insufficient requisite research skills consequently leading to low research engagement. Unfortunately, no local studies have been conducted to investigate the differences in research engagement among the students. The continued absence of such investigations sustains a long-standing disconnect between the students, their supervisors and faculties, the postgraduate affairs offices, home, workplace, and social as well as personal life. This study, therefore, sought to bridge the extant student engagement practices in universities that have Master of Education programmes in Uganda were investigated.

METHODOLOGY

Cross-sectional survey design was employed in collecting, organising, and presenting quantitative data from the Master of Education students because a single time frame was chosen for garnering the data from the different categories of the students engaged in the study. The study population comprised Master of Education students who enlisted in 2011 and 2012. The institutions considered for selection of the participants were those whose Master of Education programmes were accredited in 2010 (Lejeune, 2010).

Sampling was done at the level of universities and respondents. The inclusion criteria for a university included having a charter and offering of a Master of Education programme duly accredited by the National Council for Higher Education in 2010. The universities that satisfied these criteria were then stratified as private, public; religious, secular; and according to location, age, and accessibility. A census of all the three qualifying public universities was taken, while a systematic random sample of three private universities was selected. The systematic sampling was based on regional balance, the foundation body, and accessibility. This ensured equitable and yet randomised representation across the institutional divide for quantitative data collection.

Sampling frames for the 2011/2012 and 2012/2013 Master of Education students were obtained from the selected universities. All the students on the frame constituted the target population. Initially the researcher intended to involve all the students

on the frames as participants in the study. However, considering accessibility and consent, inclusion of a student in the study depended on the student's geographical location in which the questionnaire could be given and picked, or online, and on the student's acceptance to participate in the study. Sampling using these inclusion and exclusion criteria resulted in 102 participants.

Work-life balance was measured using the Work-life Balance Scale adapted from Banu and Duraipandian (2014). The scale has five subscales; work place support, work interference with personal life, personal life interference with work, satisfaction with work-life balance, and improved effectiveness at work. Aspects of work place support included work environment support, organisational support, manager support, and co-worker support. Work interference with personal life has three aspects: time- based interference, strain-based interference, and behaviour stress related interference, marital related interference, time related interference, family intrusion, and dependent care issues. The remaining two subscales are not segregated into aspects. The original overall scale and the subscales had good psychometric properties (Banu & Duraipandian, 2014).

Subscales of Research Skills Proficiency Inventory include the students' proficiency in basic skills required during research; competency in basic computer skills, competency in academic writing skills, competency in data collection and data treatment skills, and information and communication skills.

The students' research engagement was investigated by using an adapted version of the Student Engagement Scale (Singh & Srivastava, 2014). The scale measures four constructs including active and collaborative learning, student effort, student-faculty interaction, and institutional support. The Cronbach alpha reliability coefficient of the subscales of the original instrument ranged from .81 to .84 while the content validity index of the original scale was .85.

RESULTS AND DISCUSSION

The main objective of this study was to examine the levels of research engagement as a function of work-life balance and research skills proficiency among Master of Education students in Uganda. To achieve this, nonparametric tests of difference were run to; first, compare the categories of the demographics with respect to their levels of research engagement. Second, the research engagement of the students in the different levels of work-life balance and research skills proficiency were compared. However, before testing the differences in research engagement, the levels of work-life balance and research skills proficiency were determined.

The average work-life balance of the students was generally low ($M = 107.48$, $SD = 23.56$). Analysis showed that there was a significant difference in work-life balance among the categories of age range ($U = 7.796$, $p = .050$). The highest work-life balance was exhibited by students below 30 years of age (Mean rank = 76.58). Otherwise, work-life balance increased as the age increased from 30 to 59. Another factor that affected work-life balance among the students was their sex. There was a statistically significant difference between males and females ($U = 753.00$, $p = .002$). The males had higher work-life balance (Mean Rank = 58.08) than the females (Mean Rank = 39.43).

Generally, the students reported having high overall research skills proficiency (M = 68.96, SD = 10.44), high proficiency in computer applications (M = 15.13, SD = 3.14), academic writing (M = 16.21, SD = 2.46), and data handling (M = 21.81, SD = 4.99). Their proficiency in communication skills was generally low (M = 15.81' SD = 10.44).

It was further established that there was a statistically significant low positive relationship between work-life balance and research skills proficiency ($r = .304$, $p < .01$). This implies that an increase in research skills proficiency was associated with a reciprocal increase in work-life balance. Probably, a student who had a good grasp of the 21st century skills had a better way of organising his or her time in pursuit of the various life facets.

Analysis of data to determine differences in research engagement revealed a number of findings. Results indicated that there was no statistically significant difference in research engagement among the students by employment status, religious affiliation, and undergraduate programme pursued to qualify for the master's programme. However, the existing literature presents findings that are to the contrary. A variety of institutional and background characteristics, prior to students' college entry, have long been reported as significant predictors of students' college Grade Point Average (GPA) and educational satisfaction. The background characteristics include institution type, high school GPA, race, gender, class standing, parental education, study time, and educational aspirations (Anaya & Cole, 2001; Astin, 1993; Cole, 2007; Davis, 1994; Hurtado, 1994; Pascarella & Terenzini, 2005). Institutional circumstances include individual indicators such as academic year, program, and number of courses. Similarly, Andres and Carpenter (1997) identified age, gender, social class, ethnicity and current physical health as differentiating factors of research engagement. This is in agreement with the findings of Wilson and Peterson (2006): students bring differences in intelligence and interest, in ethnicity and race, in culture and gender and in many other dimensions when they join university.

Results show a marginal difference in research engagement ($\chi^2 = 8.738$, p = .05) by religious affiliation, decreasing in the order Muslim (Mean Rank = 67.89), Catholic (Mean Rank = 53.45), Protestant (Mean Rank = 49.35), Pentecostal (Mean Rank = 39.64), and Other (Mean Rank = 33.08). A similar earlier study by Gonyea and Kuh (2006) to investigate the differences in student engagement revealed that although significant differences exist by religious affiliation, they are not particularly sizeable overall. Astin (1984) similarly found out that, those students who become intensely engaged in athletic activities show smaller than average increases in religious apostasy. However, this trend of engagement by religious affiliation seems to reveal the continuum conservativism to liberalism. As noted by Astin (2005), religion as one of the most fundamental characteristics defining one's ethnicity has gained widespread interest in the field of education. It has been argued that religious identity and engagement are more important to the current generation of college students than in previous generations (Nash, 2001).

Given Smith's (2001) assertion that Muslims tend to be more highly educated than the general public, it is expected that Muslim students would have higher levels of research engagement. In a follow-up study by Cole and Ahmadi (2010), it was found out that Muslim students were more likely than students of other religious affiliations to tutor another college student, attend a racial/cultural awareness workshop, have a roommate of different racial/ethnic background, participate in racial/ethnic specific student organizations, and socialize with someone of different ethnic group. Muslim students are also likely to have spent less time in religious service or prayer in addition to having greater tendency of working in groups while doing their research projects. In line with Astin's (1984) student involvement theory, the amount of student learning and personal development associated with any educational program is directly proportional to the quality and quantity of student involvement in that program. Therefore, the findings of this study lend some evidence to uphold findings in the previous studies, that Muslim students are generally more engaged in pursuing their research than their Christian and Other counterparts.

There was also a statistically significant difference between singles and the married ($U = 370.00$, $p = .027$). The singles had higher research engagement (Mean Rank = 65.07) than the married (Mean Rank = 46.90). This finding has not been paralleled by findings from similar previous studies. However, a note by Andres and carpenter (1997) advances some explanation that majority of higher degree students are most likely older and married, having weaker academic backgrounds, and less confident about their prospects for program completion, but join higher degree programmes because of feeling threatened on their jobs. This tends to describe the exact situation

among majority of the Master of Education students. In line with Tinto's (1975) compensation theory, married students are more likely than single students to perceive benefits of research engagement as less than the costs with respect to their family engagement. Looking after their families may have been perceived as having higher rewards and less cost so that the students decided to engage less or drop out of the so demanding terminal assessment process – the research journey.

There was also a statistically significant difference between those who had graduated and those who had not with respect to their research engagement ($U = 769.00$, $p = .006$) with the former group reporting a higher research engagement (Mean Rank = 62.88) than the latter group (Mean Rank = 45.81). It is obvious that those who already graduated must have engaged more in their research undertaking than those who had not. The reasons for the difference might include marital status and religious affiliation which significantly differentiated the students.

The students' research engagement did not vary significantly by levels of work-life balance. However, they showed significant differences in research engagement by levels of research skills proficiency ($U = 88.00$, $p < .001$). Students high in research skills proficiency (Mean Rank = 54.56) had higher research engagement than their respective counterparts with low levels of research skills proficiency (Mean Ranks = 15.50). Engagement in active and collaborative learning varied significantly among students with low and high levels of research skills proficiency ($U = 82.00$, $p < .001$). Those with low levels of research skills proficiency exhibited low levels of active and collaborative learning. Student effort invested in the research work varied significantly by the level of research skills proficiency ($U = 196.00$, $p = .022$). Students with high levels of research skills proficiency (Mean Rank = 53.51) had invested more in student effort than their respective counterparts (Mean Ranks = 29.00). Student-faculty interaction varied significantly among students with low and high levels of research skills proficiency ($U = 82.00$, $p = .001$). Those with high levels of research skills proficiency (Mean Ranks = 54.28) exhibited higher levels of student-faculty interaction than those with low levels of the variables (Mean Ranks = 18.81).

The degree to which the students engaged in benefitting from institutional support varied significantly among students with low and high levels of research skills proficiency ($U = 215.50$, $p = .044$). Those with low levels of research skills proficiency also exhibited low levels of active and collaborative learning. High research engagement generally tends to go hand in hand with employing research skills in learning by doing. Alvarez, de la Fuente, Perales, and Garcia (2002) similarly observed that students taught using an experimental approach which allows them to

investigate and research an issue show significantly higher involvement compared to students exposed to traditional curriculum and teaching methods. Hence it is here advanced that skills training and personality beef-up should become part of the Master of Education training methods. As reported by Masters (2009), all educationists should be required to have a master's degree and matriculates' levels of literacy, numeracy, and problem solving should be tested to ensure they are finally brought to the right level at the end of the day.

CONCLUSION

Work-life balance was positively associated with research skills proficiency; a student needed to have a higher level of research skills proficiency in order to have a high level of work-life balance. The levels of research engagement varied significantly with research skills proficiency but not work-life balance. Students high in research skills proficiency, that is, having a broader competence in 21st century skills, had significantly higher research engagement and so were more likely to complete their Master of Education programmes earlier than their counterparts with low levels of research skills proficiency.

RECOMMENDATIONS

The differences among the students point to the fact that while acknowledging the common learning needs of all students during course work, supervisors should give attention to students' individual needs and learning styles and adjust their approaches accordingly during research. Accommodating the diverse range of students' learning needs, especially in terms of research skills competences, that is, the 21st century skills, is likely to have positive impact on research engagement among the students. Therefore, ongoing trainings and workshops on 21st century skills should be conducted to stage the students on a forward footing for research engagement. Implications for educational policy and practice include careful selection and training of adult learners at master's degree level, and staking the students in the final assessment process of research engagement.

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KEY TERMS AND DEFINITIONS

21st Century Skills: These are 12 abilities that students in the 21st century need to engage effectively and efficiently in their studies and later on in their careers. These are grouped into three categories including Learning skills (the four C's – critical thinking, creativity, collaboration, communication) which teaches students about the mental processes required to adapt and improve upon a modern work environment; Literacy skills (IMT – information, media, and technology) which focusses on how students can discern facts, publishing outlets, and the technology behind them; and

Life skills (FLIPS – flexibility, leadership, initiative, productivity, social) which focus on both personal and professional intangible qualities of the student.

Research Engagement: The feeling of positive emotions toward research work; investing personal resources, energy, and time in doing research as a meaningful activity; considering the research workload to be manageable while taking advantage of collaborative, faculty, and institutional support; and having hope that the research work will attract better opportunities in future.

Research Skills Proficiency: Skillfulness in the command of fundamentals of computer applications, academic writing, data collection and handling, and communication skills deriving from practice and familiarity.

Upliftment: The process of raising the education level and economic status of disadvantaged groups.

Work-Life Balance: The extent to which an individual higher education student effectively manages multiple responsibilities at work, at home, and in other aspects of life.

Chapter 8
Challenges Confronting Students With Disabilities in Research Engagement in South Africa

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ABSTRACT

This chapter presents physical barriers, lack of adequate funding, poor supervision, delay in feedback, communication difficulties, negative attitudes, and impairment-related disadvantages as the unique challenges confronted by students with disabilities when doing research in higher education in South Africa. Data were collected through scanning South African and international literature available on Google scholar, ProQuest, in books, journal articles, and online resources. Informed by decolonial theory, the invisible underlying causes of the challenges are discussed. Suitable assistive devices, listening to students with disabilities' voices, and more time allocation are suggested as strategies that could improve research engagement for students with disabilities.

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INTRODUCTION

Both the academic staff and students have to engage in research because it is one of the ways through which knowledge is produced and disseminated. Students with disabilities are not exceptional in engaging in research as a component of the programmes of their study. When they graduate from institutions of higher education, graduates with disabilities who enter into academia as faculty members, have an obligatory requirement to engage in research and publish their work. However, limitations such as physical barriers, lack of adequate funding, poor supervision and impairment-related disadvantages are confronted by students with disabilities, in the South African context of higher education. This chapter uses decolonial theory to analyse the challenges confronted by students with disabilities in research engagement. The argument for the chapter is that while students with disabilities are required to engage in research as all other students, they confront unique obstacles, which limit their effectiveness in research engagement. The chapter suggests relevant assistive devices, listening to students with disabilities' voice and more time allocation, as strategies that could improve students with disabilities' engagement in research in the South African higher education. The chapter seeks to contribute to the contemporary debates on engagement in research, by all diverse students in higher education globally, and in South African context specifically.

Research has been conducted on challenges confronted by students in contexts of higher education in Africa. Among other many studies, Atibuni, et. al (2017) explored challenges and strategies in conducting research by Master of Education students in Uganda. This chapter comes from a unique perspective of focusing on challenges for students with disabilities specifically, which are different from those confronted by other students without disabilities. Accurate statistics of graduate students with disabilities in South Africa is difficult ascertain because some of them do not disclose their disabilities in institutions of higher education. Literature however reveals that they take longer than other students without disabilities, to complete their programmes of study, which research is part of (Ndlovu, 2017).

Given the focus of this chapter, it is important to start by providing the context in which research in higher education in South Africa takes place. This will provide the picture of students with disabilities' engagement in research in the particular context. The chapter goes on to discuss the decolonial theory which is important for understanding the invisible causes of challenges confronted by students with disabilities. The challenges as illuminated by the theory are presented and intersectionality is discussed, to make an understanding that challenges confronted by students with disabilities in doing research cannot be over-generalised to all of them, as they are not homogeneous. Lastly, suggested strategies to improve research for students with disabilities are provided.

Research in South African Higher Education

South Africa is one country where a lot of research needs to take place in its higher education because it is seeking transformation from the previous regime and as a result, a lot of change has to happen. Research is the basis and foundation upon which the change can be implemented. Furthermore, research is the way through which developmental milestones and progress made from the Apartheid period, to the present democratic government, in different areas and in education specifically, can be determined. The importance and inevitability of research in such a context need not be over-emphasised. At present, everyone who enters higher education, is initiated and groomed into the practice of constructing knowledge in different disciplines, argues Ballim (2015). World Bank is supporting research through centres of excellence in Southern Africa, broadly and South Africa specifically (MacGregor, 2016) and the National Research Foundation (NRF) is investing a lot of funding in research in higher education, to fund academics and post-graduate students in various research endeavours. However, despite the efforts, there is much that still needs to be done, in terms of research in South African higher education, states Bitzer (2009). It implies that there is a lot of untapped knowledge that still needs researching on, and disseminated hence the justification of the need of extensive research, even by students with disabilities.

Research in higher education broadly, borders around specific themes. In the South African context specifically, Tight (2003) categorised research themes as including among others, teaching and learning, curriculum design, quality, student experiences, policy, institutional management and higher education transformation. Though the categories are not exhaustive, those are some of research areas and categories, from which research topics are formulated. Students with disabilities also need to be engaged in research on issues that affect them. As informed by the principles of the transformative paradigm, the oppressed should play an active role in research that pertains to them (Mertens, 2015). This is so that they are not objects of research by those without disabilities, but subjects who engage themselves in their own research as well. Issues of equity and access into higher education in general and 'access with success' by historically disadvantaged social groups, are topical issues in the South African higher education presently. Students with disabilities are part of the social groups that have been historically disadvantaged, classified as the traditional students in the National Plan (Department of Education (DoE), 2001). This justifies the need for students with disabilities to engage in research in higher education, so as produce and disseminate knowledge on issues that affect them as they have a lived experience of disability.

Access of Students with Disabilities in Higher Education in South Africa

There has been an equal opportunity of access given to all diverse students and those with disabilities specifically in the context of South African higher education. Equity of access is addressed in a number of clauses in policy. Policy of transformation in higher education states that the goal is to give fair chances of access to all students who have the potential. Furthermore, it states that there should be eradication of all forms of unfair discrimination (White paper 3: Transformation in higher learning, Department of Education (DoE), 1997). It implies that all diverse students including those with disabilities, cannot be denied access into higher learning. Thus, there has been increased access of formerly disadvantaged social group, as women, the blacks and students with disabilities (Council of Higher Education (CHE), 2013) in South African higher education. Part of the requirements for programmes in higher education, more particularly at post-graduate level, is research. It is a requirement for all students, including those with disabilities. It is in this context that the chapter presents the challenges confronted by students with disabilities in their research engagement, in particular and consequently, suggesting strategies that could make improvements. The section below is on the theory, which underpins the chapter, to understand the underlying cause for obstacles confronting students with disabilities in research engagement in the South African context of higher education.

Decolonial Theory

Decolonial theory (DT) is a long-standing theory, whose proponents include, among others: Grosfoguel (2007, 2011), Quijano (2000, 2007), Mignolo (2000; 2007), and Maldonado-Torres (2007). It is a theory that extensively explains coloniality and Western modernity, exposing their hidden and invisible ills, and making a clear understanding that while colonialism has long ended, it is extended and perpetuated through the structure of coloniality and the dark side of modernity (Grosfoguel, 2007; Ndlovu-Gatsheni, 2012). In other words, the theory seeks to make the understanding that Africa, and other countries in the West as Latin America, which are understood to be part of the Global South, are still under the oppression of Europe (Ndlovu-Gatsheni, 2013). The theory thus explains the fact unknown to many, that the invisible structure of coloniality still exists to this present day (Quijano, 2000; Maldonado Torres, 2007) and how all the oppression and exclusion of other social groups that is being experienced globally generally, and in Africa particularly, is influenced by coloniality.

Decolonial theory is not a theory that addresses disability per ser, but it explains the oppression of the Other, to promote agency, the emancipation of the oppressed and the marginalised social groups in society in general. The Other, is a social category created through coloniality, as the dominant society categories humanity using 'normalcy' as the standard (Quijano, 2000). This is explicitly explained in the concept of coloniality of being (Quijano, 2000; Grosfoguel, 2007; Mignolo, 2007; Maldonado-Torres, 2007). It is in the process of categorisation and naming of humanity that persons with disabilities are constructed as the Other, ranked in the lower hierarchy than the 'abled'. The theory has thus become popular in the Global South because it unmasks and exposes coloniality and provide methods of self-liberation for those victimised by these ills.

Decolonial theory is relevant and important for the present chapter as it explains the invisible cause of the challenges confronted by students with disabilities in engaging in research in the South African higher education. Effective strategies for improving research for students with disabilities can be thought about, designed and implemented, if only the invisible structure underlying the challenges confronted, can be exposed. If not, the same challenges will continue to rear their ugly heads, disadvantaging students with disabilities in engaging in an effective research process, like their able-bodied participants. The slogan 'publish or perish' is real in higher education internationally, in Africa and South Africa specifically. Students with disabilities should thus be assisted to engage effectively in research as those without.

SOUTH AFRICAN CONTEXTUAL DISADVANTAGES

Inaccessible Physical Environments

Unlike students without disabilities, those with disabilities, have the challenge of inaccessible built environment in the South African context of higher education. This affects more specifically those with physical disabilities, using wheelchairs and those with visual impairments. The inaccessibility of the built environment results from not being originally built with all diversity in mind. Some spaces as places of integrated learning (workplaces), have been retrofitted and renovated, for access of all diverse persons, including those with disabilities. However, this is limited because there are also restrictions imposed by National Buildings Regulations, which have to be followed (SANS, 2011). Swartz and Schneider (2006) explain that while attempts are made to transform the built-environment, for the access of

all diverse people, including those with disabilities, total accessibility might not be achieved soon enough because of the costs involved. With this situation at hand, students with disabilities, using wheelchairs, and those with visual impairments, have challenges when required to collected fieldwork data in research spaces that are inaccessible. They could be time loss for them when doing research as they take long negotiating spaces.

It is important to note however that in some institutions of higher education, there are instances of retrofitting and building of new structures, as informed by the principles of Universal Design (UD), taking place (Fitchett, 2015). UD involves designing space, objects, and technological devices for accessibility and use by individuals with and without disabilities (Mace, 1998). It implies that new structures at some particular institutions are being redesigned to suit all diverse students, including those with disabilities. However, while there is such a kind of improvement, some institutions have specific buildings that cannot be retrofitted or renovated because they are preserved for their architectural designs and heritage (Chipkin, 1993). In essence, the particular physical structures cannot be improved. Besides, most institutions of higher education still have lecture rooms, libraries, toilets, door handles that are inaccessible (Engelbrecht & de Beer, 2014). In cases where there are accommodations within the built environment, they often take the form of the bare minimum, and are at the back of buildings (Hall & Belch, 2000). When the built environment is so limiting, as students with visual impairments, those with physical and motor disabilities might also waste a lot of time negotiating access into the buildings as libraries, to source information as literature for research purposes. Therefore, it cannot be expected that when there is such a limitation as imposed by physical structures, students with disabilities can engage in research effectively.

Public transport is another major barrier for students with disabilities to engage in research effectively. The Parliamentary Monitoring Group South Africa (2013) states that buses, cars and trains are still inaccessible for people who use wheelchairs and those with visual limitations in South Africa. The situation is much more pronounced in rural areas. Even in urban areas, there are still very few accessible transport modes, says Khuzwayo (2011). It is in such a situation that Odendaal-Magwaza and Farman (1997) report that most field work in higher education is done off-campus. That inaccessible transport inevitably presents a challenge to students with physical disabilities, more specifically those using wheelchairs, and those with total loss of vision, need not be over-emphasised. Thus, while all students in higher education are required to engage in research, when infrastructure like the built environment and transport are still inaccessible, those with disabilities might not perform at their best.

Lack of Adequate Funding in Higher Education

Engagement in an effective research requires funding for all students with and without disabilities. At present, higher education in South has a specific fund for students with disabilities. This funding is part of National Student Financial Aid Scheme (NSFAS), and it covers tuition, accommodation, food and it includes Disabled Student Allowance (DSA), which caters for assistive devices (NSFAS, 2013). Unlike what NSFAS provides to other students however, the grant provided to students with disabilities is not a loan, but a bursary. This funding does not include research expenses. Wolpe (1991) had predicted that the economic resources required to address the inequalities of the core structural conditions of the legacy of Apartheid in Education sphere; are not available and will not be in the near future. Badat (2015) argues that South Africa has low state funding for higher education. While there has been an increased access of diverse students to higher learning, the Government subsidy has not increased. Furthermore, though National Student Financial Aid Scheme (NSFAS) for disadvantaged students has been increased, it is still not enough (Badat, 2015). While lack of adequate funding adversely affects even students without disabilities' engagement in research, its effects are more exacerbated and more pronounced on students with disabilities. This is because they might require equipment that is expensive to use and assistive devices, to access and collect data. Without appropriate research equipment and adequate research funding, students with disabilities might not be able to conduct their research effectively as those without disabilities.

Poor Supervision and Delayed Feedback

Most limiting is that students with disabilities are confronted by the challenge of poor supervision when doing research in the South African context of higher education. While poor supervision is a challenge that can also confront students without disabilities, it is exacerbated for students with disabilities. Literature reveals that the academic staff is not willing to include students with disabilities and consequently teaching excludes the particular students (Crous, 2004; Mutanga. 2017). The reason for their unwillingness and exclusion of those students has been traced to lack of knowledge about disabilities (Matshedisho, 2010; Haywood, 2014), and consequently, lack of skills and knowledge of teaching students with different categories of disabilities in class. It is reported, they use overhead slides and power point presentations as technologies to teach, while there are students with

visual limitations in class (Sukhray-Aly, 2008; Kajee, 2010). It is not expected that supervision of students with disabilities could be different when academics are not willing on them, lack the skills and knowledge about disabilities, and are excluding them in teaching in class. When such kind of exclusion happens, it suggests that students with visual impairments specifically, and other categories of disabilities, might lack access to theoretical knowledge of research.

Furthermore, students with visual impairments specifically are limited by technology in accessing learning. Mokiwa and Phasha (2017) observed that the software known as Job Access with Speech (JAWS) does not read signs in Mathematics and Science. When such happens, it means students with visual impairments in particular, are limited in accessing knowledge in the two disciples, when they are doing conceptual and conducting empirical research. Compounded together, it cannot be expected that when they lack the foundational theoretical knowledge of research because of exclusion in class, students with disabilities can engage in an effective research. They might not be competent in selecting the relevant research methodology, data collection methods and might be limited in data analysis process. The over-arching fact is that they would inevitably confront the challenge of lack of knowledge and skills to apply theoretical knowledge of research methodology to practice in both conceptual and empirical research studies.

Students with disabilities also confront the challenge of delayed feedback from supervisors. While this particular challenge might be confronted by all students engaged in research, they are exacerbated for students with disabilities. Tugli et al. (2013) observed that students with disabilities receive their study materials late. Research material such as modules for methodology, could be also among study material that they receive late. Besides, as the academic staff are not aware of teaching different disabilities, the process of supervision will require support from other stakeholders, which might not be an efficient, smooth flowing process. For example, a student with visual impairment' research work embossed in Braille, might need to go to Braille' specialist to be converted to print before being taken to the supervisor. The supervisor' comments in print might also need to be converted to Braille first by a specialist in the Disability Unit, before being received by the particular student. This long process between supervisor and student can delay feedback, and distortion and miscommunication are high likely, for student with disabilities, which might not be the case with students without disabilities.

Communication Difficulties

Students with hearing impairments, who do not use oral communication as way of communication, might confront challenges in conducting interviews with participants who use oral language for communication. Interaction between the researcher and the participants is an important process when data is collected for research. When conducting an empirical study in particular, all students with and without disabilities are required to collect data through methods that require extensive interaction such as one-to one or focus group interviews. This happens extensively in fieldwork, where all students may be required to conduct empirical data. While students who are totally hearing impaired (deaf with a capital D), can communicate using sign language to interact with their participants, it is not all participants who understand sign language and can use it for communication. The interaction between students who are hearing impaired themselves could be effective but might be difficult with other participants who do not have disabilities. It would require that students with hearing impairments use interpreters, to interpret what they are saying to their participants and vice-versa. Chances of misinterpretation in the process are most likely especially when the interpreter is not a person in the same discipline of field of the students with hearing impairments. The service of interpretation is also very expensive in South Africa as it is charged per hour (Ndlovu, 2017). The process of interpretation is also unreliable as the interpreter can fall ill or take a leave, at the time that the student with hearing impairments needs her or him for interpreting for him or her during research. Without interpretation or distorted research data, it might not expected that students with disabilities can report their research accurately.

Negative Attitudes Towards Persons with Disabilities

In South Africa as in many other African countries, society still manifests negative attitudes towards persons with disabilities. In institutions of higher education, attitudes towards students with disabilities by other students and the Disability Unit staff members who provide support are positive, reports the Fotim Report (2011). However, negative attitudes are still extensively manifested in spaces outside universities such as workplaces. It implies that though students with disabilities doing empirical studies, that requires interaction with larger society, can effectively collect data from institutions of higher education; they can become limited to do so in the field. Without adequate field data, the empirical studies of students with disabilities might not be reliable.

Impairment Related Disadvantages

Besides the contextual challenges confronting students with disabilities and limiting their engagement in research, students with disabilities find themselves limited by impairments they have, to effectively do their research like students without. There are some research equipment or instrument students with disabilities might find difficult to use. A medical student with visual impairments stated that he was not able to use a small needle on patients when doing his field work in hospitals (Ndlovu, 2017). Also, there are some research methods that students with disabilities might find limiting to competently use to collect data because of their impairments. For example, a student who is totally visually impaired might not be competent in applying the observation method, to collect data because it requires sight. The student might miss out on important cues from participants as facial expression, which are important to note, when interacting with the participants. In consensus with that, Shakespeare and Watson (2001) argue that the effects of impairments should not be overlooked because they indeed limit persons with impairments. For an example Shakespeare, speaking from her own personal experience as an individual with total visual loss, argued that she cannot drive. Thus, depending on the category of disability and degree of severity, impairment limit students with disabilities' research engagement. For an example, disability categories as physical disabilities and visual impaired are to a larger extent disadvantaged by contextual conditions as transport and built environment. Hearing impairment categories are limited by unconducive social environments. Thus, within partially transformed social and physical higher learning contexts, and also in the field, students with disabilities find themselves confronting obstacles resulting from impairments in themselves. It might not be expected that when students with disabilities are limited to access field work or any conceptual data, they can produce accurate research as that produced by students who are not limited in any way by impairments.

"Publish or Perish"

When students with disabilities fail to conduct research as other students, they will not get their qualification. Research is a component required to be fulfilled, as part of degree component in higher education. Furthermore, when they don't 'publish they will perish' from academia. It is thus important to understand the deeper underlying, invisible causes of the challenges they confront in research in higher education.

When the challenges confronting students with disabilities in doing research as inaccessible physical structures, poor supervision due to unwillingness of academic to handle them, resulting from lack of knowledge about disabilities, are illuminated by

decolonial theory, deep revelation of the invisible structure of coloniality manifests, as the underlying cause. The physical structures are inaccessible because they were not originally designed for all diverse persons in their diversities, pluralities and multiplicities (Quijano, 2000; Ndlovu-Gatsheni, 2001; 2012). They were designed for a 'normal person' because all other differences are denied within coloniality (Ndlovu-Gatsheni, 2001). Thus, it is coloniality of being specifically that is a factor to the challenges confronted by students with disabilities in terms of inaccessible infrastructure in South African higher education.

While challenges of poor supervision could also be confronted by students without disabilities, the reasons for those with disabilities still extends from coloniality of being. Academics as supervisor are more comfortable supervising a 'normal student' than a student who is different by way of body or mind. Also, problems of communication confronted specifically by students with hearing impairments results from coloniality of being of the normative, that a 'normal person' is the one who can hear and talk. The social environment was therefore not constructed to include those who cannot hear because they are diverse. Thus, for the reasons that pluralities, multiplicity and differences are denied within coloniality (Ndlovu-Gatsheni, 2012), the academic staff do not have skills to handle students with disabilities, and consequently unwilling to have them in their classes and supervise them effectively, so that they also engage in research like all other students.

Negative attitudes by society towards students with disabilities, which can have a negative impact on collecting fieldwork data, still hinges on denial of difference, plurality and multiplicity (Quijano, 2000). Society denies that there are other people who are different, and as such deviate from the 'normal' used as standard for humanness. They hold on to the mentality of the normative. Persons without disabilities are skeptical of those with disabilities, resulting in them having low expectations of their capabilities and consequently manifesting negative attitudes to them.

Though the issue of funding is also a challenge to students without disabilities, coloniality of being specifically and coloniality broadly, is still the underlying cause for the challenge of lack of adequate funding, as it relates to those with disabilities. It was not thought of in the South African context during Apartheid that a student with disabilities can access higher education and conduct research. Howell (2006) argues that the system of education was segregated and those with disabilities had their own kind of education known as special, in special schools. Now, when students with disabilities, including other social groups as the blacks and women have increased access into higher education (Carrim & Wangenge-Ouma, 2012),

funding is not adequate because it was never ever planned for them. The over-arching fact is that the present government's resources are over-stretched because it seeks to now include even the Other, who was formerly excluded for being the Other. In coloniality, there is the Other who is categorised in the lower hierarchy. There is the 'superior and inferior', 'black and white', abled' and disabled' (Ndlovu-Gatsheni, 2012). As a result of hierarchisation of humanity, funding is no longer adequate and much exacerbated for the Other. Students with disabilities are the most affected because they are the Other. It is inevitable that their engagement in research without adequate funding, is negatively affected.

Impairment-related challenges also would never been, had the social and physical environment, both in institutions of higher education and everywhere in the country, been originally designed for all diverse persons. Students with different categories of disabilities are hindered to do research because the social contexts do not suit them. Oliver (1990) argued that persons with disabilities are not limited by their impairments in functioning but by the social contexts. Though at surface levels, impairments could also be seen as limiting students with disabilities, to effectively conduct research as highlighted in the above paragraph, decolonial theory explains it as all resulting from coloniality, where the physical and the social is favourable to the powerful, and exclusive to the powerless, who are the Other. It might sound contradictory, but his is in congruence with the proponents of the traditional social model, such as Oliver (1990, 1996), who views an impairment as not the cause of disability and limitation, but oppression in the social context. It implies that if the social contexts considered diversity from the outset, not anyone, with whatever impairment, would be excluded. In a totally transformed social and physical environment students with different categories of disabilities can effectively engage in research without being limited by their impairments.

Thus, compounded together, the specific challenges, though different in nature and size as confronted by students with disabilities, in engaging in research in the South African context of higher education, it all points to coloniality broadly, and coloniality of being specifically, as the invisible underlying cause. When exposed and unmasked through decolonial theory, strategies can then be formulated to address the underlying cause rather being looked at surface levels.

Intersectionality and Students with Disability's Research

Before suggesting the strategies for improving research engagement for students with disabilities, it is important to raise the issue of intersectionality. This is because the challenges for research are not the same for all students with disabilities. The

particular students are intersectional subjects, who embody other positions (Goodley, 2013), as gender, race and class. In other words, disability is multi-layered in terms of gender, race, ethnicity or class, hence impaired bodies should not, in all cases be understood in terms of disadvantage and oppression. They could also occupy privileged positions, which can advantage them and they engage in research in an even more effective way than students without disabilities. Thus, other intersectional identities, previous experiences, schooling background and cultural capital, could also compound to have an influence, which can be either positive or negative in terms of students with disabilities' engagement in research. For example, an individual with an impaired body who comes from a high or middle class family, might be privileged, and could have better opportunities to access skills and knowledge of research, because of family support, good schooling background and wide exposure, and thus is empowered to do research, without confronting challenges confronted by others, even those without disabilities. From the decolonial theory perspective, these are students with disabilities whom even coloniality cannot affect in the same way as others because though they have impairments, they are not 'disabled' and they are consequently not oppressed, but privileged. Strategies for improving students with disabilities should therefore not be over- generalised to all students with disabilities. Those students are not homogeneous and the challenges they confront are not the same, they are not confronted in the same way, and they do not impact their research engagement in the same way.

STRATEGIES TO IMPROVE RESEARCH ENGAGEMENT BY STUDENTS WITH DISABILITIES

Provision of Relevant and Suitable Assistive Devices

In the South African higher education, assistive devices are available to students with disabilities through the Disability Allowances in their bursary (NSFAS, 2013). Students with total hearing impairments, use sign language and interpreters, as a way of communication, to facilitate their learning in general and communication with those who use oral language. Students with total visual impairment have access to Braille or Job Access with Speech (JAWS). JAWS software is installed onto the computers of students with visual impairments, to assist their reading and access to knowledge. One institution of higher education, which has greater support for disability has assistive devices, which include kindles, eye trackers, special magnifying

classes, hearing loops and motorised wheelchairs. A kindle is a small device to which books are uploaded onto, so that the students with physical disabilities do not carry heavy books around. An eye tracker is for students with severe physical disabilities who cannot use their limbs; the device enables such students to control the mouse of the computer using their eyes. It sells for R65 000-00 and the specific Institution is the first to have it, among others in South Africa (Ndlovu, 2017). It can be argued that this specific institution has different kinds of assistive devices available to students with disabilities. Literature has also confirmed that assistive devices and technology are useful to support the impaired bodies (Boone & Higgins, 2007; Meekosha & Shuttleworth, 2009).

While on one hand, devices and technology can assist research, on the other, it is not always the case that the availability of assistive devices imply that they are useful in assisting students with disabilities to engage effectively in research. It is therefore suggested that relevant assistive devices, suitable for each student with disabilities' unique needs, are provided. The assistive devices could be expensive, sophisticated as the eye tracker but not suitable and do not meet the needs of the individual student, to which it was designed for. Though Meekosha and Shuttleworth (2009) argued that technologies and mechanical devices enhance and constitute bodies with impairments. They help those with disabilities to have positive self-images and to overcome feelings of inadequacy, it is the relevant and the suitable assistive devices, which could help students with disabilities, to engage in research effectively. Thus, with the availability of relevant and suitable assistive devises, not even sophisticated, and expensive, students with disabilities could be enabled to conduct their research, whether it's desktop or empirical, effectively.

Listening to the Voice of Students with Disabilities

Listening to the voice of students with disabilities, who have a lived experience of disability, could be another strategy to improve their research engagement. It is argued that disability, persons with impairment and their voice, concepts and knowledge are over-simplified and over-generalised as homogeneous and disability in particular, is de-contextualised in the Global South (Grech, 2015). The able-bodied have been speaking and continue to speak for disabled persons. It has resulted in the construction of those with impairments as powerless and voiceless. The experience of disability has been and continues to be understood from the able-bodied perspective (Hosking, 2008). It implies that the needs of those with disabilities are taken for granted. Assistive devices are designed for those with disabilities without consulting

with them. It is argued that when the disabled say things that the mainstream society wants to hear they are listened to, but when they speak of what they do not want to hear, that is considered as an inappropriate response to disability (Titchkosky, 2003). It is the voice of those with lived experience of impairments that should be privileged and they need to be given opportunity to talk and to be heard (Hosking, 2008). Supervisors should hear from the students with disabilities on how they want to be supervised. Assistive devises should be designed according to the needs of individual student with disabilities. Those students might have the same disabilities but different needs. Thus, there should be a shift from making support and provision for students with disabilities, without them being involved. A bottom-up approach (Pothier & Devlin, 2006), would allow the stifled voice to emerge. What needs to be done in relation to research should come, and be heard from students with disabilities themselves. Their research engagement might improve if their voice could be listened to.

Increasing Research Time for Students with Disabilities

Challenges confronting students with disabilities in South African higher education might not be overcome in the shortest possible time. The social and physical environments (social context) cannot be totally transformed in a day. As efforts of transformation are being made, what might help improve students with disabilities' research is allowing them more time for research engagement. The issue of increasing time for students with disabilities' learning, and not only in research, has been suggested before. In respect to this, Steele and Wolanin (2004) observed that the longer the time students with disabilities take for their studies, the higher the cost of higher education. Families might incur extra costs to keep the students at institutions. The institutions and the state also incur additional costs in terms of funding and providing assistive devices to the same students for an extended time. From that perspective, more time has cost implications. However, when same amount of time given to other students without disabilities, is also given to students with disabilities, it limits the latter. The author reiterates what has already been discussed above, that they confront unique challenges which are not confronted by those without. They take time to get supervisors because academics are not willing to take them in. They have obstacles accessing theoretical knowledge for research and they waste a lot of time maneuvering entry into inaccessible building, research spaces and transport. Negotiating access into the research field is not easy because of societal negative attitude and their research engagement is expensive because of the unique equipment and assistive devices they might need to engage effectively into research. As all these challenges point to the issue of time as a possibility that can help them and the whole process of research.

CONCLUSION

The argument for this chapter is that in the South African context of higher education, students with disabilities might not be able to perform research as those without disabilities because they confront unique challenges, which limit their engagement. Total transformation at institutional and national levels, would be an over-arching intervention that can help students with disabilities to be included in learning in higher education broadly, and in the process of research, specifically. However, at present total transformation might not be achieved as resources are over-stretched. Relevant assistive devices, listening to the voice of students with disabilities who have a lived experience of disability, and extending time for research for students with disabilities, are viewed as possible strategies that can assist students with disabilities, to also engage in effective research as all other students.

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Chapter 9
Postgraduate Student Research Realities in Uganda

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ABSTRACT

Globally, there is a high quest for graduate education with many prospective students aspiring to attain advanced qualifications to obtain a better career path and higher income. Besides, postgraduate education fosters skills development. However, in Uganda, many students enroll in different graduate programs but fail to complete them in the stipulated timeframe. Furthermore, most of the master's students tend to successfully finish their first year which basically has the coursework component yet fail to complete the second year that has the research component. Doctoral students make little progress when it comes to their research. The authors will examine general research preparation, writing, and methodology skills that are critical to graduate studies and research. With the necessary support, mentoring, and planning, graduate research can be made a better process for students and supervisors.

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INTRODUCTION

In this chapter, we shall interrogate the issues associated with graduate research in Uganda and provide insights on how supervisors and students can learn from best research practices and advice so that both can profit from the research experience and make it fruitful. These will be explored with a focus on selected Ugandan universities.

Overview of Higher Education, Postgraduate Enrollment and Completion Rates

Investing in postgraduate education is associated with skills acquisition, better pay, or a new job. Research shows that postgraduate education imparts skills including critical thinking, innovation, decision making and problem-solving, that are relevant to the real-world situation (Oluwajodu, Blaauw, Greyling, & Kleynhans, 2015; Serrano, Llamazares, & Otamendi, 2015). Besides employable postgraduates possess skills including discipline-specific skills, generic skills like teamwork and numeracy, self-management skills for example work-life balance, and career building necessary to traverse and progress in the world of work (Bridgstock, 2009).

Likewise, postgraduate training enables students to concurrently attained both theoretical and practical knowledge (Jonck, 2014). For instance, postgraduate students attain practical experience when they assist in the teaching at universities and at times they have hours of supervised practicum. No wonder there is an increase in the number of skilled and knowledgeable work-ready postgraduates (Núñez & Livanos, 2010) who can obtain and maintain work besides contributing to national development.

Globally there is an increase in student enrollment in higher education especially in North America, Europe, the Asia-Pacific region (Mok, 2016). The U.S, Japan, and Western Europe registered not only over 50% tertiary education enrollment but also above 30% graduation quotas. However, Sub-Saharan Africa has the lowest participation rate and graduation rates in higher education compared to other regions in the world (Teichler, 2001).

With all the anticipated outcomes of postgraduate education, there is a need to take a close look at the actual graduate education process with respect to Uganda a country that has 51 universities (17.6% public) that admit students to various postgraduate programs (National Council for Higher Education, 2018). Tertiary education enrollment at Ugandan universities was relatively low at 4% coupled with lower completion rates (Uganda Bureau of Statistics, 2017).

Matriculation at Ugandan universities was 186,412 (56% male). Interestingly, available data showed that only 17,895 students from five public institutions successfully completed their studies and were awarded various academic qualifications. Generally, the completion of postgraduate studies was relatively low despite the high matriculation (National Council for Higher Education, 2018; SME Division Education Planning and Policy Analysis Department Ministry of Education & Sports, 2017). Only the graduate students enrolled for postgraduate diplomas tended to complete their studies in the allotted one-year time frame. Essentially, many of the students who enrolled for different postgraduate programs failed to complete their studies in the stipulated timeframe.

Furthermore, most of the masters' students successfully finished their first year which basically has the coursework component yet do not succeed in completing the second year that has the research component. Besides doctoral students make little progress when it comes to their research projects. This implies that postgraduate students face challenges related to research.

This is not a Uganda specific issue, but it has been documented worldwide. There is a noted tendency for students to "*complete their postgraduate studies*" without actually attaining any academic credential (Teichler, 2000). Diverse reasons have been advanced to explain the low retention and graduation rates of postgraduate students. However, the general agreement is that most students don't complete postgraduate research because of institutional and personal reasons (Atibuni, Kibanja, Olema, & Ssenyonga, 2017; Atibuni, Olema, et al., 2017; Muriisa, 2015). Additionally, universities' lack qualified research supervisors who are ready to take on the graduate supervision challenge (Kyaligonza, Kimoga, & Nabayego, 2015).

Therefore, with improved access to tertiary education, the challenge to Sub-Saharan Africa universities will be the attraction of topnotch students who will be able to succeed in their postgraduate studies with the relevant skills that are required for national development. On their part, universities need to have the best academic personnel who will be able to guide and mentor postgraduate students especially during their research.

GRADUATE RESEARCH PROCESS

Completion of graduate school implies that students have successfully completed the required graduation load, research, and submitted the dissertation. Upon satisfying all the academic requirements, the postgraduate student is then bestowed an academic award. One cannot qualify to be a higher education-trained person without formally attaining the qualification that they enrolled for at a degree-awarding institution or university.

Graduate studies encompass lots of tasks for instance coursework, seminars, and research among others. Yet research seems to be the most complicated task in graduate school. This process involves three interlinked tenets that is writing, methodology skills, and general preparation (Cone & Foster, 2006). These essential nitty-gritties work as a framework for not only students but also supervisors as they circumnavigate the graduate research process. The ingredients of graduate research also offer university departments or directorates responsible for graduate research a framework for ensuring that relevant policies and documents are available to guide all stakeholders in the graduate research process. In the subsequent sections we take explore more the doctrines of graduate research.

Writing Competencies

Uganda adopted English as the medium of instruction in the education setting. More so, English language is the second language but not the native language. Furthermore, there are many local languages or first languages that tend to interfere with the learning and acquisition of graduate students' writing skills. Still there is a general scarcity of English language teachers. In addition to that there is a noted relatively low English language proficiency at lower education levels in Uganda (SME Division Education Planning and Policy Analysis Department Ministry of Education & Sports, 2017). Postgraduate research in Uganda requires a good command of English as a medium of formal scientific communication in the education setting.

In essence graduate students without adequate English language skills are more likely to have trouble during the process of articulating their research ideas yet writing skillfulness determines the accomplishment of postgraduate research.

Likewise, the emphasis put on sciences has rendered social sciences, humanities and languages redundant especially at the university level. Almost all universities that focus on science and technology don't not have English language departments yet most of the formal scientific communication is in English. Additionally, we are not aware of any university in Uganda that has a fully-fledged and functional writing center. Interestingly most universities pride themselves as centers with adequate research infrastructure.

More to the point there is a general lack of mentorship of postgraduate students that would enable them to attain proper writing skills. That in essence implies that graduate students are more likely to have trouble during the process of articulating their research ideas yet writing skillfulness determines the accomplishment of postgraduate research.

Writing involves interlinked processes that involve spending lots of time locating the relevant literature, reading and analyzing the content of the material. Then postgraduate students use their critical thinking skills to organize their opinions, accommodate converging and diverging view, and appropriately come up with conclusions based on scientific facts. This process takes a stepwise sequence including prior preparations, organizing the ideas, writing an outline, drafting a logical draft, and submitting the written material to others to obtain constructive feedback. This is the rigorous process required for academic writing at postgraduate level. Unfortunately, not many universities enable their postgraduate students attain the requisite writing skills.

All the same scientific writing in essence necessitates a firm command of the English language. Besides knowledge of the language rules and regulations including proper sentence construction, appropriate usage of grammar and punctuation is also important. A good grasp of English language enables scholars communicate effectively with precision. Besides, grammatical errors, word choice, spelling, writing mechanics and sentence structure, and paragraph organizations among others can be challenging to graduate students. Buying a grammar and punctuation book can partly solve the dilemma related to English language usage (Cone & Foster, 2006).

Moreover, attainment of writing skills requires lots of practice especially at postgraduate level. Students need to be guided so that they can improve their writing skills. Universities purse need to have writing centers that would benefit students and research supervisors. Such places can provide technical support, provide feedback on written submissions and conduct writing workshops for the benefit of the entire university community.

Writing Styles

Postgraduate writing follows a particular scientific writing style that dictates the expected standard and structure when communicate with the scientific community. Writing styles provide scholars with guidelines that they ought to learn and follow in their scholarly work. These include the required structure, citation style, and research ethics among others. Universities in Uganda prefer different writing styles and provide some specific examples that illustrate how the citation style is use in-text and the reference list. Besides postgraduate students are given hard copies or have easy access to soft copies of the graduate handbook and/or research guidelines.

Uganda Martyrs University students adhere to the Harvard style (Uganda Martyrs University, 2018). Institutions including Makerere University (Makerere University Directorate of Research and Graduate Training, 2011), Ndejje University (Ndejje

University, 2015) and Uganda Christian University (Uganda Christian University, 2018) prefer the American Psychological Association academic writing style, or APA style. These universities further provide flexibility with respect to the writing style. In case of discipline specific writing style preference, the respective academic units are obliged to inform the research and graduate studies school or directorate in writing to enable the relevant authorities approve and incorporated these changes into the graduate handbook. The academic units must also ensure that updated literature on the discipline-specific writing style is available to their respective students.

Uganda Management Institution a degree awarding institution refer to institution guidelines but these could not be found in their prospectus or website (Uganda Management Institute, 2018). Mbarara University of Science and Technology elucidated discipline-specific referencing styles for the different academic units based on preference of subject journals. Nevertheless, the university assigned the responsibility of making sure that students follow an acceptable citation style to individual supervisors (Mbarara University of Science and Technology, 2016).

A closer look at the writing styles adopted by universities in Uganda reveals interesting findings. Universities have a tendency of referring to a certain writing style without the required investment in the appropriate resources. University libraries don't have copies of the applicable publication manuals yet academic staff always refer to these books. Therefore, one can conclude that postgraduate course outlines and written assignments have to strictly adhere to the writing styles that neither students or university dons clearly understand. This confuses postgraduate students who might be privileged to have a copy of the publication manual. At times students with the publication manual might engage in an intellectual debate about the style of writing with their supervisors who may perhaps have no updated knowledge of the relevant writing style.

Writing style is not synonymous with citation style but most universities actually refer to citation instead of writing style. Research guidelines of the universities provide examples of citations in-text and reference lists (Makerere University Directorate of Research and Graduate Training, 2011; Uganda Christian University, 2018; Uganda Martyrs University, 2018) ignoring other sections of a thesis or dissertation. Publication manuals explain and provide relevant examples of the sections of a manuscript or research report. For instance, presentation of findings sections provides examples of tables, clarifies what to include, and shows how to format the tables among others.

In some cases, reference is made to the latest writing style manual but the examples provided are wrong. A case in point is the reference list with citations that are suitable for a previous version of the publication manual (that is the fifth

edition of the APA manual) and reference to headings that are underlined (Makerere University Directorate of Research and Graduate Training, 2011). Contradictory guidelines were also noted such as use of typeface and font size that is Times New Romans, with 12-point font size or Arial, with 11-points font size. Likewise, it's inconceivable for graduate research guidelines to provide examples with incorrect details with respect to front page font size (Mbarara University of Science and Technology, 2017). Reference is made to APA writing style with abstracts of 150-250 words and 1.5 spacing. Heading levels provided as examples are virtually erroneous (Ndejje University, 2015).

Clearly the sampled Ugandan universities have a problem with regards to writing styles. Graduate schools and academic staff seem not to understand the utility of mastering the discipline related writing style. Citations seem to be the only aspect that is widely documented in graduate research guidelines. Ignoring vital aspects of the writing style such as structure and content and publication process is a setback for postgraduate students who want to learn research skills.

That notwithstanding, postgraduate students and dons need to set aside some money to procure appropriate publication manuals, learn the content and consult the manual during the scholarly writing process. Making use of free online resources can also enable students to improve their writing skills.

Methodological Skills

Postgraduate student who acquire methodology skills during their training are more likely to complete their independent research on time while at the same time contributing knowledge in their discipline. However, prior problems tend to affect the acquisition of some methods skills and hinder the success of postgraduate students.

For instance, students' mathematics self-efficacy that is skills and abilities to learn and flourish in math, and value that is to say the utility of mathematics significantly contributed to enjoyment of learning mathematics (Muwonge, Ssenyonga, & Kwarikunda, 2018). However, in most cases students do not see the link between the mathematics theory and its application to the real-life context. This affects students' appreciation of mathematics as a subject and results into poorly academic performed at secondary school (The Science and Technology Human Capital Development Unit Uganda National Council for Science and Technology, 2012). These prior negative attitudes towards mathematics hinder appropriate learning of research specific skills such as statistics at postgraduate level.

Postgraduate students are required to take statistics course(s) (Cone & Foster, 2006) so that they can understand the statistics in the literature, efficiently conduct research and make evidence-based conclusions. That is why universities prepare

their undergraduate students early enough by teaching them introduction to research methods and statistics courses. To ensure that the quality of what is taught to students in research methods and statistics courses, only lecturers who scored at least 70% during their studies are allowed to teach research methods and/ or statistics courses (Ndejje University, 2014). This implies that only the best qualified lecturers can teach research related courses to their university students.

Furthermore, postgraduate students read published literature in journals and books that has results presented with statistical summaries. Knowledge of statistics enables students comprehend and evaluate the data put across using logical, critical and analytic skills. Still, the fear of numbers and mathematics inhibits the appreciation of the relevance of statistics to the whole research process.

Universities strive hard to teach their postgraduate students' statistics course(s). Yet it's at times difficult to teach students with a mathematics phobia with an arts or humanities discipline inclination statistics. Further, universities teach research methods courses in the first semester contrast to statistics in the second semester, while actual research is conducted in the final year of masters' study. Students on their part just want to pass these courses and move on to the next semester. By the time the actual research starts the students have already forgotten the previously learnt statistics and research methods content. Linking statistics to research work is problematic for students in such circumstances.

Research methodology courses are taught in the first year of graduate school. During these courses, students appreciate the research language, terminology, and research structure. The assumption is that students will appreciate the research language while using it correctly especially during presentations and written assignments. Later on, the students should ably translate the knowledge acquired during the research methods courses into their own research.

Though "unofficial graduate rules" tend to dictate the nature of research students will conduct in future. Quantitative research seems to be reserved for science-focused courses while qualitative research is basically for arts disciplines. Mixed methods research designs and multi-disciplinary studies are not usually part of the broader university research agenda.

Likewise, academic staff are constricted to a limited area of specialization in their discipline. This implies implicit or explicit that innovation and creativity are largely lacking when it comes to postgraduate research. Research areas are basically few and students have limited choice when it comes to research supervisors. Altogether these factors limit the choices of research that students have even before they embark on the actual research.

Furthermore, Ugandan universities do not subscribe or buy software that is useful in the research process for examples software for the analysis of qualitative and quantitative data, and computer programs designed to check for plagiarism. Universities may not even attempt to know freely available software such as reference or citation managers or free programs that can help in the random selection of participants. Incase academicians are aware of the availability of free research resources then they are reluctant to invest time to know how to use the software or computer programs.

With little investment in research resources by the universities not coming to an end soon, research supervisors and postgraduate students alike need to invest in research software. Accessing copies of their preferred software and respective user manuals, will foster skills development especially through hands-on practice using the software. Use of freely available resources such as reference software like Mendeley, EndNote and Zotero can improve graduate student research skills in the area of citations.

Ugandan universities take pride in their research activities and the diverse research collaborations. University website provide information about the research grants and research partners all of which indicate that the institutions have a vibrant research agenda. Universities have been able to attract third party funding for research purposes (Kyaligonza et al., 2015). Universities have formulated research policies, have research groups and at times conduct multidisciplinary research.

Nevertheless, postgraduate students are not involved at all in the many research projects at the universities where they are enrolled. Universities don't involve postgraduate students as research assistants in the collaborative research. Students are not given any role in the university research projects. Supervisors with ongoing research projects must strive to recruit their own postgraduate who are then assigned tasks to enable gain the required practical research training and experience (Atibuni, Kibanja, et al., 2017). Without being vigorously involved in research activities means that postgraduate students miss out on acquiring real-world research-related experience.

Literature

Ugandan universities are not passionate about investing in research infrastructure. In the 2015/16 financial year public and private universities allocated 0.85% and 2.67% respectively of their total budget for the procurement of books and research (National Council for Higher Education, 2018). We are not aware of any university

in Uganda that continuously and chronologically subscribe to journals and buy up-to-date literature. Most libraries are filled with old classic books and journals that might probably have been donations. Lecturers try to buy some relevant personal book(s) once in a while. By and large, Ugandan universities libraries needs an overhold. Library resources generally need to be updated (Atibuni, Kibanja, et al., 2017). Interestingly most graduate handbooks are written in a compelling way indicating that the stock of the university libraries include current textbooks, journals and electronic resources (Makerere University Directorate of Research and Graduate Training, 2013; Mbarara University of Science and Technology, 2017). On the contrary universities require their students to cite current literature, for example relevant literature that is less than 10 years old (Uganda Christian University, 2018). In some circumstances, universities direct postgraduate students to the obvious search engines like Google where they can obtain updated literature (Mbarara University of Science and Technology, 2016). Without the appropriate literature the dons and postgraduate students are left to lag behind when it comes to recent updates in their discipline. During the course of their writing they are more likely to refer to old literature that is not in line with the current developments in their field of study. Furthermore, without current literature students cannot learn and acquire the requisite hands on skills. Students need to be knowledgeable in the use of computerized databases, skillful in locating the identified current literature, have access to the identified literature and finally read the obtained material. This process enables students engage in a critical evaluation of the literature. As students take time to appraise the literature their thinking skills are developed. Initiatives were implemented to overcome problems of lack of access to literature for institutions from low-income countries. Research4Life provides institutions with free access or low-cost access that is US$ 1500 per year for the literature for students and academic staff. Since 2002 the Research4Life initiative have enabled about 8700 institutions across 115 countries access to scientific literature including 85,000 journals, books and databases. Scientific literature in the disciplines of health, agriculture, environmental research, law, physical and social sciences is readily available to the institutions for free or at a small fee (Research4life, 2018).

Uganda has more than 100 institution registered with the Research4Life initiative. Interestingly many Ugandan universities still grapple with limited access to scientific literature despite the availability of such free resources. Even when the universities have free access to such useful information resources the students and staff are not aware of this access options. University community that is aware of such free electronic resources don't actually put to good use such opportunities. Academic staff and

postgraduate students at universities in Uganda need to strive hard to know who in the respective libraries has access to the Research4Life initiative user identification and institution password. With the credentials at their hands the students will have access to free updated scientific literature. They will however need to acquire other research related skills such as hands-on experience with databases to successfully be able to search and retrieve the relevant literature.

General Research Preparation

As postgraduate students get assimilated into the university system, they often get a feeling of what to expect during their time as students. Usually universities admit postgraduate students at various levels including postgraduate diploma, masters and doctorate. New students often learn and profit from the experiences of continuing postgraduate students. Newly qualified students can also share their knowledge with the other students. Students have the opportunity to learn about the research experiences of postgraduate students from their cherished university and also students from other universities. Students can also have discussions in relation to postgraduate research with continuing students. Sharing experiences provides reassurances that with adequate support, postgraduate studies and research can be completed in the allotted time. Learning about the diverse postgraduate research experiences can lay a firm foundation for newly enrolled postgraduate students. Moreover, former or continuing postgraduate student remain a good source of information regarding research. Having gone through the research process themselves puts them in a better position to estimate the costs associated with research. They might have ideas of how to finance the research project and ideas of how to handle some research-related cost. Supervisors can also ably advise students on the available financial and material resources that can offset some of the research costs. Students can go an extra mile as they seek to understand more about postgraduate research. This can be achieved by visiting the respective libraries where dissertations and theses are archived. Libraries can enable students get a visual picture of how completed research reports looks like. Students can find out more about the thesis or dissertation specifications like the structure, number of pages and writing style among others' things.

Postgraduate Students' Engagements with Research Supervisors

Universities assign postgraduate students' research supervisors who are formally appointed (Makerere University Directorate of Research and Graduate Training, 2013; Mbarara University of Science and Technology, 2017; Ndejje University, 2014;

Uganda Christian University, 2018; Uganda Martyrs University, 2018). Supervisor roles are also clearly stipulated including overseeing the quality of the research project from a research idea, to a full proposal and finally a thesis or dissertation. Supervisors have expertise in the research area, are well versed with the literature, are more than willing to provide the student with constructive feedback and support, read and critique multiple drafts of the proposal and thesis or dissertation, yet invest time in the research project (Cone & Foster, 2006). The quality and quantity of research supervision determines the progress of the research project.

Many universities assume that having a PhD automatically qualifies one to be a research supervisor. However, many supervisors have the academic credentials but lack research supervision skills implying that they are not adequately qualified to supervise graduate research (Muriisa, 2015). Lack of supervision skills and competence means that the supervisors are realistically not ready for the task ahead of them. More so such supervisors will not invest the required time and resources in the research project resulting into conflict with the postgraduate students. That's why universities need to design strategies to ensure that research supervisors possess the necessary supervision competencies.

Mentoring of new research supervisors with no experience was another innovation observed. Experienced research supervisors are assigned novice co-supervisors who are mentored during the supervision of at least three postgraduate students' dissertations. During this period the mentor assess the supervision skills development and competence of the co-supervisor and makes the appropriate recommendations. After successful supervision skills attainment, the co-supervisor is expected to take on the supervisor role. In case of any supervision-related issue, the new research supervisor can always consult the mentor and other experienced academic staff for guidance (Ndejje University, 2014).

However, despite the high matriculation of postgraduate students at universities, there is a general lack of qualified supervisors and research supervision mentoring in Uganda (Muriisa, 2015). For example, by 2015/16 there were 1755 PhD holders that is full-timers and part-timers employed at higher institutions of learning. About 583 (36%) of the university staff were PhD students (National Council for Higher Education, 2018) who may also be struggling to find research supervisors or even have trouble paying the required university dues (Kyaligonza et al., 2015).

Though research is a core aspect of Ugandan universities, there seems to be a problem with the recruitment and retention of top-quality academics who will be more than willing to supervise postgraduate students (Altbach, 2015). At times the available working condition including infrastructure, job security, academic freedom and remunerations may not be in line with the demands of good academic staff.

Furthermore, universities in Uganda have a tendency of setting unrealistic expectations of their academic staff. For instance, by 2015/16 Mbarara University of Science and Technology with 56 PhD holders (National Council for Higher Education, 2018) expected only PhD holders at a rank of senior lecturers, associate professor and full professor to supervise PhD students and be part of the doctoral committees (Mbarara University of Science and Technology, 2017). The university was ignoring the fact that lower rank staff who are PhD holders such as lecturers with the required supervision experience and appropriate mentorship can also supervise PhD students. Interesting supervisors of postgraduate diploma or masters research should be lecturers. Besides not all the 154 masters' holders at the rank of lecturers are on the PhD track in conformity with the guidelines concerning the qualifications of academic staff in universities (National Council for Higher Education, 2014).

Postgraduate students need to realize that the availability of qualified research supervisors with the acceptable supervision competence is minimal compared to the students' enrollment. More so the few readily available research supervisors are on a high demand and they have very high expectations of their research students. Remarkably some potential research supervisors are still also pursing postgraduate studies (National Council for Higher Education, 2018) a situation that is likely to affect the supervision abilities, supervisor-student interaction and overall research productivity.

Supervision is assumed to be part and parcel of the activities of the academic staff employed by most universities in Uganda. On the other hand, nearly all postgraduate students are privately sponsored. Only one university paid research supervisors at least twice a year. Payment was effected after submission of quarterly progress reports (Uganda Christian University, 2018). Other universities are not explicit about the payment of postgraduate research supervisors, while some honorarium accorded to supervisors cannot attract high caliber academic staff to supervise students. For instance, academic staff are paid less than US$100 for a PhD student who has successfully completed his or her studies (Muriisa, 2015). This implies that supervisors may not be motivated to supervise students when their efforts are not recognized by the universities.

The demanding research supervision workload that is not compensated financially by universities presents a real concern to academic staff and students alike. Demotivated research supervisors may not be willing to provide adequate research supervision to their allocated students. More importantly this is likely to affect the quality of the research final output.

Research Rules and Regulations

Universities inform postgraduate students of the formal rules that govern research. Usually the universities give their students a graduate handbook that explicates the fees to pay, forms to complete, ethical considerations, deadlines and formats to follow among others. Some rules are explicitly stated say supervisory meetings each month and six-months progress reports.

Moreover, some rules are not clearly stated. For instance, expecting masters' students to have an approved proposal within the first month of year two or third semester. Such a vague rule ignores the fact that the first year of masters' studies has the coursework component. There is no provision for students to study and work on their research proposal concurrently. Additionally, the university might not have officially assigned students research supervisors by the end of the first semester (Mbarara University of Science and Technology, 2017).

Research rules tend to be controversial at times for instance the dual role as a supervisor and internal examiner (Uganda Christian University, 2018). Another contentious issue is the award of marks to the various sections of the dissertation. Methods section is awarded 10 marks and literature review 20 marks (Uganda Christian University, 2018), 15 marks each for the methodology, results and analysis and interpretation sections (Uganda Martyrs University, 2018), study methods are awarded a maximum of 20 marks (Makerere University Directorate of Research and Graduate Training, 2013) while results, and discussion sections are awarded 60 marks (Mbarara University of Science and Technology, 2016).

Such ambiguous rules further complicate and confuse the students and supervisors and have the potential to easily erode the quality, skills and attitudes of prospective students. Unfortunately, National Council for Higher Education guidelines (National Council for Higher Education, 2018) are silent about issues of standardization of the curricular and postgraduate research rules.

Postgraduate research process has some informal rules that are known only to the students and supervisors. Informal rules in part dictate the supervisory styles that will govern the student-supervisor relation. Therefore, students should always strive to understand the rules, demands and expectations of their supervisors and their work style in relation to research so that the quality and quantity of supervision will enable the postgraduate student attain skills and professional growth (Lee, 2010).

Postgraduate Students Research Challenges

Graduate handbooks clearly spell out the roles of the postgraduate students including sparing time to work on their research projects with their supervisors. Students are also expected to adhere to the research rules and regulations at all times. Nonetheless students enroll for postgraduate courses without prior knowledge of what to expected. In most cases postgraduate students may not have attained the introductory theoretical and methodological skills during their undergraduate training. Furthermore, postgraduate students face work-life balance concerns and academic challenges like other university students but have nowhere to go in case of such difficulties (Atibuni, Kibanja, et al., 2017; Atibuni, Olema, Ssenyonga, & Kibanja, 2018).

Stress associated with graduate studies can easily lead to social isolation (Ali & Gregg Kohun, 2007) especially when students fail to adjustment or get integrated into the university system. These concerns negatively impact the postgraduate students especially during the research year. For those reasons, universities need to put in place mechanisms to support all of their students including postgraduate students. More so universities need to remind postgraduate students of their roles during the research process.

Graduate Students' Skills

Availability of particular knowledge and skills for the entire duration of graduate school is a prerequisite for successful completion of the postgraduate course. These personal skills including interpersonal skills, time management skills and computer literacy.

Postgraduate students should take on a research area that is interesting to them. The chosen areas should have a strong theoretical grounding. In essence the student should be able to invest time, spend hours reading about their research area, writing notes about their study and analyzing data in their preferred subject. Scholars advise that students need to invest about 10-20 hours per week for about 12-18 months on their postgraduate research project if they want to attain a postgraduate degree on time (Cone & Foster, 2006).

Time management skills are an important tenet of research accomplishment. Though in some cases deadline are already set for the students before the start of the research, say monthly meetings with research supervisors. That notwithstanding students need to carefully plan their research tasks well so that they can effectively

manage their time and meet the already set deadlines. Time estimates should be set in a realistic fashion. Postgraduate students need to identify key research tasks that will be sequenced in a logical fashion with the corresponding timeframe. In this way the research process becomes part of the student's lifestyle. This enables the student and supervisor stick to their projected plan, besides attaining the identified milestones in an orderly and timely way.

Even with proper planning and good time management abilities, students should always be aware and acknowledge that at times the unexpected happens during the research process. Therefore, contingency plans must be in place to mitigate the aftereffects of unforeseen occurrences.

Postgraduate research is a collaborative process that involves various stakeholders. Students and supervisors remain at the epicenter of this process, with universities taking on the administrative bit of the research process. Students interpersonal skills are important in the overall success of the research process. Interpersonal skills are vital as postgraduate students communicate and interact with people for example supervisors or in a group setting such as a research discussion seminar with other graduate students.

Students need to be able to get along well with all key players overseeing the research process. Satisfying the demands of these fundamental stakeholders is not an easy undertaking for students. For instance, good supervisors are demanding, stick to deadlines and set high academic standards for their students. They will provide their students with timely feedback that requires at times numerous revisions to their perfection. This learning process can occasionally be frustrating for the students who need to manage their emotionality during these hard times. Reacting to criticism and feedback in a defensive or negative way can result into negative repercussions and withdrawal of the required social support.

The information, communication and technology era dictate that ownership of a computer and computer literary are necessary ingredients of any research project. At least all postgraduate students should have access to a computer and are well equipped with the necessary skills to use the computer. Students' who are computer literate can learn to use research software and data bases with ease. Research involves finding appropriate bibliographic resources yet the use of libraries, e-resources or databases requires some computer skills. Furthermore, postgraduate students need to be familiar with the use of computer programs such as word with adequate keyboarding skills. Computer knowledge is also required in case postgraduate students want to use research-related software including data entry and analysis software, reference manager software and specialized subject-specific software.

Computer literacy in essence will be able to save students lots of money and time during the research phase. Nonetheless access to computers and internet connectivity is still a major challenge for Ugandan universities. Only 18,085 predominantly overhauled computers (17 students share one computer) were available for students' research and study use while lecturers had access to only 5125 computers. Most lecturers (50%) use personal computers and laptops and internet connection for university work. This is complicated by the poor quality and limited internet connections (National Council for Higher Education, 2018).

Research engagement of postgraduate students depends more on the social support of family members (Atibuni et al., 2018). Postgraduate students require lots of support from significant other who provide the required workspace and privacy needed for research purposes. This conducive work atmosphere is needed throughout the time when one is enrolled in graduate school. This allotted physical space is the place where the postgraduate student will spend lots of time thinking, reading, analyzing, and writing issues related to their research. All this will only be possible when family and friends understand the research task at hand.

When family and friends understand why the postgraduate student family member requires time and space for studies, then they will be in position to provide the required support. Significant others will know when the student requires time for study or research purposes. During this time the busy student will have to re-adjust to make sure that there is a balance between studies, work and/ or family time.

What Next After Completion of Graduate Studies?

Students who successfully meet the required graduation load that is in accordance with the National Council for Higher Education guidelines (National Council for Higher Education, 2014) are awarded graduate degrees during the university graduation ceremony. After graduation the new graduates start a new chapter of their life that is supposed to be fulfilling at a personal and professional level.

First of all, researchers strive to inform the broader scientific community about their research as a way of contributing to the knowledge base of their respective discipline. That is why after graduation postgraduate students and their respective supervisors are encouraged to publish their findings in peer-reviewed journals. Research findings can also be presented at scientific meetings such as conferences, workshops and symposia. During such academic conferences the researchers get constructive feedback about their research work from their peers.

Attainment of a postgraduate degree opens the door for further scholarly engagements. Only PhD holders can supervise research leading to an academic award. Reviewers of manuscripts in peer-reviewed journals are basically doctorate holders. Applications for some research grants should possess certain academic credentials such as postgraduate degrees.

Further studies are also possible when you have an advanced degree. For instance, a master's degree is required when one is to enroll for doctoral studies while a PhD is a requirement for postdoctoral studies. Besides, there is also lots of funding for postgraduate studies in terms of graduate assistantship, scholarships and fellowships. These funding opportunities are available to the crème de la crème of the postgraduate students worldwide.

Of course, attainment of a postgraduate degree with employable skills qualifies one to for a better job. Work-ready postgraduates are able to changeover from being a recent postgraduate student to being successfully employed. Indeed, higher education increases the odds of employability (Núñez & Livanos, 2010; Teichler, 2002).

CONCLUSION

Research seems to be the most daunting task at postgraduate level. Students experience diverse challenges during the research phase of their studies. Postgraduate students encounter problems communicate their research ideas in English. At time the inadequate personal, writing and methodological skills further delay the completion of the research. Moreover, there were controversial issues related to research rules and writing styles.

Furthermore, postgraduate students experience difficulties as they struggle to satisfying the diverse research requirements of their supervisors while adhering to the research regulations. Besides universities generally had limited access to updated literature and research infrastructure including data analysis software. Universities also had few research supervisors compared to the enrolled postgraduate students.

Students can easily accomplish their research projects with the appropriate support from their supervisors and the universities. In so doing graduate students can improve their writing and methods skills while being prepared for the research experience. Universities can ensure that the research process is smooth by appointing qualified supervisors, conducting supervisor workshops, informing students of the acceptable writing style, investing in research infrastructure, enacting clear rules and regulation, and encouraging the students to publish their research findings.

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KEY TERMS AND DEFINITIONS

General Research Preparation: Ground work, prior planning and preparations that are necessary before the graduate student embarks on their research.

Graduate Research Process: Procedure through which graduate students with the guidance of their supervisors identify a researchable topic, develop a full proposal, conduct the actual research, and engage in a thesis or dissertation writing.

Graduate Research Supervisor: university or degree awarding institution appointed academic staff with the requisite expert knowledge, research supervisory competence and adequate time available to guide graduate students make research progress including coming up with researchable ideas, developing a proposal, conducting research, writing a thesis or dissertation and publishing their research findings.

Graduate Student: a scholar who has been admitted and enrolled at a university or degree awarding institution on full-time or part time basis to pursue graduate studies.

Methodological Skills: Competencies of graduate students that will enable them conduct acceptable independent research that will culminate into writing a thesis or dissertation.

Research Rules and Regulations: Acceptable standards and procedures that govern graduate research.

Writing Competencies: ability to use the discipline specific writing style to correspond efficiently with the scientific group and the general populace.

Chapter 10
Administrative Support for Graduate Education Success in Resource-Poor and Culturally-Challenging Environments

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ABSTRACT

For any university to become successful in producing new knowledge it must invest heavily in graduate education. The developing world has dwindling resources investment in graduate training, yet countries cannot develop without graduate programmes. The challenge is that most postgraduate students do not receive adequate support from programme administration. There are no deliberate efforts to understand the cause of high dropout or delayed completion schedule of most graduate students. Providing tailored administrative and supervision support to graduate units is vital in reducing high attrition rates. This chapter provides key challenges facing graduate education in a resource-poor and culturally challenging environment. It proposes innovative remedies on student engagement, focusing on the need to develop tailor-made programmes to support student success at graduate level. The focus is on preparing, supporting, and enabling graduate students to successfully complete their studies.

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INTRODUCTION

Postgraduate or graduate study is a growth process by which students need to develop as scholars under the thoughtful support and guidance by the institution (Abiddin, 2011). Postgraduate students are regarded as mature persons who are motivated to build academic career path after their bachelor's degree or higher education. Postgraduate education is important because it provides educational institutions opportunities to build their research capabilities, enhance academic reputations, and financial gain (Firoz et al., 2013). The primary mission for a student to join graduate education is to prepare for the next generation of professional, scholarly, and educational leaders. In order to fulfill this mission, the institutions seek to instill in each student an understanding of and capacity for scholarship, independent critical judgment, academic rigor, and intellectual honesty. Thus Higher education in general is critical to economic success and long-term development of Africa, a continent facing several challenges of growth and development on many fronts. Higher education especially at graduate level provides economic and social benefits, both to the individual and the public, produces specialized qualified human capital, adapts and generates knowledge, promotes international cooperation and this improves competitiveness in the global knowledge-based economy (Yizengaw,2008).

It is the joint responsibility of faculty and graduate students to work together to foster these capabilities through relationships that encourage freedom of inquiry, demonstrate personal and professional integrity, and foster mutual respect. High quality graduate education depends upon the professional and ethical conduct of both faculty and students. Globally, there is increasing pressure on young adults to attain post-secondary and higher levels of education (Stelnicki et al., 2015). This is due in part to the ever-increasing educational requirements for entry-level career positions and promotional opportunities (Bain, et.al, 2011). As competition for high quality postgraduate increases, the role of administrative, student engagement, and supervisory support services become more emphasized due to the fact that most postgraduate students come from various ethnic, cultural, political, economic, linguistic and educational backgrounds and their attraction, retention and successful completion of the programme are paramount for educational institutions. This essay focuses on the challenges faced by graduate education institutions in providing support to postgraduate or graduate students to enable them to complete their studies timely and successfully.

The writing of this chapter was motivated by the author's interaction and experience with several graduate students about the dilemma they faced on their journey of graduate education in Uganda. The stories and experiences reported from

the students expressed their fear of taking longer than the scheduled time to complete their graduate studies. This presents a worrying picture of the future of graduate programme completion rates in Ugandan universities in general. As a result, many of the prospective students first search for graduate programmes to vet characteristics such as favorable completion rates, better supervision and support to the students during graduate study. Consequently, the focus turned to the question of what the institutions could do as part of their role to support, encourage and promote their students to successfully complete the graduate programs. The rich experience the author gained during time of pursuing master and doctor of philosophy trainings, and also as administrator of graduate programmes and supervisor of graduate students was helpful for writing this chapter. The focus is on Ugandan experience which would apply in most of the developing world or where support of graduate programme is still wanting.

The author also noted that the issue of low percentage of graduate programme completion rates was not just a concern for the students alone, but would be of interest to all graduate programme offering institutions, advisors/supervisors of graduate students, and graduate programme developers. The goals of this chapter are to raise awareness of the need to improve the experience of going through graduate education system to promote and improve the programme completion rates. It will in particular help to improve graduate student-advisor relationships, provide pointers and guidance for both advisors and graduate programme institutions and the students in navigating the complex network of a graduate degree pursuit, and to guide those who hope to learn on how to improve graduation rates for graduate programmes, specifically under resource poor and culturally challenging environments. Similar challenges were articulated by Stacy and Joshua (2015) for special category of graduate students who were single parents with dependent children and this justified the need for support and provision of necessary resources to improve such graduate students during the course of their study.

Relevance for Support for Graduate Study

The goals of graduate education include training of researchers, teachers, and practitioners in the professional industry. Graduate education provides educational institutions the opportunities to build their research capabilities, enhance academic reputations, build their research bases and profiles and financial gain from donor communities (Firoz et al., 2013). The success and quality of postgraduate education largely depend on multiple factors, ranging from the quality of supervision (supervisor's role) which determines postgraduate student's overall satisfaction, retention and completion (James & Baldwin 1999).

In the developed world, students choose universities and research projects through personal contacts with the respective supervisor (Alam et al., 2013). But in most developing world such as Uganda the prospective graduate candidates start by first making background checks on the programme completion rates in their fields of interest/specialization from the former students. They consider time taken to complete a programme as one of the most critical factors for selection of a university to join for graduate study. The completion rate is generally determined by the level of support which is offered by the institution, availability of supervisors and quality of supervision which would facilitate the students to progress in their studies, especially research projects, faster and to complete within the scheduled time. As a result, supervision of postgraduate students remains an area of great concern to university administration, to student unions and the individual research students (Mackinnon, 2004; Moses, 1984). This challenge provides an important entry opportunity for universities to develop strategies to transform the current graduate programmes with high attrition rates to facilitate timely completion rates. In most Ugandan universities graduate candidates take unnecessarily longer to complete graduate programmes of study. This deters students' attraction and retention to the programmes.

The challenges of delayed completion and dropping out of the studies mainly result from the poor student support system especially after completion of the course work component of the graduate study. In many cases poor support systems frustrates students who end up abandoning the programmes altogether. This is one of the key challenges facing graduate programmes in many of the developing countries with low academic staff capacity, characterized by poor remuneration, the few staff do not the experience, skills and time dedicated time to support student programmes in their institutions. The questions to ponder are; why don't universities review approaches to graduate training with the view to improve graduate programme completion rates? What administrative support are needed to support these students to enable them complete the study in time or at least persist to completion of the programmes where possible? Based on more than 10 year experience of managing a faculty that was running graduate programmes the author explores the challenges to gives recommendations to university administrators, graduate policy makers and supervisors alike on how to improve and support graduate students to promote improved programme completion rates.

When identifying motivation for enrolling for graduate education there are a wide array of possible responses. The first question to ask is why a student plans to enroll for a graduate programme. The common reasons are; to deepen learning in a specific area; and that it provides an opportunity to perform original research. For

the majority of the candidates the graduate study is generally undertaken to safeguard job positions occupied. This may arise from the policy changes for various job positions that propels the current holders to join the graduate program. For example in Uganda the Ministry of Education and Sport (MOES) has come up with a policy that all head teachers for Government aided secondary schools must possess at least a graduate degree in relevant fields in order to continue to serve in the positions. This provides driving force to attract secondary school head teachers to enroll or join the graduate programmes. This means most graduate students enroll into a programme to fulfill the existing job market conditions, that is, to avoid the risk of losing a job, unlike taking graduate study as opportunity to grow academically and professionally in one's academic field. Similarly, in most academic institutions many teaching staff continue to pursue graduate programme so as to "protect their jobs". This has implication for promoting professional career development and academic growth and motivation for any graduate program to produce new knowledge.

Critical Student Capacity Development for Graduate Education

Graduate education encompasses at least four separate components: development of an individual research agenda, preparation for and experience in a variety of teaching roles, opportunities for professional career development, and active participation in a disciplinary or professional community. Each party in the graduate process—that is, the faculty, the graduate students, the graduate department, and the Graduate School as an administrative unit—has particular responsibilities in ensuring the achievement of these primary goals. One of the important characteristics associated with graduate programme is the increased freedom to schedule study especially after completing the course work component. The student is usually left on their own to decide on the topic, take their time to develop the proposal and then to defend the proposal to the graduate board at the department level among others. This is where most of the time is used and students easily wonder away for the programme as this stage is characterized by stressful events. For any graduate programme to be complete the candidate has to complete a dissertation or thesis. Graduate school in most cases is structured to be completed in two to three years that is one to two years of building theoretical background (course work) followed by the research project that would result in a thesis or dissertation. For many candidates, after the second or third year of the coursework completion, the very difficult and stressful period starts. This is when the candidate is expected to select a dissertation or thesis topic and develop a project proposal for implementation, undertake data collection, analysis and report

writing which are skill and knowledge-based activities. Observations suggest that this is the most critical period when students' engagement becomes a key factor to successful completion of the programme. Working very closely with the supervisors during proposal development, data collection, analysis and later thesis report writing are key stages stags of student engagement for providing support for the research. Supervision is an intensive, interpersonally focused one-to-one relationship between the supervisor and the student. The designated supervisor becomes key person in the life of the student through facilitating the student's academic development. The supervision process is a complex process that is influenced by many factors, including the social setting, the personalities of the supervisor and the student, the relationship that develops between them, the expertise of the supervisor, among others (Hodza, 2007). This often makes the graduate student to become established as part of the research community under the advisor or supervisor who can further help with supporting students' professional development through funding conference travels, encouraging publishing of research results, collaborating on joint publications, and promotion to the next stage on the basis of students' work among others.

Graduate education requires a set of tasks to which a student is exposed to during training, that are important for eventual professional success. These include identifying significant problems for investigation; planning investigations of the problems; writing research proposals, papers, and reports; participating in collegial interactions and professional networks; and critiquing the ideas, proposals, and work of colleagues. This justifies why in some universities each prospective graduate candidate is required to write a concept paper and motivations for their study as one of the conditions for admission into the program. This gives a clear sense of what you want the candidate wants to work on. It is also important to have broad background in the field of specialization and in related fields to broaden knowledge area. This provides opportunity for the student to gain experience in the skills and knowledge which are the critical functions of the graduate program. This is in addition to content mastery and the skills of reasoning and writing that are traditionally assessed in graduate students, other characteristics that contribute to success on these important tasks include interpersonal skills, oral communication skills, creativity, and motivation. Many skills, such as writing, argumentation, and evaluation of research, are not formally taught and are thus acquired indirectly through practice, exposure and internship opportunities. Modeling of these skills and opportunities for demonstration, practice, and critique often occur in student seminar meetings, and tutorials. Modeling also occurs in graduate courses where students learn the ways in which important field leaders think about problems and issues which is part of

acquiring practical professional knowledge. Modeling also provides environments in which faculty members are actively engaged in research activities to who the student are attached to gain practical knowledge on research execution. This is an important internship opportunity for practical skills acquisition. Unfortunately, such environment of research experience gaining is rare in Uganda as many universities in Uganda today lack graduate student supervisor staff participating in research projects. The emphasis has been on the teaching and lecture accomplishment leaving the experience for research and thus graduate training opportunities with gaps. This is further complicated by inadequate supervision, research support and research environment. Continuous student engagement especially those with diverse background is thus very vital for motivating and advising the graduate candidates (Thomas, 2011) and this starts from the time when they enroll for the graduate program. They need support and guidance throughout all stages of their candidature. And this is what needs to be emphasized by the stakeholders of graduate education in order to increase student retention for successful and timely completion of their programmes.

Support for Successful Completion of the Dissertation/ Thesis

In typical Ugandan graduate education system the completion of course work is assumed to make the student competent and able to work independently in proposal development, data collection, data analysis, and report writing, among others. Although the course work provides theoretical basis to the research, it does not give the skills and experience needed for the student to undertake the real work. That is, to write a good proposal, undertake field work (in this case it may be the first time for the student to collect large amount of data independently), analyze data among others. Most of the graduate students generally lack proposal writing skills and yet this is one of the most critical skills to succeed in the graduate programme. After completion of the course work the student still has to be closely guided to the next stages such as topic identification, proposal writing stage, field data collection among others. Unfortunately, in most cases the students are left to fend for themselves at this stage and thus have no direction on how to proceed. This is what tempts students to end up writing many substandard proposals which end up being rejected and thus adding to their frustrations. This could make the students to become apathetic, anxious and thus leading to poor relations with their supervisors.

Therefore, continued close supervision through one to one support towards proposal development, report writing, and analysis is an important factor which would improve graduate students' programme completion rates in the universities.

This is unfortunately being overlooked by the administrative units within university structures. In most universities in the developing world such as in Uganda, teaching staff in both public and private universities offering graduate programmes are often heavily loaded with lecture hours which gives them very limited time and opportunity to support graduate students. This notion is further complicated by many graduate students who think that after successful completion of the course work the journey is near completion. And many give more time to their jobs at their workplace risking the temptation of straying from the programme. As close interaction and support reduces after completion of the course work, the students are almost left on their own to decide how long they would take to complete the remaining part of the thesis/dissertation. This is complicated by the fact that most of the students are working class or are seeking employment in order to secure their livelihoods. For those students who are not given formal study leave they continue to jungle between work and studies this may drain their energy to concentrate on the academic work which delays the planned activities. This may further be complicated by the restriction at workplace and other additional social challenges that may arise from working in culturally and socio-economically demanding environments.

Where the students do not have scholarship for the study, they have additional burden of looking for tuition fees and substance allowances as such they look for getting additional employment for financial support. Such are the common environment under which many of the graduate students in developing world such as Uganda operate. This contributes to the high dropout rate in graduate programmes. The author supported four university graduate students in various Ugandan higher education institutions who had virtually given up on completing their higher degree programmes after completion of the course work. This category of students easily contemplate giving up on studies in one university and changing to another or giving up all together. In general, the appointed or assigned academic supervisors in most cases may not give sufficient support to enable the student to sail through the last stages with ease. This points to the quality of supervision which seem to be wanting. Therefore, under such scenario how would the graduate programmes best be designed for the working graduate students? In many cases the programmes are designed as fulltime programme and this is engaging the student on full time basis forgetting the challenges they face as self-sponsored candidates.

Designing Graduate Education Program that Caters for the Resource Poor and Culturally Challenging Environment

The character of graduate students undertaking study in most African universities such as in Ugandan is that they are often already employed in the government ministries or private sector. These graduate students often retain their jobs while undertaking full time studies on part-time basis. These students have the delicate challenge of balancing a fulltime job which may be intensive and professional development or educational obligations as graduate students. Moreover most of the students, by the time they undertake graduate program, are married and often with added parental care responsibilities for their children. This has a lot of implications on their study. They have to ration their time and attention to the work for livelihood, taking care of the family and the academic responsibilities which has grave implications for timely and successful completion of the graduate program. This calls for the need to design specific activities to support such categories of students who both have the pressure at work and family while they are students as they are the most vulnerable to dropping out. As the pressure for various social needs increase many of the students are often overwhelmed after completing the course work component, and thus making them fail to complete their studies on time. In African higher education system and setting there are no tailored programmes designed to cater for the category of students who may have family responsibilities while undertaking graduate education.

A similar scenario is reported to be common in continuing education landscape elsewhere at lower education level where nearly one quarter of undergraduates have dependent children and one half of these parent students are single parents (Miller et al., 2011). At graduate education level the percentage of students who have parental responsibilities is often higher, moreover they are from low-income communities (Schumacher, 2013). This poses the need to address the issues of the low-income single parent graduate students as critical to graduate education completion. The challenges of juggling multiple roles as student, professional, and sole care-giver often generates stresses and strains, at home and at work, for students juggling multiple demands, which can have negative consequences to achieving academic goals. At the moment there are no programmes to cater for, or support the students with the background of resource poor and culturally challenging environment. Often the counseling service resources at the universities do not cater for such students. The plight of such students studying under poor resources and harsh cultural environments is often invisible to the policy makers, programme developers and university management. Under the stressful conditions of challenging educational environments it is often

difficult for such students to develop skills and acquire knowledge such as scientific thinking, persistence, drive, creative problem solving which are key to promoting creativity for professional development (Crooks, Campbell, & Rock, 1979; Nelson et al., 2013). It is thus important to give the candidates the assistance they need to succeed, backed up with consistent guidance during the time of the study. This calls for the need to design tailored programmes that take into consideration the key challenges of graduate students especially under low resource and culturally challenging environment.

Administrative Support Strategies for Graduate Students under Resource Poor and Culturally Challenging Environment

Despite graduate education being a relatively small portion of total university enrollment, it is viewed as essential for the viability of national economies and the future vitality of the university (Yigitcanlar, 2011). Graduate programs prepare students to advance knowledge for continued functioning of our society. Competitiveness in the global economy hinges on the ability to produce sufficient numbers of graduate-degree holders characterized by people with the advanced knowledge and critical-thinking abilities to devise solutions to grand challenges such as energy independence, affordable health care, climate change, and others (Becker, et al.2017). Wendler et al. (2010) argue that in the knowledge economy, a graduate degree will become the new bachelor's degree, the minimal education credential that high-skills employers require. This means at national level the graduate programme must be promoted. However, the current nature of designs of graduate programme does not make graduate education received high level of support in terms of financial support and other investment it deserves in the university system.

By nature, the graduate students in developing countries have many activities to attend to which may be spatially different. It is important to promote the online education which enables students to be able to learn and work anywhere, with constant access to learning materials, as well as each other support systems. At the moment most colleges and universities have made great strides in generating more methods and platforms for faculty, students, and staff to collaborate and be productive wherever they are (Taylor, 2004). This trend is what needs to be promoted to engage the graduate students. The advent of connected devices provides the required flexibility in how, when, and where people learn, and many institutions have updated their IT infrastructures to address the issues of connectivity and online learning. This supports graduate students with background of resource poor and culturally challenging environment to continue with their studies despite being engaged in other unavoidable work opportunities.

CONCLUSION

In a typical developing world university environment and cultural setting, successful completion of graduate education is a big hurdle as exemplified by high dropout rates or low completion rates. In Ugandan environment, the expectation of high-quality postgraduate candidates is becoming more challenging and there is need to urgently develop new strategies especially to tackle the low rate of thesis or dissertation completion which is a critical component of the graduate programme. The programme administrators need to identify the key administrative challenges facing graduate students which affect their timely study completion rate. The proposal focuses on how to support the students who are the customers and what responsibilities and expectations of the graduate student should be in order for them to accomplish the task ahead on them, that is, to enter into the world of producing new knowledge and effectively communicating it to others as researchers, teachers, and practitioners. While most of the graduate programmes in Africa are designed based on the British or American system, however, these do not consider the cultural, socio-economic and political environments in which the programmes operate. And it is assumed that the environments are constant which could be one of the challenges leading to the reported high non-completion or dropout rates. This has policy implications for the key stakeholders. It is hoped that this chapter will provide information for both graduate students, programme administrators and departmental supervisors or advisors to help improve on graduate experience and completion rates. For any institution to navigate to promote better graduate experience requires taking systematic decision to transform the system in a slow, with small start, but thinking of bigger support to graduate students while keeping focused on the ultimate goal of new knowledge generation.

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KEY TERMS AND DEFINITIONS

Academic Motivation: is defined as desire, as reflected in approach, persistence, and level of interest regarding study of academic subjects as judged against a standard of performance or excellence.

Administrative Support: Means use of non-academic persons of a university or other higher education institutions for the achievement of its basic objectives such as finance, supply chain, human resources, research administration, student affairs and information technology to deliver services more efficiently and effectively to their business units.

Higher Education: is all organized learning and training activities at the tertiary level. . It is also called post-secondary education, third-level or tertiary education, is an optional final stage of formal learning that occurs after completion of secondary education. This includes conventional universities post-secondary institutions such as poly-technique and vocation, colleges.

Institutional Factors: are both academic and non-academic support services that might contribute to students' academic achievement and educational quality.

Mobile Learning: is exploiting mobile technologies which enable learning at any place, such as CD ROM-enabled learning, and web-based teaching and learning.

Postgraduate or Graduate: is a student who has successfully completed an undergraduate degree level course at a college or university and is undertaking further study at a more advanced level.

Research Supervision: the academic guide to a student throughout the higher degree by research program and usually involves offering advice in a field of study and providing direction for your research, setting milestones and monitoring your progress, providing feedback, encouragement and support.

Student Attraction: is cultivation of an appealing organizational brand that will attract an individual or prospective students to a higher institution of choice for study. For example how academic programmes are run and quality of products can that makes people want to go to a particular academic institution.

Student Attrition: is the number of individuals who leave a programme of study before completing it. Attrition, or non-continuation rate, is a measure of the performance indicator of higher education providers.

Student Engagement: refers to the degree of attention, curiosity, interest, optimism, and passion that students show when they are learning or being taught, which extends to the level of motivation they have to learn and progress in their education.

Student Retention: is a process of ensuring student succeed or graduate without dropping out or withdrawing from the programme of enrollment. Student retention is important because it illustrates student success and perhaps strong academic support.

Chapter 11
Relieving Financial Constraints of Doing Postgraduate Research in Africa

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ABSTRACT

Private and public universities all canvas to enroll learners targeting community as a source of students. The parents' and learners' choice to join universities is guided by knowledge available on social media as universities are web-ranked depending on evaluation criteria of best performance. Research and publication is one of the three core activities that identify a university from other tertiary institutions after secondary education. The financial constraints in financing research for Masters and PhD students remain a drawback in implementing quality assurance policy in African universities. The major criteria used while evaluating best performing universities are: teaching, research, citation, industrial income, and international outlook. Research takes equal percentage weight as teaching in universities' web ranking. This chapter explores the possibility of financing research and publications in promoting quality assurance system, a global marketing strategy for universities.

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INTRODUCTION: FINANCIAL CONSTRAINTS OF FINANCING POST GRADUATE STUDENTS RESEARCH IN AFRICA

Attrition in post graduate studies has been associated with financial constraints where about 30-50% of enrolled students do not persist to graduate (Bair & Haworth, 1999). Research has shown that between 40-60% doctoral students do not persist to graduate. In South Africa 50% of PhD enrolled students drop out of the university within the first year of enrollment (Herman & Sehoole, 2018 and Mutula, 2011). In Australia, between 2010-2016 out of the 437,030 enrolled only 65,101 which is 14.89% of PhD students graduated from Australia public universities (Bednall, 2018). In Uganda, considering Masters of Business administration, Masters of Science in Accounting and Finance of Makerere Business School about less than 16% of enrolled students could complete within four years period (Eyangu, Bagire & Kibrai, 2014). The causes of attrition have been identified from personal, financial and institutional. From the perspective of financial constraints, post graduates students especially PhD candidates' challenges vary along lines of gender, ethnicity, age, family responsibility and maturity. The performance of such student if not financed at an early age (below 40 years) it may be detrimental for him or her to complete and it is made worse with students enrolled on self-sponsorship in universities (eyangu, Bagire & Kibrai, 2014; Van de Schoot, 2013 and Bednall, 2018). Professor R J Nico Botha of university of south Africa arguably say that, "Throughput of post-graduates is decreasing due to financial difficulties, personal challenges, less opportunities for students to get study leave from their employers". Throughput is the amount of work, people or things that a system deals within a particular period of time (Botha, 2016). In university, post graduate research needs to be funded otherwise attrition may continually cause waste in human resources development.

Attrition varies with discipline of study, age of students, enrollment status, family responsibilities and country (Gittings, 2018 and Herman & Sehoole, 2018). Gradual reduction in the number of students enrolled at postgraduate studies remain a drawback in personnel development at such a critical moment where university enrollment at undergraduate level is advisedly increasing as youth and adults seek to attain university education (Louden, 2010). Delay to graduate and programme termination at Masters and PhD level may also be detrimental to the university as resources, time and collaboration with funders may be disconnected since there is delay and termination rate which is undesirable by graduate students and other stakeholders. In Netherlands, PhD government rewards universities which successful present a Doctoral thesis. Each successful PhD thesis is £90,000 and this helps universities with financial autonomy (Schoot, 2013).

Economic development is significantly related to the level of achievement in formal education where professionalism is practical in institutional management and output is of high quality. It is accepted that there is no economy which can attain economic development with less than 40% literacy level. Therefore, economic development is proportionate to increased level in academic achievement of the citizens (Center for Global Development, 2002 and Tremblay, Lalancette & Roseveare, 2012). However, literacy, education and economic development can be expedited through post graduate researches to propose solutions that affect society (Blaug, 1966).

Post graduate students face challenges of financial austerity as they think of financing research, conference travels for research dissemination, publication, and personal administration in terms of upkeep costs (Johnstone, 2003). These mentioned requirements of post graduate research once not fulfilled due to financial constraints may turn as risk factors of attrition in the program of study. Attrition evolves over time throughout the study cycles which may be 2 years for Masters and three years for PhD. Attrition leads to lose of upcoming researchers, leaders, and lecturers (Myers, 1999). In the study by Lawrence H Myers it was found that between 1983 and1992 the 354 students enrolled for doctoral studies and only 94 qualified for doctoral candidacy. This means that 74% failed to attain candidacy and during final stage on 39 candidates were able to graduate where attrition had claimed 89% leaving only 11% to graduate (Myers, 1999). Life challenges are hard during post graduate studies due to student's age, family responsibilities, full-time employment where workload is heavy, yet the salary got from employment may be the only source of funds to support his/her post graduate studies. Low paying part-time jobs that provides inadequate funding, enrollment status, some student may be dissatisfied with dissertation chairpersons and dissatisfaction with academic involvement coupled with financial austerity which detracts post graduate students (Gittings, 2018 and Johnstone, 2003). However, there are many opportunities that need to be explored so that securing research funding can be from different organizations as shown on internet following links like; opportunities for Africa/connecting Africa to latest life and other research engines (Rachel, 2015). Universities can help financing post graduate research by partnering with other universities and organizations such as Food and Agriculture Organization (FAO). FAO works with universities and other partners like AGREENIUM, France; TAXAs, A & M, USA and other organizations to support research.

In the past century, higher education in most African countries such as Uganda, Kenya, Tanzania, Ghana, Nigeria and others has been largely dependent on governments or taxpayers, for revenue to meet these high and raising costs

(Johnstone, 2003). Now the controversies are the debate of the day on university funding (Woodhall, 2007 & Ministry of Education and Sports, 2018). Maureen Woodhall presented an argument considering higher education as viewed in three perspectives; i). Higher education is a social and private investment, ii). Cost sharing and iii). Income – contingent students' loan. The rationale in this argument is that, who should pay for higher educational costs? Should parents pay or should government pay for higher students' tuition and other functional fees? Different authors agree that higher education is more of private good other than public good (Mamdan, 2007). Due to low household income with a lot of poverty among most African communities, students' loan schemes and partnering with research agencies are needed for supporting post graduate research in Africa (Johnstone, 2003).

Both private and public universities face two challenges in providing higher education. The first challenge being ever increasing "per-student cost" and the second challenge being increased enrollment of students at undergraduate studies where students-lecturer ratio increase with deteriorating institutional infrastructures; library text books, classrooms, furniture, digital equipment, laboratories, to mention but a few (Johnstone, 2003). Research being one of the three core activities that identifies a university, then both private and public universities should create avenues of supporting post graduate research starting from annual budgets, and collaborating with government and other funding agencies.

Countries with highly educated communities have got an advantage of developing economically and socially (Center for global Development, 2002; and Tremblay, Lalancette & Roseveare, 2012). The return on education is achieving social and economic benefits due to knowledge and skills in economic planning, politics, science and research. Therefore, mixing financing higher education is better than either exclusively public or exclusively private financing (Woodhall, 2007). The question of financing post graduate research is to be supported by university administration, government ministry, and funding agencies (Myers, 1999). However, some university top administrators like government ministries have not cherished financing post graduate research in some African countries. African union (AU) in collaboration with Association of African Universities (AAU) are canvassing for post graduate research financing and scholarships through collaborations and establishing specialized universities in different regions. The initiatives is cutting across many different discipline like Agriculture where Regional Universities Forum for capacity Building in Agriculture (RUFORUM) vision 2030 (RUFORUM, 2017) has been established to champion development and increase food security in Africa.

Universities and government ministries are facing financial constraint due to increase in population and demand for social services like education, medical, security and other services. The situation is world-wide in industrialized countries

and when it comes to less developed countries it is alarming especially in Africa (Johnstone, 2003). Universities with no financial autonomy constrain to support financially post graduate research and resort to only teaching hence little is done in knowledge generation and sharing (Kibalirwandi, 2019).

Establishing institutes of research like Makerere Institute of Social Research (MISR) is seen expensive hence little attention is given to post graduate research in most universities in different countries. Postgraduate students and most lecturers in lifetime they publish less than 10 articles as low motivation indication for research (Kasozi, 2017). Post graduate research, if funded can increase research volumes and help in generating knowledge hence meeting research agenda for university and societal demand of knowledge for consumption. Education has a significant effect on economic development as it equips citizens with knowledge and skills hence preparing them for employment, labour mobility, entrepreneurial skills (Yeoh & Chu, 2012 and Olsson & Meek, n.d.). Research institutes can be made vibrant through post graduate research and innovation as may be planned by university administration and government ministries.

Post graduate students enrolled for Master's and Doctoral Degrees often face financial constraints hence delay in completing within stipulated time for a study cycle (Mutula, 2011 and Khodabous, 2016). In most cases over 60% of post graduate students are forced to drop out of doctoral degree program prior completion due attrition risk factors (Bergman, 2014). The rate at which post graduate students dropping out of the program approximately is 50% within the first year of enrollment (Herman & Sehoole, 2018). Considering Economics of Education, higher education is an investment that both government and institutions should invest in for the good of the economy (Woodhall, 2007 and Yeoh & Chu, 2012). Research and innovation (R & I) are strong drivers of economic activities as well as of social health and wellbeing of the community (Olsson & Meek, 2013).

The failure to finance Masters and PhD research appear pothole in creating human resource capacities in a low resource setting economies (Grove, 2017). Research and innovation enhance human resource development in the country. Financial autonomy of universities is not possible when traditional means of getting income from students' tuition fees and sometimes university budget is overstretched hence fail to support research. The situation is exacerbated in private institutions where students' tuition fee is the major source of revenue (Johnstone, 2003). Most universities in may not finance research because of their diminutive finance pockets. Research and publication would increase industry income given time and creativity by post

graduate students. Innovation and creativity where new products are brought to market through end research projects for community consumption would generate income and employment to the community and graduates. The idea of "patents and copy rights" has not been explored by most universities and researchers hence industry income is not reported in most universities (Kaseozi, 2017 and Kibalirwandi, 2019).

Little is emphasized on research and publication in most universities due to model of governance coupled with financial constraints as university budgets do not allocate more than 05% to research yet it would be part of the marketing strategy (Kasozi, 2017). The national budgets of most countries seemingly allocate little on research. South African country appear as an icon in promoting research hence more than six of south African universities rank among the best one hundred performing universities in Africa (Breier, 2019). Debate on pertinent issues like research are never encouraged hence knowledge sharing and public awareness on new findings are limited. Scholarly debates esteeming from research and innovation is key to national development. Timothy O'Donnell's group presents an essay, "A Rationale for Intercollegiate debate in the twenty-first century" where research is viewed as a path way for innovation and change in administration to promote financial autonomy due to productivity as participants are positioned in the new academic environment (Louden, 2010).

Financial constraint has impacted negatively research management process where students, supervisors and dissertation chairpersons are equally affected due to inadequate funding (Johnstone, 2003; Kasozi, 2017 and Grove, 2017). Research is being done in few industrialized countries-technological economies-the knowledge-driven economies and low developed countries remain as consumers of knowledge other than manufactures of knowledge (Mamdani, 2007). The countries where little or no research done are now referred to as market-driven where human beings are passive consumers of knowledge with no future to improve and become innovative. The quality of research is compromised due to insufficient funding resulting into poor output. Therefore, little may be reported if attrition does not override graduate schools. As candidates fail to finance research, they quietly drop out of the program.

The time allocated for data collection coupled with financial constraints compared with time allocated for data analysis expose the researcher to panic hence failing to process all collected raw data (Mutula, 2011). Failing to balance appropriately time for data analysis is detrimental on quality of output (Johnstone, 2003). Output in terms of quality research and teaching materials related to such researches (open resource) are not attractive on global scale. Little or scant information is provided in the report without substantial findings. This scenario of leaving huge collected data

unprocessed when writing a report with scant information frustrates sponsors, and may cause no motivation to continue with such scenarios of sponsoring individuals. Value of money must be accounted for by providing and disseminating research findings. The quality of research is observed when publication is subjected to critic and peer reviewed. Research communicates, share knowledge and create knowledge for innovation and creativity. However, most post graduate students get frustrated not to continue with studies due to funding (Mutula, 2011).

The published work by graduates sometimes remains narrow with scant information to meet criteria needed to cause informed policy or community consumption being the end result of research. Projects to improve community livelihood are expected after research. Doctoral studies are unique in adding new knowledge and approaches in providing solutions to existing problems in the community or institutions (Louden, 2010). Scholarly debate based on research may impact both parliamentarians and institutional leaders in countries. Universities are at the cutting edge of economic and social development that may result into; social networks, intellectualism and institutional trust. Social capital and economic development are accelerated by collaborating with researchers from northern hemisphere and other universities within Sub Saharan Africa. Universities from the northern hemisphere especially Association of commonwealth universities have initiated program known as STARS to provide avenue of collaboration with universities in countries like Uganda, south Africa, Rwanda, Kenya, Tanzania, Ghana, Cameron among others (Breier, 2019). Researches add blended value and quality creating human resources to cause creativity and innovation (Bitzer, 2014). A synergy and perceived doctorateness is needed through research, writing thesis or dissertation and defending a thesis at viva voce. Once these criteria for doctorate degree are achieved synergistically, then doctorateness is demonstrated (Bitzer, 2014).

Antagonistic think show that there is little return on education cost spent on postgraduate studies in most African countries. The few Doctoral graduates after graduating they establish consultancy and resort to direct teaching other than making more doctoral graduates and research (Khodabous, 2016).The course cost paid and time spent for postgraduate programme is considerably thought of as not rewarding (Mutula, 2016). Could be promotion in academic ranks would provide an incentive to PhD graduates. To the dismay promotion in rank is restricted by either government ministries of Education or university administration for fear to increase salary in relationship with awarded academic rank by Senate or university council (Kibalirwandi, 2019). However, research and publication is significantly important in consideration for promotion in academic ranks.

Research benefits institution and researchers by positioning both at global intellectual platform. Doctorate students have often published with their supervisors hence review and creation of knowledge is shared. Doctoral graduates in supervising other doctoral candidates increase knowledge and creativity hence knowledge economies that are beneficial to the development of countries (Mamdani, 2007). However, graduates from outside Africa have been engaged in administrative role and direct teaching when they return to Africa. African universities are reported to be facing a conundrum in conducting research, lack of research project management, and supervisory capacity (Breier, 2019). Therefore, as an alternative means, universities with universities funding has to collaborate with universities that are advanced in research management capacities from the north and others within the Sub Saharan region to make consortium. African scholars have been identified capable of doing research but limited by funds to implement particular research projects that are of global attention. After graduation, most bright graduates are hired by outside countries to be given lucrative jobs that pay better than when they would be in their countries. In turn their countries keep lamenting of brain drain when even they could not support them financially during their research.

A number of constraints face postgraduate students starting from financial constraints, time for data analysis and report writing has been identified as cause for low economic development in most African countries (Mamdani, 2007). The quality of research is constrained due to lack of funding to both candidates and supervisors as time may have direct financial implication on both candidates and their supervisors. Doctoral graduates resort to teaching workloads and private consultancy companies other than creating more doctoral graduates (Khodabous, 2016). Travel for conferences are limited, access to technologies and libraries is constrained by funds. Few objectives are handled during PhD study period considering financial constraints and time for data analysis (Mutula, 2011 and Khodaboius, 2016). The government and universities in every economy may take position in improving quality of higher education taking example of South Africa (Breier, 2019). University of Cape Town (UCT) tried research to increase graduate students and success reports are available as 600 academics have been achieved to graduate since 2003. Publication output per university academic increased by 80% which include 55% for masters and PhD weighted research output. The Department of higher education and training in South Africa has created 125 new, permanent lectureships for Blacks as Next Generation (Breier, 2019). National budget is promoting doctoral research and resource material like digitizing libraries, improving libraries as e-libraries are being provided, and research funding to students (Sawyerr, 2004 and Khodabous, 2016).

Higher education institutions provide countries with human resources so as to increase productivity. Universities world over provide research capacities; "postgraduate programmes are considered as conduits through which universities develop research capacity and also generate high skills needed for a functional economy" (Mutule, 2011). Scholarships were given to best students for further education either in collaborative universities or countries that were colonial masters. The purpose of education was to prepare human resources to continue with countries leadership (Fontana, 2017). The role of university education cannot be under-estimated in countries' economic, social and political development. Countries with high literacy level easily develop economically because jobs are done in a professional manner with high quality of output that attracts market (Yeoh & Chu, 2012). This explains why USA, Germany, Britain, China, Japan and other countries have developed high with their citizens having the best level of education. These countries have not only employed their citizens but have provided employment to best performers from Africa.

Most African countries have invested in primary school going children (Universal Primary Education), UPE and Universal Secondary Education, USE. Returns on both sections to attain economic development is after 12 years of investment (Blaug, 1966). For adult education which is almost like university education returns are expected on one dollar invested in post graduate student is giving return within 2-3 years. Investing in higher education therefore would cause a paradigm shift. Imagine investing in a Ugandan PhD student within the country, US$ 14,000 would make one to graduate from Mbarara University or Makerere University in 3 years. PhD holder is given salary between US$ 1,052.63- $2000 per month annually US$12,631.57 –US$ 25,263.12. Given chance to graduate one PhD student, such a graduate would pay back student's loan within two years and the repaid loan would educate another student. Policy makers and institutions have not thought of such an innovation. Research for post-graduate is a challenge because most students have not been regarded with love for Africa. At the point of graduation international universities invite such neglected student for lucrative jobs and brain drain takes place continually in Africa.

The new trend is that education grants and bursaries' policy has been adopted in more and most countries of Africa for two reasons; one to increase accessibility to more students who do not make it to "*fee-free places*" at the university where taxpayer's funds cater for the few privileged. Secondly the policy provides incentives to university employees to get extra earnings so as to maintain them within the country (Johnstone, 2003). The grants and bursaries policy introduced two products

as alternative to university access; cost sharing and students loan scheme. In most countries students loan schemes have not succeed in recovering funds hence no success reports are provided for supporting research at postgraduates. Cost sharing has directly exploited families as they collect resources to send a son or daughter to acquire university degree (Johnstone, 2003). Makerere University has been reported to be registering success in *dual track tuition fee* for private students. However, there is no recorded success in post graduate research financing by students loan scheme and cost sharing in African countries. The post graduate schools have enrolled a small number of students as compared to undergraduate enrollment yet graduate students are mostly recognized of engaging in research that would provide solution to some of the community problems within a country or global concerns like environmental issues and human related challenges (Louden, 2010).

Funding research remains a challenge in most universities in Africa hence researches are terminated prematurely before consumable projects are initiated to complete research cycle. A good researchable topic should propose solutions to community existing problem that may be attracting global attention. The challenge of supporting research agenda may be associated with university administration leadership style and isolation in research project according fragmented field of study (Mwine, 2016). Most researches done by postgraduate students have remained lining on university library shelves because they lack substantial knowledge and information to handle community problem by generating consumable projects, dust has covered them within libraries.

If research would be handled in interdisciplinary nature of research, then community would benefit from research. For instance, when students of agriculture, biology, chemistry, economics, development studies, and other field of study would combine and handle a substantial research it would be beneficial to the community as end project research would be implemented (Mwine, 2016).

The gaps in university administration have negatively affect research as top administrators assume positions above employees and team players in leading others to succeed. Participation in decision making is theoretical where gaps between top management and subordinates that even extends to government "inner offices" like in ministries, research and innovation has not been supported as required. Lack of support for research limits research and publication volumes hence poor positions during university web ranking. Managerial challenges can result into poor performance of university in many aspects (Mwesigye, 2013 and Kibalirwandi, 2019). The tradition university leadership where top managers could hold command post to instruct subordinates was medieval era where authoritarian and autocratic,

dictatorship could hold in most government and universities leadership styles could not be questioned (Mwesigye, 2013). Participatory and democratic leadership is required in universities so as to enhance quality assurance that is enshrined in the three core activities; teaching, research and community outreach (Kibalirwandi & Mwesigye, 2018).

The authors concur with evaluation criteria as applied by different web ranking organizations while identifying best performing universities at global, continental level and country level basing on major five criteria; teaching, research, citation, industrial income, and international outlook (Baty, 2014; African Quality Rating Mechanism, 2013 & Kibalirwandi, 2019). The short fall on achieving reasonable weight percentage during web ranking reveals that quality of education is sub-standard not worth to attract reasonable number of students. Communication on employees' participation in implementing quality assurance policy/system in universities is important and evident through research and quality of teaching; "anthropoanagogy". Anthropoanagogy is where learners are inspired by examples of educators' experience (Kibalirwandi, 2019). Anthropoanagogy being a new concept coined from two Greek words; Anthropoi (People) and anagogy (Inspire) to combine and form anthropoanagogy. This explains that people learn when inspired by experienced educators who live by examples. Research jointly done by post graduate students inspires undergraduate learners and global community hence knowledge creation is possible with financial support from both government and university.

Research can help in increasing industry income for each university. Industry income is one of the five major criteria that are used in web ranking. The information on how industry income can be enhanced in universities is scant! Why haven't researchers written on this topic? Why don't universities declare their industry income? Commercial banks do declare their financial statement to its clients and general public. Why don't universities declare industry income? And show products that they have patent rights. Some university lecturers do not even have copy rights over their publications due to low salary income hence journals have retained copy rights. Open access journals are free to give copy right to author than closed journals where publication is free.

As mentioned that loyal employees are worth much more than their weight in gold, a leader can easily earn loyalty by doing good for his team (Kibalirwandi, 2019 quoting Vishnepolsky, 2018). The decision to support post graduate research is within the limit of top university administrators and government ministries not being overruled by their former colonial masters. Could be such rhetoric questions may be asked. Who of the colonialists have affected African universities not to engage in

research and publication? Shall Africans continue lamenting that poverty in Africa is due to the effect of colonialists? Do African countries have capacity to develop beyond the current level as they plan to shift and join global participation where they will increase livelihood and productivity? Can research and publication contribute consumable products in terms of goods and services? What have you (individual or as an institution) brought to the market in the recent five years? Research can fund itself hence publication costs can be paid for by universities! Increase university publication volumes to attain position in web ranking and this alone may cause more students to join hence increasing revenue. Post graduate research will benefit both university and students hence investment in research is good for the university and students. Scientific research can cause a paradigm shift in creativity and innovation hence overcoming economic challenges where lamentation has been about colonial masters that left colonies more than 60 years ago for most countries in Africa.

BACKGROUND: RESEARCH AS A DETERMINANT FACTOR FOR IMPROVING UNIVERSITY QUALITY EDUCATION

The public is interested in new products on market and value for money is their concern (Van de Akker & Spaapan, 2017). Societal impact of research in Europe is on a gender for innovation and university contribution to the knowledge society. Graduate students are giving back through research and innovation in UK, France, Germany, Netherlands and other European countries through knowledge sharing as research lead to projects as end products of research. New products have come to market as a result of research in medicine and manufacturing industries. Discipline like agriculture has utilized research to impact society in providing new methods of food production and preservation hence reducing hunger (Ali, 2003). Research has been given attention and funding in Europe. This is evident as high level strategy of development at LERU universities in Europe has been witnessed (Van de Akker & Spaapan, 2017). Research has also shown that universities have nurtured leadership in countries like Ghana, the Philippines, Oman, Lebanon, cote d'Ivoroire and Boston (Fontana, 2017). Research have been relevant in all spheres of human development hence a need for funding to researchers with researchable projects that may cause change in averting problems in the society.

In Africa, where per-student cost has reduced tremendously in the last two decades reducing, yet quality of education has not improved due to insufficient infrastructures and overwhelming enrollment of students at undergraduate levels

(Johnstone, 2003). The number of PhD holders is very low as mentioned for South Africa where the ratio of PhD holders to students is low. The low salary scale in some countries is not pleasing to retain employees hence research is anticipated to change the situation as new products will be brought on market for public consumption. This has been experienced in countries like UK where universities contribute to Gross Domestic Products (GDP), for instance in 2011-2012 universities contributed 2.7% employment, £ 73.3 billion as output, £17.97 billion to UK GDP, £ 0.92 billion from research income. The contribution of university revenue to national GDP is assign of economic development (Keely, McNicoll, & White, 2014).

Publication volumes per faculty or department increases chance of research publication volumes to be ranked. Research by faculty, department and discipline has a resultant multiply effect on knowledge and skills imparted. As students gain knowledge and skills research volumes each departments of different faculties within recent five years, citations of publication, teaching relevant researched information that is inspirational (anagogical) will increase. To the learners elsewhere and general public will access open resources that are typically reflecting university contribution to the field of knowledge required. Institutional research is ideally market strategy to attract collaboration and funding. The benefit of research as presented in most university human resource policy books, employees' promotion in ranks depends partly on number of publications and outstanding teaching experience.

Universities are encouraged to actively participate in implementing and executing the three core activities (teaching, research and community outreach) that uniquely differentiate universities from other tertiary institution (Kibalirwandi & Mwesigye, 2018). Researched articles are inspirational hence research culture introduce a new concept of anthropoanagogy. Anthropoi (people) and anagogy (inspire/ inspiration) the two Greek words combines to form anthropoanagogy (people inspired) by educationists during learning process (Kibalirwandi, 2018). Post graduate students are central in presenting institutions to stand as giants because of research and publication (Kibalirwandi & Mwesigye, 2018). Parents and students more often than not will associate themselves with giant institutions of reputation because research offers unique events being reported annually or quarterly. Financing research and publication therefore is both administrative and marketing managerial strategy for the growth of universities and economies.

Education system of Africa has been criticized to have not answered societal demand of competent human resource creation (Materu, 2007). Low productivity is associated with low quality of human resource with little or no specialized skills in the field of production (Center of Global Development, 2002). There is conundrum

when backwardness of some countries is being blamed on colonial masters who left direct leadership of African countries 60 years ago. "Misleaders" in the post-colonial era still lament as they fail to cause development in their own countries. Engaging researchers would cause paradigm shift in improving creativity and innovations (Kibalirwandi & Mwesigye, 2018). The question of what makes a university, a lecturer, and a country to stand out as a giant is creativity and innovation resulting from researches done to solve existing problems in the community. Knowledge is manufactured, reviewed, stored and sold from universities. Industry income is never reported because patent rights is never acquired by university researchers, publication is never done at the expense of the university, students researches are ending in library shelves, hence knowledge does not reach the last consumers in the community. University top administrative still question what criteria are being taken in ranking best performing universities (Rwakishaya, 2018 & Kibalirwandi, 2019)

Global community is invited to consider guiding principles in identifying global universities worth of providing quality education for global learners basing on convectional criteria for web ranking. Open access resources (OAR) materials are available to enlighten and guide decision-making in selecting best performing university. There are some rhetorical questions that have been asked by university administrators and they do not get answers. Questions like; how do universities meet their breakeven point in a situation of low enrollment? How can these private universities attain their management vision? Is it possible for universities to increase their revenue outside students' tuition fees? What about research and industry income? It is important for universities to engage in students' research funding that new products are brought to market and patent rights are acquired by the university which brings benefit to both students and institutions. The purpose of students' research should not end in library shelves but to the community. The new issues in education must be approached basing on local and global perspective explored on researches made by postgraduate students (Louden, 2010; Van de Akker & Spaapan, 2017; Baty, 2014 and African Quality Rating Mechanism, 2013).

A lot of changes are happening in the field of technology, which is cutting across disciplines. Young people are becoming experts according to research coupled with innovation in technology. Teachers must change in methods of teaching which is proposed to be anthropoanagogy which means inspire people to be innovative and productive. Some of these changes are causing future shock which teachers should prepare for as their plan for inspiring people (Townsend, 2011 and Kibalirwandi, 2019). Research articles can help the lecturer to present his ideas very easily to the learners and inspiring them into research and innovation. The technology and research should be harmonized to meet the society needs.

The criteria of ranking records teaching as first online! The quality of teaching depends on the ratio of PhD holders to students; Bachelors students, Masters and PhD students in a university. Universities without PhD holders' lecturers then quality of education may be questionable hence they cannot enroll PhD students and research capabilities is weak. Citation or reputation is another facet for answering who authored published articles? On what mandate does he/she have in scholarly world of research? This explains where most articles are written by more than two researchers to create substantial matter worth taken by academia world.

Post graduate research financial constraints are reflected in university staff list where few PhD holders are shown on lists. The bottom line is research and active participation can raise one to stand a giant in the world of scholarship and service (The QUAD, 2018 & Academic position, 2018). There are a number of internal constraints within universities when it comes to employees' recruitment. Most universities are not financially autonomous hence they do not employee PhD holders to participate in creating more doctoral students. How can a dependent university which is not financially autonomous maintain a PhD holder who ideally need US$ 436,065 as basic annual gross salary compared to what is average annual salary of US$10,000 for Ugandan university employees (Kibalirwandi, 2019). The highest salary earner being annual gross salary of US$ 21,088 and the lowest salary earner was US$3,157 per year. Comparing USA and European annual gross salary of £82,506 and £43,607 these are declared salaries without other allowances (The QUAD, 2018).There are individual professors known to be earning comparably good salaries like Professor David N. Sliver of Columbia University who earn USA$ 4.33 million, Professor Zev Rosenwaks who earn about $3.3 Million and others on the list. However, the list may be long because individuals who earn relatively good salaries annual are mentioned.

The question of minimum wage is pertinent in labour market depending on qualifications of labour. Universities should be able to generate income outside students' tuition fee as previously mentioned that universities relay on students' tuition fee collection to pay employees. Salary scale for university employees is sometimes influence by income from students as they pay tuition fee. Some core activities like teaching, research and community outreach are neglected ideally due funds. Lecturers' monthly salary (wage) is suffocated due to thin pocket for investment in teaching, research and outreach. Research in this case should be promoted through enrolling post graduate students.

Marketing strategy require university top management to think "outside the box" in order to attract scholars and collaborate with universities in Europe and USA for the purpose of increasing communication and research. Research should be done with

consultation with government agencies and business world to establish problems of attention to the community livelihood. Financing research may be another venture that requires investment for purpose of creating financial autonomy in universities beyond the tuition fee brought in by students. A university can increase its industry income through research and international collaboration.

ISSUES, CONTROVERSIES AND PROBLEMS

Issues at Hand for University Education in 21th Century

Institutions providing university and college degrees are both public and private in different countries globally (Shabani, Okebukola, & Sainbo, 2002). Government using taxpayer's resources provide funds to public universities, therefore income is from government and other sources depending on how industrious a university participate. Private universities are divided into institution for profit and non-for profit. The denominational universities with foundation body being religious denomination like Roman Catholic Church, protestant (all religious sectors that believe in Jesus but object the supreme leadership of Papal), Muslims and many others may be called "not for profit". The institutions for profits may be the cooperate institutions owned by shareholders who may be individuals or companies. The third category of institutions is not yet common but popular in some African countries where inheritance leaderships of kings and cultural leaders are evident. Such institutions are known as cultural academic institutions managed by employees appointed by cultural leadership (Kibalirwandi, 2018).

The criteria of choice to select a university by parents and students may be influenced by religious affiliation, entry points for state funded universities, and other factors like household income, cost of living expected as private universities take almost more than 50% students in tertiary institutions. The quality of education and variety of learning disciplines may have been compromised since due to lack of harmonization of university education as revitalization is on the agenda of African Union (AQRM, 2013). Research, teaching and community outreach are core activities that need to be included in annual budget of the university. Financing post graduate research by the university is an investment worth to undertake since knowledge and skills are developed from such initiatives. Kampala International University in Uganda has ventured into supporting post graduate studies where students are

helped to study and their credentials are kept or retained after graduation until they work for three years within the university at agreeable salary or pay an equivalent to redeem their certificates if lucrative jobs are found outside the university. Post graduate student after graduation their salary scale is raised hence capable of paying tuition fee or work for the same university.

Most universities with reputable employees especially lecturers have not taken extra miles in research and publication so as to share manufactured knowledge and sell knowledge (Kibalirwandi, 2019). The reasons given are low salary scale as mentioned less than US$21,088 annually, heavy workload in teaching and administrative responsibilities. Those that publish do not publish in open access journal hence their articles are never accessed freely by their students and community. University repository cannot host professors articles published in journal that have not provided a researcher with copy right. Patent rights must be sought of as part of industry income to own products as post graduate students present research reports and articles to contribute towards solving existing problems in communities. It has been observed that students research for partial fulfillment end only in departments without publication. Unpublished researches are no knowledge manufactured because it has not been disseminated to the final consumer.

However, in quality assurance evaluation reports observed during research, students indicated that choice of which university to take was because of choice of professional, denominational orientation, entry requirement attained after final examination of senior six (secondary level education) and pocket friendly tuition fee charged by the university as most children in private universities are children of peasants who are neither politicians and rich business citizens (Kibalirwandi, 2019). The national summative examination sometime dictates upon choice of university professional course to be undertaken by the learner basing on entry cut points of public universities foundered by government. The community members have not been enlightened about universities that can train their children to be good researchers in identifying possible solutions on community problems. Most parents in Africa only think of university degree without considering the current need for research and innovation. There is a need to encourage research from political, administrative, legal and policy issue influence not underestimating any of these stakeholders. Financing post graduate research must be on agenda of any country, organization and university for economic strategic purpose (Woodhall, 2007).

Research and publication is essential for teaching and learning in the university as lecturers teach from experience acquired during research as presented scholarly articles. As mentioned anthropoanagogy is where an educator inspires people by

sharing his personal experience acquired through research which is documented for the next generation to see. Such documented research allows scholars to review and share knowledge through creativity and innovation to refine knowledge for the better of the community. The personal reputation can become a bargaining power for professors in public and private institutions. As mentioned earlier Dean Takahashi is a professor of finance at Yale University and earns $2.6million because of his exceptional expertise.

Both employees and students should engage in searching for issues at hand that require government ministries funding considering government agenda for informed policy action. However, policy formulation process in developing countries have been observed weak due to policy cycles being not complete due to lack of seriousness or ill political agenda by "misleaders". These mentioned as misleaders are not only politicians, but all concerned institutional leaders that still think that African underdevelopment stagnant because of colonialists. Patriots are invited for the cause of research and publication in universities to increase creativity and innovations. Misleaders are both in academic institutions and government political positions that only focus on personal benefits at the expense of publication expenditures. As suggested, top administrators should apportion some US$ 8 per student from graduation fee to support research and publication so as to generate local contribution funds to improve research and publication (Kibalirwandi, 2019). Alternatively, university research departments should acquire status of becoming institutes of research having semi-autonomous status so as to control its budget and purchase collaterals like constructing hotels for students to hire and pay in funds as another source of income besides grants and other funds allocated by the mother university.

Controversies in Financing Postgraduate Research for Masters and PhD

The debate of who should finance post graduate research is a controversial according to different perspectives. Maureen WoodHall suggested both government and private agencies including families (WoodHall, 2007). Professor Mamdan view post graduate studies as both public and private good hence ideally suggest both stakeholders to finance graduate studies (Mamdani, 2007). Maureen WoodHall her perspective was considering European experience of England, Wales, Scotland, and few examples from Scandinavia and elsewhere while Professor Mamdani considered Africa and elsewhere. In these controversies Nicholas Barr (Barr, 2010) suggests four higher

education objectives to be pursued by Higher education policy; 1)."Widen participation both for quality reasons on efficiency grounds, in that countries cannot afford to waste talent; 2). Strengthen the quality of teaching and research; 3). Protect the autonomy of universities, which is desirable both for its own seek and more instrumentally because autonomy and quality are strongly linked, and, 4).Protect fisc

Barr, (2010) further state that, "if private finance relies on family resources, the resulting credit constraint will be inefficient and by particularly affecting people from poorer families, also inequitable."

If research cannot be funded by universities and government, then post graduate students research shall always be delayed to be completed and sometimes students may dropped as failure hence waste of resources that may have been paid during initial stage of enrollment at post graduate schools.

Research should be purposeful to avert problem affecting community as it emanates from existing policy or it may cause informed policy (Atwine, 2018). University research directorate may write grant winning proposal which may provide funding to researchers to fund master's and doctoral research like in Ruforum (Regional University forum for capacity building in Agriculture), DAAD for In-region PhD scholarships in Eastern Africa at Strathmore university, SAAD Scholarships for African students from SADC Countries, INUKA Fellowships for African women but age requirement 25-35 years, African Scholarship programme (ASP), Ecole polytechnique federale de lausenne (EPFL), schindler Global Award in Switzerland for architecture, landscape, urban design, planning programmes and other fields of study. The list may be more than what has been presented here. The overall question is what is required for a student to win a scholarship?

The reputation of a University as we think of International outlook accounts a lot in winning grants and scholarship. A person in administrative position who recommends an applicant can be a determining factor in winning a scholarship or financial support towards research. International outlook is one of the criteria for ranking require inter-university collaboration for research and publications. Research accounts for 30%, teaching accounts for 30% while citation also accounts for 30% and International outlook or collaboration 7.5% (domestic to international students' ratio 2.5%, domestic to international lecturers' ratio 2.5%, international collaborations in research and other links 2.5%). Considering this evaluation rate during web ranking, citation and research is accounting for 60% while teaching account for 30%. Therefore, for a university ratio of PhD holders to students must be proportionate in consideration to research at post graduate. Quality assurance is

a global policy for purpose of marketing and improvement of quality of education, research must be supported to increase quality of teaching from evidence-based research of post graduate and their supervisors so as to sustain universities. Evidence based research may attract more enrolment and other sources of revenue through active participation in research (Kibalirwandi, 2019; Herman & Sehoole, 2018).

The choice of who to be funded at masters or PhD level sometimes depends on university top management or it depends on choice of faculty need or funder guided criteria (Herman & Sehoole, 2018). Getting sponsorship is possible to all who fit in purpose or goal of the funder. However, some non-conditional grants do occur in charitable organizations that do not expect benefit from a graduate other than equipping him/her for the future. National agenda must be studied by both grant seekers and university leadership so as to acquire national sponsorship since government is the largest employer and sponsor of education in Africa. The situation where government remain the largest employer and funder of education has stagnated the development in African hence time has come for everyone to participate in increasing output as privatization and trade liberalization policies have been adopted by many African countries.

Citizenry education emphasizes people learn to live together in a meaningful life that is beneficial to himself/herself, family, society, country and global community. However altruism may cause one to have self-denial and perform beyond than personal benefit to redeem situations like most lecturers in African universities who have endeavor to publish where their salaries earned would not be sufficient to pay publication fee, and support their families (Kibalirwandi, 2019). Publication fee per article ranges from US$100 to 700 while 85.1% of university employees in Uganda. They earn less than US$ 10,000 as annual gross salary. How best would these lecturers, professors support publication in absence of research and publication fund being created as proposed? The authors established that employees still complain of work overload to be heavy for them to teach and research at the same time while most of them are on transit part-timing searching for extra pay to supplement their little salaries. This scenario directly affects post graduate research in most universities in Africa.

Low motivated university employees engage in teaching rather than in research and publication. Research has not been fully supported by university employees because of poor remuneration, heavy workload of teaching, inability to mentor young faculty, and inadequate infrastructure (Sawyerr, 2004). Post graduate students are placed to be supervised by employees who could have lost meaning of post graduate research in context. The low payments to lecturers do not motivate them to guide

students well as upcoming researchers. Lecturers prepare for teaching rather than finding time for research. Lesson preparation is not research in this context. Finding a solution to community problem through research laboratory is what is identified as research. Research findings that have evidence in relationship with existing knowledge and providing societal solution to improve community livelihood is the desired research for African challenges.

It is the role of top administration to crusade for grants and scholarships from other universities and organizations. The vice chancellor of Mbarara University of Science and Technology, (MUST) professor Celestine Obua has distinguished himself as a proactive crusader and believer in the creation of several research teams of both academic and non-academic staff (Tumuhimbise, 2016). University post graduate students, many of them have been blessed through his effort to promote research. Rectorate is no longer one man's business. It is all about team building system that plans and determine the bearing at which the university research and publication is to fly.

In South Africa, government and academia have jointly work together to promote research through encouraging post graduate studies. A proposal to increase research and development expenditure to 01% GDP would help to increase competitiveness of research output (Herman & Sehoole, 2019). Motivated staff will be equipped with new skills to supervise students and research will be done through collaboration with universities from northern hemisphere and organizations. Shared values can help institutions to create a strong marketing strategy and financial autonomy through research and publication. Participants in research will get funded; in turn supervisors may get academic rank promotion and exposing university to be recognized as a world giant in research.

The universities leadership and policymakers have not harmonized on what is required or needed for research in government ministries hence funding has not been possible (Atwine, 2018). The same applies to university administration, they (Management) have not engaged in dialogue without government ministries to identify what research areas are of interest to the government since policy is government lead initiative in Africa. Education allows an individual to be free from Servitude hence empowerment in decision making. It sounds contradictory as researchers indicate that education in Sub-Saharan Africa is estimated to have not answered societal questions on human resource development and social justice hence not meeting societal expectations (Materu, 2007).

Problems in Financing Research for Post Graduate Students in Africa

Whereas, a conundrum exists in universities and government ministries about who should rightly fund research, the benefit of supporting post graduate research outweighs the cost. As suggested that taking example of Uganda a post graduate student taking PhD can averagely spend USA$14,000 for social science research and US$ 20,000 for pure science research. After graduation international universities may hire him/her for better lucrative job or he /she can establish a consultancy and keep paying back students loan n a period of two-three years he/she can pay back. Therefore, there is no reason for not investing in post graduate research because return on investment is sure and beneficial (Woodhall, 2007). The students whose family background may be average may not access post graduate schools. For this reason, universities and government ministries better take up responsibilities for supporting financially post graduate research during employment period government shall keep obtaining tax from educated labor force. PAYE is high-yield revenue collectors in many countries generate more personal income tax from employed people than what they would gain from sales tax (Van de Heeden, 1998). This shows that as IMF can explicitly show this evidence then investment in education has a return after all employers collect and make returns to the government.

Innovation and creativity have not been encouraged by creating a research fund for researchers who prove to be innovative. For instance, some researchers have conducted studies and left them "hinging" without projects to benefit community members who may have participated in the study. Grant writing courses have also not been cherished by most research directors in universities hence they hold titles when they cannot use their position to crusade for research and publications to increase ranking on global level. Japan invested in scientific research hence it has changed its economic status in this generation. As earlier mentioned where eight countries were observed giants to colonize the rest of the countries, research institutions can prove giants in increasing knowledge and skills (Kibalirwandi & Mwesigye, 2018).

Research reports in resource centers of universities as observed in 2017/2018 were found with some unrealistic recommendations (Kibalirwandi, 2019).The cause may be hypothesized to be lack of information hence quality of research is ranked low. Therefore, research in humanities was not promising a need to team up students from different disciplines to carry out a realistic joint research projects that can be beneficial to the community. Research should be funded by students/ sponsors and supported by the university research directorate to make follow-up in order to benefit participants.

A need to be more aggressive in documenting cases like social science research, psychological or behavioral researches, economic researches applying randomization, engineering research, social-cultural researches, anthropological researches, history and antiquities related researches, judicial researches, land and home, environment related researches, agriculture related research and other fields in open access journals so that scientific revolution can trigger more production in terms of goods and services.

Therefore, universities should establish income generating projects for research outside students' tuition fee on research and publication. For instance, if a university would allocate a piece of land for research department to construct a hostel or hotel to accommodate tourists and local travelers at a cost that would become income generating project for funding some publication and research this would be sustaining. Financial autonomy is important in all university faculties and departments for purpose of sustainability of activities. Also, students' payment for graduation can apportion US$ 8.00 per student and this can be annual income to research and publication department. Publish the best research reports would be easy and increase volumes of research per department would be possible. Finally, on this point research consortium would be made by a number of universities so as to improve publication volumes per university. As proposed that graduate students can publish with their supervisors, still it is estimated that Ugandan PhD holders publish 10 pieces (articles) in their lifetime hence low knowledge generation by lecturers. Patent rights registration of research project was estimated at 0.6 per PhD holder (Kasozi, 2017).

The above situation may be due to poor motivation hence low morale as research and publication does not get 05% annual budget in most universities (Kasozi, 2017). Failure to engage in research is caused by poor remuneration, heavy teaching loads, inability to mentor young faculty into research, and inadequate infrastructure in universities (Sawyerr, 2004). This was evidently seen as directors of quality assurance in participating universities during data collection of Kibalirwandi could not tell what budget percentage research had in annual institutional budget. The same scenario was observed in quality assurance (QA) directorate (Kibalirwandi, 2019). The students' performance in academic pursuits where innovative and creativity depends on how much teachers/ lecturers or educators give as feedback to inquisitive and curious questions of learners. Townsend (2011) arguably say that 50% of learners' performance at universities or learning institution depends on teachers' feedback and 30% is directly acquired from what a teacher does in his professional life. In fact, the role of an educator is still great in inspiring learners hence anthropoanagogy is timely concept (Kibalirwandi, 2019). Educators should be able to participate in research and publication, and then encourage learners to do meaningful research projects that will improve livelihood in the community by reviewing knowledge, creating new knowledge and sharing knowledge.

Writing a convincing, compelling and appealing proposal to win a scholarship require honest and sincere art of communication. Funders are interested in heartfelt outpouring of mind to establish why a grant is needed by the grant seeker (Ikenna, 2019). It is important to strike the balance between curiosity and societal needs. More funding agencies fund compelling research proposal based on meaningful and highly relevant research topics. Selecting a good and compelling research topic can increase chances of securing funds. Sometimes faking situation may lead to failure to acquire a funding for research and scholarship. Ambitious applicants have been so attractive to funders hence secure the funding as required. However, an applicant should have acquired admission from university or be able to meet requirement for application. Could be funders/donors are like God who asked Moses that, what is that in your (thine) hands? And he said "a rod" and God said cast it on the ground and it turned into "a serpent". Moses fled from before it. God told Moses take it by its tail and it turned into a rod again. Exodus 4:1-17. The funders also need to understand your capability and ability to compete research.

Importance of securing a scholarship are numerous; paying for your studies so that one is kept in school fulltime as others go out to search for daily piece rate jobs a beneficiary of a scholarship will keep in books. A scholarship may provide flight ticket to conferences and workshops hence exposing the beneficiary to other scholars and communities so as to acquire global perspective. The scholarship may provide books, and stipend that can be used to plan and save for life after education level hence support to the family members. A scholarship can link an individual to internship hence acquiring employment opportunity. The scholarship may expose an individual to other scholarships hence continuing winning scholarships for further studies like at masters level and PhD level at different universities. However, the mystification that vulnerable children from average families cannot wine scholarships is not true. Scholarships are given by different individual with different reasons and expectations like religious organizations, charitable organizations, governments, companies, and individuals.

Awestruck individuals with appealing story, convincing as a case is presented to funders, a grant can be secured. This may help a grant seeker to realize his/her dreams as one may be from average family but with an ambition of participating in national leadership at different level of administration. Activists' organization can sponsor such individual for purpose of human rights activists and women activists. Demystification about scholarship that scholarships cannot be acquired by everyone is not true. Courageous individuals have done TOEFL examinations and succeeded. The question of trying and trying is very important for individuals willing to seek for research funding.

Fitting into the plan and objective for funding is pertinent because each fund has got tires around it hence terms and conditions have to be considered in requesting for funding. Research and publication office should always update grant seekers of calls and opportunities to achieve research funding. Information is abundant on internet as students and supervisors remain focused on the goal to achieve higher education. Research financing is a teamwork initiative for purpose of creativity in creating knowledge-economies (Mamdan, 2007).

SOLUTIONS AND RECOMMENDATIONS

- Research and publication should be done through teaming up so as to handle a particular project in research which will provide a publication for sharing knowledge and skills. Most researches done by most students at undergraduate and master's level are for partial fulfillment without end projects in the community hence human participants don't benefit out of research done by university students. Students better team up with lecturers and carry out research that will benefit communities in solving problems. Gibbons, (1998) presents model 1 & 2 of knowledge where model 1 of knowledge is according discipline knowledge and model 2 is about interdisciplinary knowledge. This appears the solution for research to be more meaningful than a single handled person to come with research and due to expertise, he/she fails to provide substantial information.
- Directors of research and quality assurance should engage in grant writing for purpose of promoting research and publication in universities so as to achieve position during web ranking. Post graduate students are encouraged to join universities that hold position in scholarly world as its research and publications are adding value in scholarly world of creating knowledge. Team spirit should be enhanced in research projects and innovation whereas skills and knowledge are brought to work for purpose of development and purposeful research.
- University administrators should establish sustainable means of funding research and publication for university to meet core activities agenda. Post graduate research loan scheme should be established where students can easily access loan to finance their research and pay after graduation. Helping in providing research funds may reduce the masters study period to be less than 4 years and PhD less than 7 years (Eyangu, Bagire & Kibrai, 2014). The on average students in USA graduate with PhD after 7.6 years and Masters after 4 years. This estimate is for Uganda considering Masters and USA considering PhD (Eyangu, Bagire, & Kibrai, 2014; Schoot, 2013).

- University administration can still apportion US$8 from each student's graduation fee to help in publishing given number of articles from research reports and projects for that particular year of graduation. Students should be encouraged to participate in research and publication so that knowledge can be shared.
- Collaboration between Northern Hemisphere Universities and African universities should be increased through joint research projects and scholarships to post graduate students (masters and PhD). Mwine, (2016) arguably say that, "the usual approach to development has been led by research along fragmented fields of study, each of which independently, much of such reports have remained on library shelves with dust…" Students across disciplines should team up and conduct research aiming at providing solution to the community existing problems. This is almost the same argument emphasized as Gibbons 1998 think of knowledge model one (I) and Model II. Where model agree and encourage one researcher to conduct a study while the second model encourages researchers to team up and together conduct a comprehensive study using expertise from different fields of study.

FUTURE RESEARCH DIRECTIONS

Considering the current literature review, a study should be conduct to establish current rate at which attrition is affecting post graduate output in Africa. Government ministries should work with universities to secure funding from government and foreign governments specifically to improve quality of research aiming at improving living standards following particular thematic areas. Much as funding organization attach some conditions, government ministries should negotiate so as to meet the African need of researchers. It is the role of research coordinators or directors to link and search for areas that has funding from government ministries and international communities.

CONCLUSION

The chapter provides a discussion of relieving financial constraints in financing post graduate research so as to reduce attrition. While attrition is associated with many complex barriers to graduation such characteristics of students (gender,

ethnicity, age, family, maturity), nature and quality of supervision, and institution or environment, financial constraint tend to influence all other barriers (Bednall, 2018). The authors encourage students and research directors to work with government, international agencies and other universities looking for financial support in order to relieve financial constraints that are turning into risk factors leading to attrition. Top university administrators are encouraged to invest in post graduate research because research is part of marketing strategy. Research and marketing are directly associates with enrollment and institutional revenue. Institutions where research and publication is done, such universities are identified among the best performers when rated/ evaluated. Web ranking is open for global community to observe and critique. Research and publication exposes university leadership, active lecturers, and students graduating from the institution are regarded as ideal graduates. Research and publication may increase collaboration with other research institutions. It is important to work as a team with gender sensitivity for common purpose to foster quality assurance and research. Financing postgraduate research is as good as marketing strategy to improve financial autonomy of universities. University administrators may not wait for their respective government / states to allocate funds for research when they themselves are not including research in their annual budgets. Therefore, searching for funding will be jointly done by research directors and students because the benefit is enjoyed by all stakeholders.

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KEY TERMS AND DEFINITIONS

Anthropoanagogy: a concept coined from two Greek words; *anthropoi* (*ἀνθρωποι*) means people and *Anagogy*(ἀναγωγή) making *ἀνθρωποιἀναγωγή* anthropoanagogy refereeing inspiring people. Teaching should be taken as a means of inspiring people to achieve a particular professional position as guided by a professional team of individuals. This concept seeks lexicon entry into educational terminologies after establishing polemic nature of the term pedagogy basing on its historical origin from pedagogue referring to a slave who teaches a master's child.

Financing: The act of providing funds or money for project implementation is financing.

Marketing: This is a managerial action of promoting the selling and buying of goods and services produced by the company or a firm. In this context is a managerial activity of selling services produced by the universities to the community.

Quality assurance: This is an educational policy as well as education system advocating for continuous improvement of higher education institutions for purpose of producing high quality widgets (knowledge and skills held by graduates to use increasing productivity). Quality assurance is therefore a universal high institutional policy to reform education system in universities and other tertiary institutions.

Research: This is a systematic investigation into materials and services in order to establish facts and reach new conclusions. Research is one of the three distinctive core activities done by the university. The three core activities are; teaching, research and outreach. Research makes universities unique from other learning institutions.

Chapter 12
Institutional Support and Student-Faculty Interaction for Postgraduate Research Engagement

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ABSTRACT

Quality institutional support and student-faculty interaction are critical to effective research engagement and efficient completion among higher education students. However, the research engagement of many postgraduate students in Uganda is characterised by low completion rates, longer stay on the journey, and high drop-out among others. In this interpretative phenomenological qualitative study using focus group discussions among Master of Education cohorts of 2011/2012 and 2012/2013 and seven key informant interviews among research advisors in Ugandan universities, the author explored gaps in institutional support and student-faculty interaction that negatively affected the students' research engagement. Findings revealed wanting institutional support in resources, operating procedures, organisation and communication, supervision, curricula, and student financing. Student-faculty interaction gaps included supervisor absenteeism and emotional and behavioural dereliction. Strategies to fix the gaps were also solicited. Recommendations for policy and practice were advanced.

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INTRODUCTION

Higher education in general and postgraduate education in particular constitutes a particular investment – whether personal or national – in human capital. Its overall objective is to realise highly skilled citizens and professionals able to address the specific issues of their local and national contexts as part of a wider globalised society. The wealth drawn from people's expertise and talents at higher education forms a basis for finding viable solutions to the issues of sustainable human development (Jackson & Allen-Handy, 2018) – particularly in poverty reduction, wide access to health care, education for all, population, good governance, equitable arrangements for globalised economic trends, trade patterns and so on. For the UN, these issues were encapsulated in the 2000 Millennium Development Goals (MDGs) which set the development agenda for the first decade and a half of the 21st century. Now they are contained in the sustainable development goals (SDGs) to end poverty, fight inequality and injustice, and tackle climate change by 2030. These are the primary foci of any pursuit of higher education, especially at master's level.

However, in the African context, it has been observed that higher education is generally characterised by extremely low participation rates, that is, there are far fewer students at tertiary institutions and universities than there are at the lower levels of education (Pillay, 2010). Such progress deficiencies are often blamed on the students; they are often labelled as low ability, financially incapable, and not focussed. Unfortunately, the role of institutional support by the university management and quality of student-faculty interaction in this situation is usually discounted.

In the article "Challenges and Strategies of Research Engagement among Master of Education Students in Uganda" (Atibuni, Kibanja, Olema, Ssenyonga, & Karl, 2017), the authors brought to the fore institutional support challenges and student-faculty interaction challenges. This chapter exposes narratives of students and staff attesting to the institutional support and student-faculty interaction challenges, which actually paint a true picture of the challenges as experienced by the students. The chapter further proffers strategies for circumventing these challenges so as to enhance heightened research engagement and hence completion among postgraduate students. The chapter is based on a study conducted among Master of Education students in Uganda.

STUDY ON CHALLENGES OF RESEARCH ENGAGEMENT

This study was a qualitative narrative of gaps in institutional support and student-faculty interaction that affected research engagement among Master of Education students. The target population was composed of the students who enlisted in 2011 and 2012 and their staff (Heads of Departments, Deans of Faculties, and Directors of Institutes handling Master of Education students' research issues) in private and public universities in Uganda. Participants were drawn from universities whose Master of Education programmes were accredited in 2010 (Lejeune, 2010). The public universities included Gulu University (GU), Makerere University (MAK), and Mbarara University of Science and Technology (MUST). The private universities included Islamic University in Uganda (IUIU), Kampala International University (KIU), and Uganda Christian University (UCU). In total, six universities were selected.

Two focus group discussion audio recordings were obtained, the first one (FGD1_03_01_16) from a group of seven students and the second (FGD2_14_01_16) from a group of five students. The group discussion codes indicate the number of the discussion, the day, month and year of the interview. Constitution of groups for the discussions was based on residence; students of the different years of registration, though from different universities, but hailing from the same geographical location, were constituted into one group. The first discussion, attended by students from MUST (n = 3), KIU (n = 2), and MAK (n = 2), was held at MUST whereas the second, attended by students from MAK (n = 1), GU (n = 1), IUIU (n = 1), and UCU (n = 2) was held at MAK. The second discussion proved repetitive of the first, thus indicating instrument reliability and data saturation (Merton, Fiske, & Kendall, 1990).

Seven audio recordings of key informant interviews were obtained from one academic registrar, two directors of postgraduate research, three deans whose faculties offered Master of Education programmes, and one head of Educational Foundations and Psychology Department. These key informants were selected because they were directly responsible for the academic engagement of Master of Education students. Apart from the academic registrar, the rest of the interviewees were in senior teaching positions, seasoned and highly reputable researchers and research supervisors, and all including the registrar were experienced research administrators. All interviews were conducted in the offices of the participants behind closed doors, undisturbed. The interview transcripts were coded as KII_1_11_01_16, KII_2_12_01_16, KII_3_12_01_16, KII_4_15_01_16, KII_5_26_01_16, KII_6_28_01_16, and KII_7_14_02_16, in order of date of interview. Like for the focus group discussions, the interview codes indicate the interview number, day, month, and year of the interview.

The study underwent the requisite rigorous procedures for an ethical study and was terminally approved by the Uganda National Council for Science and Technology (UNCST; registration number SS 3949) on October 30, 2015. Ethical conduct of consent, confidentiality, anonymity, and right to withdrawal were highly observed during the study. The discussions and interviews were recorded using a digital recorder, and also taking notes to capture as much response as possible, just in case the technology might fail. The audio recordings were loaded in a free, unlicensed, non-commercial, home-use-only version of Express Scribe Transcription Software, and transcribed verbatim in MS Word soon after recording. The transcripts were then checked against the tapes and corroborated with the notes several times to ensure accuracy of transcription. Gestural expressions of each respondent were inserted within their quotations so as to capture the full message given. The data were then imported into NVivo. Repeated reading of the transcripts was continued in order to enable me to explore the data for meanings and patterns. Braun and Clarke's (2006) six basic steps of thematic analysis (Creswell & Creswell, 2017) were followed in making meaning of the data. The analysed data were constituted into the findings of the study.

INSTITUTIONAL SUPPORT AND STUDENT-FACULTY CHALLENGES TO RESEARCH ENGAGEMENT AMONG POSTGRADUATE STUDENTS

Findings from the analysis revealed a cohort of institutional support and student-faculty interaction challenges. The institutional support challenges included winding institutional operating procedures; low accessibility, quantity, and quality of resources; poor organisation and communication within the institution; financial challenges; supervision challenges; and curricular challenges. The student-faculty interaction challenges include lecturer absenteeism and emotional and behavioural dereliction among the students and faculty. These are expounded with verbatim quotations as presented below.

Institutional Support Challenges

Findings of this study indicated that the students faced a score of challenges with regard to access, utilisation, and even outright lack of provision of institutional resources. A number of issues that arose in focus group discussions and in-depth

interviews indicated limited institutional support. For instance, one participant in FGD2_14_01_16 summarily stated that "I think with the resources, apart from the seats we used, not really much in terms of resources (some laughter from the group)." Generally, the disappointments expressed by the students and other key informants were categorised as winding institutional procedures or bureaucracy; low accessibility, quantity, and quality of resources; poor communication; non-leverage with finances; supervision challenges; and curricular challenges. A phenomenological description of these challenges is given below.

Winding Institutional Operating Procedures

Both the students and key informants observed that operating procedures within the universities sometimes presented hurdles to the students' progress in research. Participants indicated "postponement of some programmes, say presentation" as a sign of laxity within the institutional arrangement. Sometimes the bureaucracy to follow to have a simple outcome accomplished would discourage the concerned and responsible personnel from investing energy in that pursuit. For example, the key informant in KII_1_11_01_16 argued that

If you want to buy something, they say 'Okay, did you put it in your budget, was the budget approved, was this item approved, did it go through the procurement process?' You have to advertise, get people who can supply the thing, you have to tender. By the time you get the thing it is almost twice the cost. The process is so long and very expensive and complicated. If you have little money you end up spending the little on the procedure. It is a government policy so there's nothing to do. So, procedures, procedures, procedures, is [sic] another problem.

It was further noted that some of the institutions lacked or did not follow frameworks that concretely guided the research process. The key informant in KII_2_12_01_16 alluded to this fact: "I don't think we have a framework at the moment. I don't know whether the university has developed that, guidelines. But it appears that we are operating without a framework at the moment."

In KII_1_11_01_16, the key informant noted that "at the moment I think those guidelines have not been implemented fully; they are still in a draft form, they are still working on them." The response from KII_3_12_01_16 also supported the previous views, and hailed the importance of an operating procedure:

We didn't have any guidelines so the judgment decisions we were making were not based on policy. And to be objective you really need this policy to be there and to know this is what you are following so that any deviation from the policy, I can be allowed within a given radius stroke limit. But for example, for proposals and dissertations, we did not have guidelines. For example, if we sent out examinations to external supervisors, they would use those guidelines they came up with and some students would complain, but nothing much would be done because we did not have guidelines in place.

Another cause of delays in research progress was the inadequate, if not total lack of, supervision of the research process. Whereas the key informants agreed that wielding some institutional pressure would yield fast-pacing in the supervision and conduct of research, they acknowledged the lack or laxity of support in research monitoring and evaluation. The participant in KII_2_12_01_16 made the following claim: "About monitoring and evaluation of research progress … the AR's department has not been very keen in that…. About the National Council [UNCST], they have only been following the guidelines; they do not come down also to follow it up."

In KII_6_28_01_16, discontinuation or deregistration of overdue students was noted as one route to poor research conduct and output. The key informant stated that

For us what we do, when your time passes, we get your file and discontinue you. Yes. [After how long for masters?] It is four years. If by four years you haven't, because you have two years and you are given two years for withdrawal and extension. Okay? So that amounts to four years. If by that time you haven't, we are going to discontinue. In this case, students might be compelled to take to unethical research conduct such as plagiarising and having someone else do for them the work when confronted with undue duress of deregistration.

Institutional challenges to research were noted to exist and arise even well beyond the university. One pertinent issue was, whose mandate it was to clear certain research areas which seemed not to be a focus of the Uganda National Council for Science and Technology (UNCST). The key informant in KII_6_28_01_16 narrated the following scenarios:

There is one guy who gave us a presentation and … he wanted to take photographs of the monuments around Kampala and come up with designs of these monuments in brailles [sic] so that the blind people could feel and appreciate the monuments.

But then he failed. Well, he was almost shot by a policeman who found him taking a photo of the monument. He went to City Council, City Council referred him to the ministry of culture, and ministry of culture referred him to the police, and a real confusion. Okay? That needs, it needs ethical clearance. Okay?

So we need to go beyond animals and human beings. We have to take care of plants, about the insects. If you are picking a sample of, could be nsenene [grass hopper often edible in Uganda], where are you taking them? You could go out there and come up with a very powerful discovery. Hhmn! Then you patent it. This has happened. People pick samples here, go to USA, [and] come up with very good discovery and at the end of the day Uganda loses.

It is implicit in the narrative above that universities are lacking in, and therefore need, a more structured operating procedure of ethical clearance, data collection, research dissemination, and material and knowledge transfer.

Low Accessibility, Quantity, and Quality of Resources

Resource constraints plagued the research engagement of the students. Critical among these was poor internet connectivity. In FGD2_14_01_16, one of the participants complained that

Internet at the university, especially minus the time to use it; ah, I think there was a problem with it because most times you would go there [to the library] and it was off. The little time you have to go there it is off, or sometimes you find the undergraduate students have filled it [the library]. So you lack the room.

Various key informants attested to the fact that internet connectivity indeed was wanting in some of the universities. In KII_4_15_01_16, it was noted that

Internet of here is like rain. It is up and down. At one time you hear it is on and at another you hear it is off. So it is not a priority, I think. Let me tell from the experience, I have never used internet of here, because the facility is either ghost or what!"

The inaccessibility of reading materials, especially hard copy books, also posed a challenge to some of the students in certain universities. Those students who had visited different universities found some libraries less facilitated and hence more challenging than others. For instance, one of them in FGD2_14_01_16 observed that

The library, to me, much as it was there, the resourceful books were kept in the short loan section where they could not even allow you to go and check because you … you are not supposed to take that book out, and yet you have the time only at night. So, me, really I did not benefit much from the library.

Even key informants in certain universities acknowledged the fact that hardcopy reading materials were insufficient. For instance, in KII_4_15_01_16 it was noted that, "As for the Library, there the lecturer has to buy his/her own books. If it's education, I, once I am given a Unit, I go to Kampala [capital and central business city of Uganda] and buy my own textbooks." A similar observation was made in KII_7_14_01_16, that

The library, I agree that it is inadequate. But that's also partly the department to blame because the department is supposed to submit to the office of the dean a list of the requirements. … All departments that comply have got books but those who do not comply, there's nothing we can do because we are not the experts.

In KII_4_15_01_16, it was further acknowledged that there was inadequacy of another critical resource – space – where the students could commune for their research undertakings. The key informant in the interview pointed out that there was a shortage of lecture rooms, adding that

There is a problem of allocation of (pause [space]) you first have to have to hunt for a free lecture room. There is no systematic allocation of room like other universities would say lecturer number this, lecture number this, room X. You have to survey, explore. There, there is a weakness…. You may find that the room is closed while the lectures/students are floating.

The findings indicate a paucity in internet connectivity, library space and reading materials, and lecture cum study space. These are bound to limit the engagement of students on research.

Poor Organisation and Communication

In FGD1_03_01_16, one of the group members complained about the mode of running the programme and reported that

I also found it very challenging, the organisation was not very good to be sincere and honest. ... You even reach a point when there is no timetable, I mean there is no time frame. You finish first year, you finish second year, no time for you to come and – know like – ideally there is no time that is put down to say at this time you should have finished the course work, this point we expect you to present the proposal, at this point we expect you to [do] that.

The students also expressed the communication gap that existed between them and the lecturers as a hindrance to their progress. For example, some of the participants in FGD1_03_01_16 reported that they failed to study computer skills, which was one of the key courses required in doing research, because of the communication gap that prevailed. One of them noted that

No wonder we didn't do one of the course units [computer skills] because we never saw the lecturer and the only day we saw about that is when the lecturer said we should go for an exam (all laugh) when we had never seen him! Really that is an inefficiency of the highest order. Imagine a lecturer is calling you to do an exam before you have seen him!

Another research engagement challenge that was noted in FGD2_14_01_16 was related to poor induction of master's students. One of the discussants observed that

… one of the challenges I found was that the institution never exposed some of these resources to the students. They thought that may be because we are mature – students are mature at that level – they knew what they were doing. And yet they did not know that people were coming from different areas and they were still ignorant. Take an example, the computer lab; some people did not know where it was, the library and the like. So, accessing some of these areas even when people were able to, they could not because they didn't know where these things were mainly found.

An observation in KII_1_11_01_16 supported the premise above:

But I think many students don't know. Otherwise there are databases in the library where the students could download a lot of information. But the library also does not advertise what they have extensively. Do you know there are certain consortia in the library where the students can just access if they sign and get a lot of information.

Above are some of the revelations of poor organisation and communication within the running of research and other courses among Master of Education students. This means that the institutions need structural and functional adjustments in their approaches to research engagement.

Financial Challenges

All the key informants attributed the lecturers' inefficiencies to the poor remuneration provided by the universities to research supervisors. The key informant in KII_1_11_01_16 acknowledged that the supervisors were few and overloaded because of studying and lecturing in two or more universities [to make more money]. In KII_2_12_01_16, it was reported that "It is actually true that, that challenge [of demotivated supervisors due to poor remuneration] has been there which has been one of the factors demotivating these supervisors." The participant in KII_5_26_01_16 further advanced that

Generally, motivation [to lecturers] in Africa is not good (some laughter). The students, the fees they pay is also small. So the supervisors are paid from the resources the institution gets. Majorly it is students' – what – fees where they get resources. So they cannot stretch their arms also (a chuckle) to give you what they don't have. So generally, Africa as a whole or Uganda in particular, motivation is not all that what the lecturers expect. They would love to have more but institutions pay what they can afford.

In KII_6_28_01_16, it was similarly remarked that

The other reason now in such cases is that the university is not paying anything for supervision. There is no, apart from promotion, there is no direct benefit that a supervisor gets. So you find that someone looks at it and says 'supposing I sit and write a proposal to look for money instead of spending much time supervising the students,' okay? Or 'I already have [supervised] two, three students which are already enough for my promotion to the next level. Why should I supervise many? Why do I need all those?' So you find that is another reason for these supervisors not giving enough time to the students.

With the poor remuneration of the staff arose the challenge of some lecturers quietly demanding pay from students under their supervision though students were mainly silent about it. This arose in KII_4_15_01_16. The participant exposed that

When I was in the Administration as a Head of Department, we would have cases of Lecturers demanding money from students. And I was telling them [the lecturers] 'please, don't demand money from the students.' And me I have survived because I am fed and I am housed and I am okay [as a Catholic priest].

Some of the students expected the universities to support master's students with bursaries to alleviate their financial challenges with tuition and scholastic needs. To explain this the key informant in KII_1_11_01_16 gave winding government bureaucracy as another challenge:

You can't pick money and give it to the student. No, you can't. Because all the money is appropriated – say this is money for utilities – there's no way you can give it to a student, you cannot. It is difficult unless there is a scholarship … [otherwise] it will raise an audit query.

Supervision Challenges

In both discussions, the students registered complaints about the quality of guidance they received from their supervisors. One of them reported that "We were not given enough guidance right from the start of course." A related point of contention was the delays in the examination process, "Examination process taking too long," "unnecessary delays at various levels from the system," "delay from ethical review committee."

The students also expressed lack of institutional support in collaborating with "difficult" supervisors. One female in FGD1_03_01_16 expressed the following:

I think we need a lot of support from the institution, most especially I think concerning our supervisors. The institution has not helped us so much on this. You find you as a student you are struggling with the supervisor. You are not even comfortable with the person but you don't have where to run to. And at the end of the day you just go there and die with your 'thing'.

To this a colleague added, "I think maybe they don't know that there are some reluctant, inefficient, or defective lecturers."

Another challenge with supervision the students expressed dire but contrasting needs in was the number of supervisors. Whereas students who had challenges with one supervisor wished to have two, those challenged by two supervisors preferred

to have one. However, the interviewee in KII_1_11_01_16 acknowledged the need for two supervisors but lamented "We could try but then we have few staff on the ground who are already doing so many things. This is also a challenge. But finance, as we said, is almost the set of everything." Apart from financial constraints, the Dean in KII_2_12_01_16 owned up to the fact that faculties and departments had not braced up to the challenge:

We've not been very keen in really bringing up or in the identification of some of these supervisors to be allocated to the different candidates. We've not been keen in that. And that's why we're getting that kind of challenge. And different units or departments have also not actually addressed that issue. That's why we are finding it very hard.

The faculty dean in KII_7_14_02_16 attributed the few numbers of supervisors to understaffing in the universities. He confessed that

The issue of few professors is true. Actually, in the faculty I'm the only professor. Eeh, but at [this university], because of the uniqueness of our position, we have allowed people who have doctorates and master's to supervise master's students. The challenge comes in terms of staffing level. That's the main level where we have challenge. Because at master's where we have a programme where we should have had a full complement of over ten lecturers, I think currently the situation is even more dire with people who have taken study leave and those who have gone abroad. We currently, I think, have four lecturers on the ground and so the element of supervision becomes a problem.

In addition, poor quality supervision was also blamed on the institutions. It was generally felt among the students that some supervisors needed minimum training in master's supervision, a fact which was agreed with in KII_2_12_01_16, that

You know the supervisors are also supposed to be trained on how to supervise, especially those who are still young. They need some kind of guidance. Even if you are already at a certain level sometimes also you need some of these interactions and so on to refresh yourself.

In KII_3_12_01_16, it was noted that some of "the lecturers are not oriented towards their obligations as supervisors." This definitely impacts negatively on the research journey of the students. This was noted to arise because "we don't have many qualified people, so the choice is very narrow."

Some students were in the field without documents indicating ethical clearance of their protocols. This was rather an irregular occurrence which otherwise would not have arisen if supervision and institutional oversight had been maximally conducted. However, the research overseer in KII_6_28_01_16 implicated the faculty deans and college directors for such irregularities, noting that

Why most of the students didn't have the requisite ethical qualifications for field work! … That is a problem in the colleges. They are the technical people. They are the ones who know whether the student is telling lies or not. [The student] is going to the field to collect what data? So it is a role of the colleges.

Curricular Challenges

Another challenge that attracted serious attention from the student participants was the lack of continuous tooling by way of seminars and workshops in research methodology. One of them in FGD1_03_01_16 voiced that

In terms of the university putting provisions especially like the research seminars, I think that was not organised very well. Either I lacked information or I was not available. But that one I did not see but … if it was organised then it was not organised in a nice way.

Another participant in the same group noted additionally that "we would only be invited to come and watch and may be observe people defending only. But the seminars and workshops, me I've not attended any." The underlying cause of this yearning for seminars and workshops was the feeling of ill preparedness among many of the students to handle research. One of them noted that

The challenge I got is that we did not get enough preparation when we were studying research methods. So in research methods teaching, literature review should also be included such that students can learn how to do that part. Otherwise it is a challenge for, like most of us.

Some of the key informants also attested to the fact that the research students did not receive regular seminars to aid their knowledge base. In KII_4_15_01_16 it was observed that "to say that I have heard of seminars, it has died out because of some reasons, perhaps [a pause], it was there but it has gradually faded out because of I think motivation."

One of the expectations the students had, which, because it was not fulfilled, was reported as a challenge, was lack of interuniversity networking. The students felt such a network would enable them compare standards across the board. One male participant in FGD2_14_01_16 noted that

We did not, personally I did not, receive any form of support as far as holding seminars with other people is concerned. And … in first year during the first orientation meeting we had, our understanding was we would have the opportunity to spread our wings beyond the scope of [our] university and interact with other students from [other universities] so that we can gauge ourselves upon them and see how we have gone as far as our studies are concerned. But the course finally ended before we could even hold a single seminar.

The mainly theoretical nature of the curricula was reported as one of the challenges affecting research progress. In FGD2_14_01_16, many discussants were particular about the lack of hands-on experience in the courses, with particular reference to research skills. One male in the group had the following to say:

You get challenged: they teach you, you are going to collect data, these are the methods you are to use to collect data – theory, your sample is supposed to be this and that. But when you get that data, you have no experience, you have no knowledge of how you are going to handle that data, you have no knowledge of how you are going to analyse, to make those graphs, and the pie charts and everything and to interpret them. Most of what is given to master's students is theory.

Another discussant, a female this time, who had made it to graduation also decried similar curricular challenges as given in the following excerpt:

The students, I don't know, me and my colleagues, we passed without much knowledge of how to handle data after collecting it. I don't know what happened with those ones who came after us, but we got challenges. We had to go to individuals to ask them to help us, to show us how to enter and do this – everything. So it was really a challenge and it needs to be worked on to help the students finish in time. Personally, I finished the course [but] I do not know how to enter data.

Another group member said, "But if you ask me about entering data, analysing data, zero. I can just tell you thirty per cent implies this but not anything like that." Therefore, the curriculum needs to be refaced to incorporate hands-on learning and thus foster high research engagement among the students.

Student-Faculty Interaction Challenges

Findings reveal that the research journeys of the students were marred by negative interactions with the faculty in general and supervisors in particular. Two main categories of student-faculty interaction challenges were identified: lecturer absenteeism and emotional and behavioural dereliction.

Lecturer Absenteeism

A number of issues related to supervisors' lack of time for the students were advanced by the participants. These included among others "delayed feedback," "scarcity of the supervisors," "little or inadequate guidance from supervisors due to time," and "supervisors' [non]compliance with appointment schedules." For instance, two members in FGD1_03_01_16 expressed their disappointments in the following narratives:

First member:

Though I happened to get some few members of the faculty to help me with my work, but concerning my supervisor, it has been a challenge. Just you take the work to the person, you find the person is busy. Just tells you to drop it on the table. You want to ask someone about the comment he or she made, but the person is not ready to sit to review the work. Just tells you 'go and read the comments and work on them.' But at times you need to sit with the person and ask this person 'what does this mean, why are [you] doing this, I'm not getting this.'

Second member:

It's not easy to get the lecturers here to aid you in doing this research. My supervisor is a person who is very busy and I don't think the institution that employed her also noted that. … she has not been helpful to me because whenever I would call she would say … 'I don't have time, … I don't have time.' She would postpone. And when she takes your work, you can even take like three months. You keep on calling, calling, calling, … I'm still struggling with my research. … I don't know whether I'll complete, I've lost hope, I don't know anyway!

Some key informants made observations similar to the responses of the student participants. Below is one of the observations given in KII_1_11_01_16:

I know those cases [students falling out with supervisors] are there. Some work [student's proposal] comes and you see really this work has never been read by the supervisor. If it was read by the supervisor those mistakes would not come. Of course many of them, you know, they are running around to look for money here, doing this and that, sometimes they are not on the ground, they are handling a big number of students; they also have a challenge.

These narratives point to the fact that research supervisors are mainly unavailable for their students, and when available, offer very little time to advise the students. In fact the narratives indicate that the supervisors glance at the students' works without physically meeting to advise them. This leaves a lot of gaps widening as far as the students' research progress is concerned.

Emotional and Behavioural Dereliction

Student participants recollected a number of emotional and behavioural issues in their student-faculty interaction that hindered their research engagement. These included "frequent change of topic for research," "studying till past 7 pm especially when the lecturer may have missed their time of teaching," "sometimes two or more supervisors would not agree; one says do this, another one says it is wrong. So you are left confused," "supervisors do not care," "supervisors are mean," "lack of cooperation [with supervisors] sometimes," "attitude of some supervisors; some are not encouraging," and "sometimes the supervisors assigned to one; you're a different field of study e.g., the student is a student of literature while teacher is scientist."

All the key informants agreed that there existed unprofessional conduct among many research supervisors and students in the areas highlighted above. The key informant in KII_1_11_01_16 acknowledged that "But it is true, some of them [lecturers] are not serious, they don't help students; it is true, some of them don't help students." One student participant expressed discontentment with her supervisor: "I am goal oriented and as such I found trouble with one of my lecturers who seemed slow."

One of the behavioural exhibits among the students and their supervisors has been avoidant-withdrawal from one another. In KII_1_11_01_16, it was noted that "the students cannot report. Even if they want to do, they fear the supervisor. They don't want to accuse them, they fear. Most of them fear." To crown the case further, the key informant in KII_2_12_01_16 had the following to say:

People have been complaining. But previously I think people were saying – if it is a student complaining – 'who are you to complain? And yet we are giving you someone to supervise you, you are supposed to take orders.' It is like now you are saying 'I must accept what you've done for me.' And we were not concerned about the side of the student; if the student find[s] that this person is not helping, is not competent enough, we have not actually been addressing that and some of these students have actually been suffering silently because they know if they report they may either create problems for themselves. So they rather keep quiet and go by that. May be, I think, that one has been a challenge.

Meanwhile in KII_3_12_01_16, the side of the lecturers was also noted. The key informant reported that

What at times has happened is that lecturers may fear to come and report cases thinking that they might appear malicious and students also fear very much to confront because to them, they would say they will open a floor of confrontation with lecturers. [But] there are a number of lecturers who have complained about students.

However, in KII_3_12_01_16, it was noted that "Yes, some issues do come through up to the office and we learn of them. Especially on record, we have a number of students who have complained about lecturers and we have changed."

The major issue of concern among the students was the little time their supervisors availed to them. The participant in KII_2_12_01_16 said that

The students come and complain that the attention is not really given or sometimes they disagree on a number of issues which they may not be able to sort them out which sometimes now they come to the dean's office. What I have realised is some of these issues actually are caused by the supervisors. They are not following the right guidelines; they are not talking to students. That's why the students sometimes raise concern.

Laziness was also noted as another trait exhibited by some supervisors to the detriment of the students' research progress. This was described in KII_6_28_01_16:

The challenges of supervision is there, is real. It is there. Some supervisors are just naturally good people, they like supervising. But then there are others who do not feel that they should supervise. They are like being pushed to supervise. They don't

need to supervise. 'I'm now a professor and what do I need? What do I benefit from supervision?' The reason is that the university has tied – the major benefit from supervision is promotion. Now once you are promoted to the top, now what else do you need supervision for? Okay? So you'll find that is there at the level of professors. But there are even people at the lower level like senior lecturers. Those who are PhDs should supervise, but you'll find that there are some of them who are not performing well in supervision.

A critical concern that affected the students' research progress was the rapport between the students and their supervisors. In KII_3_12_01_16, it was reported that "The best relationship has always been male supervisor–female student followed by male supervisor–male student and then female supervisor–male student. Female to female have always clashed; they have failed to become colleagues." The participant in KII_7_14_02_16 narrated an experience that agreed with the observation above: "Recently we've had a case of a supervisor who was rejected by the student because there had been some problems. This is the problem of one of those so called sinister motives [sexual relationship/harassment]. And so we decided 'No. This person has suffered enough, let's change.' Such occurrences of gender-based bad student-faculty rapport are likely to have been personality or case dependent. The key informant in KII_7_14_02_16 agreed that "Concerning claims about poor student-faculty interaction such as … 'dark-hearted' personality of some supervisors; … some [of the claims] are authentic.' Another related but unique challenge that the students relayed in one of the universities was favouritism based on nationality. Some in-country students felt that their international counterparts were favoured more than the nationals.

In addition to wanting student-faculty interactions, faculty-faculty challenges also posed another threat to the research engagement of the students. Quite a number of key informants attested to this fact. For instance, the faculty dean who participated in KII_2_12_01_16 confirmed that

It's true, unprofessional fights have been there between supervisors supervising the same student. … You know some of the challenges have been coming because of some of the disappointments or demotivations [sic] of some of the staffs which sometimes are actually being pushed – like they say when two elephants fight, sometimes the grass suffers. So sometimes the postgraduate students are victims of circumstances that have been created in other units.

In KII_4_15_01_16, it was further posited that "when it comes to supervisors, some of my co-supervisors only wait until I have signed. They don't read, they say the other one will do it." So, this leads to what one of the students in the quantitative survey referred to as "unprofessional wars among the staff." To this, the research director in KII_6_28_01_16 retorted that

Those unprofessional wars they are talking about, … if it is about the principal supervisor being a senior and the co-supervisor being a junior, the junior wanting his or her signature to be on top of the senior's, is just being disrespectful. Once someone is a principal, that is it.

Another behavioural trait among the supervisors that the students detested was rigidity. The academic registrar in KII_1_11_01_16 attested to the fact that some supervisors were rigid: "Others can just say, 'ok for me you can only see me on these days from 2 [p.m.] up to this time' and any other time you can't get them. It is true some supervisors have that problem."

This implies that a student must dance to the tune of the lecturer without any bargains.

THE CHALLENGES IN THE CONTEXT OF LOW RESOURCE SETTINGS

The student and staff voices narrated above indicate that research engagement among Master of Education students in Uganda was marked with many gaps in institutional support and student-faculty interaction. The gaps in institutional support included winding institutional operating procedures, resource inadequacies, poor programme organisation and communication, financial constraints, supervision challenges, and curricular inadequacies. Challenges of student-faculty interaction were mainly lecturer absenteeism and emotional and behavioural dereliction.

These findings are in line with those of many previous studies (e.g., Atibuni et al., 2017; Canadian Association for Graduate Studies, 2006; Charema, 2013; Kearney, 2008; Manchishi, Ndhlovu, & Mwanza, 2015; Mhute, 2013; Paul Wong & Psych, 2012; Kikula & Quorro, 2007; Talebloo & Bin Baki, 2013). Muriisa (2015) similarly posits that postgraduate students face mainly two categories of challenges: institutional,

and individual (students and the supervisors). These studies indicate that the main institutional challenges are resource-based, while student-faculty interaction gaps are mainly as a result of supervisors not being available for consultations, irregular feedback from supervisors, and inadequate feedback from supervisors. Some of the studies point out that supervisors are not themselves supervised to do a good job.

The findings of this study expose the fact that higher education in general and postgraduate research, training and innovation is not given the due oversight and regulation it deserves in Uganda as a representative of low resource countries. This contradicts the government's demands on public servants to upgrade to higher levels of education. As noted by Atibuni et al. (2017), in the event that the gaps in institutional support and student-faculty interaction affecting research engagement among the students are not timely and adequately addressed, so many research-related and societal mistakes are committed by the students and later graduates. Remembering that research is a tool for liberation for the researcher and his or her people (Jackson & Allen-Handy, 2018), graduates who go through unfair institutional preparation and negative student-faculty interaction are likely to exhibit no different knowledge, skills, attitudes, and values in the society when they finally graduate. The outcome of such a situation is a deliberate checkering of the population with ill-prepared academics who will worsen the prevailing political, social, economic, and cultural order within the communities.

Developing countries such as Uganda that are slow to modernise in education, research, and innovation can be grouped under Kearney's (2008) third category of countries. The social, political, cultural, and economic situation of such countries seems to engender national priorities in militarism rather than transformative education which would abate the poor quality of infrastructure and limited human resources. Under such circumstances, higher education, but particularly postgraduate research, training, and innovation is bound to stagger at the mercy of haphazard management and administration as opposed to clearly focused strategic leadership geared towards efficiency and socioeconomic transformation. A mistake made at this stage is bound to be cancerous, eating into lower levels of education and indeed all spheres of social service delivery within the country. There is hence a high risk of increased isolation and arrested development of such countries due to lack of competitiveness in a global economy.

Given that a decision to undertake a master's study is a serious commitment, stakeholders need to get seriously engaged in abating the potential and real challenges facing the students. The responses in this study indicate that the experience of pursuing Master of Education can be challenging, rewarding, and intellectually stimulating.

The programme demands are likely to be stressful for adult students because of the conflict created by the demanding nature of the students' roles, as well as other roles that they have to perform. In addition, the students are usually working class and often have many adult responsibilities. Performing multiple roles can cause them to be depressed and under considerable stress. It therefore implies that attending a university that does not have enough facilities for graduate students will add to their burden as these problems can affect and delay their progress. Hence deliberate effort need be invested to devise tenable strategies overcome these challenges.

STRATEGIES FOR OVERCOMING INSTITUTIONAL SUPPORT AND STUDENT-FACULTY INTERACTION CHALLENGES

Institutional Support Strategies

The following suggestions were advanced as a remedy to overcome the challenges the students faced as a result of the functional and systemic structure of the universities in which they enrolled. The strategies were categorised into strategies for institutional support per se, strategies to enhance active and collaborative learning, strategies to enhance student effort, and strategies to enhance student-faculty interaction.

Strategies for Institutional Support

The participants observed that a robust institutional support offered the students benefits that enhanced their research engagement. The institutions in view here include the universities, professional and regulatory bodies, and the government per se. Accordingly, "the government should ensure that there is a uniform mode of running the same programmes among the different universities so as to maintain the same national standards." This can be affected by National council for Higher Education (NCHE) as a regulatory body.

Participants also advocated that universities should "organise workshops on policy issues and research conduct, drawing expertise of professionals such as lawyers, ethicists, moralists, and members of the community together for harmonisation of different roles of stakeholders, including units within the university."

For the supervisors, the popular suggestion was that mentorship training should be organised so as to be effective and efficient. The training would spell out the supervisor's responsibility, the rate at which the supervision is going to be done,

when to give feedback, how big the dissertation should be, and so on. Remuneration for supervisors as well as internal and external examiners of research should be instituted and increased in order to motivate the personnel to guide the students better.

In KII_4_15_01_16, the participant argued that universities' premier support to students was "providing more infrastructure such as buildings to house postgraduate studies separate from other programmes, with clear labels of rooms for each postgraduate programme." Coupled with space, participants posited that universities should ensure regular acquisition and constant maintenance of the essential scholastic requirements such as textbooks, internet, new computers, new data analysis programmes, and subscription to academic journals and websites. Universities should further provide incentives to graduate offices to follow up students through phone calls so as to track their research progress.

From the survey, some participants suggested that "the programmes offered should be made more focused such as Educational Planning, Educational Management, Educational Administration, and Educational Policy, not blocking together all into one, which would require more time to handle the broad content therein." Hence, institutional support at policy, structural, and infrastructural level was noted to be a vital force in enhancing research engagement among Master of education students.

Strategies to Enhance Active and Collaborative Learning

In FGD1_03_01_16, participants opined that "there is need for the universities to be organised; to make timelines for the programmes and to strictly follow up the activities according to the timeframe and with standard operating procedures." Such a move was seen as very necessary to make students work and complete their research in time.

Again in FGD1_03_01_16, the participants suggested that in order to draw the stakeholders such as families and community to support the students during research, universities should organise sensitisations through community outreach programmes. Collaboration between universities was also suggested, for instance, in FGD2_14_01_16, participants agreed that "since the students are being prepared for the international job market, it's good to organise seminars, discussions, workshops with students and lecturers from other universities." It was also suggested that "let master's students get involved in giving tutorials/lectures to undergraduate students; and those in research year to course work master's students so as to gain mastery of the content and experience in the profession." In this case, "some of the curricular should be reviewed to include advances in information and technology, for example incorporating hands-on computer lessons in research methods" (FGD2_14_01_16).

Student participants generally felt that the universities should contract experts from outside the university whose specific assignment would be to supervise students. This would include a complement of honorary lecturers or visiting professors. This would enable the students to commit themselves to work hard when the supervisors are around, and seek support of fellow students and indigenous lecturers when the supervisors have gone.

Strategies to Enhance Student Effort

Student participants were of the general view that the research journey should start in Year 1 through to Year 2, and that along the way the students should be scaffolded to apply the skills they have learned. Research methodology courses should be run concurrently as the students work on their projects. The universities should ensure that the mode of presentation of the research methodology courses is interactive and activity-based so that the students are well equipped to go outside and practice whatever they have learned independently. Regular workshops need to be organised for research students for presenting progress reports and having hands-on experience in data analysis, data entry, and everything that is involved in research.

The student participants further suggested that, because most students complete the programme in three years, then it would be advisable that universities structure the programme for a minimum of three years. This way, errors due to haste in the two year strain are avoided. Students who fail to complete on record time should be made to pay a fine so that others can force themselves to complete in time. Those who are unable to complete within the maximum time allowed should be deregistered to impart seriousness in the others.

To ameliorate the financial constraints, the participants suggested that government and universities should advance loans on bond to students with financial constraints so as to attract more students. Scholarships should also be given awarded to best performing Master of Education students. Retention of high-achieving Master of Education students as lecturers would also encourage students in the proceeding cohorts to work extra hard to complete their programmes in record time.

According to the participants, there should be a postgraduate students' desk, fully staffed and responsible for handling the psychosocial issues of postgraduate students. Guidance and counselling services should be advanced to these students at that desk. Universities should also set up desks for minority groups such as international students, female students, and other special needs students to help in their unique social and personal problems. The universities should strengthen the graduate students' induction process, for instance by making it compulsory, attracting a penalty if missed by the student. This would compel the students to attend and therefore be well acculturated to the programme.

Strategies to Enhance Student-Faculty Interaction

Whereas most of the key informants except the participant in KII_5_26_01_16 contested it, the focus group participants proposed that students should be given a chance of choosing supervisors of their liking, in which case they would be free and comfortable to share in depth their concerns with supervisors of their choice. Supervisors should also be asked if they are willing to supervise certain students without students being forced onto them. In the same vein, "institutions should establish a system for students to evaluate supervisors so that the supervisors are given feedback on their strengths and areas that need improvement." The students also thought research supervisors generally need to undertake "regular continuous professional development programmes in human resource management, core content enrichment and content delivery, personal stress management, and other such areas" in order to achieve fitness for purpose.

Whereas most key informants disagreed with the students' suggestion to have two or more supervisors, the key informant in KII_6_28_01_16 agreed and clarified that "for the two to collaborate well, a junior one can be conjoined to a senior one with whom they share ideals." However, he assented to the position of other key informants that "having one supervisor enables the student to progress faster if the supervisor is fast and committed to his or her role." A generally agreed stand among the key informants is that of "universities instituting research panels, where you would have at least two or three or even more members to offer specialist help to the student." This, according to the participant in KII_3_12_01_16, would "do away with student-supervisor misunderstandings."

The participant in KII_2_12_01_16 proposed that "the heads of departments, deans of faculties, and directors of institutes and colleges [should] undergo basic guidance and counselling as well as human resource management training so as to be capacitated to handle staff and student issues professionally." Participants generally agreed that there is need for a special desk at the university to handle the psychosocial issues of the staff. Such a desk could even be contracted outside the university, such as a professional body, for the sake of neutrality and confidentiality.

However, the key informant in KII_6_28_01_16 clarified that "for the two to collaborate well, a junior one can be conjoined to a senior one with whom they share ideals. Otherwise, having one supervisor enables the student to progress faster if the supervisor is fast and committed to his or her role." A generally agreed stand is that of "universities instituting research panels, where you would have at least two or three or even more members to offer specialist help to the student. This would do away with student-supervisor misunderstandings."

The participant in KII_2_12_01_16 proposed that "the heads of departments, deans of faculties, and directors of institutes and colleges [should] undergo basic guidance and counselling as well as human resource management training so as to be capacitated to handle staff and student issues professionally." Participants generally agreed that there is need for a special desk at the university to handle the psychosocial issues of the staff. Such a desk could even be contracted outside the university, such as a professional body, for the sake of neutrality and confidentiality.

Key informants unanimously agreed that "promotion of the don [should be tagged] to supervision of postgraduate students' research. In addition, the time taken for completion of the research should be put into consideration." Such a move is hoped to persuade the supervisors to avail time to meet their students regularly to foster completion of research.

Generally the participants agreed on many issues with regard to the strategies Master of Education students would need to employ to enhance research engagement. However, a few areas of digression such as how many supervisors to have per student also arose. The key informants provided clarification on the issues raised in the focus group discussions.

CONCLUSION

The existence of institutional support and student-faculty interaction challenges to postgraduate students' research engagement is a reality in low resource settings. On the basis of the study findings, institutions and faculty responsible for postgraduate student formation need to reorganize their academic systems to scaffold the students to help sharpen their research engagement. In addition, the institutions need to invest in infrastructural development and training of supervisors on how to handle postgraduate students to enable the students complete their training with relative efficiency. On the other hand, this would be a marketing strategy for the institutions and faculty to attract more students to their programmes. Governments need to invest directly through provision of resources and oversight to ensure that postgraduate research, training, and innovation are handled with the due efficiency deserved. This way, the envisaged benefits of postgraduate for national development, particularly through realising the SDGs, can eventually be felt.

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KEY TERMS AND DEFINITIONS

Active and Collaborative Learning: This is a learning strategy in which learners are actively involved in the learning process, with each assigned a definite role to play within a group for a specific learning unit.

Faculty: A teaching or academic staff member of a higher education institution.

Higher Education: Education provided to degree level; bachelor's degree, postgraduate certificate and diploma, master's degree, doctoral degree, and postdoctoral experience.

Institutional Support: Includes all expenses and provisions in terms of administrative services, legal and financial support, space, infrastructure, and facilities offered to postgraduate students to ease their research engagement and hence completion efficiency.

Master of Education: is a *master's* degree awarded to educationists who wish to specialise in a given field of education such as curriculum and instruction, counselling, educational psychology, and administration.

Postgraduate Student: A student who already holds an undergraduate degree as one of the core requirements for the current programme such as a master's programme or doctoral programme she or he is pursuing.

Research Engagement: This is a student's emotional, physical, and psychological concentration on the pursuit of research. It involves investing in personal effort, active and collaborative learning strategies, quality student-faculty interaction, and seeking institutional support.

Student-Faculty Interaction: The quality of social and academic relationships that exist between students and their staff.

Supervision: The process of guiding, critiquing, directing, and appraising the research process and outputs of a student in order to foster improvement and proficiency in research skills of the student.

Chapter 13
Obstacles for Students With Disabilities in the Supervision Process at Postgraduate Level in South Africa

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ABSTRACT

The chapter presents the obstacles in supervision for students with disabilities at post-graduate level in South African higher education. Data were collected through scanning South African and international literature available on Google scholar, ProQuest, in books, journal articles, and online resources. Decolonial theory informed understanding of why the obstacles are confronted by the particular students. The findings revealed limited supervision is the main obstacle. The argument for the chapter is that students with disabilities' obstacles in supervision are far deeper than those seen at surface level.

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INTRODUCTION

Internationally and in Africa broadly, research output from institutions of higher education has become very important, as it is one of the factors considered for university rankings. However, it is revealed that in the South African region, many public institutions are confronting obstacles that limit research engagement. Kariwo (2017) has listed the obstacles as brain drain, inadequate infrastructure and lack of access to even the most basic tools to do research has outlined those. Also funding is another obstacle said to be an obstacle because it has several effects as inadequate research resources such as books and journals. Literature reveals that competitive funding that is made available when *priorities are made right.* This is manifested in the South African Research chair scheme (Kariwo, 2017). This implies that this kind of funding has specific requirements to be met, if it has to be awarded to researchers. It could be argued that the obstacles confronted at institutional level, transcend and affect the supervision process and consequently have implications for both the academics and students who are engaged in the research process.

Being the last to come out of oppression in all African countries, to attain democracy from the segregative Apartheid system, it is inevitable that South African higher education needs to engage in extensive research, more specifically at post-graduate levels. In the South African context, the research engagement has to include the formerly disadvantaged social groups as women, the blacks and those with disabilities, who were previously excluded in higher education. However, despite efforts being made for such students to also engage in learning broadly and research specifically, they continue to confront obstacles that limit them. Grant (2003) has noted that doctoral supervision in specific, and its pedagogic engagement, is the most mis-understood. This has resulted in researchers making effort to understand the issue of 'access with success' in South African higher education, among others, Sehoole and Adeyemo (2016).

Before discussing the obstacle confronted by students with disabilities in supervision in the context of higher education in South Africa, the chapter starts by providing the context of research for students with disabilities in higher education. This is necessary to lay the foundation for understanding the obstacles in supervision, a process intrinsically interlinked, and which might not be separated from teaching and learning. Following that, the chapter also discusses Decolonial Theory (CDT), broadly and more specifically coloniality of power, a theoretical concept, that best illuminates the obstacle confronted by students with disabilities in supervision. The chapter concludes by reiterating on the argument and proposes further studies, which could focus specifically on dismantling structure of coloniality, which is an invisible, oppressive and the underlying cause of the obstacle for students with disabilities' supervision.

Context for Research for Students with Disabilities

The context of research for students with disabilities is important as background to understand the obstacles for students with disabilities conducting research in higher education in the South African context. With specific reference to doctoral research, Backhouse (2009) argued that contexts as among others, the discipline, the department, the supervisor, the students' background experiences as the family or community and the workplace, all intersect to influence the pedagogy of doctoral supervision. It means that there are different contexts that could be mediated on, to impact positively or negatively on the supervision process specifically and research generally; hence, it is important to understand these beforehand.

Exclusion in Teaching and Learning

Extensive research has revealed that students with disabilities are excluded in teaching and learning broadly in South African higher education context (Crous, 2004; Mosia & Phasha, 2017). One of the profound reasons cited for exclusion is the unwillingness by the academic staff to include those students in their teaching (Mutanga, 2017). The unwillingness emanates from the academic' view of students with disabilities as a burden (Ndlovu, 2017) and lack of knowledge of disabilities (Matshedisho, 2007; Haywood, 2014) and consequently lack of skills and knowledge to teach the particular students (Matshedisho, 2010). These are the reasons also cited by Mutanga (2017), for the exclusion of students with disabilities in teaching and learning in higher education in South Africa. When the particular students are excluded in teaching and learning, it may not be expected that they can be included in the supervision process, because it is also part of teaching by the academic staff and learning to conduct research by the students. Research, teaching and learning are key dimensions for academic knowledge that cannot be separated and when there is a setback in one of them, it consequently affects the other. Thus, while the obstacles might be the similar as in teaching and learning, this chapter presents them as they incorporate the supervision process.

Lack of Training on Supervisors

Lack of knowledge by the academic staff is also attributed to lack of funds for training. Mutanga (2017) argues that sufficient training is required for institutions of higher learning to ensure that all academic staff have the knowledge to practice

at their best. This best of practice also includes supervision of all students, including those with disabilities, because it is part of their work. With specific reference to doctoral supervision, Grant (2010) has argued that supervisors often understand it as a rule abiding process in which students have to comply with institutional codes and rules. This could be viewed as a manifestation of lack of training on the part of supervisors, because for students with disabilities with their diverse categories of disabilities and unique needs, same rules, codes and procedures might not apply to them. For example, they may need to extend time for their research, which may not comply with institutional approved rules.

While training is undoubtedly necessary for best practice, funding is a challenge in South African higher education. Gardner (2009) reported that because of inadequate funding there is a blame game at postgraduate level, in which institutions blame the government and supervisors blame students for being under prepared and students consequently blame the academic staff that they are not willing to address their needs. While it so, literature further reveals in that South Africa is one the countries, with the lowest funding for higher education (Badat, 2016). While lack of adequate funding, affects all students in general, even those without disabilities, it is exacerbated for those with disabilities who require extra resources for them to engage in research. For example, they need assistive devices, which might not be required by those without disabilities. Disability Units, which provide support for students with disabilities, are also reported to lack adequate funds (Fotim Report, 2011). It implies that supervision for students with disabilities is consequently negatively affected because the support they might need from Disability Units to carry out research may also be limited.

Besides the challenges of lack of funding to train the academic staff to handle students with disabilities, it is also reported that there are challenges relating to the academic staff members themselves not keen on participating in training programmes offered at institutional levels. Matshedisho (2007) argues that DU staff members offer workshops to train the academics members on different disabilities categories and how to handle students with various disabilities. However, because such training is not compulsory, very few lecturers attend them (Matshedisho, 2007). The unwillingness to train is also confirmed when De Lange, Pillay and Chikoko (2010) also reported the same that training and seminars on postgraduate supervision that takes place within institutions of higher education have been poorly attended by supervisors. It might not be expected that the same academic staff who lack training, to include students with disabilities in classroom teaching and learning, can include them in the supervision process. The processes and the practice of teaching and supervision are intrinsically interlinked and the limitation in one might consequently affect the other.

Low Expectation of Students with Disabilities' Capabilities

The South African context is that which manifests low expectation of persons with disabilities in general. In higher education, Riddel (1998), in agreement with Howell (2006), contends that stakeholders doubt the potential of students with disabilities to succeed. Ndlovu's (2017) study however reveals low expectation of students with disabilities by the academic staff has changed to the positive. It is at integrated setting of learning, where they still confronted low expectation of their capabilities. In the particular study, students with disabilities themselves reported that their capabilities and competences to practise competently as other students were doubted (Ndlovu, 2017). In essence, society is still reproducing the previous Apartheid tendencies of having low-expectation of students with disabilities. Within such a social context, students with disabilities are also highly likely to be doubted when they conduct empirical research requiring fieldwork, outside institutions of higher education. Though Ndlovu's (2017) study was on students with disabilities practising for different professions at the workplace, it might not be expected that such students may be treated differently, when they go out to collect data because the fieldwork space, might not be very different from integrated settings for learning.

This chapter thus presents the social context of the South African higher education with the hope that it could be a springboard from which to understand the obstacle of poor supervision for students with disabilities. In the context of this particular chapter, postgraduate level is understood as it relates to Honours, Masters and Doctoral supervision. However, most examples will be drawn from doctoral supervision, which has a lot of literature than the other two levels.

Theoretical Framework

Many social theories have failed to bring change for the full inclusion of all diverse students, including those with disabilities, in the context of South African higher education. This is because most of them address the surface issues of exclusion rather than delving deep into exposing the underlying cause of it. It is against such a background that this chapter is premised on Decolonial Theory. It is a long-standing theory whose proponents are the scholars who include, Grosfoguel (2007, 2011), Quijano (2000, 2007), Mignolo (2007), and Maldonado-Torres (2007). These scholars hail from Latin America. There are scholars from Africa as Ndlovu-Gatsheni (2013) who extensively apply the theory in their academic and research work. It is Quijano (2000), who popularised the theory in the 1990s. Decolonial scholars extensively use

the theory to awaken society that though colonialism ended, it still lives through the hidden structure of coloniality (Quijano, 2000; Maldonado Torres, 2007; Ndlovu-Gatsheni, 2013). It is thus a theory broadly used as a torchlight to understand the underlying cause of exclusion and oppression of the Other. The theory does not only unmask and expose the ills of coloniality and Western modernity, but it also provides methods of self-liberation by the oppressed (Rose, 2004). Thus, though it is not a disability theory, scholars in the field employ it with the intention of finding a solution that will make change. In this chapter, the theory is employed with the hope that when the invisible underlying cause of the obstacles of limited supervision for students with disabilities could be unveiled, an effective intervention, targeted on the invisible causes, could be thought about.

Coloniality of Power

The theoretical concept of colonial power specifically has been drawn from Decolonial Theory, to use as a tool to explain and understand why obstacles confronted by students with disabilities in supervision, continue to prevail. Coloniality of power specifically explains why despite the end of colonialism, that there are still networks of relations of exploitation, domination, control of labour, nature and its productive resources, knowledge and authority by the dominant powers (Quijano 2007). The existing colonial matrix of power affects all dimensions of social existence ranging from sexuality, authority, politics, economy, subjectivity, language and race (Quijano 2000). Ndlovu-Gatsheni (2013) understands all these forms of domination and oppression as "organised and articulated to suit the imperatives of global imperial designs" (Ndlovu-Gatsheni, 2013, p. 50). It is the reason why the South continues to be dominated by Western influences, and why oppression continues for other social groups, despite democracy and proposed transformation and inclusion. Coloniality of power therefore exposes the invisible ways in which power operates, and how it is used to oppress the other in specific contexts by the dominant powers. The concept makes understanding of hierarchies of domination, and the persistence of a colonial mentality, in which the powerful oppress the powerless (Ndlovu, 2015). In this chapter, it helps to understand that despite propositions of inclusion, and policies of inclusion, why students with disabilities continue to be excluded, resulting in them confronting obstacles in supervision.

It is through coloniality of power again that the issue of social location of individuals within coloniality, come to be understood. Grosfougel (2011) clarifies that the zones are the West, the zone of being, and the South, the zone of non-being. In

the two zones, humanity is placed in what Santos (2007) terms the Western 'abyssal thinking'. As Santos explains, this is a way of thinking by the West, which considers the social reality as divided into two realms. On 'this side of the line' is the zone of being, which is the metropolitan zone occupied by the West. The zone on the 'other side of the line' is the colonial zone referred to as the zone of non-being, occupied by the 'other' (Santos 2007:45-46). The abyssal line is invisible but divides the two zones into differential power relations. Grosfougel (2011) explains that what is found in the two zones in terms of human race, are two groups. In the zone of being, there are superior beings who are the 'I'. It is the space for the dominant society, who are the oppressors. They claim that the knowledge and theories they produce is legitimate and universal. Dominant universities are located in this zone. It is in this zone that equality and freedom are considered rights and as such, conflicts are mediated through treaties, negotiation and law (Ndlovu-Gatsheni, 2013).

In the zone of non-being, there is the inferior being who is the 'Other', the oppressed social group who exists as inferior beings. The dominant society is skeptical of this specific zone and by virtue, the humanity of the 'Other' is denied. No credible and legitimate knowledge and theories produced from this zone are credited. Critical thinkers, critical theorists, and critical scholars are doubted by the dominant society. As opposed to the zone of being, conflict and human relations in this zone are mediated and resolved through violence (Ndlovu-Gatsheni, 2013).

The two zones are not neatly formed and permanent categories, but are fluid. A zone of being can be created in the South through Western influence and education in general, and it produces the dominant society. People constructed in this way are socially located in the zone of non-being but epistemically located with the West. They think like the oppressor (Ndlovu, 2015) and consequently become the oppressors though they are also oppressed. Grosfougel (2011) explains that they reproduce coloniality through confining themselves to a particular ethnic group in the zone of non-being while they think and act like the oppressor in the zone of being. Students with disabilities could also be influenced by such positionality and location and by virtue; they can be oppressors rather than the oppressed. The concept of zoning, its complexities and dynamics are thus important to help not to over-generalise the obstacles for students with disabilities in the research process. Thus, while all students with disabilities might confront obstacles in the research process, their experiences of obstacles could be diverse because of their social and epistemic location in terms of zones.

Limited Supervision as an Obstacle for Students with Disabilities

Limited supervision is the main obstacle confronted by students with disabilities in the context of South African higher education. What may be understood as limited supervision is subjective and contextual. In this chapter, it means supervision that is characterised by lack of effective communication, delays in feedback and lack of support for fieldwork. While students without disabilities could also confront the same obstacles, students with disabilities confront the obstacles differently and they are exacerbated.

For all students to conduct effective research at post-graduate level, they need to have a strong base of theory of research as the foundational knowledge. This is so that they can apply that theoretical knowledge effectively in fieldwork when they collect data, or when they do desktop research in empirical studies. While at post-graduate level, it is expected that students have some level of theory of research, they need to acquire more knowledge on keep abreast with new methods of research. Depending on their category and severity of their impairments, students with disabilities require alternative methods of teaching, to acquire the theoretical knowledge of research such as research methodology and different methods of data analysis. Furthermore, when the supervisors are supervising students with a total hearing impairment, they are also expected to have the knowledge of, and being able to use sign language. Similarly, when supervising students with total visual loss, they are expected to know and be able to read Braille or also have Job Access with Speech (JAWS), in their computers so that they can access, evaluate and provide feedback for the research work of the particular students. However, literature reveals that supervisors, who happen to be, in most cases the same academic staff who teach them, are limited in terms of alternative methods of teaching, and supervising in alternative formats, different from the general methods and formats employed for students without disabilities. This has manifested in instances when they use overhead slides and power point presentations as ways and media to teach, while there are students with visual limitations in class (Sukhray, 2008; Kajee, 2010). As already highlighted in the section on context, this emanates from lack of knowledge on disabilities and training by the academic staff members (Mutanga, 2017). Thus, though use of inaccessible formats is reported to be happening in the classroom when the academics teach all students, also in supervising students with disabilities, which can be one on one-contact sessions, the supervisors might still not be able to use the format accessible to students with specific disabilities. Students with

disabilities are thus double-disadvantaged when they confront the obstacle of limited foundation of theoretical knowledge of research in classroom teaching and limited supervision during one to one sessions. It might not be expected that they conduct research as competitively as expected when they confront the specific obstacles. A demographic report of academic staff in South African university presented by the Department of higher education and training (DHET) (2017) reflects that those from formerly disadvantaged backgrounds as the Blacks with Masters and doctoral qualification are few and are at bottom hierarchy of the ranking. Though the report does not say anything about those with disabilities, it could be argued that they also in that category as they are also part of the formerly disadvantaged. Limited supervision in higher education could be an obstacle and contributing factor to that.

Communication Barriers in the Process of Supervision

At all levels of study, including postgraduate levels, it is important that there is effective communication during the supervision process between the supervisor and student. Lasker and Zuber-Skerrit (1996) viewed it as the highest level necessary to facilitate research at doctoral level. Though communication is very important in research, barriers are confronted by students with disabilities in the supervision process in higher education in South Africa. Communication barriers for these students result from myriads of dimensions. They result from faulty technological experiences to those who provide support to students with disabilities. A study by Mokiwa and Phasha (2012) revealed that the software known as Job Access with Speech (JAWS) do not read signs in Mathematics and Science. While technology might fail one time or the other, students with visual limitation researching in the specific fields might access distorted work from their supervisors. Supervisors in turn might receive distorted work from the students, hence a communication barrier. For the reason that the supervisors are not cognisant of alternative ways of communicating with students with disabilities, support staff as sign language interpreters for students with total hearing loss, and those who convert braille to print and vice-versa, for students with total visual loss, became the medium between supervisors and students with those impairments. Students with disabilities in Ndlovu's (2017) study stated that the support staff who are not expert in the field of research distort their work when converting it. There are also problems with interpreters when they take leave; are sick or they are not also experts in the area of research for a student with disabilities, resulting in misinformation and distortion. The communication barriers for students might not be inevitable when there is a third

party is involved in the process of supervision. Above all, the service of interpretation is very expense in South Africa (Ndlovu, 2017), suggesting that an institution of higher education might have challenges financing such a service for a student with total hearing impairments to be supervised. All the obstacles compound to result in communication barriers between the supervisor and students with disabilities.

Delay in Feedback

Students with disabilities delay getting feedback for their work confronted by students with disabilities in the supervision process. Tugli et al. (2013) observed that in the context of teaching practice, students with disabilities receive their study materials late. In supervision, delays could be experienced in one to one supervision, described in ASSAF (2010) as when a single student is assigned to one supervisor. The supervisor could take long to give feedback to students with disabilities because she or he lacks knowledge and skills for different disability categories. For example, it would take longer for a student with visual impairments who uses Braille, to get his or her feedback because the work has to be converted to print first before a supervisor who is not acquainted with Braille assesses it and gives her or his comments in print. The comments will also go through the process of conversion to Braille, for the student to access the comments. Delays in feedback could also emanate from different preferences and predijuces between the supervisor and the student with disabilities. The two could differ emotionally and psychologically and thus contradict in the way they think supervision should be conducted. Mackenzie, McDowell & Pittaway (2007) argued that there could be a "relationship of a complex mix of power based on ethnicity, class and race, incurring the risk of transgressing political, social or economic fault lines…" (p. 304). While this could also happen between supervisor and student without disabilities, it could be exacerbated for those with disabilities because of communication barriers. Thus, both internal and external circumstances beyond both the supervisor and student with disabilities' control, could result in delays in supervision process largely and feedback, specifically.

Lack of Support in the Fieldwork

By virtue of students with disabilities requiring extra support in supervision, they need to be supported even when they go out to collect data in the field. However, in the South African context of higher education, students with disabilities lack such support because the academic support is not extended to the field (Ndlovu, 2017).

Students are by themselves when they go for fieldwork. While support in the field might be required by all other diverse students, it most needed by students with disabilities because of impairment disadvantages that require special support. For example, they may become limited to collect data because they find the assistive devices they use at the institutions of higher education different from those used in the fieldwork. In such a situation, the supervisors should be available to step in and assist their students. A study conducted by Botham and Nicholson's (2014) in UK, proved that there is need for continued support of students with disabilities when they go to the field by the academic staff from the university. There is also need for partnership between stakeholders from the institutions of higher education and those in the field, to support students with disabilities through a plan designed by both (Botham & Nicholson, 2014). This support is not available for students with disabilities in South African higher education. It might not be expected that they can conduct research as effectively as other students without disabilities can when the support they get at institutions of higher education is not extended to the field.

When illuminated by coloniality of power, poor supervision of students with disabilities at postgraduate level can be understood as the case of institutions of higher education, perpetuating the structure of coloniality. Grosfoguel (2011) argues that dominant universities in particular, are in the zone of being, meaning that they belong in the same category as the powerful and the oppressors. Furthermore, institutions of higher education, can take the form of state apparatus, which are used to facilitate state ideologies (Althusser, 1978). Consequently, by virtue of being generated by the ruling state, they are a structure that automatically has a power of control, domination and universality. By way of universalisation, it implies those who do not fall in the category of the mainstream, become excluded. In the South African context of higher education, the practices of teaching and supervision exclude students with disabilities because practice is universalised for a 'normal' student. It is why the academic staff lack the knowledge of alternative methods to enable students with different categories access to knowledge in general and research knowledge specifically. Where there is universalisation, difference is denied.

Furthermore, institutions of higher educations are structures of power, in which power is vertically structured. Structures in which there is power is hierarchy, have the capacity to be oppressive, because there is the constructs of powerful and powerless are socially constructed (Ndlovu, 2015). Consequently, power dynamic interplay between the supervisor and student. It could be argued that the power dynamics are exacerbated for students with disabilities, supervised by supervisors who are not disabled, because by virtue of categorisation of people by the dominant society,

persons without disabilities are in the higher hierarchy over those with disabilities. Students with disabilities confront obstacles because they have a tragedy of double hierarchisation of the powerful and the powerless, and that of the 'abled' and 'disabled'. Decolonial scholars argued that hierarchisation results in those in the higher hierarchy oppressing those in the lower (Quijano, 2000; Ndlovu-Gatsheni, 2013). Thus, though poor supervision of students with disabilities in the South African higher manifesting as unwillingness, lack of knowledge of disabilities and lack of training by the academic staff, those are issues manifesting at surface level. The actual obstacles are issues of power dynamics, which are far deeper than seen at surface levels. They are also issues of oppression at institutional levels, which are transcended hierarchically, to have a negative effect on those in the lower hierarchy.

Coloniality of power explains the low expectation of capabilities of students with disabilities in the same light of power dynamics. The people, more especially those without disabilities, view students with disabilities as inferior because of the same notion of universalisation that all people should conform to the same standard of the normative (McRuer, 2006)). Those who differ, as those with disabilities are placed in the lower hierarchy (Ndlovu-Gatsheni, 2013). By virtue of being in the lower hierarchy, they are inferiorised and seen as incapable, hence low the expectations. Though this attitude is said to have changed in institutions of higher education, it could still result in poor supervision of those students by the supervisor because of sympathy, rather than empathy. The academic staff might do most of the students with disabilities' research work, limiting their independent research practice that is expected of all students.

Way-Forward-Dismantling Coloniality

While other interventions could be done to improve on the supervision of students with disabilities at postgraduate level in the South African higher education, the way forward is to totally overcome the obstacle of poor supervision is to dismantle the structure of coloniality broadly. Dismantling the structure of coloniality would result in the coloniality of power being consequently dismantled. As already highlighted in the chapter, it is the invisible underlying cause for poor supervision. Exposing the unseen and dismantling it would be like treating the underlying cause, which could see to all surface manifestations being overcome. Likewise, if the structure of coloniality, which is perpetuated by the institutions of higher education themselves, could be addressed, all the other manifestations, including poor supervision of students with disabilities could be overcome.

It should be stated however that while dismantling coloniality could be the way out of poor supervision, Dastile and Ndlovu-Gatsheni (2013) argue that as long as the global imperial designs, which shape and inform the character of the oppressive modern world systems and colonial matrices of powers are still in place, dismantling coloniality is only illusionary. Ndlovu (2013) also observes that world order may change, but world systems do not change. He further explains that world orders have changed since the advent of modernity, but the hierarchical character of coloniality has always remained the same. He states that post-colonialism only marked the birth of a different world order, but it does not mean a change in the covert operations of an oppressive modern world (Ndlovu, 2015). Grosfoguel (2007, p. 219) concludes: "We continue to live under the same colonial power matrix [...]. We moved from a period of 'global colonialism' to the current period of global coloniality". What the specific scholars argue is that dismantling the structure of coloniality might not be as easy as people might suppose. It is a process and struggle that requires not only students with disabilities' agency, but all oppressed persons to come together and claim their humanity. Oliver and Barnes (2012) argued that the "oppression of disabled people will only end when the oppression of all is overcome and that will happen with major economic, political and cultural transformation as well as resistance" (p. 176). In essence, the structure of coloniality will not be dismantled by one oppressed group resisting or fighting, but when there has been a total struggle of all diverse people who are oppressed. In the meantime, as the oppressed engage in the struggle to dismantle coloniality, research studies that focus specifically on improving supervision for students with disabilities internationally and in the South African context specifically should be carried out.

CONCLUSION

The chapter focused on the obstacles for students with disabilities in conducting research at postgraduate level in the context of South African higher education. The main obstacle found to be limiting students with disabilities is poor supervision, manifesting in poor communication between supervisor and the student, delay in provision of feedback and low expectation of students with disabilities' capability to conduct research as other students. The argument for the chapter is that students with disabilities continue to confront the obstacle of limited supervision in the South African higher education because there are invisible underlying causes to it.

Moving the argument forward, it is proposed that other studies specifically focused on how the structure of coloniality broadly, and the coloniality of power, specifically, should be dismantled, need to be conducted. Of importance, is that all oppressed persons, not only students with disabilities, should come together to engage a fight of deliverance from the oppression of coloniality that has continued to oppress them.

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Chapter 14
Supervisors' Reflections on Policy and Practice in an African Graduate Setting:
Towards a Pedagogy for Supervising Research

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ABSTRACT

The chapter reflects two supervisors' experiences on graduate research from the legal, institutional, and personal perspectives. In addition to a review of several literature, two professors engaged in graduate supervision were interviewed to explore perception of their roles, supervision styles, and whether they adapted these styles to circumstances. Literature documents various supervision models and styles, moving along a continuum from dyadic to relationship development models, and institutions provide minimum benchmarks and best practice guides. Supervision is a personally-intensive knowledge sharing, utilization, and management undertaking between a supervisor and supervisee. The chapter contributes to the scholarship of pedagogy of supervision, an emerging discourse especially in graduate settings in sub Saharan Africa where research is apparently low-resourced.

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INTRODUCTION

Supervision of graduate research is a core responsibility for university faculty [supervisors from henceforth], with the throughput rate of students as its measure of output (Van Rensburg, et al., 2016). In addition, state and market regulations; and university-rankings are playing a critical role in opening up and stretching discussion on graduate research and national development beyond university perimeters. This renders graduate research supervision a critical discourse in the management of universities, and in the daily lives of supervisors and supervisees. Therefore, this is a reflection in practice of two supervisors on the legal, institutional and personal perspectives on graduate research supervision.

Supervising graduate research is a complex form of pedagogy. Unlike teaching which is oftentimes less engaging in typical African universities with high student to faculty ratios, the supervision ratio [even where group supervision is permissible] is one to one. Therefore, research supervision is a more personally-intensive knowledge sharing, utilization and management undertaking. Graduate research supervision is situated at the interface of teaching and research, focuses on the transference of research and related skills (De Gruchy & Holness, 2007, in Van Rensburg, et al., 2016) with a theses as the final tangible product. Supervision has become more complex due to cumulative enrollment and therefore increasing diversity of graduate students, increasing number of flexible degree programs introducing a variety of choices for students, continuous (re)development of academic disciplines, increasing cross-disciplinary nature of academic research, emerging education technologies and their diverse affordances, the continuous redefinition of required professional skills mixes, and the ever-growing market economy.

These attendant intricacies require universities to continuously scan the environment in order to provide quality research supervision processes, outputs and outcomes. The phrase 'pedagogy of supervision' is operationalized here to mean the science and art [models and processes] of supervision that nurtures a meaningful relationship between supervisees and supervisors, to enable supervisees successfully accomplish their research projects and learn from the process. The key success factor of a research project is the relationship between the supervisor and researcher during the training stage (Orellana et al., 2016). Greene, et al., (2018) state the problem as follows:

When graduate students don't complete their degrees, institutions and departments often point to poor "fit," lack of student motivation and initiative, and a lengthy list of other personal traits, such as, "…they simply didn't have it in them." In many of

these cases, supervisors immediately shift the blame away from themselves, quipping about unprepared or "bad" students. More concrete assessments point to a lack of financial support, mental health challenges, unsupportive departmental cultures, or other systemic factors. Yet, little attention is given to the unspoken elephant in the room – poor supervision. Students who drop out of programs due to supervisory reasons rarely share their experiences with those in the academy, and instead, their departures become "horror stories" only recounted with friends or family.

The supervision process is characterized by asymmetric power dynamics which deter supervisees from disclosing inadequate supervision and its effect on progress and future careers. Power relations breed conflicts such as failure to set regular appointments to monitor progress, not meeting agreed-upon deadlines, ignoring the advice supervisees are given, failing to interact with one another in a responsive and respectful manner, bad-mouthing one another in conversations with other staff or students, showing irritability or aggravation, exchanging bad-tempered or overly emotional communications, and/or feeling rights are being undermined (New South Wales University Post Graduate Discussion Paper (2016, p. 9-10).

Such conflict suppresses the research supervision process, and may at worst culminate into toxic relationships. This is especially so when the supervisee overpowered by the supervisor decides to keep quiet rather than use institutionalized channels for action. It is for this reason that the authors reflect on the contextual and personal variables at play during the research supervision. They focus on the practices and processes [pedagogy] they engage in, draw conclusions and garner lessons they presume are beneficial to supervisors in other graduate spaces, especially in Africa.

Methodology

The authors reflect on their lived experiences as supervisors of graduate research. They also reflect on the experiences of two professors they separately interviewed in writing this chapter. The key themes during the interaction focused on how the professors perceived their roles as supervisors, whether they were conscious about supervision styles they used, whether they adapted their supervision styles to circumstances and actions, whether they were aware of any gaps between their own understanding of their supervisory role and supervisees' perceptions and what some of these gaps were, and how such gaps could be narrowed. The authors also review a variety of primary and secondary literature including journal articles, institutional legal texts and guidelines on research supervision. Findings from the various sources are marinated to further analyze the ways in which these confirm or contradict the authors' lived experiences.

In the next section, the authors review the national and institutional legal environs which give context to the supervision pedagogy supervisors engage in. They review literature on supervisory models and styles; and based on these, reflect on their sense of self as supervisors, their academic identity, and how these impact on their supervision pedagogy.

The Research Legal Framework

The Higher Education Institution (HEI) under study was established as a public tertiary institution with the status of 'Other Degree Awarding Institution' (Universities and Other Tertiary Institutions Act – UOTIA, 2001, amended in 2006). Through this Act, the institution is monitored, evaluated and regulated by the Uganda National Council for Higher Education (UNCHE).

The institution is at liberty to initiate good practices in teaching, research and community engagement as long as it meets UNCHE minimum standards. It has a Research Centre mandated to coordinate by staff and students' research. The Center is supported by the Institute Research Committee at strategic level. At operational level, the Centre is supported by four School Research Committees, which discuss and vet graduate students' work. There are also discipline-based research clusters aimed at supporting staff to undertake research and publish findings in internationally-refereed journals and books. Similar to Communities of Practice (Wenger, 1998) the clusters are expected to use their research to inform and improve teaching. To standardize research supervision, the institution has developed and continuously reviewed its Graduate Research Handbook, which institutionalizes relevant NCHE guidelines and other graduate research best practices. The development and review of the research guidelines is consultative and participatory in nature, involving supervisors. This builds general consensus and ownership of the guidelines, making operationalization smooth.

The guidelines provide criteria for supervisor allocation, roles, procedure for addressing supervision-related complaints, critical review of students' research work, which check the quality of supervision (UMI, 2019). Efforts have also been made to strengthen staff capacity in supervision and examination through theme-based capacity building workshops and sponsorship to present papers in international conferences. Guided by the UNCHE framework, the institution offers taught masters' degree programmes and a PhD.

Basic in the taught component is further exposure to research (the content) and how to undertake a research (process) whose outcome is a thesis. One of the good practices at the institution is that each supervisee is allocated two research

supervisors. The main supervisor should have a PhD as a minimum qualification (for Master's students) or a Professor in the related field (for PhD students). For mentoring purposes, staff with doctorates are allocated as second supervisors for doctoral students. One of the supervisors should be a subject expert, while the other should have research knowledge. The roles of each supervisor are clearly stipulated in the institution's research guidelines and in the UNCHE Benchmarks for Postgraduate Studies (2014b). The co-supervision model is preferred to the one-on-one supervision (Republic of South Africa, Department of Higher Education and Training, 2014). Further, Thompson et al., (2005 in Van Rensburg, et al., 2016) observe that the model benefits supervisees in that different perspectives are brought to the supervisory process, there is a complementarity of approach, content and methodological expertise; and, for novice supervisors, the experience of 'learning on the job.'

The UNCHE has set minimum standards for admission, progression, variants (routes), knowledge, skills and attitude pitch levels required of graduates pursuing various programmes. For example, the Postgraduate Benchmarks (UNCHE, 2014b) specify that a doctorate is conferred on individuals who are able to:

a) show a systematic comprehension, independent and an in-depth understanding of a discipline with a mastery of skills and research processes related to the field of study.
b) contribute to the original research that broadens the boundary of knowledge through an in-depth thesis and defense.
c) use intellectual independence to think critically, evaluate existing knowledge and ideas, undertake systematic investigations and reflect on theory and practice to generate original knowledge.
d) communicate with peers, scholarly communities and society at large concerning the field of expertise.
e) demonstrate ability to use technologies and make appropriate innovations.
f) take leadership in the area of expertise in evaluating and making decisions in situations with limited information while considering social responsibilities and related ethics.

The Benchmarks further specify the supervision models, ranging from the traditional (dyadic) model where a supervisor singly works with a supervisee to doctoral committees (also refer to Bitzer & Albertyne, 2011; McCallin & Nayar, 2012). The Benchmarks highlight the roles of supervisors and supervisory workload.

Since the workload for supervising PhD students is twice as much as that required for Masters' degree students; a supervisor is required to supervise less than four doctoral students at any one time where the supervisor has no Masters' degree students. The Benchmarks also recommend a PhD study work plan and progress report for timely and successful completion of the programme. They further provide that at least one of the Masters' degree supervisors must have a PhD, and that persons should not be designated as a major supervisor to a doctoral candidate unless they have previously co-supervised at least one doctoral candidate to successful completion.

However, due to staffing challenges at the moment, supervisors have several students at Masters' and doctoral degree levels. Hence, the institutional context implicitly and explicitly shapes supervision pedagogies. Good supervision pedagogies thrive in institutions which are open to innovation, are accommodative and recognize supervisors' initiatives and creativity. Noteworthy, it is essential for supervisors and supervisees to understand the legal and institutional frameworks within which they supervise and are supervised, respectively. Such frameworks could be international, regional, national, institutional, professional and/or discipline-specific.

Current Graduate Research Supervisees

As supervisors, the authors keep record of their supervisees in graduate research files. This is an individual initiative given the various research-related documents received from time to time. Record keeping enables them to keep in touch with their supervisees, track progress and avail up-to-date records whenever required. The files are either in hard or soft-copy format.

From the authors' experience, at the extremes of a continuum are supervisees who are laid back and need to be followed up regularly, and those that regularly follow supervisors up. Some supervisees are self-motivated and show good progress, while others disappear after the taught component. Research suggests that about 50% of the students who begin graduate studies abandon the programme due to several problems (McAlpine & Norton, 2006). Reasons behind high attrition rates, slow and non-completion of research are numerous and complex and are generally linked to either lack of, or inadequate supervisee integration into the academic program or department (Girves & Wemmerus 1988, Tinto, 1993 and Lovitts, 2001; in Gardner, 2009a), initial miscommunication creating frustration and alienation (Egan et al., 2009), feelings of psychological and cognitive inadequacy (Greene et al., 2018; Golde, 1998; Katz & Hartnett, 1976 in Gardner, 2009b), lack of financial support (Abedi & Benkin, 1987; Bowen & Rudenstine, 1992; Girves & Wemmerus 1988 in Gardner, 2009b), and dissatisfaction with the program or department (Girves & Wemmerus, 1988; Lovitts, 2001; Perrucci & Hu, 1995 in Gardner, 2009b).

Some supervisees possess research literacy skills perhaps acquired either during their undergraduate or graduate studies. However, majority of them lack the foundational skills required to undertake graduate studies because some universities do not teach research at undergraduate level. Therefore, in addition to the research workshops organized at the institution, such supervisees require further coaching and mentoring to understand and undertake academic research. As noted elsewhere, universities have to provide access and support for students who may not possess the foundational skills necessary for graduate research as a consequence of a lack of access to critical basic education (Lessing & Schulze, 2003; Lessing & Lessing, 2004 in Van Rensburg, 2016).

Despite the minimum standard guidelines in place, the authors claim that each supervisee is an individual and hence, a unique project, rendering research supervision a negotiated pedagogical process between the supervisee and supervisor. Further, while several literature ascribes high attrition rates, slow and non-completion of research to students, there is limited attention paid to the supervision process (Greene, et al., (2018) and the supervisor.

Authors' Sense of Self and Academic/ Professional Identities and Supervision

Tensions supervisors encounter during supervision focus on two dichotomies, i.e. the professional role and personal self; one being dependent and other, independent (Lee, 2008). In this section the authors reflect on their sense of self and academic identity and their influence on supervision.

As per the mandate of the institution, supervisors' core roles are to train, undertake research and consultancy work. This includes supervising graduate research, participating in academic writing, publishing and presenting papers at conferences, and contributing to other institutional obligations. To this end, one of the authors is the Chair of the School Research Committee, and therefore sits on the Institute Research Board. Before joining the institution, she lectured in two public and one private university, supervised students, was a School Registrar in one of the public universities, Deputy Vice Chancellor (Finance & Administration) at the private university, and an external examiner in a public higher education institution.

The other author heads an administrative unit and is a part-time senior lecturer at the institution under study. She teaches and supervises on some graduate programmes. Prior to joining the institution, she was a full-time lecturer at a public university. This is the place where she locates her longest academic experience; initially as a

student and later as a lecturer. She is also an external examiner in several universities within and beyond Uganda. In addition to their core academic profiles, the authors continuously participate in both long- and short-term trainings, which support them in strengthening their academic and research core. Underlying this is the desire for continuous professional growth and development.

Supervisors' academic identities provide foundational knowledge in specialized academic disciplines, which is one of the basic ingredients of competence in supervision. Good grounding of supervisors in the ontology (the study of nature and relations of being), epistemology (the study of nature and scope of knowledge), and axiology (study of values) informing particular disciplines is crucial in the supervision process. Such knowledge supports supervisors to guide supervisees who are primarily assessed in subject matter and ancillary assessed in research methods competences. For instance, one of the authors was allocated to supervise a Master's degree student specializing in Project Planning and Management, but apart from her research knowledge, she was inadequate in guiding the supervisee in project design. Nevertheless, discipline-based guidance supports supervisees formulate the key research question and objectives. This knowledge responds to the *5Ws, i.e. Why? What? When? Where? and hoW?*; and various academic disciplines respond to these questions differently.

All academic disciplines have their own uniqueness, which provide them a distinct character, making it possible to delineate the boundaries of some disciplines (UNCHE Postgraduate Benchmarks, 2014b). Clark (1997, in Gardner, 2009a) notes that disciplines have their own histories and trajectories, their own habits and practices. Disciplinary culture according to Gardner's study findings was apparent in supervisors' perceptions of doctoral student success. Biglan (1973 in Gardner, 2009a) posits *'…studies of academic cultures and contexts cannot be generalized across discipline[s].'* Elsewhere, differences in supervisors' behaviors and research practices have been *'…examined, in part, through the nature of their disciplines…, disciplinary boundaries typically demarcate differences in the nature of re-search and intellectual activity'* (Biglan, 1973; Lodahl & Gordon, 1972; Thompson & Brewster, 1978, in Gardner, 2009a, p. 343).

To further elaborate on this, among the cross-cutting course units at PhD level in the UNCHE Postgraduate Benchmarks (2014b, Subsection 5.2.2) is philosophy of knowledge which covers the nature and scope of knowledge. The course questions what knowledge is and how it can be acquired. This epistemic knowledge is the key ingredient in a PhD programme, for instance, as in Philosophy of Science and Philosophy of Social Sciences. The other cross-cutting course unit is Research

Methodology whose aim is to provide doctoral students the necessary grounding in quantitative and qualitative paradigms necessary for research. This course unit also focuses on the theoretical analysis of the body of methods and principles associated with a particular branch of knowledge. It encompasses concepts such as paradigm, theoretical and conceptual models, phases and quantitative or qualitative techniques. The choice of techniques to use largely depends on the candidates' subject area and academic background. However, such techniques should be high level commensurate with expected doctorate standards. That is why the authors lend credence to the co-supervision model, where one of the supervisors is a subject expert and another has competence in research methods. These are two sets of scholarship, and although a supervisor can have both, a second supervisor adds rigor to the supervision process.

While reflecting on what a scholar is, Tolk (2012) highlights the key characteristics of a scholar, i.e. definition, disposition, immersion, authority, persistence, passion, connection, recognition, productivity, competitiveness, ethics and loyalty, mentorship, contribution, integrity, tenacity, service to mankind, open-mindedness, vision, insight and order. One of the authors scores herself highly on ethics in that she does not gain personal advantage from, for instance chairing the School Research Committee, which among others allocates supervisees. She also scores herself highly in terms of loyalty because of her continuous engagement in developing new ideas, ensuring quality and mentoring colleagues in research supervision; and introducing students who are not necessarily her supervisees into the community of scholars. Similarly, from an interview held with a professor [code-named Professor 1 in this chapter] the authors learnt that he is extremely passionate about and completely immersed in research to the extent that he has set up a private centre and personal reference website. The professor uses these platforms to support students and colleagues to learn to become scholars and researchers.

In keeping with the UNCHE Postgraduate Benchmarks (2014b), the current practice at the institution is that at Master's degree level, the main supervisor should have a PhD qualification and the second supervisor should be a master's degree qualification. One of the supervisors should be a subject specialist in the related research field while the other should have knowledge of research supervision. In order to supervise a PhD student, based on the traditional model, UNCHE Postgraduate Benchmarks, among others demand as follows:

- The major supervisor shall be an accomplished academician at a level of senior lecturer or higher within the institution ranks and shall have published at least five publications in the relevant area.

- A person to supervise a PhD student as a major supervisor shall have a PhD qualification or equivalent qualifications, shall be an expert in the subject area and shall have a teaching/research experience of at least two years after acquiring a PhD. Non-experts in the subject area and those who acquired PhDs no more than two years may be involved as co-supervisors.
- A person shall not be designated as a major supervisor to a doctoral candidate unless s/he has previously co-supervised at least one doctoral candidate to successful completion.
- Every doctoral candidate shall be allocated between two to three supervisors (Subsection 5.3.2: v, vi, ix and x, respectively).

For group supervision, the Benchmarks require that members of the supervisory team have either research subject matter expertise and/or expertise in supervising PhD students. The role of each member of the supervisory team may differ based on the discipline and nature of the PhD research. According to the Benchmarks, the supervisory team should be led by a major supervisor who is the contact person. Other members of the team [co-supervisors] play supporting roles by bringing additional or different subject expertise (Subsection 5.3).

The co-supervision model is good as one of the authors reflects. While pursuing her doctorate, one of her professors insisted that she adds more variables to her study. However, the other advised that she keeps the study variables, but explore the concepts deeper. Therefore, while there are interrogations about the various paradigms within which knowledge is generated, and supervisors' roles in guiding supervisees in a broad range of approaches, caution should be taken not to limit what constitutes knowledge to what supervisors are either familiar with or interested in. Although supervisors are at ease supervising in familiar disciplines, supervisees' preferences equally enrich and generate new knowledge in the respective disciplines.

Based on the above observations, it is difficult to isolate one's academic core identity from the pedagogy of research supervision. This is why the Research Units responsible for allocating supervisors should consider supervisors' academic identity. In instances where students are given the opportunity to select their supervisors, supervisors' academic identity is a key criterion in the selection process. Academic identity is part of the academic freedom supervisors and supervisees should enjoy. According to NCHE (2014a), "*academic freedom is the freedom of the individual worker and student to act freely in pursuit of knowledge*". If supervisors are assigned to supervise students from any field, they will not be able to exercise their academic freedom. One of the professors we interviewed said in his institution, supervisors are allowed to select the areas of supervision and select who to supervise in light of their expertise and interest.

The authors' academic identity has linked them to various communities of practice at local, regional and international levels, which have further refined their research and supervision competences. They have not only gained as individual members of such academic and professional networks, but also encouraged other academics and students to join such networks, attend conferences and publish their research outputs in internationally peer-reviewed journals.

Van Rensburg, et al., (2016, 1) note that high quality supervision plays a pivotal role in the scholarship of discovery and development of evidence-based practice. Further, a healthy, productive supervisory relationship results not only in a successful academic program and outcomes, but also contributes to supervisees' wellbeing and to supervisors' teaching and research excellence (Canadian Graduate and Professional Student, 2016 in University of British Columbia Graduate and Postdoctoral UBC Guide, n.d.; p.1). Therefore, since academic achievement, professional socialization, scholarship of discovery, development of evidence-based practice are qualities of graduate success, supervisors should display similar qualities to be able to mentor supervisees in the realization of the same qualities.

Academic identity is an enculturation research model which entails appropriation of ways of thinking, speaking, and writing in the particular discipline (Dysthe & Westrheim, 2003), and achieving a PhD is considered becoming a member of an academic discipline (Leonard 2001 in Lee, 2008). Supervisors' roles in directing supervisees becomes more apparent since the model focuses on enculturation into the institution, the discipline's community, and epistemological access. Lee further observes that the supervisor behaves like the family doctor and gatekeeper to many more learning resources, specialist opinions and networks, creating power relations, which influence the supervision process. Therefore, supervisors should continuously be aware of the contribution of their academic identity to the supervision process, so that it remains a positive competence. Suffice to note, supervisees come with their own personal, academic and professional identities, which equally influences and shape supervision. Although supervisors are comfortable supervising students in their respective study disciplines, they should also be open to new approaches in these disciplines, new views of methods (Gill & Bernard, 2008) and supervisees' identities. Further, the supervisors should ensure that supervisees own their research by fostering an environment of critical thinking and emancipation, and building a quality relationship (Lee, 2007).

Working in typical academic and research spaces has reinforced the authors' academic identity and career path. The rules of the game include that in order for supervisors to successfully work in such spaces, they must have additional qualifications and continuous exposure to expand and deepen their contribution towards teaching, research and community engagement; or else, as the old adage applies; they perish.

Supervisory Models and Styles

Lee (2007) proposes several supervisory models, i.e. the functional model, enculturation model, critical thinking model, feminist model, emancipation model, relationship development model and qualities model as detailed in table 1 below.

Reflecting on the content in the above table, the authors borrow from several models during supervision, oftentimes starting with the functional model and iteratively concluding with relationship development. According to Wisker and Robinson (2013:140) *'after well-established ground rules have been agreed, the supervisory journey proceeds in a developmental trajectory in which the student becomes less dependent, and more independent, until s/he achieves autonomy and competence.'* The models and styles supervisors use may vary depending on personalities of both parties, and the discipline.

Supervisees can likewise exclude supervisors because the supervision style is not to their taste. Therefore, it is advisable for both parties to recognize existing and potential power dynamics and address them as they manifest. Both have to be accommodative of each other's intentional and inadvertent shortcomings, and create an environment of inclusion and participation. Referring to doctoral supervision in particular, Petersen (2007 in Van Rensburg, et al., 2016) assert that the supervisory

Table 1. Supervisory models

Concept of research supervision held by supervisors	Most prominent activity	Knowledge & skills needed	Possible student reaction
Functional	Rational movement through tasks	Directing, Project management	Obedience
Enculturation	Gate keeping	Diagnosis of deficiencies to be remedied, Nurturing	Apprenticeship, role modelling
Critical thinking	Evaluation Challenge	Argument (gently Socratic or constructive controversy)	Constant inquiry/fight or flight
Feminist	Supporting student in constructing knowledge	Analysis and reflection	Reframing knowledge
Emancipation	Mentoring	Facilitation	Personal growth
Relationship Development Qualities	Supervising according to experience	Emotional intelligence A arrange of experiences to draw upon	Emotional intelligence Personal awareness

Source: Lee, 2007; 691

relationship constitutes a negotiation of boundaries around what it means to undertake research that is recognizable as 'academic' or 'scientific.' These boundaries relate to power relationships, independence versus dependence and the 'becoming' of a new member of the academy (Van Rensburg, et al., 2016). Therefore, the quality of the research input, process, output and outcome heavily relies on the management of power relations. In this case, management of the process is a shared function of both parties.

Since each supervisee is unique, supervisors need to be more cognizant that there are those who need support and advice over a prolonged period of time compared to others. This requires supervisors to develop a stronger mentor: mentee relationship. The authors analogize that a mentor is like a navigator in a car race, sitting in the car with the mentee and guiding them to navigate safely. This is different from a coach who instructs a trainee from afar as they 'play the game' like it is with football. Mentoring can best be approached using the principles of transformational leadership where close contact and relationship need to be maintained. During the interview with Professor 1, he gave an example of when he had to look up a supervisee at his home and found that the supervisee had encountered a number of personal challenges. He counselled the supervisee who thereafter got back on track. Professor 1 added that he requests his supervisees to type out their own progress reports, which both of them sign. His approach not only enhances accountability for both parties, but enables supervisees to articulate their understanding of each stage of their work and take more responsibility for it in terms of committing to progress as per agreed deadlines.

Professor 2 had a wealth of graduate training and supervisory experience at international, continental [Africa], regional [East Africa] and national level. From the interview held with him about how he perceived his role as supervisor, whether he was conscious about the supervision styles he used and how he used them, the authors developed five supervisory styles, i.e.

a) **a mentor**: He reflects; *'I would want the student to value honesty, quality and transparency in research. I would like them to do things the way I do them.'*
b) **a football coach**: He observes; *'the ball does not move itself in the field, it has the momentum by itself but needs pushing.'*
c) **a protector and promoter**: He says he talks to the students' employer when the student is either transferred to another work station or changes jobs. The discussion is intended to inform the employer to support the student successfully complete the research project.

d) **a networker/a bridge**: He reflects; *'I raise money to support them [supervisees] to attend international conferences. I become a bridge through which they can develop their own networks.'*
e) **a trainer**: He trains his supervisees in data collection, data entry into SPSS for analysis and interpretation, report writing and publication.

Similarly, Dietz et al., (2006) highlight six supervision styles, i.e. 'delegater', 'expert guide', 'quality controller', 'coach', 'friend' and 'co-writer'. These styles involve different types of behavioral interactions and task orientations between the supervisor and supervisee (African Network for Economics of Learning, Innovation, And Competence Building Systems, 2015). The styles also invoke different power relations, some more subtle than others, and ranging from low to high levels of intensity engagement. The 'delegators' are according to Dietz et al., often deans, heads of departments or leaders of large-scale research programmes, who have limited time to fully engage in supervision. These are formally responsible for progress and final reports to funding agents, delegating the real work of supervision to others, who are responsible for the 'real supervision.' Supervision is considered low intensity and businesslike. Despite their devolved function, supervisees are happy to include such supervisors' names in their final theses to raise their research profile.

The 'expert guides' stimulate a process of work improvement and help supervisees to 'grow' as scientists. The 'quality controllers' or 'research managers' are businesslike and product-oriented, judging products based on scientific quality, attendance of most influential conferences, publications in the most prestigious journals. They are often cautious of timelines and deadlines. In a coach relationship, which is of higher intensity, more personal and process-oriented, supervisors steer supervisees' ambition and groom them into academics by requiring them to perform in public, scientific fora, attend presentation training courses, do mock exams before final examinations. The 'coaches' assist supervisees in networking, and are interested in supervisees' holistic welfare, i.e. academic, psychosocial, and professional lives. The 'friends,' 'buddies,' or 'confidants,' (Dietz et al., 2006), or 'protectors' and 'promoters' cited by Professor 2 transcend subject boundaries to provide holistic support that positively affects the quality of the supervision process. The process is considered low intensity, personal, and therefore casual with less focus on the process and product, but more on the relationship. The 'co-writers,' 'editors,' 'product advisors,' 'scientific language assistants' 'trainers,' or 'correctors' are more personal but product-oriented, mindful about grammar and language. Dietz et al., (2006, 72) note the following about this supervisory style:

Candidates always get their work back covered in red marks or – if they have an electronic relationship – full of track changes. Some supervisors would, often after two or three failed attempts to improve the style of reasoning or writing, take over and suggest sentences, paragraphs or even major parts of the thesis. Some will hire the services of professional editors for support.

Although literature shows that successful graduate research students are goal-driven, well-organized, focused on their well-being, proactively manage their supervisors and support individuals, apply specific writing techniques, have a high degree of discipline concerning their work, ability to delay gratification, perseverance in the face of frustration, high degree of autonomy, strong internal locus of control, high level of self-initiative, task-oriented and strive for excellence (Gupta, 2013; Lovitts, 2008 in Awuni, 2016: 165), they too may either prefer similar supervisory styles or have supervisee styles cited in Dietz et al., 2006. That is, they can play the 'delegators', 'expert guides', 'quality controllers', 'friends' or 'co-writers'. Supervisees may prefer working independently, nurturing relationships, working businesslike, keen on quality, and/or want to grow academically and professionally. However, a supervisor or supervisee may display a combination of styles as the context demands, but would naturally prefer to engage in their primary style. One of the authors describes herself as;

…a guide for students through the research process; counsellor during the valleys and hills throughout the research process; a perfectionist who will not tolerate mediocre work from supervisees; one who believes there are several ways of carrying out research, one strict on agreed upon deadlines; one who goes an extra mile to help supervisees achieve their targets and one who easily relates with the supervisees.

This author displays a variety of supervisory styles. Brown and Atkins (1988, in Orellana et al., 2016) developed a list of potential supervisor roles and associated attitudes, some of which are supervisory styles:

a) Director (determining topic and method, providing ideas).
b) Facilitator (providing access to resources or expertise, arranging field-work).
c) Adviser (helping to resolve technical problems, suggesting alternatives).
d) Teacher (of research techniques).
e) Guide (suggesting timetable for writing up, giving feedback on progress, identifying critical path for data collection).

f) Critic (of design of enquiry, of draft chapters, of data interpretation).
g) Freedom giver (authorizes student to make decisions, supports these decisions).
h) Supporter (gives encouragement, shows interest, and discusses student's ideas).
i) Friend (extends interest and concern to non-academic aspects of student's life)
j) Manager (checks progress regularly, monitors study, gives systematic feedback, plans work).
k) Examiner (e.g., internal examiner, mock vivas, interim progress reports, supervisory board member).

During interviews, Professor 2 observed that he does not have a specific supervisory model, but follows institutionalized graduate regulations and guidelines. He therefore perceives himself as using the mentor-coach model. As a coach, he ensures that the players [supervisees] play the ball, he observes from outside the field, he is there to listen and see. He adds: '*…as a coach you keep correcting the mistakes as they occur not using an examination model, but a growth model.'* Asked why he uses this model, he says:

'I was trained in the same manner by my supervisors…my professors were bridges for me. My local supervisor would go with me to the field. We had a supervisors' conference, to avoid conflict between my two supervisors in University X and in University Y.'

Supervisees are likely to model the supervisory models of their own supervisors or other role models they have interacted with. According to Greene, et al., (2018), supervisors often model their practice after their own experiences as graduate students or practices of senior colleagues, while trying to avoid the mistakes they see others make. Similarly, James and Baldwin (1999) attest that supervisors serve as models by keeping in mind their role as mentors and always strive "to be a model of first-rate scholarship." A role model in this respect provides good teaching, is professionally committed, personally involved, recognizes and values diversity and sets high but realistic standards encouraging students to go beyond what they thought possible (*op cit.*).

Professor 2 further observed that he is responsive, and therefore adapts his supervision style to circumstances and action. If there is for instance emerging knowledge such as Participatory Geographical Information Systems or remote-sensing, such knowledge is shared during the supervision process. He explained:

'My aim is that the research should still be relevant even after s/he [student] has graduated. Regulations stick, but methodologies are flexible to achieve the research goals. As a geographer I have to go the field, the field is not static, weather changes, peace or conflict, etc., these keep changing. Therefore, the tools and behaviour must conform…including timing demand a lot of flexibility for relevance and reliability. I train my students to identify scenarios where flexibility is a necessity.'

He is aware of the gaps between his own understanding of the supervisory role and supervisees' perceptions, and that this is the reason for training:

'The students sometimes think it is my role to teach them where I am supposed to be providing guidance for them to continue. My role after guidance should be to monitor and they continue, but some wait for you to tell them to continue.'

He added:

'Some students may want to take up my role, I had such a one, I stopped to supervise him. Others do not consult – they forget their role; that is, to be in constant consultation with the supervisor. They bring a complete draft ready for me to look at.'

The above excerpts indicate a twin gap, i.e. some supervisees assume the supervisor role, but bring clumsy work; while the other category think the supervisor should be doing their work. On further interrogation which of the two is a better category to supervise, he observes that the best category is where the supervisee is the owner of the work and the supervisor provides the guidance. Because of these gaps, the Professor conducts research methods workshops so that supervisees know his and their role in the supervisory process.

The above gaps can be narrowed using various strategies such as having formal and informal discussions; exposure by sending supervisees out to observe what others are doing, for example in research workshops where they interact and learn from each other; visiting the supervisees in the field after an appointment, which provides the supervisor an entry point to discuss and share experiences with the supervisees in a real contextual setting; and advising the supervisees on funding opportunities for their projects, since these are a major influence on the quality, efficiency and effectiveness of the supervisory experience. Professor 2 observes:

'The student should be allowed to let the supervisor know if s/he has socio-economic challenges, relating to funding, sickness, family conflicts, etc. When the mind has gone, only the body remains in the field. Therefore, interaction is important in order to provide quality guidance.'

The literature confirms the above findings. For instance, Wisker et al. (2007) note variation in supervisory roles and responsibilities. Wisker et al. (2007), also noted two types of approaches to supervision, i.e. technical-rationality, which emphasizes technique. In this case, Professor 2 ensures that he and his supervisees comply with the institutional guidelines during the supervision process.

The second approach to supervision noted by Wisker et al. (2007) is negotiated order, which emphasizes changes in processes. This implies that Professor 2 is conscious of the various contextual variables at play in the supervision process. Professor's activities seem to move along Lee's (2008) continuum, i.e. beginning from being 'legalistic', i.e. following the rules of the game, following a rational progression through tasks, gatekeeping master to apprentice, evaluation challenge, mentoring, supporting, constructivism and lastly, but not least, supervising by experience and developing a relationship. However, Lee and Professor 2 do not attach timelines to when relationship development is likely to occur. This is because this depends on the level of interaction and understanding between the supervisor and supervisee.

This implies that supervisors play multiple roles at different stages of the process, i.e. the academic leader, manager, teacher, role model, quality controller, and supporter at emotional, technical/strategic and structural levels. For instance, structural support may include providing supervisees information on funding opportunities, training courses, such as library search skills or specific research methods, networking opportunities, attendance and presentation at graduate seminars and conferences relevant to the research and encouraging research support groups among students (de Gruchy & Holness, 2007 in Van Rensburg, et al., 2016). Even in the traditional apprenticeship (dyadic) approach (Bitzer & Albertyn, 2011) displayed by Professor 2, his roles vary due to the changing contexts and needs, placing higher demands on him as a mentor, sponsor and coach (*op cit.*).

Through these interviews the authors learnt that supervisors assume different roles depending on their individual understanding and interpretation of their supervisory role, supervisees' understanding of the individual perceptions and roles of their supervisors and of their own roles, the circumstances surrounding the supervision process including the legal frameworks, and factors within and beyond the supervision locale. Supervisors are therefore expected to support supervisees in both concrete [focusing on the academic and research core] and holistic [non-academic support] ways. In the next section, the authors reflect on their supervision pedagogy.

Practices During the Supervisory Process

Supervisory practices are a matter of negotiation between supervisors and supervisees within the framework of national and institutional requirements. The supervision process can be broadly divided into three phases, i.e. pre-supervision, actual supervision and post-supervision. However, the authors [referred to as supervisors in this section] reflect on their supervision practices which they have divided into six phases, i.e. knowing each other, the actual supervision process, guiding data collection and analysis process; guiding report writing, ensuring that supervisee's work is examined and closing the research project. These phases do not stand in isolation, but are iterative as both parties engage in the supervision process.

Phase One: Knowing each other

This phase is fundamental in establishing rapport between the supervisor and supervisee. In case of a physical meeting both verbal and non-verbal communication are important. If the supervisees introduce themselves through emails, the supervisors have are conscious about written feedback. Communication, in whatever form is important in supervision. Supervisors have to be empathetic and put themselves in the shoes of their supervisees by asking themselves the following question: *suppose it was me receiving such feedback, what impact would it most likely have on me?* This question gives supervisors the opportunity to re-think their feedback. Self-introduction is important, and the supervisors have found exchanging of business cards (if the supervisee has one) an ice-breaker, in addition to allowing the supervisee feel relaxed in the meeting place, preferably the supervisor's office; doing more attentive listening than talking, and cracking a joke where it is befitting. The first meeting is rather informal and less academic but more social and administrative. The meeting may include recording vital information about the supervisees, their family, education and work background, interests, fears, expectations and targets in the supervision process. Discussion of fears and expectations can foster open communication between both parties and prevent misunderstandings that might otherwise arise (University of British Columbia Graduate and Postdoctoral Graduate Student / Supervisor Expectations, 2014).

The supervisors also share their own interests and expectations in the process, and provide advice on some relevant documentation to read and targets for the next meeting which are completed by the supervisee on the form developed by the institution and endorsed by both parties. According to African Network for Economics of Learning, Innovation, And Competence Building Systems (2015:10), increasingly universities are making it mandatory for supervisees and supervisors to sign informal contracts with each other to ensure that they are aware of their responsibilities.

With emerging technologies, initial meetings held with supervisees are increasingly becoming diverse. In addition to the demeanor, described above, tele-etiquette and netiquette become vital skills in this case. The supervisors find Phase One the most important phase in the supervision process. Before one of the supervisors learnt about its importance, a supervisee applied for another supervisor after the initial meeting noting that she did not feel comfortable being supervised by her.

Phase Two: Actual research process

This phase involves discussion on the key research question, problem, objectives, the literature and methods; and finally writing the proposal. It demands a lot from both parties in terms of academic rigor; dealing with power relations; engaging various supervision models and styles depending on the supervisee, the discipline and the context; providing support in locating various resources including people; adhering to graduate research policies and guidelines; concretizing on schedules and monitoring that these are adhered to; negotiating, resolving conflicts and providing quality and timely feedback. Both parties play multiple tasks. However, supervisees should take responsibility of their work, the supervisor being a mentor, a facilitator and a promoter. From the supervisors' experience, when the practices and processes during this phase are faulted, there is attrition not only of the supervisees, but also the supervisors. This phase is fundamental because it provides the roadmap for the entire supervision process. Therefore, a lot of concentration and time is invested into it. After the proposal has been submitted for examination, the supervisors are required to sit in the proposal defense session to listen and take note of the panelists' concerns, which the supervisees need to pay attention to during revision. This is in keeping with the UNCHE Postgraduate Benchmarks (2014b; 4.7.3) which stipulate thus; *"Supervisors are not expected to raise any questions during the oral defense but may make comments."* During this phase, the supervisee and supervisor have to try as much as possible to maintain the nature of interaction agreed on in Phase One. However, this does not mean rigidity in the process.

Phase Three: The data collection and analysis process

Upon clearance by the institution, the supervisees embark on field work. Unlike what Professor 2 cited earlier, the supervisors do not go to the field with the supervisees, but continuously monitor the field activity right from pilot testing to data collection, cleaning and analysis. The supervisors verify that data has been collected, cleaned, well-coded and ready for entry and analysis.

Phase Four: Report Writing

The supervisees submit write-ups of their data for supervisors' guidance. Guidance includes scholarly writing presentation (which essentially starts in Phase Two). The supervisors have difficulties reading badly-written pieces. Rather than spending time pointing out grammatical mistakes, they advise the supervisees to submit their work to English language professional editors so that they concentrate on more substantive issues. During this phase, the supervisors continue exposing the supervisees to existing resources, including inviting them to relevant workshops and conferences. Before submission, the supervisors have to ensure that the anti-plagiarism test has been carried out and is within acceptable levels.

Phase Five: Final Assessment and Examination

The supervisors prepare the supervisees by guiding them on how to defend their research in a *viva voce* panel. Their role during the oral presentation and assessment is to sit in and take note of issues arising so that these are addressed before the supervisee submits the final thesis.

Phase Six: Closing the research project

This is yet another difficult task to perform especially because of the close interaction between the supervisor and supervisee in phases one to five. However, it is also relieving to both that the project has come to a successful conclusion. This is a time for compliments, reflection on the foregone process, learning points and further professional and social interaction.

In each of the above phases, the supervisors work with co-supervisors, either as main or second supervisors. Initially, each supervisor used to provide separate feedback to the supervisee. With time, the authors have found comparing notes and jointly sharing feedback reduces ambiguities which confuse supervisees. Supervision as a transformational mentoring undertaking stimulates supervisors to benefit from each other as scholars [intervision]. According to the Participants' Guide (2014), intervision is the structured contact between colleagues involving mutual support, giving feedback and learning from each other in a professional manner to network, develop and share specific competences.

In each of the above phases, the authors note the importance of the nature, quality and timeliness of feedback by both the supervisors and supervisees. Constructive feedback is clear, simple, focused, timely, and respectfully and professionally

conveyed. According to Van Rensburg et al., (2016) communication and feedback, whether in writing, oral, online or in combination, can only be effective if the message the supervisor wants to convey corresponds directly with how supervisees perceive that message. Feedback should not only point out areas that require improvement, but also areas where supervisees have excelled. This helps to nurture a healthy relationship and reduce negative existing and potential power relations leading to feelings of confusion, shame, defensiveness, failure, resentment, and/or defeat. However, the quality and timeliness of feedback is affected by high supervisee numbers.

Although originally developed as a laboratory-based model and traditionally seen in the "hard" disciplines (Egan et al., 2009), the authors have found the group approach to supervision a good strategy for the high supervisor to supervisees ratios even in the humanities and arts disciplines. Group supervision is noted to foster dialogic interaction (Dysthe, 1996) and the notion of how understanding and learning emerges from the interplay of voices, 'multivoicedness' (Bakhtin, 1981 in Dysthe & Westrheim, 2003). Dysthe and Westrheim add that dialogism [as opposed to monologism typical in the traditional supervision model] is important because the co-construction of knowledge is essential to communication processes generally; and to the supervision process in particular. It also nurtures interdisciplinary discourse using multi-methods approaches and the building of communities of practice. Group supervision has further been commended as a power-diffusing mechanism that increases social learning in collaborative and collective environments (Wisker et al., 2007; McFarlane, 2010; Parker, 2009; & Malfroy, 2005, in Bitzer & Albertyn, 2011).

In addition, the authors are increasingly adapting online supervision [flipped supervision] because it is fast, time-cost-effective and versatile. Various online interaction platforms [e.g. email, Skype, Facebook, YouTube, Webinars, WhatsApp, twitter, LinkedIn, VLE discussion forums, Blogs, etc.] provide technological affordances which can innovatively be used to provide feedback including recording and keeping records, making track comments, highlighting, and hyperlinking additional helpful resources much more than what is afforded on a hard copy. In this digital age, supervisors are required to have the ability to match the affordances of the various technologies (Bower, 2008) with the provision of meaningful feedback during the supervision process.

Although the literature pays more attention to ethical considerations during the research process, less attention is given to ethical issues underlying the supervisee and supervisor relationship including beneficence, non-maleficence, justice, truthfulness and honesty. For instance, both parties should uphold human dignity from any form of harm [physical, psychological, emotional], respect human rights

[right to expressing a view, freedom from all sorts of harassment including the push to complete, sexual harassment, etc.] be accommodative and manage emerging power relations. Similar to feedback, observation of ethics cuts across all phases of the supervision process. It is crucial that the ethical dimensions that present during the supervision process are openly discussed, agreed upon and monitored by both the supervisor and supervisee.

Phases one to six will be successful when the roles of the supervisor and the supervisees are clearly spelt and adhered to during each phase. An example of the roles of each party have been summarized in Table 2 below:

James and Baldwin (1999 in Van Rensburg, 2016, 6-7) provide a useful framework of eleven good practices in graduate supervision as summarized below:

1. Ensure the partnership is right for the project.
2. Get to know students and carefully assess their needs.
3. Establish reasonable, agreed upon expectations.

Table 2: The roles of the PhD supervisor and student

Responsibilities of a PhD supervisor	Responsibilities of a PhD student
Facilitating students to undergo relevant training and participate in workshops and conferences	Abiding by the rules and regulations of the academic institution they are affiliated
Providing timely sufficient advices to students to write scientific texts and offer constructive criticism of their manuscript up on review	Discussing and setting mutual and convenient mechanisms to maintain contacts with supervisor/s
Supporting students to integrate into the broader research environment (e.g. faculty and department members)	Taking and appreciating suggestions, comments and critical reviews concerning their PhD project
Advising and encouraging students to produce academic deliverables, such as journal publications, that ensure dissemination of research outputs and an easy viva	Meeting deadlines and Planned milestones as agreed with the supervisor
Encourage students to present their work to other faculty/department members and gain feedback	Fulfilling all the requirements at all stages of the PhD programme
Prepare students for the ultimate PhD defence examination	--
Encourage students to think about their future career path	--

Source: University of Reading Graduate School (2013) as cited in African Network for Economics of learning, innovation, and competence building systems (2015).

4. Work with students to establish a strong conceptual structure and research plan.
5. Encourage students to publish their work early in their academic life and often.
6. Initiate regular contact and provide high-quality feedback.
7. Get students involved in the life of the department.
8. Inspire and motivate students.
9. Help if academic and personal crises crop up.
10. Take an active interest in students' future careers.
11. Carefully monitor the final production and presentation of the research.

We consider the above as good practices even in resource-constrained graduate research environs. From the foregone, the authors' approach to supervision is iterative and consultative in nature, sometimes functional, '*enculturational'*, emancipative and/or mentoring.

The authors therefore take on the supervision process diligently and consciously depending on what the situation demands, *albeit* some challenges which affect the quality of graduate supervision. Such challenges include the context of the study environment, supervisees' and supervisor's perspectives (McCulloch et al., 2016; Orellana et al., 2016; African Network for Economics of learning, innovation, and competence building systems, 2015); clashes between the purposes of supervisors and supervisees, lack of support structures for supervisees, isolation, and confusion regarding the function of resources (Edwards, 2002, in Orellana et al., 2016). The authors also note high supervisor: supervisee ratios, above the nationally recommended ones (UNCHE, 2014b). The continuous backlog each academic year increases the supervisor to supervisees' ratio making the supervision experience a daunting one. In a recent study on completion rates (UMI, 2019:2), it is noted as follows;

…low completion rates clog the system, create inefficiency, hinder enrollment of prospective participants [students] … [are] potential threat to the Institute's sustainability amidst increasing competition with other service providers.

Similar findings are reported in a university in Kenya with a supervisor to supervisees' ratio of 1: 23 (Atieno, 2015) and in a university in Ghana with a supervisor to supervisees' ratio of 1: 5 (Awuni, 2016). The authors identify with Deush (2008 cited in Bitzer & Albertyn, 2011) who states; '*…the increasing workload of supervisors of postgraduate students threatens the quality of research and the training of future researchers*.'

Further, current discourse is limited on the attendant rewards to supervisors and their contribution to the quality of supervision. While traditionally, the number of students supervisors graduate is considered a measure of academic throughput contributing to the promotion to professorial ranks, in some universities, supervisors are additionally monetarily remunerated for each successful supervision. Quality is compromised in cases where the supervisors place more emphasis on the reward than on the quality. Generally, the more throughput is emphasized, the more the quality of the research process is jeopardized. The negative outgrowth on focusing on throughput is the increasing number of research bureaus within and around university perimeters. Research bureaus were originally designed to provide university communities professional editing services. Currently, in an era where many students are far more concerned about completing their research projects and obtaining a degree than about the scientific value of what they are working on (Paretti, McNair & Holloway-Attaway, 2007; Van Vuuren, 2013 in Rensburg, et al., 2016), and supervisors are overly concerned about meeting and keeping their throughput rates high, there is a high affinity to utilize research bureaus. It is little wonder that despite the introduction of anti-plagiarism regulations in universities, research bureaus are booming businesses. Therefore, in addition to the traditional evaluation of the research output, it is imperative that universities devise robust mechanisms to continuously monitor the supervision process, both at institutional and personal levels.

Conclusions and Lessons for Graduate Supervisors

National political, economic, social, technological, legal and environmental environs; institutional contexts and supervisors' sense of self as academic and professional, implicitly and explicitly shape the pedagogy of supervision. While existing policies and guidelines on graduate research supervision provide minimum standards, and while institutions have developed good codes of practice guides and principles, and supervisor/supervisee contracts to guide the process, each research supervision process provides both supervisees and supervisors unique and exciting experiences worth learning from. Further, supervisors' academic identity furnishes them with the foundational knowledge in specialized academic disciplines, which is one of the basic ingredients of competence in graduate supervision. Therefore, a good grounding of the supervisor in the ontology, epistemology and axiology informing a particular discipline is vital in the allocation of supervisors and in the supervision process. This implies that supervisors need to be continuously aware of their various identities and manage them to enrich the supervision process.

University of British Columbia Graduate and Postdoctoral UBC Guide (n.d., pp1-2) shares a helpful summary of seven principles of excellent graduate supervision, which augment the authors' personal reflections, i.e.:

1. Students' learning benefits from individualized supervisory approaches: students learn more effectively when supervisors' interactions with them are responsive to their unique learning styles, passions, questions, knowledge, abilities, experiences, and long-term/career interests. They also benefit when these interactions reflect an awareness of any personal, cultural, and structural challenges students may face.
2. Student learning develops with both dialogue and guidance: students develop critical thinking abilities, creativity, and adaptability when supervisors listen to, question, challenge, and guide them, prompting students to reflect on and critically examine their thinking and decision-making processes.
3. Students' multi-faceted growth as scholars is supported by supervisors: supervisors play an important role in fostering the development of students' independence, their ability to ask important questions, their professional competencies, and their scholarly identity, which includes the development of habits of heart and mind.
4. Students learn from role models: students gain deep intellectual, ethical, and practical knowledge of their field and of the scholarly profession through exposure to outstanding role models.
5. Communication is key to teaching and learning and to relationship-building: the supervisory process and student learning are enhanced when mutual expectations about the process are communicated clearly and regularly; when all communication is done with sensitivity, empathy and recognition of boundaries.
6. Scholarly and other communities are central to students' development: Outstanding supervision incorporates, and is supported by, strong communities that assist in shaping students' scholarly identities, model scholarly integrity, and share the norms of fields, in addition to promoting diversity, inclusivity, intercultural understanding, and equity.
7. Reflection makes one a better mentor: reflecting on and clearly articulating one's own supervisory and scholarly beliefs and practices can strengthen supervisory abilities.

Supervision is a pedagogy, and the literature has identified a variety of supervisory models and styles, each with implications on the supervision process. Although supervisors are comfortable supervising using preferred models and styles, through

training, individual reflection and sharing, they can learn better models and styles. The literature increasingly points to a transition from the traditional supervision models and styles accused of being susceptible to power relations and conflicts to models that foster critical thinking, problem solving, emancipation, transformation and relationship development and are in tandem with supervisees' learning styles.

While there is no gold standard for effective graduate supervision (Benaquisto, 2000, in Egan et al., 2009) supervisors and supervisees need to be flexible and willing to learn, re-learn and un-learn in order to meet each other's needs and interests. A pedagogy of supervision that involves encouragement, advice, support, constructive and critical appraisal, pastoral care and encouraging and developing independent thinking and ways of working, one that adapts a facilitative approach which is flexible, supervisee-centred and reflective, and in which the supervisor and supervisee share mutual control of the learning process (Gill & Bernard, 2008; Lizzio, Stokes & Wilson, 2005) will foster quality supervisor and supervisee interaction and learning, which will eventually translate into good research outputs and outcomes.

Particularly, group supervision approaches make research supervision a liberating pedagogy that empowers supervisees to work beyond their and supervisors' expectations. These approaches according to Egan et al., (2009) create communities of practice, and have the potential to create a lively, casual, and collegial atmosphere among the supervisor and supervisees. Such approaches encourage peer-to-peer supervision, inclusion, teamwork and knowledge sharing. The approaches also diffuse power by reducing dependence on supervisors and increasing students' sense of self, fostering supervisees to establish their research identity, increasing their social learning in collaborative and collective environments, which lead to the production of high-quality dissertations (Bitzer & Albertyn, 2011). However, institutions need to develop explicit policies and guidelines for group supervision approaches, without which they are prone to misuses and abuse.

As Greene et al., (2018) observes, it is time that institutions deliberately re-examine graduate research to reduce on lengthy times to completion, high attrition rates, and focus on student retention and increase optimal student outcomes. Quite often, ineffective supervision tends to foreground responsibility for failure on the supervisee, disregarding the institutional spectrum and the relational dynamics at play during the supervision process. The national and institutional graduate guidelines are minimum benchmarks, which according to Greene at al., (2018) should be a starting point for a serious conversation about supervision, not an end in themselves.

Supervision is a shared responsibility between supervisees and supervisors, i.e. a complex duality of roles. Therefore, both should formally be prepared to assume their respective roles through induction, continuous professional development and

training, and on-the-task coaching and mentoring. Such capacity building spaces, when institutionalized and well-utilized can nature the growth of communities of practice where students, faculty and administrators continuously question their deeply-embedded assumptions about supervision, voice their concerns [within and beyond self], share experiences and resources, and learn from their peers to develop best-of-fit institutionalized supervision models that blend both informal and formal strategies. As literature shows, there is a paradigm shift from more bureaucratic, product-based approaches to less strict, personal and process-oriented supervision pedagogies that seek to emancipate, empower independent scholars and researchers, and develop quality relationships. This ultimately leads to multiple positive outcomes including retention, academic achievement, completion or graduation and professional socialization (Gardner, 2009a).

Further, there is growing consensus that effective teaching presence can be established online (Baguma, et al, 2019; Bagarukayo et al., 2017; Bagarukayo et al., 2016); conversely, that supervision can be done effectively without face-to-face contact (Van Rensburg, et al., 2016). Graduate schools should provide enabling environs in which supervisors and supervisees can exploit the affordances of emerging technologies including the Internet of Things and virtual reality during supervision; albeit with capacity building and guidelines. Finally, universities which do not have research courses at undergraduate level should consider designing these to provide undergraduates the basic research knowledge and skills in preparation to undertake graduate studies.

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Chapter 15
Pedagogy and Agency in Postgraduate Student Supervision in a Rural South African University

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ABSTRACT

Postgraduate studies in South Africa's higher education and the world have come to occupy an important position not only due to the high level of professional development attached to it but also due to the significance of post-graduate research towards the university's research output. This chapter is based on a combination of informal interviews with supervisors and doctoral students, observing student supervisor interactions as well as personal experiences within the doctoral study trail. The notions of agency and pedagogy related to the complexities surrounding how supervisor-student interactions could shape various forms of agency that may act as enabling or constraining within the doctoral study route are explored. This is particularly with respect to poorly resourced universities, particularly those often referred to as the historically disadvantaged universities (HDUs) in South Africa.

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INTRODUCTION

The expansion of postgraduate training and outputs within a global context has increased in a number of universities worldwide. This has particularly been the case as universities have increasingly become strategically seen not only as an important source and measure of global competitiveness but also central to driving socio-economic development worldwide (Kaggwa, Sekiwu & Naluwemba 2017). McAlpine and Amundsen have averred that both developed and developing countries across the globe have come to view universities as strategically positioned for championing social and economic growth as well as international competitiveness (2011, p. 4). Higher education policies have been viewed as vehicles for the promotion of socio-economic growth and global competitiveness. At the core of achieving socio-economic growth and global competitiveness some western governments have embraced the practice of rankings. It is within this context that the Canadian government for instance set a 2010 research and development target which aimed at attaining a top 5 ranking in those two areas (McAlpine and Amundsen, 2011, p. 4). It is significant to note that such targets have been driven by an increase in the enrolment of students on doctoral programs. Other countries such as the United Kingdom have also sharply increased attention on higher education policies particularly with greater emphasis on accountability, higher rates of research productivity coupled with higher doctoral student throughput as well as expectations their research out puts having global competitiveness.

This preceding view, albeit at global level is essential to this chapter's arguments as the South Africa's universities have not been spared the pressure of ensuring an increase in the enrolment of master's and doctoral programs. This has occurred within a context of embracing rankings as well as ensuring research out puts meet international standards. This becomes an important issue within the South African context particularly when one considers the apartheid legacy of inequality that created a divide within the education sector. The legacy of historical disadvantage particularly within South African University system has linkage to the racially segregatory nature of apartheid policies. Bharuthram and Kies (2013) present an important insight on how the education for Black South Africans mirrored the inequitable relations of the racialist and non-democratic apartheid state. Subsequently, huge disparities between institutions arising from the discrimination of the apartheid era produced a legacy of the historically advantaged and the historically disadvantaged institutions.

The apartheid legacy in South Africa meant that the university system gets divided into what has come to be commonly known as formerly Historically Advantaged Universities (HADs) on the one hand and the formerly Historically Disadvantaged

Universities (HDUs) on the other. In this categorization, the former are at the core of the arguments of this chapter as they represent poorly resourced institutions in terms of human and financial resources as well as infrastructure wise (Breetzke and Hedding 2016). On the contrary the latter category have benefitted from favourable policies and resources, which has given them an urge in terms of productivity and competitiveness. Focus on low resource settings is crucial considering the dictates of the knowledge economy currently prevalent not just in South Africa but across the globe as well. According to a report by the Academy of Science of South Africa (ASAf), the production of doctoral graduates is beneficial to the country in many regards (ASAf, 2010, p. 116). The report exposes an important strong correlation between the production of doctoral graduates and economic growth especially within the context where frontier research has increasingly become essential in knowledge-based economies (ASAf, 2010, p.116).

The expansion of student numbers in master's and doctoral programs coupled with the growth and flexibility of degrees and subject choices tends to be a response to the obligations of a rapidly changing labour market and knowledge-based economy (Van Rensburg, Mayers and Roets 2016). South African Universities have this experienced a steady increase in students returning to pursue postgraduate studies. This has however been occurring at a rate faster rate than that equivalent to supervisor production. The disproportional increase of students visa-vis the supervisors has also contributed to some of the challenges faced as it has seen a supervisor being forced to supervise a larger pool of students. This has happened without taking much consideration of one's capacity to handle such a workload. It is therefore in this context that postgraduate supervision continues to receive increased attention not just within South African universities but also worldwide. The importance of postgraduates particularly the doctoral professionals within the contemporary society has seen the promotion of the creation, transfer and management of knowledge to high levels (Kaggwa, Sekiwu, & Naluwemba 2017, p. 26). This has especially become a central issue in the knowledge economy where the competitive environment, fuels increased pressure on higher education institutions to enhance postgraduate research outputs. South Africa has emerged as one of the countries where Doctoral throughputs have been on a steady increase (Waghid, 2015, p. 3).

Considerable scholarly attention has been paid in exploring the associations and relationships around doctoral degree supervision within the South African context (Bitzer, 2010; Bitzer, 2011; Waghid, 2011). It must however be noted that despite these bodies of literature, the prevailing scholarship in the South African context around the subject depicts a gap on the relationships between different dimensions

of pedagogical and agency driven student supervisor relations. The purpose of this study is to address this scholarship gap. The problem addressed in this chapter therefore relates to the day-to-day practices and experiential relationships that inform the supervisory process especially within low resource settings. It is crucial to note that the aspect of resourcefulness among South African universities ought to be understood within institutional legacies. It is therefore critical to explore the question of low resourcefulness and its influences on supervisor-student relations especially for HDUs.

This chapter draws from a combination of desktop review and qualitative research, which involved in-depth interviews and observations that targeted doctoral students and supervisors. This covered a group of ten doctoral students and five doctoral student supervisors (two females and three males) based in one the formerly historically disadvantaged universities in the Eastern Cape Province in south Africa. The pool of students in question was diverse with some of the identifying features inclusive of age, language, socio-economic status and educational competency. The arguments of the chapter focus on how the student-supervisor interactions are shaped by the institutional setting within the context of pedagogy and agency.

Institutional Contexts: Historical Legacy of South African Universities

Bitzer (2011) argues that, while there have been a number of studies that have focused on effective postgraduate supervision and the need for student commitment and identity development, there has been less emphasis on the institution or the university and its role in the production of knowledge and wisdom. This institutional focus is crucial in as far as its resourcefulness has a bearing on the nature of academics that it can attract as well as the capacity it has in developing already existing academics. It is also important to note that postgraduate study transcends the processes of knowledge production. It is important to note that the supervisory process is a complex, highly interactive process which can not be reduced to an incident or event. It follows that supervision exists within a social space that is mediated through diverse personal and professional practices and experiences that different actors bring within the supervisory space. This implies that the supervisory process is subject to the nature of the personal and professional baggage that each actor brings to the extent that the ensuing relations are shaped through a combination of conscious and unconscious practices.

Waghid has presented some important cues on the differentiating features between HDUs and HDAs. The features have included; academic programming, knowledge production, staff qualifications, student access, opportunities and quality,

infrastructure, funding and geographical location that disadvantaged the HDIs (2015, p.2). Formerly HDUs operated on negotiated budgets with unspent funds having to be returned to the controlling department at the end of each financial year (Bozalek and Boughey 2012). This entrenched the legacy of disadvantage with HDUs lacking in capacity to plan, develop and handle financial resources, which resulted in their failure to build financial reserves. Such a legacy has recently seen several HBUs going through administration because of alleged mal-administration and corruption (Bozalek, and Boughey 2012). Despite massive evidence on rampant corruption and mal-administration in these institutions, it remains crucial to note the cumulative influences of the historical legacy in which the apartheid era systematically denied HBUs the opportunities to develop their capacity to manage their affairs.

Whilst the aforementioned factors defining HDUs have a bearing on the supervision capacity of these low resourced universities, geographical location has emerged as central to the inherent deficits. It follows that HDUs were mostly located either in deeply rural areas in the former 'bantustans' or 'homelands' or in urban areas designated for the population groups they were intended to serve, often on the fringes of more affluent areas (Bozalek and Boughey, 2012). The ten small geographical areas established by the apartheid state as self-governing 'homelands' for the black majority resulted in overcrowding and poverty which got exacerbated by maladministration associated with the homeland governments. The marginal location of HDUs consequently affected the competitive urge of these institutions; a historical legacy that continues to be significant in post-apartheid South Africa.

It is also important to mention the new targets as set by the 2012 National Development Plan in which the South African government aims at ensuring that 70 per cent of all academic staff in public universities would have acquired PhD degrees by 2030 compared to the current 40 per cent (Waghid, 2015, p. 3). Such targets inevitably add more pressure on the existing institutional capacities vis-à-vis supervision in the system with HDUs being affected more due to their lack of competitiveness towards attracting and sustaining adequately qualified staff, a legacy of poor infrastructure and low resourcefulness.

What is striking about this is that supervisors in historically disadvantaged institutions seem to lack the diagnostic capacity to expose some of the limitations they may possess in as far as supervision is concerned. It needs to be further argued that even in cases where some of the supervisor deficiencies are discovered and institutions provide staff development initiatives, there is reluctance by members to take up such initiatives. The reluctance to acknowledge weaknesses and let alone to take up capacity building initiatives that would inculcate the good supervision ethos has made it difficult to transform supervision within low resource settings as in South Africa's historically disadvantaged universities.

It follows that institutional audits have also become central towards evaluating post graduate throughputs and quality to ensure conformity to the demands of the knowledge economy whose quest for quality seem to be deepening (Kaggwa, Sekiwu, & Naluwemba 2017, p. 26). Van Rensburg, Mayers, and Roets (2016) have noted that quality ought to be viewed in two terms. First, is the quality of the supervisory process in which supervisors play a part in shaping the quality. Second, is the quality of the research output produced by students which in a way consequently reflects on the quality of the individual graduate. It is however crucial to pinpoint the influences of the competency, quality and other features associated with a supervisor and how it has a strong bearing in shaping the practices and processes within the supervisory trail (Kaggwa, Sekiwu, & Naluwemba 2017, p. 26). It is within this context that this chapter focuses on how some of the perceptions and narratives have tended to locate the actions of supervisors squarely at the core of the processes of agency and pedagogy mainly responsible towards shaping resultant relations.

It is important to note that whilst the issue of resourcefulness of an institution has a bearing on the postgraduate supervisory processes, the increasing demand for postgraduates has been driven by the contemporary market dictates that have placed the postgraduate at the center of the knowledge economy. This is not just the case in South Africa and Africa but it has become a global feature (Kaggwa, Sekiwu, & Naluwemba 2017). Since universities have continuously become centers of knowledge and skill production, both low and high resourced universities have borne the brunt of ensuring that this critical component is produced. The issue of resourcefulness has come to be an impediment especially for low resourced universities or disciplines struggling with attracting adequate funding. Questions have therefore been raised over the worthiness of demanding low resourced institutions to becoming as research intensive as the historically advantaged institutions. Because post graduate supervision is deeply embedded within a university's research capacity, the legacy of low resourcefulness and the subsequent incapacitation characteristic of HDUs have seen them struggling to attract and retain adequately qualified supervisors, who can support and sustain the supervisory processes. Instead, low resourced universities have fallen short in terms of attracting adequately qualified staff and developing the existing contingent to meaningfully create a thriving research-intensive ethos that can translate into enhanced postgraduate supervision and ultimately improved postgraduate throughput.

The Question of Low Resourcefulness

The concept of low resourcefulness within the South African context can mainly be explained within the dimension of the historical legacy in which apartheid policies created separate Bantustan universities. These universities were never meant to attain the high levels of professional competitiveness that the white universities thrived for. Subsequently the resources deployed to these universities reflected the deeply entrenched inequalities. The essential feature to note in this instance is the fact that this legacy of poor resourcing was so deeply entrenched such that the post-apartheid government found it a challenge to dismantle. This was despite a number of initiatives that went beyond provision of financial resources. It was not surprising to see the post 2000 period being dominated by the placement of many historically disadvantaged institutions under administration as the government tried to avert a total collapse of these vital institutions.

The complexity of the supervisory process is overtly manifest in universities that fall under low resource settings especially the HDUs in South Africa. It is in this context in which the chapter seeks to draw insight from the argument of Cross, Isaacks and Nyoni (2019, p. 9) who have averred that institutional legacies develop peculiar research cultures and practices that either promote or discourage staff development, and increase or weaken the production of scholarship. This becomes important towards understanding the contextual nuances of the supervisory process especially where resources are scarce as in most instances the institutional legacies have indeed militated against staff development and associated scholarship enhancement practices. This has consequently resulted in the further decimation of good ethos within the supervision space within HDUs.

In understanding the institutional contexts of resourcefulness especially in South Africa, it is crucial to note that resourcefulness patterns have manifested through inequalities in doctoral amongst South African universities. It is in this context that a report by the ASAf (2010) noted that as of 2007, the top nine higher education institutions in the country were found to account for 83% of doctoral graduates. In order of production from highest to lowest, the top nine ranked universities were, the Universities of Pretoria, Stellenbosch, Cape Town, Witwatersrand, North-West, KwaZulu-Natal, UNISA, Free State and Johannesburg (ASAf, 2010). Whilst recent statistics could not be accessed for this piece, it is undoubtedly clear therefore that the effectiveness of supervision, given the issue of resourcefulness having a bearing on an institution's capacity to attract and produce adequately qualified doctoral supervisors, is therefore critically important in this context. It therefore follows that if

low resource institutions can be supported to the effect that they are able to increase their numbers and effectiveness of supervisors especially at doctoral level, it would be possible for them to increase the doctoral outputs and quality. There is a greater likelihood that even the institutional research outputs would improve especially in light of policy requirements requiring doctoral students to also produce at least one research unit in accredited journals or books.

However, what is common to all forms of postgraduate supervision across the disciplines is the ability to develop critical thinking skills in students which ultimately translates into a greater form of originality within the work produced by the post graduate student. In addition to the obligation for critical thinking and originality, there is the crucial demand for ensuring that postgraduate supervision is abreast with the professional dynamics and emerging trends within the relevant discipline. It is in this regard that Waghid (2011, p. 393) has added that currently, the post graduate training space has featured a shift from the traditional forms of learning to embrace new pedagogical forms that can satisfy the obligatory complexity of the knowledge economy.

The arguments in this chapter are therefore hinged onto the fact that whilst governments and universities have been quick to focus on the aspect of increased enrollments in master's and doctoral programs coupled with the obligation that research that the research outputs ought to meet international standards. This has pushed to the periphery the vital question of the nature of student-supervisor relations and the requisite transformation for producing properly qualified academics capable of handling the master's and doctoral programs. Central to the conducive postgraduate supervision ethos are the supportive and critical interactions occurring beyond the primary student-supervisor relationships. Responses from students in this research generally revealed a state of having strong networks whilst equally drawing from diverse relationships that went beyond the primary student-supervisor relationships as they dealt with day-to-day personal and professional obligations.

Locating Supervision within the Context of Pedagogy and Agency

An argument by Biesta, Priestley and Robinson, albeit on teachers can be extended to supervisor-student relations in pursuit of an understanding of what helps or hinders teachers in exerting control over and giving direction to their everyday practices. The practices in question need not be perceived as mere outcomes of actor's judgments

and actions as they are rather shaped by the structures and cultures within which supervisors work (2017, p. 3). Importantly, is the assertion that agency ought to be viewed as both a temporal and relational phenomenon. It is something that occurs over time and is about relations between actors and their environments in and through which they act (ibid, p. 5).

The question of what agency is crucial within supervisions not just for understanding what it means for supervisors to be agents of change but to also to explore factors that may promote or hinder supervisory agency. Agency is therefore reflected on people's actions as opposed to what they can have. The definition of agency in this chapter is influenced by Priestley, Biesta, and Robinson who argue that 'agency' denotes a quality of engagements of actors with temporal relation context for action and not a quality of the actors themselves (2012, p.3). Such a view becomes important in explaining people's reflexive and creative nature in which in some instances they act against societal constraints on the one hand whilst being enabled or constrained by their social and material situations.

It follows that in its broader connotations post graduate supervision embraces the holistic experiences, processes and practices that the post graduate as an emerging scholar is being prepared for a specific profession within a fluid academic space in which professional and personal obligations need balancing. It is within this dimension that doctoral supervision has been said to represent a complex and negotiated process in which both the student and supervisor have to find a delicate balance between the personal and professional obligations. Within this negotiation, notions of agency and pedagogy will be at play within a context of shifting boundaries. It is in the process of the shifting boundaries that different forms of power relationships emerge. Subsequent to the preceding arguments it is suffice to conclude that the traits defining effective and good supervision not only depend on the professional capability of the supervisor and the commitment of the student, but also on the nature of the relationship that define the supervisory trail as a holistic process.

It follows that inherent negotiations within the supervisory processes occur within the dictates of a plethora of institutional policy practices and requirements. Some of the regulatory dictates include processes such as choosing and disengaging a supervisor. This has a bearing on the entire process and resultant relationships as in some instances students have room to use available knowledge about supervisors to then approach these and engage. In addition to the available regulatory framework and in light of the fact that it is the competency of individuals implementing the regulations more than the instruments themselves, the factor of resourcefulness weighs heavily on the supervisory processes and ensuing relationships. Academic departments

located in poorly resourced institutions usually do not even have academics having the required minimum qualifications needed to handle postgraduates. Whilst professional competency of supervisors is an equally important feature of supervision, it is however not the main thrust of this chapter. This is due to the influences of pedagogy and agency towards shaping a good supervisor which is equally crucial not only in shaping the processes and practices within the supervisory trail but in as far as the supervisor's personal baggage has an equal bearing. The question that looms large is therefore not what qualifications and expertise one possesses but how they balance their personal baggage with professional obligations.

It is therefore crucial to note that supervision requires a concern that extends beyond the academic. The supervisor needs to show concern and commitment, not only to the student's intellectual development and discovery of their academic potential, but also to the development of an understanding of the student as a whole person with other roles and responsibilities which may include family, work and other non-academic activities. This understanding will consequently enable the supervisor to assist the student to maintain a balance, as non-academic obligations tend to equally need balancing as they have an equal influence in the individual's success in their post graduate studies. It is therefore no doubt that the process of supervision augurs well in contexts featuring shared responsibility between the supervisor and student with the process having an appreciation of emotional connection. The ensuing pedagogical processes fueled by some positive agency result in both the supervisor and student taking a leading role as they acquire knowledge albeit at different levels. Good supervision ethos develops when a student-supervisor relationship permits each party to simultaneously draw from each other for emotional and professional support. It is important to however emphasise that the corporative relationship between the student and supervisor is often in turn is subject to influences by what this chapter refers to as the personal and professional 'garbage' of both the supervisor and student.

Supervisor Traits within the Supervision Trail

It is crucial to note that the individual supervisor plays a significant role in the process. This role comes in diverse forms that can be collectively referred to as the supervisor baggage. This would include a range of issues featuring personal and professional traits. It follows that the characteristics of the supervisor are to a larger extent be related to successful postgraduate supervision hence the reason they are considered to be of particular significance. It is crucial to note that in many contexts, be it in the developed or developing world higher education system,

doctoral supervision is structured such that the supervisor becomes central to student-supervisor engagements. This is usually replicated through literature that equally points to supervisors playing a pivotal role towards shaping the day to day student-supervisor experiences which ultimately informs one's failure or success in completing their doctorate.

A key feature that is of importance for supervisors is the appropriate academic and research qualifications as well as experience. In the low resourced institutions where this research took place, experienced supervisors were obliged to work with less experienced academics to support their own development as supervisors. This has occurred under the practice of co-supervision which involves blending experienced supervisors with budding academics. In essence there is a good argument for co-supervision. The benefits of such an arrangement are threefold with the student, supervisor and co-supervisor deriving different benefits. Included on student benefits are; different content and methodological perspectives being brought into the supervisory process, in some instances the budding supervisor can act as a knowledge mediator between the senior supervisor and student. Whilst the issue of co-supervision might be a crucial intervention, in low resource settings were the senior supervisor lacks the requisite supervisory expertise to begin with; it has not helped the student. In that regard, the doctoral students interviewed complained that their supervisor was always busy and did not have enough time with them. One crudely put it thus;

"We wonder if we have a supervisor at all, he is always busy and we are always sent to the co-supervisor even when we have issues we feel need the his attention. We have no problems with the co-supervisor as we are getting high level assistance but we need equal attention from the supervisor himself" (Interview with Doctoral student, September 2018).

It is therefore clear that supervision requires professional commitment, as it is an intensive form of educator-student engagement. There is no doubt that a multiplicity of layers within the supervisor-student relationship need a mere acknowledgement as there is need for engagement to ensure a successful outcome is achieved. It is clear therefore that a certain kind of specialised professional practices drawing from the personal and professional baggage of a supervisor are key for the success of doctoral supervision. Subsequent to these professional demands it is imperative to note that the supervisor facilitates a process that is mediated by personal and professional traits, all of which are key to qualifying the goodness of the supervisor and ultimately the supervisory process itself. The extent to which the supervisor draws from the traits forming their baggage is circumstantial and subject to change during the course of the doctoral journey.

The responses from doctoral students highlighted a number of supervisor traits. The key trait was that of possessing the requisite experience and being knowledgeable about the subject matter under research. In addition, supervisors are expected to be endowed with skills of nurturing whilst at the same time being supportive, friendly, patient, honest, trustworthy, culturally sensitive, approachable, flexible, and tolerant as well as being unbiased. Whilst it is undoubtedly apparent that it is almost impossible for an individual supervisor to possess all the aforementioned traits, it is obvious from the listed traits that students are ultimately after a good working relationship with their supervisors. It is no surprise then to realize that in many instances, students tend to be more concerned with their level of satisfaction, something which points to a closer association between the level of satisfaction with supervision and degree completion. Many students are thus far more concerned about completing their research projects and obtaining a degree than the systematic value of what they are working on. The research revealed that it is this attitude that might have a lasting impact on the students' perception of what good supervision or rather a good relationship implies and what they can ultimately expect from the supervisor as an individual and the supervisory trail as an interactive space.

The supervisor's role in its diverse forms entails guiding students towards independence, and thus the supervisor should maintain a balance in feedback between giving too much or too little direction as the core of supervision is to provide direction on how students ought to improve their work. Most of the respondents highlighted that supervisors need to take a leading role in dealing with the supervisory obligations in relation to providing the much-needed guidance whilst the student has the obligation of handling the suggestions accordingly.

Pedagogy and Relationships within the Doctorate Supervision Trail

The doctoral supervision process can be viewed in the light of an interactive relationship between supervisor and student which is pedagogical and driven by various forms of agency. This is in contrast to the notion of viewing supervision as rather a simplistic set of processes. This argument can be strengthened by Lee (2018, p. 884) who has averred that shared values, respect for each other and agreeing expectations are an important precondition for successful supervision relationships. It is however essential to note that in contrast, for some supervisors there is a tendency of being carried away by so called traits of maintaining formality and distance within

the course of supervision. This is reinforced by the fact that as far as supervisory practice is concerned, respondents widely believe that that supervisors frequently base their approach on their own, often unexamined experiences. The unexamined experiences which are referred to as supervisor baggage can act as some form of enabling or constraining agency within the supervisory trail.

A straight jacket highly formalized supervisory approach points to pedagogy of difference in which only the fittest of the students would survive. In describing the straight jacket approach style of her supervisor one of the doctoral students had this to say; "My *supervisor is so cold, unlike my master's supervisor who used to have some of the discussions over coffee, with this one you would be lucky even if you got a smile, from the time you entre her office up to the end everything is just formal. She doesn't even care to ask about your wellbeing*". (Interview with Doctoral student, July 2018).

The above quote is just one of the many responses in which supervisors feel that the best way of dealing with the relations with their students is to be as formal as possible. This presents the question of what ought to be the boundaries between the supervisory relationship and friendship which in practice tends to be viewed quite differently by supervisors. It is in the context of the dilemma in construing and constructing supervisory processes that the concept of pedagogy becomes important. The concept becomes significant especially since it draws attention to the process through which knowledge production occurs. In essence focus on pedagogy enables us to deal with the interpretive dimension which transcends the transmission and reproduction of knowledge to include knowledge production. An approach embedded in pedagogy further presents an opportunity of problematising essentialist tendencies that view supervisory processes in isolation and not holistically. The pedagogy lens further enhances ones understanding on the conditions and means through which knowledge within the supervisory process come to be acquired. Although the supervisory style becomes of central interest but, though through the ambit of pedagogy, what is essential is its inseparability to the knowledge being shared and how it is acquired within the supervisory process. Through this perspective which brings the issue of pedagogy into the fore of cultural production represents an avenue for exploring other analytic dimensions commonly subdued by conservative postulations. In this manner historically dominant practices linked to knowledge production and acquisition associated with the supervisory processes are critically engaged and challenged.

The concept of pedagogy gives essence to the nature of the relations inherent within the supervisory process. In the process pedagogy rebuffs instrumentalist assertions that explore relations in isolation. It therefore follows that such tendencies

that seek a disconnection of the relatedness of practices and processes within the supervisory trail to the extent of giving more value to one form of agency over the other are not just put into question but rejected. In essence essentialist notions have a tendency of viewing the supervisor as a knowledgeable and neutral transmitter of knowledge as opposed to the student who is seen as being *tabula rasa* in which the student is depicted as more of an empty vessel. The reality however depicts a subjective interactive exchange between the student and supervisor with a degree of circumstantial dynamism. Supervisors in many instances have complained of the poor quality of students and the inadequacy of the undergraduate training especially within low resource institutions. It follows that supervisor complaints that students fail to deal with suggestions and corrections as well as the lengthy periods students take to return feedback have dampened the student-supervisor spirit of interaction. It is in this context that some supervisors have even raised a red flag and brandished their students as being reluctant to read and satisfactorily deal with suggestions due to the weak undergraduate foundation that a supervisor from the HDU in question thus exclaimed;

"Besides the fact that these students have a weak undergraduate foundation they know nothing and worse still they are reluctant to read, even the readings you recommend, you can tell they haven't implemented the suggestions even without engaging deeply with their work, we are really in fix here" (Interview with a supervisor, August 2018).

In terms of implementation of suggestions another supervisor exclaimed; "*When you send the students a track changed document they just accept all changes and send you back the document with your own comments*" (Interview with a supervisor, August 2018).

It is these kinds of supervisor experiences and exclamations together with the related perceptions that tend not only to work against the self-esteem of the student but it generally poisons the entire pedagogical process as instead of supervisors concentrating on establishing and enhancing empowering and emancipating pedagogies they are absorbed in expressing their dissatisfaction. Ultimately the supervisory process remains compromised as essentialist tendencies tend to shape the student-supervisor relations. The responses from students and supervisors generally indicate a trend where student expectations of the processes tend to be in contradiction with those of supervisor and how supervisors deal with supervision obligations. In essence the tension is mostly inherent around the demand of students such as the supervisor's obligation to ensure that enough time is invested on the

supervision. It is important to note that dissatisfaction with the supervision process by either the student of supervisor does not just present the risk of disrupting the pedagogical relations but it becomes a source of higher attrition rates amongst postgraduate students. It is within this view that student respondents tended to hold supervisor obligations such as being able to offer guidance and support on the one hand whilst also displaying high levels of professionalism in handling personal and professional obligations.

The question of pedagogy places the interactive day to day practices at the centre of supervisor-student relations through which successful completion of studies could be attained. Central to the supervisory processes with a particular focus on low resource setting institutions in the form of HDUs, the chapter focuses on the day to day activities that are perceived to enhance or constrain the PhD student. Whilst there are other structural factors that shape the supervisor-student relations in the form of institutional policies and practices as well as the infrastructure, it remains the day to day interactions and the diverse forms of relations created that tend to have a direct bearing on the resultant relations. Key to the chapter's arguments of this chapter are the various forms of agency and obligations involved within the student-supervisor interactions.

Supervisor-Student Relations Shaped by Agency in Low Resource Settings

At the heart of the formation of the enabling or constraining agency it is critical to consider that as far as the unfolding student-supervisor relationships are concerned suitable initial selection of students for the postgraduate research programmes is imperative. Although this aspect is key also for well resourced institutions it gains more significance with low resource settings especially for the research-intensive doctoral degrees. Although the initial selection ought to be guided by the institutional policies, with prospective students needing to be fully informed of the highly demanding programme obligations, it is almost impossible for low resourced institutions to achieve this. Observations during the study revealed that in practice institutional obligations to admit more doctoral students has seen the admission bar being lowered especially for students who would have studied in the particular institution. It is through such loopholes that many students end up venturing into r the postgraduate education environment with insufficient foundation knowledge especially I as far as research is concerned. In essence, it becomes clear that this becomes a constraint in the student capacity to handle some of the doctoral obligations

as strong foundation knowledge is key in their capacity to draw from various forms of existing agency to deal with the supervision obligations. What makes this issue a further constraint in terms of agency is that low resourced institutions like HDUs might not have the adequate financial and human capital to provide such academically challenged students with the requisite foundational research skills. It follows that students from diverse backgrounds and language competency may require different forms of support towards enhancing their research skills at both reading and writing levels. In addition, since the process of supervision transcends the facilitation of research skills competence, but also the development of the students' confidence and guidance towards building critical thought and independent research capacities, students in low resource settings are most unlikely to attain these valuable attributes.

Gender, Power Dynamics and Gate Keeping Within the Supervision Trail

The responses in relation to student-supervisor engagements together with observations of respondent's body language suggested that supervision can be viewed within a context where unequal power relations are displayed. Most of the students especially those with reservations with some of the practices of their supervisors felt that it was difficult and risky to openly challenge their supervisors about what they feel are supervisor obligations. Students responded by indicating that while one was pushed to a corner such that silence would be unsustainable, it was equally difficult to be radical when trying to express oneself. There was a common belief that supervisors and other academics within departments tended to protect each other especially when it came to issues of students apportioning blame on a supervisor. Responses therefore indicated a high level of fear and anxiety related to the perceived threats of retribution by the department or supervisor. This fear and anxiety ultimately had corrosive effects towards the student's capacity to exert any form of agency on supervisor or department. This became more pronounced with the HDU where this research took place. It got intense mainly because the student self-esteem and confidence levels tend to be at their lowest in these low resource settings.

Deeply embedded within the supervisory system and within the context of personal and professionally oriented student-supervisor is the issue of how males and females experience the doctorate journey. It is in this regard that the chapter also engages highlights the gender nuances with regards to ways in which individuals respond to various professional and personal obligations encountered within the doctorate trail. Female doctoral candidates displayed a higher propensity of emotional attachment

compared to their male counter parts. Whilst both male and female doctoral candidates showed an emotional attachment to their research as reflected on their response to their circumstances there were more reports of female students having broken down in tears in response to their ordeal. It is within this context that some female students indicated that they found some male supervisors trying by all means to be harsh with female candidates for fear of an emotional response. It must therefore be noted that the power that supervisors have is not zero some as the student also contributes in co-creating power relations with supervisors.

It is essential to also explore the question of gatekeeping within the supervision relations. This issue was mainly raised by students who felt that some supervisors were deliberately stalling their progress as they wanted to manage the numbers of persons qualifying with Doctorates and in the process protect the doctorate space. Students who held perceptions of gate keeping being practiced by some supervisors reported that some supervisors just slowed the process without any reason whilst at the same time pushing for things to happen as and when they want to. This perception was rather difficult to rationalise as an issue of supervisors deliberately stalling the supervisory process or to view it as an issue of a combination of complacency and mere incompetence by the supervisor. The later becomes even more appealing considering the inadequacies of supervisor traits at both personal and professional levels found especially within low resource settings.

CONCLUSION AND FUTURE RESEARCH DIRECTIONS

The chapter has explored how the level of resourcefulness of an institution particularly within the context of diverse conceptions of agency and pedagogy shape is responsible for shaping experiences and perceptions of doctoral students and supervisors within the doctoral journey. In as much as supervisor-student relations have been widely reported; this chapter's arguments drew from an inherently holistic point of view that explored the interactions and resultant relations from a multidimensional perspective. The chapter also raised arguments to the effect that in as much as the supervisory processes are beset with power inequalities that are tilted against the student, both are ultimately responsible for shaping the relationships that feature within the doctoral supervision trail.

The chapter interpreted issued through the lens of pedagogy that placed the interactive day to day practices at the centre of supervisor-student relations through which successful completion of studies could be attained. At the core of the supervisory

processes especially with regards to low resource setting institutions in the form of HDUs, the chapter focused on the day to day activities that are perceived to enhance or constrain the PhD student. Whilst there are other structural factors that shape the supervisor-student relations in the form of institutional policies and practices as well as the infrastructure, the chapter highlighted the argument that it remains the day to day interactions and the diverse forms of relations created that tend to have a direct bearing on the resultant relations as well as the success of the doctoral students. Key to the chapter's arguments are the various forms of agency and obligations involved within the student-supervisor interactions. At the heart of the formation of the enabling or constraining agency and as far as the unfolding student-supervisor relationships are concerned it became clear that the shaping of student –supervisor relations transcends the suitable initial selection of students for the postgraduate research programmes. In that regard the chapter presented arguments that point to the significance of personal and professional baggage from both the student and supervisor in shaping the ensuing relationships which ultimately has a bearing on the success of the student.

In terms of future research, the issue of student-supervisor relations especially within low resource settings is crucial particularly when explored from a vantage point of how student-supervisor relations are shaped by the day-to-day experiential actions. At the centre of this issue are the pedagogical and agency nuances that seem to define not only the nature of student-supervisor relations but they also inform the success of the supervision process in its entirety. There is therefore need for more research on the aspect of how student-supervisor relations are shaped to assist supervisors and students within the low resource settings to adopt the best strategies for a friendly, more conducive and above all emancipatory and empowering pedagogies.

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KEY TERMS AND DEFINITIONS

Discipline: A branch of knowledge, typically one studied in higher education.

Good Supervision: This explains the art of effective supervisors who constitute those with the required clinical and expert knowledge to assist students in their research work whilst providing emotional support and having the capacity to develop and sustain positive working relationships.

Historically Disadvantaged Universities: A common term in South Africa referring to a cluster of universities that were created under apartheid to cater for Africans and other non white populations.

Holistic Perspective: This is an anthropological perspective in which many different factors are taken into account to generate a picture of the culture as a whole.

Knowledge Economy: An economy in which growth is dependent on the quantity, quality, and accessibility of the information available, rather than the means of production.

Professional and Personal Baggage: Professional baggage includes features that define an individual as a professional while personal features are those that define individuals in their private realms which is usually outside their professional scope.

Quality Dictates: A distinctive attribute or characteristic possessed by an individual.

Supervisory Process: This includes all the functions, practices and procedures that supervisors use to assist students with their research.

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Phefumula Nyoni is an anthropologist and sociologist lecturer and researcher. He has been actively involved in curriculum design, implementation and programme quality assurance. Dr Nyoni's research interest is mainly on issues that are of multidisciplinary nature and include education transformation in tertiary institutions, particularly from a culture-centric perspective, reconfiguration of urban spaces through access to socio-economic amenities for marginalised migrant and local communities with specific focus on women and children, poverty alleviation and human rights, community development, urban workers' experiences, urban artisanal mining and agriculture, women and harmful cultural practices, entrepreneurship as well as reinvention of post-colonial identities in African cities. This has combined research and policy advocacy. The various research engagements have led to the publication of several book chapters, journal articles and reports. Dr Nyoni's latest research projects are in the area of higher education transformation and quality assurance.

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