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**“Rethinking Teaching and Learning in the 21st Century”**

# **Proceedings**

**Edited by**

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## **Preface**

The dynamic education landscape of the 21<sup>st</sup> century demands academics, educators, policymakers and researchers to come together regularly to rethink their practices, policies and design of tools for teaching and learning.

The South Africa International Conference on Education has been a forum for academics, researchers, policymakers, professionals and institutions from different countries and continents to come together to deliberate and share ideas in order to promote ethical and best practices at all levels of education.

In the maiden edition of the conference in 2014, over 80 participants from 21 countries took part in the conference. The varied contexts of the presentations were insightful and thought-provoking. It is our expectation that this conference will be even more insightful, enriching and thought provoking as participants present a wide range of perspectives on various topics.

The proceedings contain the accepted full manuscripts presented at the 2015 conference. A total of 123 manuscripts have been received from participants from 19 countries. This attests to the wide range and varied contexts of the presentations. Hopefully, the presentations will result in a deeper understanding of how others are addressing different problems as well as in a crossbreeding of ideas.

We wish to welcome all the participants to Pretoria. A special word of welcome goes to those who are visiting Africa for the first time.

We would like to thank the keynote speaker and workshop presenters for the most wonderful and thought-provoking presentations. Our appreciation also goes to the reviewers of the full manuscripts as well as the editors who have worked tirelessly to ensure that the proceedings were compiled timeously.

To each one of you, enjoy the conference as we rethink “Teaching and Learning in the 21<sup>st</sup> Century”.

The South Africa International Conference on Education is an annual event. We therefore look forward to meeting you at the 2016 edition of the conference.

Prof. A. Mji  
*Conference Chair*

### **Review Process**

In total, 123 manuscripts in different areas within the field of Education were received. Of these manuscripts, 45 were intended to be full papers while the rest were to be short papers. All the full manuscripts were subjected to a double blind review. The reviews were carried out by experts from different countries. Their brief was to base their reviews on 19 criteria they were supplied with. They were also requested to look at the manuscripts with the aim of assisting authors to produce good quality presentations.

Following the review process, the editorial committee considered the reviewers' comments and 12 manuscripts were found to be unsuitable for publication. Reports were forwarded to the remaining 33 authors with suggestions of what needed to be addressed. After receiving the re-worked manuscripts, the editorial committee finally accepted 26 for inclusion in the proceedings. This means that the acceptance rate was just about 58%.

### **Editorial Committee**

M. Dichaba

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# CHALLENGES OF TEACHER EDUCATION IN ENHANCING DEVELOPMENT: CASES OF MAKERERE AND KYAMBOGO UNIVERSITIES OF UGANDA

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## **Abstract**

This study which is limited to teacher education in the two universities of Makerere (MaK), and Kyambogo (KyU), attempted to unravel and establish the challenges of teacher education in contributing to the development of Uganda. Both qualitative and quantitative approaches were employed so as to provide the necessary triangulation for getting a more composite data to articulate better the findings. Further, a descriptive research design specifically a case study was adopted to secure in-depth data regarding the subject. The study established challenges of teacher education in universities as; academic staff, curriculum, education as a process and as a system, financial, goal displacement, imbalance between students offering sciences and arts/humanities courses, liberal policy of education and national teacher ideology. To overcome the aforementioned challenges, the study identifies opportunities like increasing funding, change of attitude, resilience of the primary and secondary education sectors, political freedom, financial support, increasing demand for HE, employment opportunities, and the knowledge revolution. It is hoped that if taken advantage of, teacher education will be able to contribute a great deal to the development process of Uganda.

**Keywords:** Teacher Education; Challenges; Opportunities; Quality Education; Development of Uganda

## **1.0 Introduction and Objective**

There are 79 institutions in Uganda by 2014 which are producing hundreds of teachers per year at certificate, diploma and degree levels. In the vision 2025 of Uganda, education is considered as one of the tools to lead the country to middle income through creating nationals who are united, self-reliant and just. However, the development indicators show that the effect of teacher education is still low evidenced by existence of corruption, poverty, inequalities, and unemployment which should have been greatly reduced if teacher education was of quality, continue to persist. This directly suggests that there are challenges in teacher education which are hindering the delivery of quality teachers necessary for Uganda's development hence this study to unravel them and identify opportunities.

## **2.0 Conceptual/Theoretical Background**

Education is a cardinal tool of development and more so teacher education which equips teachers with knowledge, values/attitudes and skills which they pass on to students that are necessary to transform Uganda politically, economically, and socially, thus attaining holistic development. However, Uganda presents a real paradox in relation to the contribution of teacher education to her development. On one hand, while it was envisaged that teacher education would be key to the development of Uganda, through production of quality teachers who will promote a sense of national unity, self-reliance, justice and equity as well as a sense of political, economic and social responsibility into learners to a degree that can develop Uganda, there are few empirical facts to augment this thesis such as National Development Plan II (2015/16-2019/2020). Despite the fact that 79 institutions in Uganda by

2014 were producing hundreds of teachers per year, On the other hand, development indicators show that the effect of teacher education is still low. For example, existence of bad tendencies /vices such as corruption, poverty, inequalities, and unemployment which should have been greatly reduced if teacher education was responsive.

### **3.0 Methods/Techniques**

Both qualitative and quantitative approaches were employed so as to provide the necessary triangulation for getting a more composite data to articulate better the findings. Further, a descriptive research design specifically a case study was adopted in order to secure in-depth data regarding challenges of teacher education in enhancing the development of Uganda. The study used a sample size of 219 respondents using research instruments of a semi-structured questionnaire, interview guide, and observation guide The study was analytical with the view of establishing teacher education challenges from the lecturer's side, students, teaching-learning environment, and extrinsic factors that could be hindering their operations and effectiveness in terms of producing valid and reliable results in line with educational domains. The study used greatly education and development literature to provide a basis for analysis.

### **4.0 Results/Findings**

#### **4.1 Academic Staff**

A first class university consists of first class academic staff that understands the purpose for which their institution exists and agrees to implement its mission (Smith, 1986). This indicates how important academic staff is in building a university whose cardinal role is to create, preserve and disseminate knowledge (Kasozi, 2003). However, in Ugandan universities today, some academic staff do not even have second upper class degree and some do not have the first degree. Such people are not academicians and therefore are unfit to be in academic circles, but because of corruption, nepotism, favouritism, and shortage of academic staff, they find their placement in academic circles. Study results show that over 70% of the academic staff has not yet attained PhDs, such an important qualification in the academic arena, which shows hard work and researched knowledge, thus, knowledge contribution, patience, intelligence and brilliance. Less than 30%, have attained PhDs, however, little, if any, research or publication attributed to them at large. One respondent among lecturers cited a lecturer of Kyambogo University who has held a PhD for 29 years and virtually has not done any serious research or published. He has kept on quoting his PhD for the last 29 years! One wonders what quality of education such a staff member delivers that can lead to development.

Respondents (students and lecturers) indicated that over 50% of academic staff are involved in unprofessional conduct(s), evidenced by falling in love with students like the Makerere lecturer who was fired due to sexual harassment of students and gross negligence of duty, examination malpractices, over-drinking, dodging classes, not assessing students, seeking cheap popularity and favouritism from students, and many others that undermine the academic fraternity and university goals. This implies that the students are more likely to copy bad behaviours from their lecturers hence under development.

Inadequate academic staff in Ugandan universities is another major finding. All new universities such as Kampala University use part-time staff from Makerere, Kyambogo, and people in other jobs that are not academic. Even Makerere and Kyambogo use academic staff from each institution on what is known as "unofficial exchange programme", besides getting

people in other jobs to teach. No doubt, many staff members who are “moonlighting” overstretch their abilities and this adversely affects the quality of instruction they deliver. For example, the Dean Faculty of Education, Kyambogo told the researcher that he was displeased with the work of some part-time lecturers.

Findings from the respondents (students and lecturers) indicate that Makerere University students have complained on several occasions that part-time lecturers are disastrous as regards academic achievements, evidenced in poor quality delivery and absenteeism. This is absurd and indeed causes concern, since academic staff quality is generally accepted as the most important determinant of the overall quality of teacher education institutions (World Bank, 2000). By spreading their abilities/energies thinly across many institutions, academic staff lose focus, do not research, go for further studies/short courses, get tired, get easily worn out, and cannot do a very good job. In the end, many become "full time staff with part-time mentalities, and part-time staff with full part-time mentalities”.

#### **4.2 Curriculum**

Curriculum is very vital in influencing quality education and shaping the course of development in society. Curriculum in the university is one of the challenges to providing quality education for development because it is often not focused on the needs of Uganda, is partly outdated, out modelled, examination orientation, such as end of semester or term exams, which you must pass minimally at 50%, limited research and not demand driven as mentioned by the respondents.

A review of literature show that the colonial education system and religion ushered in new attitudes, values, practices, customs, and traditions that were foreign to Uganda’s development (Munhuweyi, 2004). For example, European modernization experiences mechanically replaced Ugandan cultures, practices, customs, beliefs, and traditions, many of which were instrumental in society’s development (Ayres, 1995). In particular indigenous education, which was good, effective, inclusive, cosmopolitan, and well oriented to society needs was eroded and replaced with formal education which is the opposite and partly responsible for the underdevelopment of Uganda today (Todaro,2000; Margolis, 2001).

#### **4.3 Education as a Process**

Education as a process, involves “Inputs - Process – Output”. Education systems have variously been conceptualized as a production line where inputs/raw materials are fed into the system, processed, and passed on as output/value added to inputs. At all these levels of "the production line" quality considerations are paramount for development.

##### **Inputs/Materials**

Study findings from the observation guide show that inputs/materials in the teacher education are lacking like lecture rooms, latrines: play grounds: laboratories: demonstration gardens private space, and instructional materials/equipment/technology process among others (MOES, 2001).

Learners as in-put: Many of the learners in the universities are not ready for the rigorous academic work. They always want free marks or with little effort; as the utterance in Makerere goes: "Minimum effort, maximum cooperation" (interview with lecturer respondents).

The researcher also discovered that many learners are misplaced in the courses/professions. For example, at Kyambogo University, in an interview with 50 students offering Bachelor of Arts, Bachelor of Science and Bachelor of Vocational Studies with Education, only 5 (10%) said teaching was their first choice and they were comfortable with pursuing the course. The remaining 45(90%) gave various reasons or circumstances that placed them in education and if given chance, they would change. The reasons/circumstances included: Government scholarship, parents/guardians (influence and sponsorship), not having qualified for Law (low grades at 'A' level), easy to find a job, and stepping stone for other courses or jobs like in NGOs. Teaching such a group of student-teachers is very hard, unfortunate, and absurd.

In the discussion with university students, I discovered that 75% lack motivation, moral, and are often discouraged because of domestic and personal stress, and the negative socio-economic-political conditions in the economy (poverty, unemployment, war, high cost of living, and high university dues), which reduces even the little motivation and moral they had at start hence the alarming failure rates. For example, at Makerere, in the School of Education over 200 students were having re-takes in (seen at the faculty notice board 20th March 2013). This was unheard of in the past. Such teachers cannot provide quality input in the development process that Uganda requires.

#### Process/Systems efficiency and effectiveness in a university

As regards pedagogy, assessment and certification system, the major criticism is that it is too examination oriented, which only tests mainly cognitive (head) and less affective (heart) or psychomotor (hands) (Bishop, 1995; Farrant, 1984). This is partly responsible for the rote learning, cram work, coaching, spoon-feeding, examination malpractices in order to pass, and hence the production of teachers with first class degree academic certificates (cognitively good) but with less pedagogical skills.

Outputs of a university are evident in graduate's performance at individual, school, and community level.

At the individual Level, it is important to know the grandaunt's competencies (knowledge, values and skills), and aesthetic (civic awareness, moral attitudes, social, and communication skills, knowledge, skills, and confidence to translate knowledge into solutions, and ability to learn continuously - life long). Unfortunately universities seem not bothered to follow up their students and ascertain whether the relevant knowledge, values and skills have been acquired and retained or not, which makes the universities static.

At the level of university, the culture of quality is reflected in the lecturer's perceptions, values, attitudes, and competencies. Unfortunately this research revealed that little, if any, attention is paid to these. This makes universities oscillate between actual output and expected output because of not doing evaluation to ascertain the exact output performance of the lecturers

University-Community linkage is a fundamental output. Universities should strive to be seen doing well. Unfortunately, this research revealed that there is no clear mechanism in place in universities for assessing their graduate's performance and how the community rates and owns them. KyU for example, up to now still enjoys historical pride and government mandate to manage teacher education in Uganda but without making any clear evaluation, how it is

declining because the original quality lecturers, infrastructures, culture, students, optimum population, rigorous academic work, and enthusiasm can no longer be met.

#### **4.4 Financial Resources**

One of the most pressing challenges that were discovered by this research is that universities do not have adequate financial resources besides corruption (IG/FES, 1998) to fully fund the human resources, facilities, equipment, and requirements needed to deliver quality education to the increased numbers of students. Public Universities-Makerere, Mbarara, Kyambogo, and Gulu, which have direct government funding, face the problem of politically influenced and allocated resource. Also estimates by universities are never fully approved; the little that is approved is never fully disbursed, and even then, never delivered on time. Such financial inadequacies and budget deficits have fundamentally affected the delivery of quality education for development (Universities financial records-Makerere and Kyambogo, 2010-2014).

The labour of academicians, which is minimally Second Class Upper degree, Masters, and Doctorates (PhD) is scarce, inelastic and not easily replaceable. This is the same labour that is poorly paid, which has negatively affected quality teaching, marking, and supervision of research. A case in point is that at the end of 2012/2013 academic year staff of MUK threatened to go on strike demanding 100% pay rise. The university council convinced them to teach and promised to pay and when the 2013/2014 academic year started without the 100% pay rise, they went on strike and the university is closed. Therefore such de-motivated staff, one wonders what quality of education they deliver to training teachers.

Lecturers spend little or no time doing research in order to create, preserve, and disseminate knowledge. Consequently, the teachers they produce are often incompetent, and mainly job seekers than job-makers, who have escalated the unemployment problem, accelerated poverty and contributed to low productive in the economy.

University expansion in terms of space, human resources, facilities, and equipment is urgent and a necessary pre-requisite to accommodate the rapidly increasing enrolment and demand for university education (Saint, 1999). The research findings indicated that because of shortage of financial resources, universities are not able to decongest, and this is undermining the quality of education to cause development in Uganda. For example, the School of Education at Makerere, in the academic year 2001/2002 Semester I, a total of 4255 students sat for exams (both undergraduate and postgraduate). The number has kept on increasing but since then; there has been no substantial increase in the human resource, facilities, and equipment. The question is: Are these students truly professionally equipped with all the necessary skills to sustain Uganda's development needs? The answer is no as research revealed and therefore Uganda's development is not guaranteed with such teachers.

#### **4.5 Goal Displacement**

There is evidence of goal displacement in university particularly in respect to being centres of higher learning where knowledge is created, preserved, and disseminated, to profit making organisations. Like Mak and KyU formerly universities of quality education, have turned into education business enterprise, full of income generating projects, strong tax base of the economy, and only enabling those in leadership positions survive well. The trend has led to the creation of many unnecessary courses typical of duplication in order to earn money as cited by the respondents (students and lecturers). Creating evening, external, day, afternoon,

weekend, and midnight programmes of study, so as to admit more students even if there are no facilities, equipment, and human resource, has tended to lower the quality of education.

#### **4.6 The imbalance between students offering Science- based courses and Arts/Humanities in teacher education**

This was another major problem that was identified by 77% of the respondents (students and lecturers). Although this is solely not the problem of the universities but that of the entire education system, the differentiation at universities is worth noting. This imbalance continues to create a perpetual low enrolments and passing of sciences at primary and secondary levels because of limited motivated science staff.

#### **4.7 The Liberal Policy of Education**

The government view of development, transformation, progress, complement and democracy is of allowing private individuals or institutions to provide TE and it is welcomed by all. However, the government retains the role of supervising the education process of inputs (students, human, financial, materials resources)-process (teaching-learning process) and outputs (teachers and their performance) in order to ensure that they are in their right proportions. Failure to do so may lead to producing teachers who have gaps or limited capacity in the educational objectives. According to the taxonomy of educational objectives developed by Bloom and others in 1956 at the University of Chicago (USA), it means classification of educational objectives based on the intended behaviour of the learners. The classification involves objectives that cater for;

- 1.The cognitive domain
- 2.The affective domain
- 3.The psychomotor domain.

In detail, the cognitive domain usually associated with the head leads to the acquisition of knowledge at six levels.

1. Knowledge – The ability to know and recall learned material.
- 2.Comprehension – The ability to grasp the meaning of the material.
3. Application – The ability to use learned materials in new and concrete situations.
4. Analysis – The ability to break down material into its small component parts so that its structure is easily understood.
- 5.Synthesis- The ability to put small component parts together to form a new whole.
6. Evaluation – The ability to judge the value of material

The affective domain usually associated with heart leads to the development of attitudes, values or feelings at five levels.

1. Receiving – The ability to listen and get information.
2. Responding – The ability to act and reply to a given situation.
3. Valuing – The ability to gauge and judge given information or situation.
4. Organization – The ability to put information or things in order using the learnt knowledge.

5. Characterization – The ability to sort out and classify information or things according to their form or need. And also develop your character

The psychomotor domain is associated with the hands thus leading to the development and acquisition of skills. It is categorized at five levels.

- 1.Imitation – The ability to see some things and attempt to reproduce it
- 2.Manipulation – The ability to do something in your way using the acquired knowledge.

3. Precision – The ability to summarize a given skill in your way and produce results
4. Articulation – The ability to defend what you have learnt and done (your position, theory or practice)
5. Naturalization – The ability to develop the skill acquired naturally (Kline, 1987; Richlin, 2006; Urebu, 1991; Davis, 2001; Gipps, 1994, Lubaale, 2011).

The Research reveals that many universities because of the above challenges (staff, curriculum, financial, goal displacement and liberal policy) are producing teachers limited in the educational objectives hence producing teachers with limited capacity to contribute to the development process. This is happening because of the liberal policy in which TIs set their own agenda in terms of research, curriculum and study load, semester or term calendar, tuition structures, and management. While this could be a good thing and way of promoting institutional academic freedom essential for development, this is being abused by universities in which they are focusing little on the educational objectives particularly the affective and psychomotor. There are significant gaps in the core, co, hidden, spiral, official and actual curriculum being implemented in universities whether public or private which is not health for development.

The Paper asks the rational, logic, authorisation, supervision and authenticity of the teaching-learning process taking place in those universities and how far they lead learners to acquire the educational objectives. Despite the presence of Ministry of Education, Science, Technology and Sports (MOES) and National Council for Higher Education (NCHE) with mandate to supervise and monitor universities, the liberal policy with less government supervision and regularization paves way for the institutions to pursue their own academic agenda which now partly accounts for the under development of Uganda.

#### **4.8 National Tertiary Education Ideology**

The national educational ideology and in particular the Tertiary education ideology of Uganda remains scanty in terms of content, awareness, documentation, circulation, comprehension and implementation. Although the aim of HE in Uganda is to produce skilled human resources; enhance research, advance public service and the creation, storage and dissemination of knowledge (Kasozi, 2004; MOES, 1989; MOES, 1992), the government, the people, as well as professional educators continue to express concern about the less relevance of the education system and the failure to meet the needs of Uganda. Teacher education is largely failing to promote a sense of national unity, self-reliance, social justice and equity, and to impact scientific and technological knowledge, cultural values, and a sense of social responsibility among other things to a degree that society would like to see.

So far, Teacher education in Uganda has not been based on any clear continuous systematic and scientific planning; it has largely developed as a result of colonial legacy and uncoordinated response to social demand, and this partly accounts for the wide disparities between what the educational system is turning out, what the economy can absorb at the moment, and what the nation needs for its future growth. This evidenced in too much concentration on academic learning, passing examinations and paper work per se to the neglect of knowledge, values and skills needed to solve real life development challenges. Consequently, the system has fallen short of turning out the right number and types of teachers needed for optimum development. This limited national ideology and the liberal policy paves way for universities to pursue their own agenda/ideologies which sometimes are not in the

interest of national development hence creating more development problems because of limited national focus.

#### **4.9 Opportunities for Teacher Education to Enhance Development**

The opportunities in summary lay in tapping the return of aid for higher education (HE), changing minds and philosophy towards HE, increasing major donors of HE in developing countries, growth and resilience of primary and secondary education sectors, the political freedom and general peacefulness in Uganda, the increasing demand for education, available employment opportunities for teachers and the knowledge revolution which enhances awareness and eases the teaching-learning process.

#### **5.0 Conclusion/ Recommendations**

In the last 20 years, Uganda has witnessed unprecedented increase in teacher education enrolments and institutional growth with over 79 tertiary institutions offering it (NCHE, 2014). But it has been a growth with less positive changes in curricular or response to socio-economic needs. This growth has made little positive contribution to the development of Uganda, as evidenced in corruption, poverty, inequalities, and unemployment. Thus teacher education as delivered in the tertiary institutions today is facing numerable challenges whose origin is both internal (local) and external (global) and which undermine the delivery of quality education for development.

The study is hopeful that the above discussions enlightens stakeholders and if there is immediate and long-term taking advantage of the opportunities above as well as the implementation of the recommendations like recruiting and retaining quality staff, curriculum review to reflect the educational domains, ensuring effective and efficient financial, human and physical resources management will certainly enable teacher education to contribute tremendously to the development process of Uganda by:

- Producing quality teachers who will earn high incomes and contribute positively to Uganda's development in all sectors.
- Enhancing the education system with quality teachers who will promote a sense of national unity, self-reliance, justice and equity. Besides impacting scientific and technological knowledge, cultural values, and a sense of political, economic and social responsibility into learners to a degree that can develop Uganda.
- Attract foreigners to either study because of quality education or invest because of quality labour hence more income to the economy.
- Equip teachers with relevant global skills which will enable them work outside Uganda as expatriates who in turn will bring revenue to the economy and learn more extra skills that will enhance Uganda's development.

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# EDUCATION AND CRIME: EXAMINATION OF THE ROLE PSYCHOLOGISTS CAN PLAY IN COMBATING CRIME IN EDUCATIONAL INSTITUTIONS IN GHANA

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## Abstract

In Ghana, many educational reforms have occurred since the colonial era. Some of the objectives of these reforms include character building, the inculcation of moral qualities; ethics and honour, courage and sociability. In spite of this, crime rate keeps on increasing in educational institutions in the country. The paper examined the role Ghanaian psychologists can play in combating crime and criminal behaviours such as armed robbery, rape, drug abuse, and murder in our educational and other institutions. Using the Zeitgeist model the paper traced the history of psychology as a discipline in Ghana. The Zeitgeist model holds that historical progress occurs through “events themselves that permit the right person at the right time to express an innovation or social and cultural forces developing paradigms that shape science or prevailing cultural forces of a given age” (Brennan, 1998, p. 2-3). The conclusion drawn was that educational and other institutions in Ghana do not utilize the services of psychologist in Ghana. Most of them find themselves in the wrong places and not given an opportunity to practice what they learnt. It was recommended that psychologists should be attached to Ghana’s educational and other institutions to prevent events likely to lead to criminal behaviours.

## Introduction

Ghana was colonized by the British in the 16<sup>th</sup> century and soon after that Western education was introduced as a handmaid of Christianity, to serve the primary needs of evangelism (Antwi, 1992; Busia 1969). Schools founded were attached to the castles and forts and by 1529, the Portuguese had opened one such school in their castle at Elmina. The Dutch, who ousted the Portuguese from the West African coast, also established a school at Elmina castle in 1644 (McWilliam & Kwamena Poh, 1975). These schools were opened to provide formal education to European children by African wives because they saw the need to train their children in order for them to fit into society. Missionaries who followed the merchants also opened schools in various parts of the country aimed at inculcating good moral values into children through education and Christianity. Guggisberg, after becoming governor of the Gold Coast in 1919, expanded and reformed education in Ghana and held the view that character building, industrial and professional training rather than literacy alone were the most important ingredients of any educational system (Antwi, 1992, Ishumi, 1983, McWilliam & Kwamena Poh, 1975, Education Report Committee, 1987). Character training was an important part of all Educational reforms in Ghana because various governments knew this will make people in the society put up acceptable behaviours and refrain from criminal deeds hence, anything criminal was unacceptable and therefore frowned upon by society. In some cases, people who engaged in criminal activities were given custodial sentences to serve as a deterrent to others and to reform them but the prisons in Ghana rather

made some of them more hardened. Societies frown on criminal behaviours because they not only hurt but also, make people become traumatized and maimed forever, hence, becoming liabilities to family and society instead of being assets. Crime must therefore be dealt with through preventive measures.

### **Crime at the various Educational Levels**

The word 'crime' originated from the Latin word "crimen" which means an unlawful activity or a serious offence, especially one in violation of morality. It also refers to an unjust, senseless, or disgraceful act or condition, an accusation or fault. However, Bohm & Haley (2002) are of the view that crime should be defined from both the social and legal perspectives. In the social sense, crime is any behaviour that violates the norms of society, or simply, it is an antisocial behaviour. Legally, crime is defined as "an international violation of the criminal law or penal code, committed without defense or excuse and penalized by the state". It is an act committed in violation of law forbidding it and for which a court may impose a variety of punishments including a fine, removal from office, imprisonment or death. A crime is also a serious offence, especially one in violation of morality. It is an unacceptable conduct for which punishment may be imposed in the name of the state (Bohm & Haley, 2002). Based on these definitions, one can say that crime is a serious breach of the law, a wicked act or wicked behaviour.

Bohm & Haley (2002), divide criminal acts into two broad categories, namely: Felony and Misdemeanor. Felony is a serious offence which includes rape, armed robbery, manslaughter and murder punishable by life imprisonment or death. A victim is affected physically, psychologically, emotionally and sometimes socially, because the offender threatens or commits physical harm against the victim. Misdemeanor is a less serious offence which can attract a fine and or a prison term not exceeding one year. They include arson, burglary and larceny. Such crimes affect property rather than the human being.

In recent times, certain acts of government and people in authority could be categorized as crime. If for instance, a government orders the police or army to brutalize its citizens, the act can be classified as criminal in the sense that it violates the rights of citizens. In the same vein, there are also crimes committed by people of high socio-economic status. Such criminal acts include embezzlement of funds, misapplication and misappropriation of funds and property as well as internet fraud or cybercrime. This type of crime has been termed "White-Collar Crime" by Sutherland (1955), cited by Lauer and Lauer (2006). Coleman (1998) describes white-collar crimes as criminal acts committed during the course of one's occupational activities. He points out that such acts must indeed be considered criminal because the law recognizes them as harmful. Such acts also affect other people in the society and lead to huge financial loss to the state. The acts are again committed willfully and intentionally hence the perpetrators must be dealt with according to law irrespective of the status of the offender. The last category of crime is that which affects the individual himself or herself. They include gambling, prostitution, alcoholism, drug abuse and or addiction. Victims suffer physical, psychological and emotional harm and may become liabilities to the nation instead of being assets.

According to the United Nations Commission on Human Rights (2002), crime rate has increased enormously across the world. The document states that in most parts of the world, including the United States of America, Great Britain, and even in Switzerland which used to

be safe, crime rate has soured. The Federal Bureau of Investigation, ( 2002), reports that a serious crime occurs in the United States of America every 2.7 seconds, a violent crime occurs every 22.1 seconds, and property crime every 3.0 seconds. At present rates, almost everyone will be a victim of a crime at some point in his or her lifetime, and nearly five out of every six will be the victim of a violent crime (Lauer & Lauer, 2006). This means that crime is common in all sectors of life including education. Various degrees of crime can be seen at the various educational levels. Educational institutions are supposed to be safe and orderly to create conducive atmospheres for academic excellence. Nevertheless, crime rate seems to be souring especially in High Schools in some African countries. For instance, Yaroson (2004) speaks of similar behavioural patterns in most Nigerian High Schools. Crimes committed in Senior High Schools and tertiary institutions in Ghana include various forms of examination malpractice, stealing, vandalizing school or University property, substance abuse, rape, stabbing students and staff, and in a few cases murder.

According to Santrock (2005), psychology is the scientific study of human and animal behaviour as well as the functioning of the mind. Simply, psychology is using scientific methods to learn about the behaviour human beings exhibit and how their minds function. Psychology shares a focus on human behaviour with other social scientific disciplines such as Sociology and Anthropology. Whereas psychology studies the individual organism's behaviour and the mind using scientific methods, sociology studies the society and the interaction of its members while anthropology looks at the cultural practices of a society. A psychologist is a credentialed professional whose primary objective is the application of scientific principles of learning and behaviour to ameliorate social and school-related problems and to facilitate the learning and development of children in the entire society.

### **Statement of the problem**

The curricular at the basic and secondary levels have portions dedicated to character molding. Every student who has had some form of formal education is expected to exhibit a behaviour that is accepted by the larger society. Despite such training, there seem to be an increase in the cases of behaviours that could be termed criminal. In the basic schools, indiscipline acts and violent behavior exhibited ranges from simple pinching and teasing to severe beating of friends and other colleagues. Indiscipline, violence and crime are found in almost every educational institution in the country.

Most Ghanaian dailies have copious reports of defilement, robbery, and murder cases. For example, the *Mirror* of March 27 - April 1, 2015 reported of murder and defilement cases. The *Daily Graphic* of August 4, 2015 reported of the arrest of 31 Senior High School students for vandalizing, stealing school property and attacking some female students of the school (p. 64). The same paper of September 24th, 2011 reported of a Junior High School pupil who slapped his teacher and chased him out of the school with a machete. The Ghanaian Times of September 16<sup>th</sup>, 2012 reported of a 24 year old student who raped his 85 year old grandmother who was blind and bedridden with stroke.

Similarly, the Daily Graphic of 26th November 2009 reported of a 19 year old school girl who stabbed her boyfriend to death (p. 1 and 3). The situation has attained worrying proportions to the detriment of academic excellence and morality. Since crime is inimical to the growth of society, it becomes necessary to find an antidote or ways to curb this social

cancer. Given the role psychologist play in the training of people, there is the need to examine the role they can play in curbing crime in Ghanaian educational institutions.

### **Objectives**

The purpose of the study was to find out

1. Whether educational institutions have psychologists
2. How these institutions manage criminal issues
3. Whether these institutions have challenges dealing with crime.

### **Methodology**

The Zeitgeist model was used as a design to trace the history of psychology as a discipline in Ghana. The model is defined as the general intellectual, moral and cultural climate of an era. Interviews and observations were used to collect data from psychologists in various organizations. Criminal event in some Ghanaian dailies were discussed.

### **Discussion**

#### **What Psychologists can do to Combat Crime?**

Prevention of crime is more important than its treatment. Psychologists and psychiatrists work with people suffering from grief, trauma or mental disorders. Their work helps understand behaviour, memory and mental health disorders. Through counselling and experimentation, psychologists work to promote safety, understanding and good mental health. They can be found in practically any work environment such as hospitals, schools and corporations (Feldman, 2013). Many psychologists work as criminal, clinical, counseling and school or educational psychologists.

The purpose of criminal psychologists is to study the criminals and get into their minds. They interview criminals and learn more about their background and their childhood. They look for underlying links or reasons for such criminal behaviours. They also seek to understand the will and intention behind criminals' actions as well as their thoughts and behaviours. In combating crime, clinical psychologists, who specialized in neuropsychology study the relation between the brain and behaviour. Based on this, they team up with clinical psychologists to handle a particular criminal and or criminal offence.

Ongoing research has revealed numerous biological factors associated either directly or indirectly with criminal or delinquent behaviour. Recent evidence suggests that chronic violent offenders have much higher levels of brain neurotransmitters which are substances the brain cells use to communicate. For example low levels of the brain neurotransmitters serotonin have been found in impulsive murderers and arsonists (Bohm & Haley, 2002). Clinical psychologists who specialized in neuropsychology study the relation between the brain and behaviour. They focus on the diagnoses and treatment of mental, emotional and behavioural disorders and ways to promote psychological health. Early detection can prevent severe cases of crime. Since every individual in the society can be a victim of any of the behavioural disorders mentioned, it behooves on clinical psychologist to team up with criminal psychologists on how best to handle a particular criminal and or criminal offence. They work alongside doctors in certain cases to determine the best course of treatment for particular patients.

A related field is counselling psychology. Psychologists in this area assist individuals to realize their strengths and weaknesses and their ability to solve their own problems. They are to equip individuals with information on academic, social/personal, and vocational/career counselling to prevent criminal behaviours which may occur later in life (Feldman 2013). Counselling psychologists who work in universities, hospitals, individual or group settings use counselling techniques such as interviewing and testing to get to the root of criminal act and advise offenders on how best they can back out of their criminal acts (Davies, Westcott & Horan, 2002). They tend to work with less severe psychological disorders than clinical psychologists and treat and assess relatively healthy people and assist them to be informed about their needs and interests (Feist & Rosenberg 2012).

Educational psychologists normally work in school settings and provide services such as counseling, teacher consultation, and crises intervention (Gallagher 2014). It is the school Psychologist's ethical responsibility to become involved in programmes such as behaviour control management in communities, effects of crime on the individual, family and community, parenting styles and skills' aimed at problems that are broader than assessing and diagnosing what is wrong with a child. They must be interested in addressing social and human ills. Although school psychologists may not solve these ills, they may have a role in ameliorating on the lives of the children (Sheridan & Gutkin, 2000).

In the school set up criminal activities such as shooting, murder, bomb threats, extraordinary violence, sexual harassment, and theft may occur (Darling-Hammond 2003). Educational psychologists who are trained in evidence-based prevention and intervention strategies, in consultation with school authorities can train school site personnel in prevention strategies and help establish screening procedures that identify and direct interventions to students who are likely to get involved in various criminal activities. They can assist in selecting appropriate screening instruments and interpreting the assessment information to ensure that the focus and interventions are in line with criminal activities that are likely to occur in school (Darling-Hammond, 2003). This can minimize criminal activities in our educational institutions. Research has shown that prevention and early intervention are more likely to curb school crimes.

The Ontario Psychological Association (2013), states that the school psychologist serves the district by engaging in planning, implementing, and delivering prevention programs for the full spectrum of mental health problems affecting schools, including violence prevention and crisis response (Professional Practice Guidelines for School Psychologists in Ontario, 2013). Collaborative consultation with teachers and mental health professionals enables the psychologist to deliver meaningful programmes to the total student body. (Gallagher 2014) The role that psychologists play in curbing crime and criminal issues is mainly discussion on some of the activities of psychologists relating to crime. Psychologists apply their knowledge to a wide range of endeavors, including health and human services, management, law, education and business.

### **The State of Psychology as a Discipline in Ghana**

Registration and licensing of psychologists in Ghana started only in 2014. Generally they are employed as employees who can fit into a lot of places and not as psychologists who have special roles to perform. This limits them in performing their duties as psychologists. They cannot use their expertise to combat crime because they are not recognized as such.

Writing on the state of psychology in Eastern and Southern Africa, Machungwa (1989) had this to say “Unlike many other physical and social science disciplines, psychology is not much known by the average administrator/policy maker, let alone the average person”(p.55). Machungwa’s assertion is applicable to modern Ghana. The average Ghanaian does not understand the concept psychology because all explanations pertaining to it are foreign (Danziger, 2006). When one mentions his/her field as psychology, what comes into the mind of the average Ghanaian is that the psychologist can look straight into the eyes and narrate what is going on in the person’s mind or he can use his expertise to play tricks or play down on the person’s intelligence. Psychology as a discipline of study was introduced into the British colonies of West Africa way back in 1949 (Nsamenang, 2007). The subject is not taught in second cycle schools in Ghana and therefore, the first time a student formally meets the subject is at college or university.

According to Eze (1991), the first undergraduate, Master’s and Doctorate degrees were awarded in 1964, 1975 and 1982 respectively in the sub region. In Ghana, Psychology as a discipline started at the University of Ghana, Legon in 1963 as a combined Psychology-Sociology course in the Department of Sociology but became an independent academic discipline when the Department of Psychology was established in May 1967 (Agbodeka, 1998).

The University of Cape Coast was established in 1962 with the mandate to produce graduate teachers. Psychology as a professional discipline was taught under the Department of Educational Foundations for many years until 1987/88 academic year when the Department of Psychology was established. All students of the university did at least one term/semester course in “Introduction to Psychology”. The first batch of Bachelor of Education – Psychology group graduated in 1992.

At the University of Education Winneba, psychology as an academic discipline was taught under the Department of Education of the Advanced Teacher Training College from the early 1970’s until the Diploma awarding institution was upgraded into a University. The Department of Psychology and Education was then established in 1992 to handle all psychology related courses as general courses for all students except those majoring in Elementary Education. Psychology in Ghana has since then been growing and has also become one of the most popular courses in some of our universities both public and private. (Amissah & Sam-Tagoe 2002). Currently, there are three public and two private universities that offer under graduate psychology courses. The Ghanaian psychologist, after training, is poised to help the country solve critical problems to ensure the success and wellbeing of each and every individual. However, this has had little impact on social and public policies with a lot of people not knowing services offered by psychologists.

Psychologists have major roles to play in curbing indiscipline, violence and crime in our society. In many countries psychologists counsel students, pupils and individuals when the need arises, monitor their recreational activities and equip them with skills they can use to solve their own problems amicably. The situation in Ghana is different since psychology is not taught in Senior High Schools, and students meet it for the first time at the university. The Ghana Psychological Association, which was established in 1986 and re-launched in 2013 (Mate-Kole, 2013) does not recognize undergraduate degree holders as full members of the

association. The association recognizes only those with Masters and Doctorate degrees yet only a handful of universities in Ghana offer Master's and Doctorate degrees.

At University of Cape Coast (UCC), the 2015/2016 intake for doctorate in Educational Psychology was only three. This is the first group since the inception of the university. At University of Ghana, Legon, a relatively few Master of philosophy degree holders and only two doctorate degree holders have been turned out since 1967 (Oppong Asante & Oppong 2012). The University of Education, Winneba has turned out a few Master of philosophy degree holders in Guidance and Counseling. The other universities are yet to follow suit. Oppong Asante and Oppong (2012) give seven categories of professional psychologists in Ghana. They are the industrial/organizational (I/O), clinical, social, developmental, educational, community and counseling psychologists.

Among the various applied fields of psychology, Clinical, Educational and Industrial/Organizational Psychology are the most popular. It is worth noting that the various psychologists in Ghana are in different positions in several organizations including institutions of higher learning, corporate Ghana, non-governmental organizations and non-profit organizations as lecturers, heads of Human Resource Departments or as consultants, classroom teachers, (Feldman, 2013). For instance, a number of the I/O psychologists have established their consulting firms, providing services mostly in the area of training, recruitment, psychometric testing, and to a lesser extent, organizational development. Most psychologists in Ghana have been hired by some management consulting firms operating in Ghana. They are in Human Resource and/or training positions in the banking, insurance, shipping and logistics, telecommunications, and allied industries (Oppong, 2013).

Clinical psychologists are also hired by the various organizations in Ghana. These organizations include the Ghana Armed Forces, Hospitals and educational institutions. Other Ghanaian clinical psychologists work with Non-Governmental Organizations (NGOs). Clinical psychologists employed in health sectors in Ghana are attached to the various teaching and regional hospitals to help diagnose patients with mental health issues. Looking at Ghana's population of about twenty five billion and the number of psychologists who graduate from our universities and those who train outside, the ratio of the populace in relation to the number of psychologists in the country will be unbelievably high.

Policy makers and opinion leaders also do not have in-depth knowledge about the functions of the psychologist; hence when charged with finding political solutions, they ignore the psychologist, and rather contact experts who they think might have some ideas about solutions (McKnight, Sechrest & McKnight, 2005). This problem has also cropped up because most Ghanaian psychologists have no identity as licensing and registration of psychologists in Ghana is still ongoing. The psychologist in Ghana does very little when it comes to preventing and curbing crime. Those who help are the few who have been employed to work in health institutions, remand homes and those who teach in various educational institutions. As they perform their normal duties, they also put some preventive measures in place to help children not to get involved in criminal activities.

## **Conclusion**

This paper examined the role of the psychologist in Ghana and crime combat. The conclusion drawn was that educational and other institutions in Ghana do not utilize the services of



psychologists in Ghana to the maximum. Most of them find themselves in the wrong places and not given the opportunity to practice what they learnt. Some of them work following the laid down procedures of the organization or institution rather than practicing as psychologists.

### **Recommendations**

Psychologists should be trained and posted to all schools and other human institutions in order to prevent and also deal with traits of crime at the onset. Psychologists in the country should be given the free hand to operate as professionals. Ghanaian psychologists should research into issues of early detention and prevention. The curricula of the universities should place more emphasis on the fact that criminal behaviours can start from childhood. Psychology as a discipline should be introduced in the Senior High School curriculum to educate students on what psychology is all about. This may reduce the problem of juvenile delinquency and enlighten the Ghanaian populace. Ghanaian psychologists should create awareness about the role they can play in nation-building. The Ghana Psychological Association must be up and doing. It must advertise and market its members for people to be aware of their potentialities. All psychologists in Ghana irrespective of their specialties should be licensed, and the concept itself should be customized to suit the cultural patterns of the nation. If these are done, it can go long way to reduce if not eliminate crime and/or criminal behaviours in the country's educational institutions.

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# PERCEPTIONS OF SCHOOL PRINCIPALS ON THE CHALLENGES ARISING FROM UNAVAILABILITY OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) IN RURAL SOUTH AFRICAN SCHOOLS

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## **Abstract**

The purpose of this study was to explore the views of rural schools' educators about the challenges arising from unavailability of ICT in their work environment. The population of this study comprises 50 principals of rural schools. Participants were seven principals whose ages ranged between 25 years and 50 years ( $M = 35.0$ ,  $SD = 9.4$ ). One-on-one interviews were used to collect data. The interviews were conducted with two females and five males purposefully selected from the study site. This was because of the small number of participants who agreed to participate and also the researchers felt that the information offered was reaching a point of saturation. The results show that educators identified ICT facilities as a resource that plays a critical role in the learning and teaching environment and has a potential of helping learners to develop their creativity. In most cases, rural educators painted a bleak picture regarding lack of ICT facilities that enhance quality teaching and learning. It is argued that there is an urgent need to address the participants' concerns. Furthermore, that government should provide proper and adequate ICT facilities wherein learners can explore information on their own. One limitation of this study was the fact that there was a relatively small number of respondents compared with what could have been accessed had a questionnaire been used.

**Keywords:** rural schools, ICT, resource facilities, educators, human behaviour

## **Introduction**

Despite the fact that South Africa has made a tremendous change in improving the lives of people since the new dispensation in 1994, education is still confronted with major problems in many rural schools. However, the period of the twenty first century requires schools to ensure that students become lifelong learners. Most importantly, learners need to learn how to access information, think critically and show initiative to meet up with the challenges of the fast-changing world. In fact, it is reported for instance that ICT in schools is designed to facilitate the process of lifelong learning (Lim, 2002). Furthermore, learners that are exposed to positive reading climates accompanied by the availability of computers benefits their science performance (Notten & Kraaykamp, 2009).

In many instances poor provisioning of ICT hinders quality education since it is a key factor that has become critical in the learning and teaching context. In essence, ICT refers to the hardware, software, networks, and media for the collection, storage, processing, transmission and presentation of information (voice, data, text, images), as well as related services" (Mathebula & Uwizeyimana, 2014 citing, Evoh, 2007). In this study, ICT means technologies

that include all different computing devices (e.g laptop, desktops, data projector and smart phones) that carry out a wide range of communication and information functions. The problems related to insufficient ICT facilities in rural schools were inherited from the apartheid era. In that system, all developmental issues related to African people in particular were either minimal or non-existent in many areas. This means that those who were in rural areas, including schools, were even more neglected by that system. In fact it has been pointed out that most problems experienced in historically disadvantaged schools in South Africa are traceable to the apartheid system (Singh & Manser, 2002). Furthermore, the Republic of South Africa Department of Education [RSA DoE] (2004) too lamented the fact that apartheid denied many citizens access to opportunities to gain information, skills and experience necessary to develop and equip them to contribute towards economic growth. The denial of opportunities arose because of racial segregation accompanied by unequal distribution of resources in favour of white population (RSA DoE 2004). It is acknowledged that during the apartheid era, schooling and related issues did contribute to whites unfairly advancing economically to the detriment of other races in South Africa (Kallaway 1984; Ndimande 2009).

Adequate resources in schools are an integral component of the learning and teaching context. This is because schools' facilities enables learners and educators to access a wide range of tools, services and resources to support learning and teaching. For instance, information technology through the use of computers could be useful for teaching, learning and administrative purposes. However, lack of electricity for instance renders the virtues of information technology useless in such context. The lack of resources is a critical factor in education because research has shown that it may negatively affect learning. It has been reported on the one hand, that lack of facilities and under-resourced schools are directly associated with the academic failure of learners (Lolwana, 2004). On the other hand, factors militating against rural learners' academic success have been identified as poor infrastructure, poverty, and lack of supportive academic discourse (Banda & Kirunda, 2005. In fact, researchers (e.g., Sinko & Lehtinen, 1999; Smeets, et al., 1999) report that in many countries ICT has become more and more critical in education where the aim is to embed it in primary and secondary education as well as in teacher education. In the context of South Africa, the opposite is true because there is no universal rollout of ICT across the education spectrum. This is happening in spite of the known virtues of ICT. It is worth to point out that today the goodness of ICT is seen to be important and has contributed a great deal to the preparation of learners for effective education as well as for economic growth and the improvement of social conditions. This is important because it is argued that ICT can be an important catalyst and tool that educators can use to improve teaching by giving learners access to electronic media that make concepts clearer and more accessible (Wario, 2014). Furthermore, ICT has the potential to innovate, accelerate, enrich, and deepen skills, to motivate and engage learners, to help relate school experience to work practices, create economic viability for tomorrow's workers, as well as strengthening learning and teaching (ibid). Essentially, this means that it is taking extremely long to incorporate or introduce this in the learning and teaching context. In this regard Garrison and Anderson, (2003, p. 51) has lamented the fact that:

Electronic communication and digital networks are transforming the way we work and are reshaping personal communication and entertainment. This transformation has had a tremendous effect on the need and opportunity to learn. Unfortunately, the transmission model that still dominates education has changed little.

The utility of ICT stems from the fact that it enables the download of information; enables learners and teachers to gain easy access to learning and teaching materials online without time constraints; the planning of lessons; provides the ability to connect with educators and learners all over the world; enables learners to actively engage with the learning content and explore learning materials on their own at their convenient time; and it may enrich learners' knowledge through access to online notes, projects, assignments, and tests. All this is achievable through the use of the internet. The introduction of ICT at schools may assist administratively as well as in the actual teaching. For example, ICT may help in improving schools' administrative functions such as the registration of learners, keeping and retrieving of learner records, while it may also enable the electronic handling of marks. In the teaching context, educators may provide simulations of experiments that learners could not perform for instance because of the non-availability of laboratories. Furthermore, in the rural schooling context in particular, ICT has the potential of being part of the solution in addressing the changing learning needs of learners (Garrison & Anderson, 2003).

In Canada (Canadian Council on learning, 2006) for instance, where there is a high rate of connectivity in both urban and rural schools the virtues of ICT that are exemplified here are possible. On the contrary this is not the case in South Africa where internet connectivity for example comes with all attendant problems in terms of broad band and accessibility. In Education policy terms, however, it is declared that every South African manager, teacher and learner should be able to use ICT confidently and creatively in order to develop the skills and knowledge they need as lifelong learners to achieve personal goals and to be full participants in the global community (DoE, 2004). Meanwhile, it is argued that "... the role of educational technology should be to replace classroom discourse patterns with those having more immediate and natural extensions to knowledge-building communities ...” (Scardamalia & Bereiter, 1994, p. 265). So far South Africa is far from reaching this ideal.

### **The problem**

The new democracy and the process of transformation that have swept across South Africa have had minimal impact on the effective functioning of many schools (Singh & Manser, 2002). Numerous initiatives, policies, directives and legislation have led the drive to equalise expenditure in terms of race, and address issues such as class size, access to teachers and course materials. The South African Schools Act of 1996 [SASA Act No 84 of 1996] set the foundation approach to education but there is not much evidence of systematic change in disadvantaged schools (Singh & Manser, 2002).

Despite of remarkable changes, inequality in education remains a challenge that needs to be addressed by Department of Education and relevant stakeholders. Among all the problems in education the most glaring is the absence of ICT facilities in rural schools and this situation is reflected in the poor performance of the rural schools in high stakes examinations (Banda & Kirunda, 2005). As has been indicated here, lack of ICT facilities has a bad effect on learning and teaching especially in rural areas of South Africa. The purpose of this research study therefore was to explore educators' perceptions regarding the impact of information and communication technologies on learners' performance in rural areas of South Africa. Ultimately, the goal was to present realities that are a challenge and recommend solutions that will possibly address what prevails in rural schools.

### **Research question**

The main research question of this study therefore is: *What are the challenges caused by unavailability of ICT on learners' performance in their schools?* To answer this question, three sub-questions were used in one-on-one interviews with the participants. The sub-questions were: (i) *Which key resources need urgent attention at your school?* (ii) *What is the impact of lack of ICT on your personal development and learning?* *What are effects of ICT in rural areas?*

In this regard the objectives of this study were therefore to:

- (a) Examine the state of ICT facilities in rural schools.
- (b) Explore challenges caused by lack of ICT in rural schools.
- (c) Describe and recommend what facilities are urgently needed by the schools at UMzinyathi rural schools.

### **Study site**

Umzinyathi District is a poor community by South African standards, with most schools poorly resourced. The district has schools without basic facilities such as classrooms, electricity, and running water. Because of the rural nature of the environment and inherent poverty, this discourages highly qualified educators to teach in rural schools. In spite of these shortcomings, there is the expectation to perform the primary task of effective teaching and learning.

This study was conducted in a rural district in Northern Kwa-Zulu Natal where the first author also works. This in a sense means that he has first-hand knowledge of what goes on in this area's rural schools. The rate of illiteracy is high with most parents or guardians either unemployed or working in low paying local farms. Schools in this part of the district may be classified as extremely poor. Most schools are built using mud rather than brick and mortar as is generally the case in more affluent areas. This situation means that schools do not have computer laboratories. What this situation illustrates is that rural schools at the study site are poorly resourced and learners generally perform poorly. In 2007 a national newspaper lamenting the Grade 12 pass rate in KwaZulu-Natal rural schools, indicated "... little is being done to change this situation resulting in Grade 12 results deteriorating every year ..."

(Sunday Times, 2007).

### **Method**

The study was qualitative in nature. It was an attempt to explore the challenges arising from the unavailability of ICT in their schools and suggested some measures to overcome these challenges.

### ***Participants and procedure***

#### ***Sample***

The population of the study included all 50 rural schools at secondary level. The sample included seven participants which were randomly selected in district UMzinyathi, Province of KwaZulu-Natal. For the correctness of information, the intention was to collect data from 25 (50%) selected participants. The number of those who voluntarily agreed to participate was 15. We however could not find eight participants to be interviewed on appointed dates. So in this qualitative study, judgemental sampling or purposive sampling was used to select the participants.

## ***Instrument and procedure***

The data were collected by means of open ended interviews. The aim of interviews was to give an independent voice to the participants. In particular each participants was encouraged to provide as honest a view as they felt was applicable to them. In collecting the data, the participants were visited in their schools. In doing this, the researchers were mindful of the argument that a researcher has to go to the setting of the study because if participants are removed from their setting, it may lead to contrived findings that are out of context (Cresswell, 1998).

## **Validity**

Validity refers to the capacity of research techniques to express the essential features of concepts being studied, and to measure what the methods were intended to measure (Leedy & Ormrod, 2005). In a qualitative perspective validity may be defined as a contingent construct, inescapably grounded in the process and intentions of particular research methodologies and projects (Winter, 2000, p. 1). To ensure the validity of this study I ensured that all processes were consistent. For instance, I asked the same questions consistently to participants. I ensured that my views were not expressed whatsoever even when participants asked for these. I simple indicated to them that it was their views I wanted not mine.

## **Reliability**

Reliability refers to the degree to which a measure yields consistent results (Leedy & Ormrod, 2005). It is worth to point out that reliability from a quantitative perspective is different to how it is defined from a qualitative context. It is argued that reliability is a concept to evaluate quality in a quantitative study with a “purpose of explaining” while the quality concept in a qualitative study has the purpose of “generating understanding” (Stenbacka, 2001, p. 551). To ensure reliability in this qualitative study, a number of activities were followed. For instance, principals who were intimately involved with the problems of ICT resources in schools formed part of the sample. Also, to ensure that whatever the participants said was correct, we took the transcripts to them for their verification.

## **Results**

Here, an analysis of the collected data, its interpretation as well as the findings from the participants’ perspective is provided. In particular, participants’ perceptions regarding the impact of ICT in teaching and learning in their schools are outlined. Importantly, actual words used by the participants are quoted in this paper.

## **Participants’ Biographical Information**

**Table 1** Biographical data of the sample (N = 7)

Category	N	%
Gender		
Females	2	28.6
Males	5	71.4
Age		

20 – 29	3	42.9
30 +	4	57.1
<hr/>		
Highest qualification		
Grade 12	2	28.6
Diploma (e.g. Diploma in Education)	3	42.8
Degree or higher (e.g. B.A. or B.A. Honours)	2	28.6
<hr/>		
Teaching experience (Educators)		
0 – 9	3	42.8
10 or more	4	57.2
<hr/>		

### Participants' Views

It is worth to point out that all seven participants were principals of schools. Here, respondent 1- 7 were from rural schools. All the participants responded to the question: *Which key resources need urgent attention at your school?* Rural participants identified information and communication technology as a resource that needs urgent attention. With regards to ICT, all the participants' schools did not possess enabling facilities such as computers, iPods or mobile telephony with attendant connectivity. In this regard, respondent 4, indicated that "... we have never had computers of our own in this school ...". When probed about what they do then, he said, "We would like our learners to use computers and especially the internet .... On the same view, respondent 6 said that "... due to poverty, our learners are unable to travel to urban areas where they can access necessary information on the Internet." On the other hand, respondent 3 argued that the absence of computing facilities was a disadvantage for rural learners. About this issue, he argued that "... our learners are compromised because we do not have computers ... This means that they don't have all the resources to complete assignments compared to children from schools that have these ...". It was interesting to find out how computer literate the participants were. This was because not one of them mentioned their computer literacy status. When asked about this, all indicated that they could use computers. However, when the researcher scrutinised the educators' profile statistics this indicated that they could not work with computers. In fact, they indicated that they attended different workshops addressing a number of aspects relating to the improvement of qualifications, computer literacy, and curriculum development. Perhaps the participants' computer literacy was exemplified by the other two men. Respondent 5 said, "... computers assist educators to develop skills and knowledge they need as lifelong learners to achieve personal goals and to be full participants in the global community." Further, respondent 2 pointed out "... ICT enables educators and learners to gain easy access to learning and teaching materials online without time constraints. On the other hand, respondent 7 argued that "... ICT assists educators to interact with their colleagues all over the world for mutual support and development." In related manner respondent 1 indicated, "... I feel comfortable to work in conditions that are technologically favourable."

### Discussion

The discussion presented here focuses on the rural schools because the problem that was identified was really about them than for urban schools. Rural participants identified information and communication technology (ICT) as critical. Essentially, participants painted a bleak picture in respect of non-availability of ICT resource in rural schools. In fact,



computers were not used in schools to educate learners due to different reasons one of which was the absence of facility such as computer. Interviews were also utilised to get all the reasons for the usage or non-usage of the computer centres in schools. Responding to the question. "Which key resources need urgent attention at your school? Respondent 4, indicated that "... we have never had computers of our own in this school ...". This was supported by respondent 3 who said "*the absence of computing facilities was a disadvantage for rural learners. About this issue, he argued that "... our learners are compromised because we do not have computers ... This means that they don't have all the resources to complete assignments compared to children from schools that have these ...*" Another respondent came with different reason of which was the lack of skilled educators. Respondent 5 indicated that "... computers assist educators to develop skills and knowledge they need as lifelong learners to achieve personal goals and to be full participants in the global community." Respondent 2 pointed out that there is a serious problem regarding the access to the internet. He stated that "... ICT enables educators and learners to gain easy access to learning and teaching materials online without time constraints. Regarding the importance of ICT it is pointed out that "... the role of educational technology should be to replace classroom discourse patterns with those having more immediate and natural extensions to knowledge-building communities ..." (Scardamalia & Bereiter, 1994, p. 265). In the context of this study, ICT was non-existent in rural schools which means the previous contention is impossible to achieve.

### **Study summary**

In this study, the aim was to explore the challenges caused by unavailability of ICT on the performance of learners in Umzinyathi district. It should be noted that the research site of this study is one of the twelve districts under the KwaZulu-Natal provincial department of education. A majority of schools in this district are more rural (60 schools) than urban (50 schools). Rural schools in particular have produced mixed student performance in the national senior certificate. Some schools and learners have performed extremely well while others poorly. The poor performance however, has unfortunately been in the majority of cases. What this shows is that ICT has an impact on students' performance. This is consistent with reports from Nigeria that resources are a major contributing factor to academic performance in the school system (Akinfolarin, 2008). In the same vein, Jabaka and Danbaba, (2014) citing Adeosun, (2010) present the following findings as evidences of educator perception of ICTs.

### **Limitations**

Limitations refer to identified problems (anticipated or not) that may affect different aspects of a research study (McMillan & Schumacher, 2006). Delimitations on the other hand are about the boundaries upon which a study is based. In fact it is said that delimitations describe exactly what researchers will do and excludes what will not be done in a research study (Leedy & Ormrod, 2005). In other words delimitation may be seen as a description of what a study will cover in a sense drawing the limits that it will not go beyond. We encountered a number of limitations that we concede may have played a role in how the study panned out. One limitation of this study was the fact that in some schools we could not find documents that were requested because the principals did not keep them there for security reasons. The security reasons were described in fact to be due to lack of resources. Another limitation of the study relates to the fact that there was a relatively small number of respondents compared with what could have been accessed had a questionnaire been used. Also, the respondents

were from one district, this suggests that this study in is no way representative of the entire KZN Districts. Therefore any information obtained from the data collection methods may not be generalised to other districts even if they appear to have similar contexts.

### **Conclusions and recommendations**

In this paper it is indicated that the unavailability of ICT in teaching and learning underpins learners' performance. The absence of key resources in rural schools was identified as a challenge. Educators identified ICT facilities as a resource that plays a critical role in the learning and teaching environment and has a potential of helping learners to develop their creativity. Also, the results indicated that the unavailability of ICT in rural schools hinders effective teaching and learning. It can be concluded that if resources are available the intentions of human behaviour will be positively reinforced. It is very important to understand that the presence of adequate resources in the school influences the quality of learners' learning in education (Koen & Ebrahim, 2013).

Finally, it is recommended that perhaps some of the problems identified in this study may be alleviated by the introduction of information communication technology. ICT has the potential to provide some of the latest innovations and up to date information to rural schools, in the shortest of time and cost effectively. To accomplish this, government may declare rural schools as Wi-Fi zones wherein internet connectivity may be readily available. This will have the advantage of training educators into working with and teaching through technology. Another spin off of such a bold move may be to train rural communities in the appreciation and use of ICT in their daily lives.

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# MATHEMATICS TEACHERS' LEVEL OF AWARENESS, KNOWLEDGE AND ACCEPTANCE OF E-LEARNING IN MATHEMATICS INSTRUCTION

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## Abstract

This study examined secondary school mathematics teachers' awareness of the use of e-learning and their acceptance in Oshimili South Local Government of Delta State, Nigeria. A survey design was adopted. 48 mathematics teachers were purposefully sampled from eight schools visited in Oshimili South Local Government of Delta State. Three research questions were answered using percentage and mean while ANOVA and t-test were used for testing the three hypotheses. The instrument for data collection was researcher designed questionnaire titled "Mathematics Teachers awareness on the use of E-learning (MTAE)". Two experts in mathematics education validated the instrument. Reliability of the instrument was 0.87, calculated using Cronbach Alpha. This shows that the instrument was reliable. The result showed that mathematics teachers were not aware of the use of e-learning in mathematics instruction such as teleconference, YouTube and skype. It was observed that they were only aware of Audio and Video tape in the teaching and learning process. Thus, the researchers recommended that government should mount an intensive e-learning training program for teachers as well as providing all the materials needed for e-learning application in curriculum implementation in secondary schools.

**Keywords:** E-Learning, Mathematics Teachers, Mathematics Instruction, Mathematics teachers' attitude.

## Introduction

Mathematics is the science of structure, order, and relation that has evolved from counting, measuring and describing shape of objects. It is a tool for solving problem in a wide range of context (Ekwueme, 2013). Odili (2006) sees Mathematics as a systemized, organized and exact branch of science which involves the creation of human mind with ideas and reasoning. Ekwueme (2013) defined Mathematics as a means of communication and a tool for solving problem in a wide range of context. The knowledge of mathematics is important to humans in problem solving, technological study and providing ways in real situation.

The goal of mathematics in school curriculum is to teach learners the basic mathematical skills that deal with learning to solve mathematical problems with information technology, gaining confidence, creativity and self-expression and empowering of learners as critical and mathematically literate citizen in the society. Mathematics teaching entails the mixture of mathematical thinking, pedagogy and problem solving. It involves a deep and broad knowledge of the variety of ways mathematical concepts and procedures may be modelled. Mathematics trains the mind and aid learning in other discipline. Due to technological advancement, different technological tools can be used to teach mathematics to learners.

E-learning means electronic learning. It is a computerized and digital type of education in which texts, audio or sound, pictures, images, graphics and videos can be simultaneously presented online to students. It is an electronic learning which embraces all form of electronic devices that are employed in teaching and learning situation to make learning easy. Stockley (2006) defined e-learning as the delivery of learning, training or educational programme via electronic means using computer or other electronic devices to provide training, educational or learning materials. It occurs when someone learns through the use of Information Communication Technology (ICT). E-learning can occur inside or outside the classroom. It could be through creating digital materials structured in a meaningful way in order to make teaching and learning productive such as online tutorial, search engines, digital libraries, e-portfolios, and portals. In the content delivery of synchronous and asynchronous e-learning, the former is an instructor led lesson where all the learners receive lesson at the same time. This could be through teleconference, internet chat forum, instant messaging and instructor participation in a class via a web conference tool such as Adobe connect, Skype, and Blackboard collaborate. These synchronous experiences can be designed to develop and strengthen instructor-students and student – student relationship. The latter, Asynchronous learning is student-centred teaching method that uses online learning resources which does not occur simultaneously. It can be used to facilitate learning in traditional education, on-campus education, distance education and continuous education. The instructor and learner communicate using, e-mail, online bulletin board, blogs, wikis and online discussion board. These type of e-learning gives students freedom to assess the course and instructional material at any time on their own, which is absent in traditional method of instruction, and also allow them tailor their experience to meet personal learning objectives.

Hassana and Woodcock (2010) examined the uses of e-learning in U.K and Saudi Arabia and discovered some similarities and some differences which are culture oriented. They also highlighted improper staff development as a major factor affecting the effective use of e-learning educational system in Saudi Arabia. According to Sims (2008), e-learning opens new ways of learning and the new models like the use of video, teleconferencing change the process of teaching. This method of instruction enhances constructive modification in the classroom instruction and raises the confidence level in the teaching and learning situation as well as exposing the learners to numerous learning styles (Dhariwal, 2010). The adoption of the use of e-learning approach in the teaching and learning situation is determined by teachers' internal and external factors. Internal factors are things that cannot be influenced or manipulated directly on the part of the teacher such as age, gender, teaching experience, computer experience and educational level. On the other hand external factors refers to the attitude of teachers toward teaching with e-learning, e-learning knowledge and skills of the teacher, availability of time to practice and teacher development/ training.

Teachers' technology acceptance is one of the issues being addressed by several scholars. Teo (2011) defined technology acceptance as a user's willingness to employ technology for the tasks it is designed to support. Thus, some of issues that relate to technology acceptance might be teachers' acceptance in terms of their awareness and motivation towards the use of technology in teaching and learning process. Teachers' awareness on pedagogical usage of technology plays important roles in determining whether they will use it in classrooms or not. In a research by Ngozi, Ngozi and Joy (2010), it was reported that, even though the teachers could identify the specific technological tools which are useful for education, they however were not aware of what way the tools can be used. Level of motivation among teachers was

also seen to be related to a successful implementation of technology. When users are aware of the value of a tool, they will be motivated toward the use of it (Solomon, 2003).

Attitude has been defined as a learned predisposition to respond positively or negatively to a specific object, situation, institution, or person (Aiken 2000). Therefore, attitude affects people in everything those people do and in fact reflects what they are, and hence a determining factor of people's behaviour. According to Albirini, (2006), teachers' attitudes toward computer technologies are also related to teachers' competence in using the technology. In addition, teachers' attitude has a significant impact on the teachers' openness to new experiences and also reflects on their implementation of the changes.

### **Statement of the Problem**

The place of mathematics in the life of any nation is said to be inextricably linked with the place of development in the nation. Mathematics plays an indispensable role in realizing a nation's dream of rapid scientific and technological development. The teaching and learning of mathematics has degenerated into the realm of rote memorization and hereby making it look more abstract concept which has led to students' poor academic performance in mathematics.

Majority of the Mathematics teachers do not have basic computer literacy, hence they find it difficult to build new technological skills. Yusuf (2001) reported that teachers in Nigerian secondary schools are not competent in basic computer operations and hereby cannot teach what they do not know. Hofer and Swam (2006) found that teachers are hesitant to adopt a transformative view of technology where laptop are more than notebook, where Power Point means more than handwritten overheads, and e-textbook do more than simply replacing hard copy textbook.

Teachers see e-learning as another way to learn which is bound to change at any point in time and this leads to negative attitude towards the use of e-learning in mathematics instruction. It is against the background that the present study is carried out to determine mathematics teachers' level of awareness, knowledge and acceptance of the use of e-learning in mathematics instruction.

### **Purpose of the Study**

The purpose of this study was to examine the level of awareness of mathematics teachers in the use of e-learning in mathematics instruction. The specific objectives were: to examine if mathematics teachers' are aware of the use of e-learning in teaching mathematics, to examine if mathematics teachers' age influence their use of e-learning in mathematics instruction, and to find out if mathematics teachers' attitude influence their use of e-learning in mathematics instruction

### **Research Questions**

- I. The following research questions were raised to guide the study:
- II. What is the level of awareness of mathematics teachers' in use of e-learning in teaching mathematics?
- III. Does age influence the mathematics teachers' use of e-learning in instruction?
- IV. Does mathematics teachers' attitude affect their use of e-learning in mathematics instruction?

## **Research Hypotheses**

- I. There is no significant difference in mathematics teachers' level of awareness in the use of e-learning tools for mathematics instruction
- II. There is no significant difference in mathematics teachers' use of e-learning tools in mathematics instruction based on age
- III. There is no significant difference in mathematics teachers' use of e-learning in mathematics instruction based on their attitude.

## **Methodology**

The study followed a survey design. The target population comprises a total of 600 teachers from 10 public schools (Delta state ministry of education 2014). Eight schools were randomly selected from the 10 public schools. Six (6) mathematics teachers were selected from each school visited using purposive random sampling to give a total sum of forty-eight mathematics teachers. The instrument for data collection was structured questionnaire title "Mathematics Teachers awareness on the use of E-learning (MTAE)" in mathematics instructions in Oshimili South LGA.

The MTAE instrument was constructed to collect information from the teachers. The questionnaire had four sections A, B, C, and D respectively. Section A sought for background information from teachers; section B requested for information on the use of e-learning while section C sought for information on mathematics teachers age responses towards the use of e-learning in mathematics instruction and section D inquired about the teachers attitude on the use of e-learning.

Content validation of instrument was done by two experts in the field of mathematics education, who critically examined the questionnaire and their suggestion were included in the final draft of the scale. Test re-test method was used to ascertain the reliability of the instrument. Cronbach Alpha Formula was used on 12 respondents randomly selected from two schools in the study population that were not part of the study sample. The reliability index of 0.87 was obtained. In the computed MTAE, the mean of 2.50 was adopted as the agreement level for decision making. Data collected were analysed using percentage, and mean to answer the research questions and ANOVA and t-test to test the hypotheses at 0.05 level of significant

## **Findings**

Research question 1: Are mathematics teachers' aware of the use of e-learning in teaching mathematics.

Table 1 Mathematics teachers and the use of e-learning

	Aware			Unaware		
	No. of respondents	%	$\bar{X}$	No. of respondents	%	$\bar{X}$
ICT	24	23.04	3.00	24	23.04	3.00
Teleconference	16	15.36	2.00	32	30.72	4.00
YouTube	16	15.36	2.00	32	30.72	4.00
Skype	16	15.36	2.00	32	30.72	4.00
Audio/Video tape	32	30.72	4.00	16	15.36	2.00

Table 1 reveals that 23.04% of the teachers are aware of the use of ICT while 23.04% were not aware. 15.36% were aware of teleconference while 30.72% were not aware. 15.36% were aware of YouTube while 30.72% were not aware, 15.36 were aware of Skype while 30.72% were not aware. 30.72% were aware of audio/video while 15.36% were not aware. It was deduced that mathematics teachers are aware of the use of ICT such as Audio/Video tape but were not aware of teleconference, YouTube and skype in mathematics instruction.

Research question 2: Does mathematics teachers' age influence their use of e-learning in mathematics instruction?

Table 2: Teachers age and the use of e-learning in mathematics instruction

Age	Yes	%	No	%
20 - 30 years	40	62.5%	8	10.0%
31- 40 years	16	25.0%	32	40.0%
41 years and above	8	12.5%	40	50.0%

Table 2 indicates that 62.5% of the respondents are between ages 20 – 30 years used e-learning in mathematics instructions. 25.0% of the respondents are between ages 31-40 years used e-learning in mathematics instructions, while 12.5% of the respondents are from 41 years above used e-learning in mathematics instructions. This shows that mathematics teachers between the age of 20 -30 years have more responses on the use e-learning.

Research Question 3. Does mathematics teachers' attitude affect their use of e-learning in mathematics instruction?

Table 3: Teachers attitude towards use of e-learning

S/N	Items	Mean	Remarks
1	I feel good using e-learning as a tool in mathematics instruction	3.16	Accept
2	E-learning does not enhance learning	1.83	Reject
3	The use of e-learning stresses me out	2.33	Reject
4	Mathematics teachers Perceptive of computer as difficult to use	2.00	Reject
5	Mathematics teachers are resistant to change from chalkboard to modern electronic device for mathematics instruction	2.66	Accept



From table 3, items 1 and 5 were positively worded and had above the mean benchmark of 2.5 and this was accepted, while item 2, 3 and 4 were negatively worded and had below the mean bench mark of 2.5 which was rejected. This shows that teachers attitude towards effective use of e-learning in mathematics instruction is of great importance.

### Hypotheses Testing

Hypothesis 1: There is no significant difference in mathematics teachers' level of awareness in the use of e-learning tools for mathematics instruction

Table 4: t-test analysis of Mathematics teachers' awareness and use of e-learning in mathematics instruction

Source of Variation	N	$\bar{X}$	S.D	df	t-calculated	t-critical	Decision
Aware	48	12.0	2.62	94	12.75	2.00	Significant
Unaware	48	17.0	2.72				

$P < 0.05$

From the table above, it was observed that the calculated t-value (12.75) is greater than the critical t-value (2.00). Hence, the null hypothesis is hereby rejected. This led to the conclusion that there is a significant difference mathematics teachers' level of awareness in the use of e-learning tools for mathematics instruction.

Hypothesis 2: There is no significant difference in mathematics teachers' use of e-learning tools in mathematics instruction based on age.

Table 5: One-Way Analysis of Variance (ANOVA) of the three groups

Source of Variation	Sum of Squares	Df	Mean Squares	F-Calculated	F-Critical	Remark
Between group	235.70	2	117.59	3.31	3.21	Significant
Within group	1599.53	45	35.55			
Total	1835.23	47				

From the F-distribution on Table 5, it was observed that the computed F-value of 3.31 is greater than the critical value of F(3.21), we reject the null hypothesis. This lead the conclusion that there is a significant difference in mathematics teachers' use of e-learning tools in mathematics instruction based on age level

Table 5.1: Test for significance using Scheffe' Test

Age (s)	Absolute F value	Result
20-30 years vs 31 – 40 years	5.51	Significant
20 – 30 years vs 41 Above	9.63	Significant
31-40 years vs 41 Above	0.61	Non-Significant

Based on this decision there is a significant difference between the mean age(s) of mathematics teachers between 20 -30 years vs 31 – 40 years had an absolute F value of 5.51, while 20 – 30 years vs 41 years above had absolute F value of 9.63. However, there is no

significant difference in mathematics teachers' ages between 31-40 years and 41 years and above.

Hypothesis 3: There is no significant difference in mathematics teachers' use of e-learning in mathematics instruction based on their attitude.

Table 6: A t-test analysis of Mathematics teachers' attitude and use of e-learning in mathematics instruction

Source of Variation	N	$\bar{X}$	S.D	df	t-calculated	t-critical	Decision
Positive attitude	48	8.65	7.88	94	3.32	2.00	Significant
Negative attitude	48	3.28	7.73				

$P < 0.05$

From the Table 6, the t-calculated value of 3.22 is greater than the t-critical of 2.00. The null hypothesis is hereby rejected. This implies that there is a significant difference in mathematics teachers' use of e-learning in mathematics instruction based on their attitude.

#### Discussion of Finding

The finding of this study revealed that majority of the teachers were not aware of the use of teleconferencing, YouTube and skype in classroom instruction while few of the teachers are aware of the use of audio/video tape.

Table 3 revealed that teachers attitude towards the use of e-learning is of great importance to the teaching and learning of mathematics and most mathematics teachers lack that knowledge. This confirmed Ogunkunle, Ekwueme and Charles-Ogan (2013) finding that most schools still prefer to use the traditional classroom setting devoid of technological facilities. This shows that mathematics teachers are resistant to change from chalkboard to modern electronic device for mathematics instruction.

Table 4, led to the conclusion that there is a significant difference between mathematics teachers' awareness and their use of e-learning in mathematics instruction. This agrees with Asan (2003) in Turkey, that many teachers were not computer users. From his study, it was found that only 10 percent of the sample was computer literate and majority of the teachers did not have the basic foundation of computer literacy, hence difficult to build new technological skills.

A One-Way Analysis of Variance was used to examine the difference of mean between the age groups. In Table 5, it shows that there is a difference in the age group as F-calculated value of 3.31 is greater than the critical value of F (3.21). However, a re-examination based on Sheffe' test in Table 5.1 shows that there is a significant difference between the mean age(s) of mathematics teachers between 20 - 30 years vs 31 – 40 years with 5.51, and 20 – 30 years vs 41years and above with 9.63. However, there is no significant difference in mathematics teachers' ages between 31 - 40 years and 41 above. This implies that teachers between the ages of 20 - 30 years make effective use of e-learning in mathematics instruction.

From Table 6, the t-calculated value of 3.22 is greater than the t-critical of 2.00. The null hypothesis is hereby rejected. This implies that there is a significant difference in mathematics teachers' use of e-learning in mathematics instruction based on their attitude. This concurs with Kumar and Kumar, (2003) that lack of adequate training and experience is one of the main factors why teachers do not use technology in their teaching which invariably results in teachers' negative attitude towards computer and technology.

### **Conclusion and recommendations**

The effective implementation of e-learning programmes clearly depends on teachers' willingness in promoting learning with electronic devices. The major handicap for the use of e-learning in mathematics education is teacher lack of knowledge of e-learning, and lack of meaningful confidence on the part of the teacher. Teachers who have little or no knowledge in e-learning find it difficult to use e-learning instruction as noticed from their reactions. The government should mount an intensive e-learning training program for teacher and also provide all the materials needed for e-learning application in curriculum implementation in secondary schools.

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# TRACKING STUDENTS' EYE MOVEMENTS WHEN READING EDUCATIONAL INFORMATION ON MOBILE PHONES: A CASE OF A LUGANDA LITERARY TEXT

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## Abstract

Although eye-tracking technologies such as Tobii (T60/T120/TX) and Eye-Tribe are steadily becoming ubiquitous, many teachers do not have experiences as yet to exploit the pedagogical affordances of these technologies. When used in a sound manner, Emerging Technologies (ETs) can leverage the design of pedagogical activities that can transform teaching and learning practices (Ng'ambi, 2013). This paper emerges from a semester-long (17 weeks) study which followed a Design Based Research (DBR) approach and deployed qualitative techniques to cultivate the experiences of 68 Luganda language teacher-trainees at Makerere University in utilizing different ETs for the purposes of transforming their students' learning. The study was guided by Kolb (1984)'s Experiential Learning Theory (ELT) and Reeves (2006)'s model of conducting research in authentic e-learning contexts. This paper examines an Active Experimentation (AE) which the participants conducted as they utilized Tobii-T120 together with Tobii Studio 2.0.x to track and analyze students' eye movements when reading an excerpt of a Luganda literary text (*Zinunula Omunaku*) on smart phones.

**Keywords:** Reading, Emerging Technologies, Eye-Trackers, Experiential Learning, Active Experimentation, Learning Artifacts, Discourse Analysis.

## INTRODUCTION

The most crucial idea behind eye tracking-technologies is that; eye operations shape and are recursively shaped by cognitive functioning (Bartels, 2008; Rayner, 1998). Emerging eye-tracking technologies such as Eye Tribe and Tobii (T60/T120/TX) work in such a way that they capture eye movements by reflecting infrared light into the user's eyes, and apply a mathematical model to determine the exact gaze point of the eye. Figure 1 demonstrates how most eye-tracking technologies generally work.



Figure 1: How Eye-Tracking Technologies generally Work (Eye-Tribe, 2015)

The use of emerging eye-tracking technologies is on the rise especially in the business sector (Tobii, 2010). Many eye-tracking studies in the business sector aim at analyzing patterns of consumer's visual attention on given products (Russell, 2005; Isomursu, Kuutti, & Väinämö, 2004). In such studies, patterns of consumer's visual attention on given products are analyzed in terms of fixations and saccades (Tobii, 2010). Fixations refer to pauses of the eye movement on particular segments of information, which interest the eye (Tobii, 2010). On the other hand, saccades refer to the rapid movements of the eye between fixations (Tobii, 2010). Fixations and saccades serve three main functions during reading: i) they place information of interest onto the reader's fovea, ii) they post the image stationary onto the retina in spite of movements of the head, and iii) they prevent stationary objects from fading perceptually (Rayner, 1998; Tobii, 2010).

Although emerging eye-tracking technologies have a number of pedagogical affordances (Bower, 2008), not many teachers in different learning disciplines have experiences in utilizing these technologies in a pedagogically sound ways to transform their students' learning (cf. Ng'ambi, 2013). This paper emerges from a semester-long (17 weeks) study which followed a Design Based Research (DBR) approach and deployed qualitative techniques to cultivate the experiences of Luganda language teacher-trainees at Makerere University in utilizing different ETs for the purposes of transforming their students' learning. This paper examines an Active Experimentation (AE) which the participants conducted as they utilized Tobii-T120 together with Tobii Studio 2.0.x to track and analyze students' eye movements when reading an excerpt of a Luganda literary text (*Zinunula Omunaku*) on smart phones. The details of this paper are organized as follows: theoretical underpinning, research objectives, research questions, research design, data collection and analysis, presentation and discussion of findings, conclusion and reflections, and benefits of the study.

## THEORETICAL UNDERPINNING

In considering what gaining experiences of using ETs in teaching might mean to Luganda language teacher-trainees at Makerere University, the study (Kabugo, et.al. 2015) drew on Kolb (1984)'s Experiential Learning Theory (ELT). According to Kolb (1984), individuals gain experiences with their objects or subjects of interest at four different sequential stages in form of a cycle. Kolb's four sequential stages of experience are: Abstract Conceptualization (AC), Concrete Experience (CE), Observational Reflection (OR), and Active Experimentation (AE). Each one of these sequential stages of experience is explained as below, beginning with AE.

- i. **Active Experimentation (AE):** Active Experimentation (AE) is a scientific procedure undertaken to make a discovery, test hypothesis, or demonstrate a known fact (Kolb, 1984). Sometimes, AE can be undertaken without being sure of what the outcome would be. AE also involves performing a scientific procedure, especially in a laboratory to determine something, try out new ideas or methods (Collin, 2014). AE is crucial not only because it demonstrates someone's understanding, but also because it influences his/her AC, CE, as well as OR about an object or subject of interest (Kolb, 1984).
- ii. **Abstract Conceptualization (AC):** This is a cognitive activity of forming and theorizing ideas about an object or subject of interest (Kolb, 1984). AC involves keen identification,

description, definition, and making of connections (models or frameworks) about an object or subject in question (Collin, 2014).

- iii. **Concrete Experience (CE):** This refers to a direct (physical) activity of interacting (engaging) with an object or subject of interest. Much of how learning takes place at this stage is directly interacting with and feeling an object or subject of interest (Kolb, 1984).
- iv. **Observational Reflection (OR):** This is a mental activity in which an individual steps back from directly (physically) interacting with the object or subject of interest, so as to ponder about it (Kolb, 1984). Much of how learning takes place at this stage of experiential learning is through observation, memorization, imagination, dialogue, and critical discussions (Gibb, 1988).

Figure 2 below illustrates the relationship between AC, AE, CE, and OR in form of a cycle.

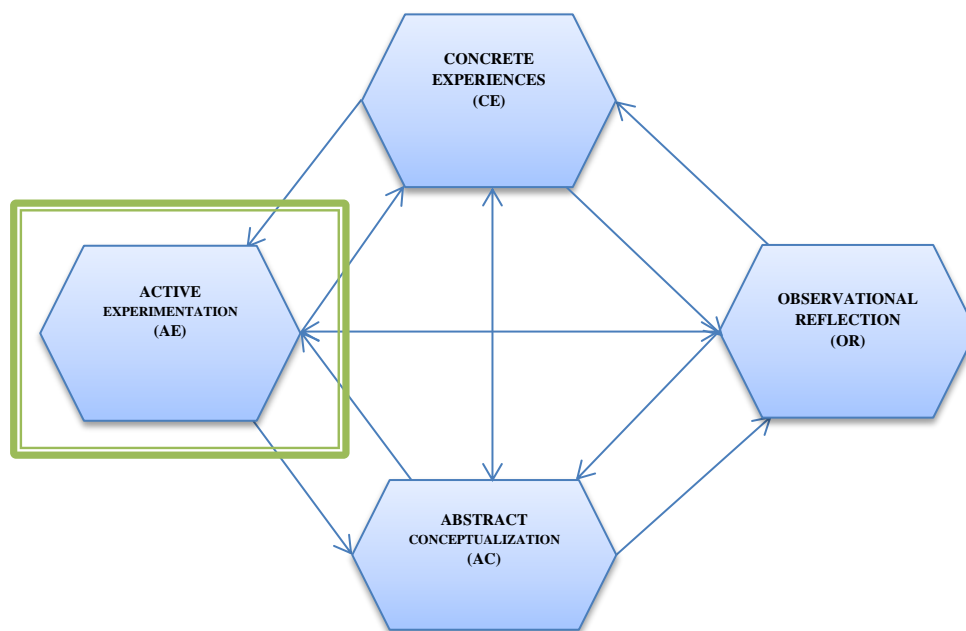


Fig. 2: Adapted Version of Kolb (1984)'s Experiential Learning Cycle (ELC)

Figure. 2 above is an adapted version of Kolb (1984)'s Experiential Learning Cycle (ELC). The figure illuminates learning as a product of experiences acquired at four different stages: AC, AE, CE and OR. Put together in a multidirectional style, AC, AE, CE, and OR form a spiral. The larger study (Kabugo, 2015) from which this paper emerged was guided by this spiral and set to cultivate trainees' experiences of using different ETs for the purposes of transforming their students' learning. This paper examines an Active Experimentation (AE) which the participants conducted as they utilized Tobii-T120 together with Tobii Studio 2.0.x to track and analyse students' eye movements when reading an excerpt of a Luganda literary text (*Zinunula Omunaku*) on smart phones.

### AIMS / OBJECTIVES

This study aims at examining how Luganda language teacher-trainees at Makerere University Actively Experimented (AC) an emerging eye-tracking technology (Tobii-T120) to track students' eye movements when reading a Luganda literary text on Mobile Phones. The study

also set to illuminate the highs and lows, which the trainees encountered in setting up their AC.

## RESEARCH QUESTIONS

- How did Luganda language teacher-trainees at Makerere University Actively Experiment (AE) an emerging eye-tracking technology (Tobii-T120) to track and analyze students' eye movements when reading an excerpt of a Luganda literary text on mobile phones?
- What highs and lows did the participants encounter when conducting their Active Experimentation (AC)?

## RESEARCH DESIGN

This paper emerges from a semester-long (17 weeks) study which followed a Design Based Research (DBR) approach and deployed qualitative techniques to cultivate the experiences of Luganda language teacher-trainees at Makerere University in utilizing different ETs for the purposes of transforming their students' learning. The subsections that follow illuminate how a DBR approach was followed in the study.

### 5.1 Design Based Research (DBR) Approach

Educational Design Based Research (DBR) has its origins in educators' pragmatic desire to improve pedagogical practices not only in a practical sense, but also from an informed theoretical perspective (Johannesson & Perjons, 2012; Herrington, Reeves & Oliver, 2010).

“[DBR is] is grounded in the practical reality of the teacher, from identification of significant educational problems, to the iterative nature of the proposed pedagogical solutions” (Herrington, Reeves, & Oliver, 2010:5).

In line with Herrington, Reeves, & Oliver (2010), figure 3 below illustrates the focus of DBR:

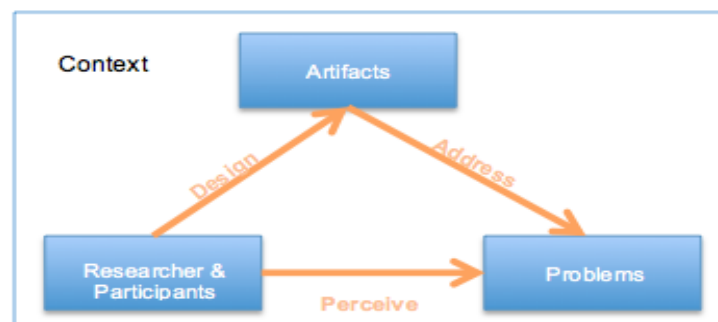


Fig. 3: DBR Focusing on the Practical Reality of Researcher & Participants, from perception of significant educational challenges (problems) to the design of innovative solutions (artefacts) for addressing such challenges (problems) (Adapted from Johannesson & Perjons, 2012)

Studies, which have followed a DBR approach to explore educational problems in Uganda in general and at Makerere University in particular, have yielded transformative results (Muyinda, 2010). While undertaking educational research using a DBR approach can be such



a lengthy iterative process (Herrington, Reeves, & Oliver, 2010), the larger study was guided by Reeves (2006)'s four-phase model (figure 4 below) for conducting DBR in authentic e-learning contexts:

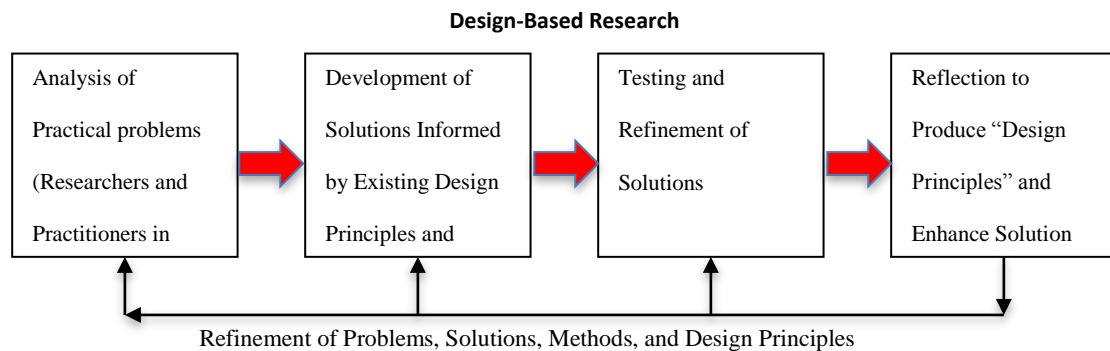


Fig.4: Reeves (2006)'s Four-Phase Model for Conducting DBR in Authentic E-learning Contexts

### ***Analysis of Practical Problem by Researchers and Practitioners in Collaboration***

Identification and analysis of a significant educational problem is the foremost step in educational DBR (Herrington, Reeves, & Oliver, 2010). This stage begins with an observation or assumption that an existing teaching or learning practice is bad, and that it can be addressed by designing an innovative pedagogical solution (Edelson, 2006). As a requirement in DBR, practitioners (participants) should be involved right from this first phase of the study so that the full extent of the problem known by all, rather than the problem being interpreted and addressed solely by the researchers (Herrington, et. al, 2010). The subsections below explain how in the study, the researchers and participants collaboratively analyzed and attempted to address the challenge of reading among students.

#### ***5.1.2 Researchers***

All the researchers in this study namely; D. Kabugo<sup>1</sup>, P. B. Muyinda<sup>2</sup>, F. M. Masagazi<sup>3</sup>, M. B. Mulumba<sup>4</sup> and A. M. Mugagga<sup>5</sup>) are teacher-educators at Makerere University, and are specialized in the fields of Educational Technology<sup>1-2</sup>, Luganda Language Education<sup>1, 3-4</sup>, Education Research<sup>1-5</sup>, and Philosophy of Education<sup>5</sup> respectively.

#### ***5.1.3 Participants / Practitioners***

The participants of this study were education practitioners in the making. These were third year Luganda Language and Education (LLE) teacher-trainees (2012/2013) of Makerere University. Before commencement of the study, a call was made inviting them to participate in a semester-long (17 weeks) blended learning course aimed at cultivating their experiences of utilizing ETs in teaching. Out of the target group of 78 trainees, 68 responded to the call. All those who responded to the call were accepted to participate in the study. Most of the participants had no prior experiences of utilizing eye-tracking technologies for teaching and learning purposes.

#### **5.1.4 Identification of Educational Challenge**

Participants were guided to identify significant challenges in the teaching or learning Luganda language in the 21<sup>st</sup> century. One such compelling challenge that was identified by trainees was ineffective reading among learners:

Although many young learners of the 21<sup>st</sup> century are using Emerging Technologies (ETs) to access educational information especially on mobile phones, anecdotal evidence shows that the ability of these learners to effectively read such educational information remains low. Rather than effectively read, many of today's young learners just regurgitate and pass on unprocessed educational information to peers (Group X of Makerere University Luganda Language Teacher-Trainees, 2014/2015)

The practice of regurgitating and sharing of unprocessed educational information via ETs can cause information overload among students and in effect jeopardize their learning (Ingebrigtsen, 2015). Following identification of this challenge, trainees were tasked to set an educational goal.

#### **5.2.1 Statement of Educational Goal**

Trainees set to analyze the way Luganda students move their eyes when reading educational information on mobile phones: "We want to analyze how our Luganda students use their eyes when reading educational information on mobile phones" (Group X of Makerere University Luganda Language Teacher-Trainees, 2014/2015). This educational goal is crucial because eye movements can augment or obstruct students' cognitive functioning (Bartels, 2008; Rayner, 1998). Thus, as a visual-cognitive activity, reading is inevitably enhanced or inhibited by someone's eye movements.

### **5.2 Designing Solution Informed by Existing Pedagogical Principles**

After analyzing a practical educational challenge, the next step is that of designing a solution informed by existing pedagogical principles (See Fig.4). According to Reeves (2006), this phase requires that the researcher and the practitioners (participants) jointly postulate a suitable learning task, understand and agree on the objective of the task, determine the affordances of the available technology, utilize the affordances of the technology to implement learning task.

#### **5.2.1 Postulation of a Suitable Learning Task**

Trainees set to give their learners a reading task via mobile phones. They selected an excerpt from a Luganda literary text called *Zinunula Omunaku*. *Zinunula Omunaku* (Kawere, 1954) is one of the most widely read educational novels in Luganda language (Masagazi, 1999). "*Zinunula Omunaku...*" is a proverbial name in Luganda language, which ends as "...*Lugaba azitunga kiro*". The Luganda proverb: "*Zinunula Omunaku Lugaba azitunga kiro*" can be loosely translated as: "[*The money*]) which rescues the poor is made by God at night".

As a pre-colonial literary novel, *Zinunula Omunaku* tells a life of an orphaned boy who is born shortly after the death of his father. At the age of two years, the grief of this boy (*Zinunula Omunaku*) surges when his mother dies too. After the death of his mother, *Zinunula Omunaku* is left in the hands of his grandparents. As death continues its spiral, it claims the life of *Zinunula's* grand parents. Now, *Zinunula* is left in the hands of one of his polygamous rich paternal uncles. At the uncle's home, *Zinunula* becomes a darling to one of the uncle's wives. However, he remains hated by other wives, especially the head wife who plots to kill *Zinunula* together with Mikolo. Mikolo is a hardworking servant at home and by that virtue, he becomes friend with *Zinunula*. When *Komunaku* - one of the daughters at home knows about the head wife's plot, she kindly alerts *Zinunula* and Mikolo. *Zinunula* and

Mikolo to run into the wilderness. In the wilderness, the two, encounter, wrestle, and by God's mercy, kill and maneuver wild animals including lions! Eventually, the two settle in a foreign land of strange customs. One day, omen befell Zinunula and Mikolo as they went fishing with one son of a village chief. The son of a village chief drowned in a lake! When the village chief knows about his son's death, he sues Zinunula in a court. At court, an old man called Miyodi bonds Zinunula. Village chief retains intense dislike for Zinunula and plots to kill him. Meanwhile, love blinds folds Zinunula and makes him sleep with Mirembe – a beautiful daughter of the village Chief! When Chief learns about Zinunula and Mirembe's affairs, his abhorrence for Zinunula soars. Now, he organizes a wrestling games and dictates that Zinunula versus a village gladiator! To the surprise of the village Chief and everyone else's disbelief, Zinunula bits the gladiator. The fight earns Zinunula fame. In the end, Chief is left with no choice but to allow Zinunula marry his beautiful daughter Mirembe. And that is how the novel trims. For, *whatever rescued Zinunula, God had already made at night.* Now, that is about the novel, which the trainees selected for students' reading.

Trainees selected an excerpt (part of chapter one) in Zinunula Omunaku, which they wanted their learners to read. After that, trainees were guided to use a web-based mobile site builder (<http://mob.is.it/>) to convert the excerpt into mobile learning content. Figure 5 below is a preview of the excerpt on a Samsung Galaxy SII.



Figure 5: Preview of an Excerpt (part of Chapter One) of Zinunula Omunaku on a Samsung Galaxy SII

After converting excerpt into mobile learning content, trainees stated the requirements of the reading task.

### **5.2.2 Statement of the Requirements of Learning Task**

In order to track students' eye movements while reading an excerpt of a Luganda literary text on mobile phones, teacher-trainees required a stable mobile device emulator that would be displayed as stimulus on an eye-tracking technology screen. In other words, instead of using physical mobile phones, students would interact with an emulator that works and looks like a real mobile phone but operating on a regular computer to which an eye tracking technology would be annexed. Similarly, instead of using fingers to interact with the reading content on mobile phones, students would use computer screen and mouse. In addition, trainees required software that would be used to analyze data (recordings and replays of students' eye-movements) and illustrate such data by either using gaze plots (which show saccades and fixations) or, aggregated heat maps (which show the amount of or length of fixations).

### **5.2.3 Determine Technological Affordances Available**

Many researchers have endeavoured to create ways of understanding what types or categories of learning tasks can be supported by technology (Hodgkinson-Williams & Deacon, 2013). Park (2011) referred to the matching between the potentials of technology and learning tasks as "pedagogical affordances". To Dabbagh (2011), the process of consciously identifying the unique attributes, features and properties of different technologies in light of requirements of the learning tasks can be termed as "cognitive affordances analysis". Referring to the same process, Bower (2008) used the term affordance analysis. In this study, trainees were guided to analyze the affordances of the available eye-tracking technology for completing their pedagogical task. Out of the many eye-tracking technologies now available, trainees managed to access Tobii-T120 eye-tracker together with Tobii Studio 2.0.x software. After exploring how Tobii-T120 eye-tracker and Tobii Studio 2.0.x (Enterprise version) software work, trainees identified the unique attributes, features and properties of these technological tools in light of requirements of their pedagogical task. Table 1 below is the affordance analysis that was conducted by the trainees:

Table 1: Teacher-Trainees' Analysis of Affordances of Tobii T120 and Tobii Studio 2.0x for Tracking Students' Eye-Movements while Reading Educational Information on Mobile Phones

General Functional Affordances of Technologies (Bower, 2008)	Track-ability	View-ability	Read-ability	Watch-ability	Write-ability	Draw-ability	Speak-ability	Video-produce-ability	Resize-ability	Move-ability	Playback-ability	Accessibility	Record-ability	Synchronous-ability	Browse-ability	Search-ability	Data-manipulation-ability	Link-ability	Highlight-ability	Focus-ability	Combine-ability	Integrate-ability	Permission-ability	Share-ability
Requirements for tracking students' eye movements while reading educational information (An excerpt of a Luganda literary text) on a mobile phone	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Affordances of Tobii T120 and Tobii Studio 2.0x software	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓

### 5.2.4 Exploit Technology Affordances to Implement Pedagogic Task

After doing an affordance analysis, trainees were guided to conduct an Active Experimentation (AE) of Tobii-T120 for tracking students' eye-movements when reading an excerpt of a Luganda literary text on mobile phones. Instead of using an actual mobile phone for students to read the Luganda literary text, the experiment was set up in such a way that students interact with an emulated mobile phone on a normal flat screen of a computer. The emulation was completed using a mobile website builder <<http://mob.is.it>>. The eye tracker (Tobii-T120) was connected to a computer and was invoked to track students' movement of eyes as students continued to read contents of an emulated phone on a flat screen. Video recordings of students' eye movements were analyzed using Tobii Studio 2.0.x. Tobii Studio 2.0.x allowed trainees to do video playbacks of the recordings and to create gaze plots thereof.

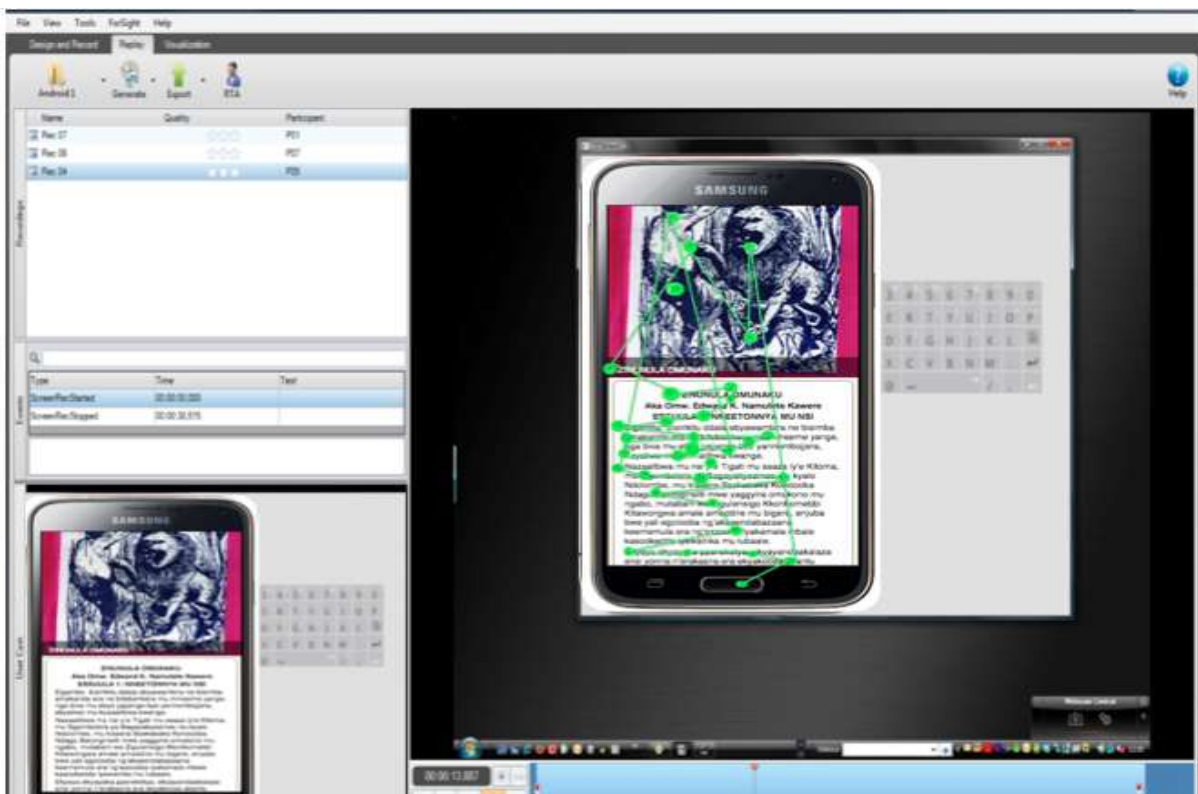


Fig. 6: Video Playbacks and Gaze Plots of the Recordings of Students' Eye-Movements

Figure 6 above is a screen shot of Tobii Studio 2.0.x showing video playbacks and gaze plots of the recordings of students' eye-movements. Given the video playbacks and gaze plots, trainees observed that students gave unequal processing time to different segments of a Luganda literary text read on an emulated mobile phone. As seen on the screen shot, segments of the first paragraph of the excerpt received more fixations than those in the proceeding paragraphs. This implies that an increase in cognitive load leads to lesser fixation during reading. Inequality of attention that readers give to different segments of texts has been highlighted in related works (Findlay & Kapoula (1992).

After developing and implementing a solution informed by existing design principles and technological affordances, the next phase of DBR is the iterative testing and refinement of the solution (Reeves, 2006)

### **1.3 Testing and Refinement of Solution**

At this phase of DBR, the researcher tests the appropriateness of the designed solution for addressing the challenge identified (Reeves, 2006). Since the solution is usually in form of a defined technological artifact (see figure 3), it becomes important for the researcher to evaluate the artifact and seek practitioners' (participants) experiences and views about the appropriateness of such artifacts in addressing the challenge. Given the artifacts of trainees' AE (see figure 6), it was important to understand the highs and lows that the participants experienced during the intervention.

#### **5.3.1 Data Collection**

At the end of AE, an online task was designed on Diigo (a discussion and social bookmarking tool) to capture the highs and lows, which the participants encountered in the intervention. This task was designed as a closed data collection activity at the following URL: <http://groups.diigo.com/group/LLL3201>

#### **5.3.2 Validity and Reliability**

In order to ensure validity and reliability of this study's findings (Creswell & Clark, 2011; Miles, Huberman & Saldana, 2014), the following were enforced. First, as participants completed the online task using Luganda language, their responses were translated into English. In order to ensure reliability of translated responses, an inter-translator reliability activity was conducted (Gibson, 2012). Inter-translator reliability refers to the extent to which two or more translations of the same source text are similar. In this study, each one of the researchers (three of whom are Language Education experts at Makerere University) was tasked to translate a compelling response. Afterwards, different translations were compared, ironed out the anomalies, and merged to generate a more reliable refined version. Secondly, a peer debriefing of the study's findings (Creswell, 2007) was conducted. Preliminary findings of this study were presented to Departmental staff at two different lunch-hour seminars. At

these seminars, staff gave constructive feedback, which was used to clarify and strengthen this study's findings. Lastly the original data, on which this study's findings are based, were published as closed online education resources with which conformability can be sought (Kabugo, 2015).

### 5.3.3 Data Analysis

Participants' AE artifacts and responses to the online task were analyzed using Discourse Analysis (DA). Discourse Theory (DT) states that spoken or written, discourses (texts and artifacts) embody and serve to perpetuate the experiences of their designers (Fairclough, 1992). A number of frameworks have been suggested to guide researchers utilizing discourse analyses to analyze the discourses (text and artifacts of) their participants. This study utilized Fairclough (1992)'s framework for analyzing discourses. According to Fairclough (1992), every discourse instance has three dimension: a) the spoken or written text (artifact) itself, b) the process of interaction i.e. re-production and consumption of such text / artifact and c) the context i.e. socio-cultural, political and economic environment of a & b. Fairclough (1992) contends that these three discourse instances are analyzable at three levels namely: a) description, interpretation and explanation. Fairclough (1992)'s framework for analyzing discourses is illustrated as below:

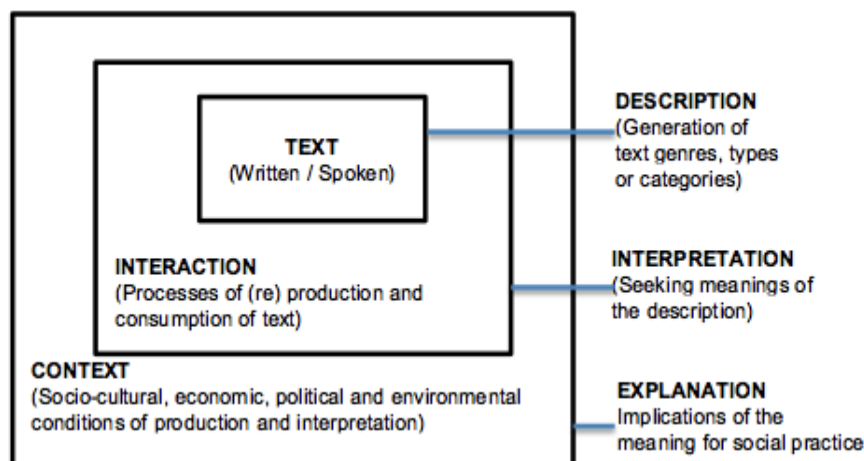


Fig. 7: Fairclough (1992)'s Three-Dimensional Framework for Analyzing Discourses

When deploying DA, genres and their discursive types (interpretations and explanations) are generated from texts / artifacts (Roode, Speight, Pollock, & Webber, 2004). There is however, a subjective judgment in generating genres and discursive types from texts / artifacts (Roode, et. al, 2004). In this study, the genres and the discursive types, which we unravel from trainees' artifacts and responses to the learning task, are not independent of our own subjectivity. In order to compensate for such subjectivity, we present our analysis in a tabular format. Such a format can help the reader of this paper to construct independent genres and discursive types (columns; 1& 2) by referring back to the source texts / artifacts that precede each table. Since the source texts / artifacts are in Luganda language, they are translated into English in the analytic tables. For the purposes of brevity this paper, presents two of the most compelling texts / artifacts of the participants for analysis and discussion.

### 5.3.4 Presentation, Analysis and Discussion of Findings

[Ekibinja C](#) 19 Mar 15 #9  
 Okumu ku kusoomoozebwa omusomesa kw'ayinza okusanga nga yeeyambisa Tobii-T120 mu ngeri gye tugyembisizaamu ky'eky'okuba nti abayizi tebakozeba butereevu masimu gaabwe. Kisoboka okuba nti waliwo enjawulo wakati w'engeri omuyizi gy'atambuzaamu amaaso nga asoma ebiwandiiiko ku ssimu eri ku kompyuta, n'okusomera obutereevu ku ssimu nga agikutte mu ngalo.

Fig. 8: Text / Artefact #9

*One of the challenges a teacher may encounter in utilizing Tobii-T120 in a way that we have used it here, is that students would not have the opportunity to physically interact with the mobile phones. It is possible that there would be differences in the way students move their eyes and read of information on emulated mobile phones versus physical mobile phones.*

Description	Interpretation	Explanation / Implication
Participants observe that the experimentation they conducted could not provide them with feedback on how their students would move their eyes if they read information on the actual three-dimensional mobile phones.	There is need for teachers to conduct different set ups when using eye-tracking technologies to track students' eye-movement as students read educational information on mobile devices in both static and mobile environments.	Although conducting different set ups might be difficult and costly, they promise yielding slightly different results that might positively disrupt students' learning.

Table 2: Translation and Analysis of Text / Artifact #9

[Ekibinja C](#) 19 Mar 15 #11  
 Ekirala, ekyekalirizo ekyatuleetera okukola okugezesa kwaffe kuno kwekuba nti abayizi b'ensangi zino buli lukya bagenda bettanira okukozesa masimu g'omungalo okufunirako n'okusomerako obubaka obw'enjawulo. Tulina okukyekaliriza nti amasimu g'omungalo ga "buli wendi nkufuna". Mu kugezesa kwaffe, twakutte engeri abayizi gye batambuzaamu amaaso gaabwe nga basoma obubaka ku masimu kyokka nga bajj mu kifo kimu. Okusomooza okunene kuli mu kukwata engeri abayizi gye batambuzaamu amaaso gaabwe nga basoma ebiwandiiiko masimu kyokka eno nga bwe batambula. Nga oggyeeko ekyo, okugezesa kwaffe kwabadde kwangu era nga kunyuma okukola

Fig. 9: Text / Artefact #11

*In addition, the observation that led us into conducting this experiment was that today's students are increasingly using mobile phones to access and read different information. Although we note that mobile phones not fixed device, in our experiment, we tracked students' eye movements when students were reading information on mobile phones in a static position. The bigger challenge is that of tracking students' eye-movement while reading educational information on their mobile phones while students are on the move. Apart from that, our experiment was very simple, and interesting to conduct.*

Description	Interpretation	Explanation / Implication
Although participants found their experimentation very simple and interesting to conduct, they questioned their own use of Tobii-T120 to track students' eye movements when reading educational information on mobile phones but in a rather static way.	There is need for teachers to conduct different set ups when using eye-tracking technologies to track students' eye-movement as students read educational information on mobile devices in both static and mobile environments.	This type of experimentation elicits more reliable eye tracking data, as the reading interface (emulated mobile phone) is more or less stationary. Tracking students' eye-movement when reading educational information on mobile phones while on the move is likely to result into unreliable data owing to movements



## CONCLUSION AND REFLECTIONS

As students' use of mobile phones to access educational information rises at different learning institutions (Muyinda, 2010), interest in students' reading practices on mobile phones grows in equal proportion. Although emerging eye-tracking technologies have potential to track and retain informative data about students' reading practices on mobile phones, many teachers do not have experiences as yet to exploit this pedagogical affordance of emerging eye-tracking technologies. Eye-tracking data can be valuable not only in studying students' reading, but also other cognitive tasks. The larger study from which this paper emerged aimed at cultivating Luganda teacher-trainees' experiences of using ETs to address challenges within their pedagogical discipline. This paper has described how the participants actively experimented Tobii-T120 to track and analyze data about their students' eye movements when reading an excerpt of a Luganda literary text on mobile phones. The paper has also illuminated some highs and lows which the participants encountered when conducting their Active Experimentation. Instead of using a physical mobile phone, participants conducted their experimentation in such a way that students interact with emulated mobile phones on normal flat screens. Although the participants found their experimentation very cheap and easy to set up, their students did have an opportunity to interact with physical mobile phones. Arising out of such a concern, this paper presents the need to conduct more classroom-based experimentations of emerging eye-tracking technologies with different set ups, and the need to compare their results and pedagogical implications.

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# THE IMPACT OF LIFE SKILLS EDUCATION ON THE SELF-CONCEPT DEVELOPMENT OF LEARNERS

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## **Abstract**

This study focused on the impact of a life skills education programme that was offered to primary school learners at an impoverished farm school. This programme was offered in order to enhance and promote learners' self-esteem, self-awareness and positive self-regard. A participatory observation that was done during the initial stages of the programme showed lack of confidence in some of the learners. After two years of learners' involvement in this programme, a questionnaire was administered to obtain quantitative data on the impact of the programme on the learners' self-concept formation. The findings revealed a slight improvement in their self-awareness and positive self-regard. There is thus a need to expand this programme to other impoverished schools.

**Keywords:** Life skills education, positive regard, self-concept, self-confidence, self-esteem

## **Introduction**

Lifeskills education is aimed at developing learners' self-concept, self-efficacy, self-reliance and self-esteem so that they are able to understand and know who they are. The Department of Education (2003) explains that life skills education is aimed at developing learners socially, physically and emotionally. Although life skills education has been introduced into all South African schools, learners' backgrounds influence the way in which it is taught and understood. The context of some communities somehow deprive learners of the opportunity to embrace life skills education optimally owing to environmental factors such as lack of stimulation, lack of attachment, absent parents and social class type. Therefore, life skills education helps learners to define themselves as they compare their functioning with those around them, enabling them to control their impulses and evaluate the "good" and "bad" aspects of their actions and reactions (Loubser, 2012).

## **Purpose of the paper**

Learners who are socially disadvantaged sometimes lack self-concept development, as well as confidence in their learning, and thus end up underachieving at school. It is therefore imperative that life skills education be part of teaching to instil positive knowledge in the overall functioning and wellbeing of the learners and to assist them in forming relationships with the people around them.

## **Theoretical framework**

The theory of relevance to this study is personality theory, which was developed by Carl Rogers in 1951. Rogers was influenced by humanist theorists, who believed that the essence of personality is influenced by how one perceives oneself in relation to others. Rogers, Smith and Coleman (1987) further maintain that personality is influenced by the way in which individuals perceive and try to understand themselves in relation to others and their environment. The overarching concept of Roger's theory is one of positive regard, genuineness and empathy, in terms of which individuals value themselves by experiencing positive affection or honour shown by others over time (Boree, 2006). Human beings have the ability to grow their potential into what they want to be, and they develop an ideal self and a real self on the basis of the conditional status of positive regard (McLeod, 2008). This acceptance is aimed at individuals fulfilling their potential and thus allowing the personality to emanate from their experiences. The theory further states that human beings frequently act on their subjective truths which are ever changing and those realities later develop into a self-concept. The implementation of a life skills programme which endeavoured to assist learners to develop positive self-concept was informed by these theories.

### **The importance of life skills education and self-concept**

The main focus of life skills education is the holistic development of learners, guiding and preparing them for life and its possibilities, including equipping them for meaningful and successful living in a rapidly changing and transforming society (Department of Education, 2011). This holistic development exposes learners to opportunities that may broaden their potential to grow and become productively involved in the community (Loubser, 2012). Life skills education may give learners the courage to express their views on matters that affect their wellbeing and self-concept. It develops learners to be critical thinkers who can challenge the false beliefs within themselves; for example, learners who are engaged in debates and discussion may open up and share their experiences and, in that process, they grow in their own pace (Danish, Forneris, Hodge & Heke, 2004). Spies (2011) emphasises that life skills education is aimed at assisting the learners to take control of their lives and use their skills and potential to develop themselves and also to be examples to one another.

The self-concept similarly assists individuals in attributing and giving meaning to situations (Dorner, 2006). McLeod (2008) states that self-concept allows individuals to define themselves in relation to others. Such awareness may give them a sense of who they are, what their capabilities are and meaning to their lives. A positive self-concept has a motivational effect which may assist learners in achieving higher grades. Learners may develop their self-concept on the basis of the norms and values of their families and their peer groups. Self-concept may also help them to define themselves as they compare their functioning with that of the people around them, enabling them to control their impulses. Sincero (2012) emphasises that self-concept is a product of socialisation.

For learners to develop a positive self-concept there is a need for life skills to be incorporated into their learning and be continuously implemented as part of the school activities. Loubser (2012); Gomes and Marques (2013) explain that life skills enable the learner to manage and control necessary life situations. Life skills education is therefore aimed at helping learners to develop a positive view of life. It also provides them with the information they need to clarify values and the social skills required to make informed decisions about all matters relating to

their life. However, the absence of life skills education may contribute to a poor self-concept in learners.

The promotion of a positive self-concept may have a positive impact on other areas of an individual's life, such as feelings of self-worth and a sense of achievement and belonging. Someone with high self-esteem is satisfied with who he is and he can meet his own standards as a human being. Schmidt and Padilla (2003) state that self-concept increases when a person succeeds, is praised or experiences love from others and is not dependent on only their own perceptions of themselves but also on others' perceptions of them. It therefore seems logical that learners, who experience praise, as is encouraged in the teaching of life skills, may experience high levels of self-concept, self-worth and positivity. Positive appraisal may convey a sense of autonomy and self-worth that positively influences the child's self-concept. This may, in turn, enhance learners' academic achievement.

It is important to emphasise that the issues and debates raised in this paper are in line with the personality theory, which was developed by Carl Rogers (1951). The overarching concept of Roger's theory is one of positive regard, genuineness and empathy, in terms of which individuals value themselves by experiencing positive affection or honour shown by others over time (Boree, 2006). This theory plays a crucial role in our plea for the continuous inclusion of life skills education in the school activities.

### **A life skills education programme as an intervention strategy**

The intervention programme used in this research was designed especially for the farm school learners and was aimed at enhancing and improving their self-confidence. At the beginning of the intervention programme, we assessed learners' strengths and weaknesses so that the programme could be designed to meet their needs and to avoid imposing our ideas on the learners. The programme included teaching learners how to receive and give compliments in order to build their self-esteem. That enabled learners to recognise each other's strengths and weaknesses. Other topics included assisting learners to be in tune with their emotions so that they could be emotionally aware of what is happening within and around themselves. Finally, as learners come from various backgrounds they were exposed to value-related topics where they were required to identify their values in order to understand who they are as social beings. Concepts related to family and individuality were some of the areas emphasised so that they could understand who they really are, where they come from and the important role each individual plays in life. The programme culminated in an exploration of the impact that this programme had had on their self-concept development. It was important to assess the programme in its second year of inception in order to improve on it before extending it to other similar schools.

### **Method**

A quantitative design was chosen as the preferred method as it incorporates a short case study. A short case study design is sometimes called the one-group post-test-only design. It is most often used to determine whether an intervention has had any effect on a group of participants. According to this design, the dependent variable is measured only once after an intervention (posttest) and conclusions are drawn (De Vos, Strydom, Fouche & Delpont,

2011). In this study the one-short case study design applies because data were collected at one farm school.

### *Participants*

Participants were 51 learners from one disadvantaged farm school who have been involved in life skills education programme. Here is the information that the data reveal regarding the demographics of the participants. Age: 15% were 10 years old or less, 64 % were between 11 years and 14 years, and 21% were 15 years or older. Gender: 58% were girls and 42% were boys. Ethnic group: all the participants fall under black ethnic group who speak different South African languages, mainly Zulu, Sotho, Sepedi and Setswana. Grades: the participants are spread between grades 5, 6 and 7. Participants' type of dwelling: 56% stay in a shack, 23% in small houses, 11% in big houses, and 10% in an identified form of a house. The head of the family: mothers only (55%), guardians only (35%), sisters only (6%), fathers only (2%) and brothers only (2%). Parents' marital status: 60% never married, 17% married, 17% unidentified and 6% divorced. Fathers status of work: 23% unemployed, 12% work in the farms, 8% work at factories, 4% work as domestic workers, 4% self-employed, 4% professional employees, 40% deceased and 5 % unknown. Mothers status of work: 10% employed in the farm, 2% work at factories, 31% unemployed, 6% self-employed, 1% professional employees, 29% deceased and 21% unaccounted for. Guardians status of work: 25% unemployed, 10% farm workers, 4% domestic workers, 4% employed at factories, 4% self-employed, 1% professional employees and 2% unidentified.

### *Instruments*

Data were collected by means of a questionnaire and observations. The questionnaire was employed in order to remain discreet and independent of what was being researched and also to avoid bias (Johnson & Christensen, 2012). Specifically, the tool used in this study was a self-developed "True or False/Neutral" Likert scale questionnaire. The researchers developed their own questionnaire because they believe that there is no all-purpose measure for self-esteem. They opined that the questionnaire needs to be tailored to the particular domain of functioning in order to be relevant to the situational demands and circumstances. They also considered the stance taken by Bandura (2006:307) when saying that "The 'one measure fits all' approach usually has limited explanatory and predictive value because most of the items in an all-purpose test may have little or no relevance to the domain of functioning".

### *Procedure*

The participants were purposefully selected as they have been participating in the life skills education programme for nearly two years. They were all requested to complete an anonymous questionnaire. The questionnaire was administered by the researchers. This ensured that all possible queries and clarifications are addressed immediately. The participants took an hour to complete a questionnaire. Although it was a short questionnaire, it took longer because the researchers had to give more clarifications using the language that the participants understand.

### *Ethical considerations*

Permission to conduct this study was granted by the Gauteng Department of Education and University of South Africa. Furthermore, informed consent was obtained from learners' parents. Learners also signed the assent form and were assured of confidentiality and

anonymity. They were also informed that they could withdraw at any stage during the completion of the questionnaire.

### Data analysis

Data were analysed by using version 22.0 of the SPSS statistical software. SPSS statistical software converted the data to a numerical form and subjected it to statistical analysis. Monette, Sullivan and DeJong (2008) view statistical analysis as procedures for assembling, classifying, tabulating and summarising numerical data to obtain meaning or information. A total of 20 variables were analysed and deduced into percentages. Results drawn from the data will now be discussed.

## Results

The empirical findings emanating from data, which were analysed by the version 22.0 of the SPSS statistical software are presented and discussed in this section. A summary of the 20 variables contained in the self-esteem questionnaire is reflected in the below table.

**Table 1. Percentage difference of variables**

Variables	True	Neutral	False
1.Much of my time is spent day dreaming	65%	2%	33%
2.I have a lot of confidence in myself	90%	0%	10%
3.I wish I were someone else	41%	0%	59%
4.I am a likeable person	88%	0%	12%
5.I have fun with my family	98%	0%	2%
6.To speaking in front of a group is very difficult for me	29%	4%	67%
7.I would like to be younger than I am	41%	0%	59%
8.I would like to change a number of things about me	31%	4%	65%
9.It is easy for me to get upset when I am at home	33%	0%	67%
10.I never do the wrong things	80%	2%	18%
11.I am proud of the work I produce	82%	0%	18%
12.I need to be told what to do	45%	0%	55%
13.New things or situations take me a long time to get used to	71%	0%	29%
14.Many times I do something that I regret doing later	94%	0%	6%
15.I am popular with people in my age group	45%	0%	55%
16.Usually I am able to take care of myself	94%	2%	4%
17.I enjoy the company of people younger than me	35%	0%	65%
18.I know myself	94%	0%	6%
19.I get very little attention at home	18%	0%	82%
20.I do not think much of myself	45%	0%	55%

The table above seeks to explain the differences in percentages between variables. The percentages of individual questions in the entire table were only used to rank and interpret the items.

## Discussion

Variables with related significance were grouped together in order to deduce meaning.

### 1. Perceptions of self

Variables 1, 2, 8, and 18 indicate that most participants are still in a situation where they might be experiencing identity confusion, including feelings of uncertainty which may result



from their vulnerable developmental stages. These vulnerable developmental stages have been highlighted in their demographic data. The feelings they experience are related to the ideal self, as described by Ntshangase, Duncan and Roos (2007), in terms of which learners develop the concept of who they are (i.e. the real self) and also of how they would like to be (i.e. the ideal self) during the intense and significant time period in their lives. Furthermore, MacLeod (2008) is of the opinion that the ideal self may be incongruent with real-life experiences. Hence, some of these responses indicate an element of incongruence and show that the participants are still on a journey to self-actualisation. Their age is also an indication that they are still developing a self-concept. The indication that this data was collected in nearly two years after the implementation of the programme may substantiate the results. The programme may not have yet yielded the positive outcomes.

## *2. Reflections on self-esteem*

Variables 2, 6 and 20 measure the participants' self-esteem. These variables depict the self-confidence and self-esteem of this group of the participants as fairly high. This was also observed through other life skills activities such as drama and debate. Learners who were regarded as being reserved during the initial stage of the life skills education programme emerged as role players and leaders in some of the activities. This is consistent with Danish, Forneris, Hodge, and Heke (2004) and the Department of Education (2011), which state that the ability to engage in debates and creative and aesthetic skills are an illustration of personal group interaction. These learners were able to interact with the group as programme directors during their school functions. This may denote that they are able to stand in front of a group as they believe in themselves. Someone with high self-esteem, is likely to know who he is and satisfied with who he is as he can meet his own standards as a human being and in relation with others and how he is viewed by others.

## *3. Self-acceptance*

Variables 4 and 16 measured the participants' sense of positive self-regard. This positive self-regard was seen during their activities in which most of the learners were free to talk about themselves and their situation without embarrassment. It shows that the participants may have accepted themselves as they receive positive encouragement from their teachers during the facilitation of life skills education programme. This is in line with McLeod's (2007) explanation of positive regard where he states that human beings have the ability to grow their potential into what they want to be, in the process developing an ideal self and a real self, based on the conditional status of positive regard. This self-acceptance is aimed at individuals fulfilling their potential and thus allowing the personality to emanate from their experiences. It is therefore likely that the participants who have been involved in life skills education programme have grown into realising their potential and accepting themselves. It is also worth noting that item 13 indicated that new situations took them a long time to get used to. This item shows that they are likely to think before they act, which is a sign of growth, as they listen to their instincts before doing anything. Baumeister (1997) defines self-concept as the totality of inferences that a person makes about himself. Some of the participants show that they believe in their abilities and they are able to make sound decisions.

## *4. Familial relations*

Familial relationship as addressed by variables 5, 9 and 19 revealed that some of the participants are comfortable with their families despite the gloomy picture as revealed in their

demographic information. These variables may be a confirmation of the effectiveness of the programme intervention where life skills education was emphasised. The statement is supported by Dagama (2012) that life skills education entail cohesion, functioning of a group, making relationship with others and living together. From their responses, it can be seen that some participants are able to relate and live in harmony with their families. This is in line with the Department of Education (2011) which states that the facilitation of life skills education enables learners to understand the relationship between people and the environment as well as to being socially aware of what is happening around them. Life skills education has therefore influenced the participants as they seem to live happily with other people in their environment especially their families. This ability to live with others signifies that some of the participants' self-concept is moving towards the positive pole.

### *5. Interpersonal relationships*

Variables 7, 15 and 17 indicate that some of the participants are confident about their age and the company they keep. The responses that we also gathered indicate that some of the participants are able to define themselves in relation to others and know their roles as they are aware of their existence as social beings. This may be an indication of positive self-concept and it also fits well with the general aims of life skills education. It shows that if learners can be guided and prepared for life and its possibilities, including equipping them for meaningful and successful living in a rapidly changing and transforming society, their positive self-concept may improve (Department of Basic Education, 2011).

### *6. Self-motivation and self-control*

It is apparent in variables 10, 11 and 14 that learners may have an ability to introspect. These results are likely to be a better indication of the participants' level of awareness in terms of self-control which is consistent with Loubser's (2012) findings that life skills education may help learners to define themselves as they compare their functioning with those around them, enabling them to control their impulses and evaluate what is right and wrong in their actions and reactions.

Learners who have been involved in the programme have shown improvement through their responses. It has been indicated that some of them can do things on their own, a clear requirement for a self-motivated person. However, there were contrasting responses indicating that some participants are still engaged in wrongdoing, as indicated in variable 12. This is a worrying factor that should be understandable as learners are still in a process of growing and still have to learn from their mistakes in order to become better in life.

## **Conclusion**

The purpose of this paper was to explore the impact of life skills education programme on the self-concept development of learners. Bearing in mind that the programme is still in its infancy and a small context-specific sample was used, any generalisation claims can be eliminated. But these limitations cannot disregard that the paper provides a rich and most needed perspective on the subject matter. The results that we obtained from the participants indicate an improvement in the self-concept of learners who were involved in the life skills education programme as compared with our prior observation. There is a connection between certain variables with the results showing that learners have grown in self-awareness and, as such, they are aware of themselves as individuals and they accept their weaknesses and

strengths. The results further revealed that there is improvement in learners' self-esteem, that is, learners are able to embrace roles and responsibilities by pioneering the events in school with self-confidence. Therefore, we believe that life skills education programme, if followed correctly and continuously, may produce a positive effect in moulding individual learners to be responsible citizens, who may be able to take charge of their lives and embrace positive roles in society.

### *Recommendations*

The implementation of life skills education for learners from impoverished communities has proven to have a valuable effect. It is therefore recommended that life skills education should include issues of emotional development so that learners are able to develop emotional intelligence. Although the importance of life skills education is often underestimated by teachers and facilitation is focused on reading and numeracy, teachers should be encouraged to incorporate psychological factors in their teaching of life skills so as to cover all aspects of an individual that promote personal growth. Such inclusion can foster learners who are aware of life issues as they may be able to know themselves and grow in self-acceptance and be responsible citizens in their society.

Another recommendation is that parents should also be involved in life skills education so that they are able to carry over at home what has been taught at school. Some of these parents have never had an opportunity to attend life skills education and therefore the programmes might be beneficial to them as well. Parents should be encouraged to attend life skills sessions, either at school or in their respective communities, depending on their circumstances, so that they can receive guidance regarding the development and promotion of their children's life skills.

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# THE NECESSITY FOR A NEW CURRICULUM DESIGN IN GABONESE SCHOOLS

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## **Abstract**

The apparent struggle for Gabonese graduates to find employment has confirmed the necessity for a new school curriculum. Gabon is faced with a high rate of unemployment and it is affecting the youth. It is believed that entrepreneurship education is one of the solutions to the problem. However, bringing entrepreneurship education which is a significant input in the Gabonese education system will definitely require a change of curriculum. This paper therefore discusses the importance of curriculum change to adapt to the teaching of entrepreneurship education.

Participants in this study included learners, teachers and a government official representing the Ministry of education. The paper reports the views of participants regarding the necessity for new curriculum design. The paper also recommends the types of subjects that should be offered in the new curriculum.

The study adopted a mixed method for data collection. Therefore, face-to-face interviews and self-administered questionnaires were used to collect in-depth information as well as achieve a larger representation of population. Results confirmed that there is a necessity for entrepreneurship education thus a new curriculum design is needed with some specific subjects that should be included in the curriculum.

**Keywords:** Curriculum design, entrepreneurship education, Gabon, teacher training, youth unemployment

## **INTRODUCTION**

Many reasons can be listed for youth unemployment in Africa. Salami (2011) lists a few which include little economic growth, stumpy economic activity and low investment. Gabon being part of Africa is not spared from the phenomenon.

Entrepreneurship has been adopted globally as a means for raising the economy of countries (Pihie & Bagheri, 2011). Developed and even developing countries have assumed that entrepreneurship is not only a way out for declining economies but the solution for countries with stagnating economies (Kritikos, 2014:2). If entrepreneurship is viewed as an important factor for socioeconomic development considering the number of opportunities it provides for the populations (Karimi, Chizari, Biemans & Mulder, 2010), entrepreneurship education on the other hand is known to equip individuals with entrepreneurial capability and skills (Pihie & Bagheri, 2011). Moreover a number of authors endeavor to prove the positive impact of entrepreneurship education on entrepreneurial intention (e.g., Wilson, Kickul, and Marlino 2007). However, Achor, Wilfred-Bonse and Kate (2013) argue that for entrepreneurship education to be taught in schools there need to be a curriculum change that

will fit the demand of the new subject. Apart from the curriculum design that is necessary in the case of implementing entrepreneurship education in schools, Arthur, Hisrich and Cabrera (2012) confirm the necessity of having trained teachers in entrepreneurship as they will be considered as mentors. Thus, if teachers are not adequately trained it would be challenging for them to implement entrepreneurship education.

### **Objective of the paper**

This paper seeks to establish the relationship between entrepreneurship education in Gabonese schools and a need for curriculum change. More specifically, it addresses youth unemployment in Gabon while considering the implementation of entrepreneurship education in schools to reduce youth unemployment phenomenon and the importance of teachers' training.

## **THEORETICAL BACKGROUND**

### **Overview of unemployment in Gabon**

Unemployment is not a problem faced by Gabon alone. Many other countries in the world are experiencing the same. According to Ajufo (2013:312) the causes of youth unemployment include lack of career guidance for youth, lack of opportunities for jobs after graduation, difficulty in finding jobs compatible with qualifications, and the gap between graduates' skills and those needed by the employers. In Nigeria, in addition to the above-mentioned causes, selection among job seekers for a particular job and the increasing number of school leavers is among the factors that propel youth unemployment (Akwaru, Akwaru, Enwuchola, Adekunle & Udaw, 2013:6).

Gabon is one of the richest countries in Africa in terms of per capita gross national income, reflecting its modest population (1.5 million) and significant oil revenues (Carney, 2013). Unemployment rate in Gabon increased to 16 per cent in 2010 from 14.80 per cent in 2005 (see Figure 1). Job creation has not been proportionate with economic growth. In 2012, the national unemployment rate stood at 20 per cent (IMF, 2013:7). The International Monetary Fund (2013:8) confirms that employment has been largely sustained by the public sector, with a surge in public employment in recent years bringing its share in formal employment to 62 per cent in 2010.

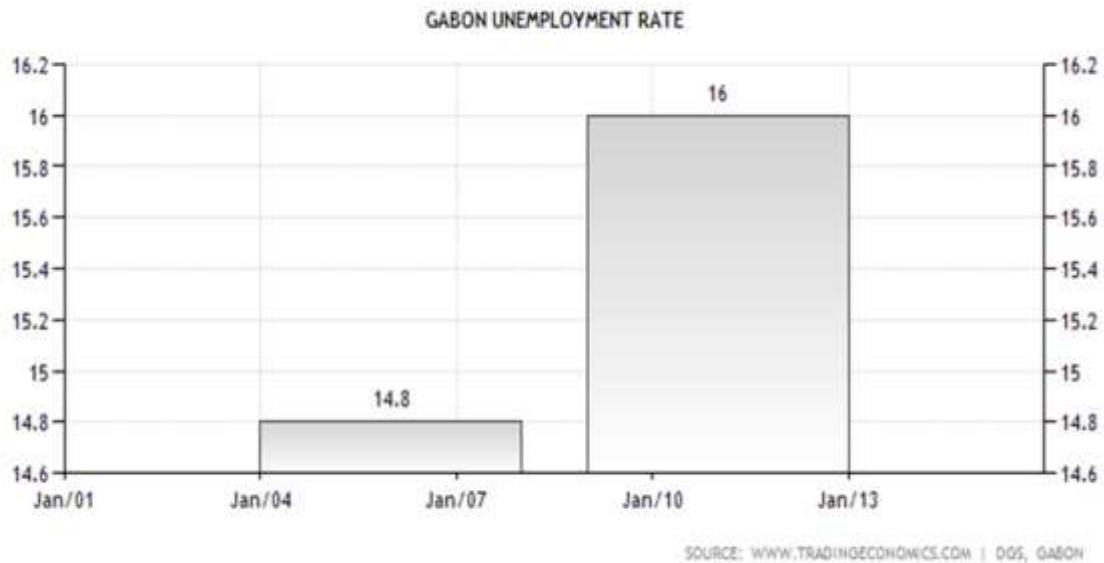


Figure 0: Gabon unemployment rate

### What is entrepreneurship education?

Bae, Qian, Miao and Fiet (2014) define entrepreneurship education as tutoring provided to enhance an individual's skills in order to create in him the desire to start a business. While Fulgence (2015) notes that entrepreneurship education programme provides learners with knowledge that will help them in the future whether they are employees or employers, Maina (2014) identifies seven more detailed objectives. These are listed below:

1. Provide meaningful education for the youth which could make them self-reliant and subsequently encourage them to derive profit and be independent or self-developed;
2. Provide small and medium size companies with the opportunity to recruit qualified graduates who will receive training and tutoring in the skills relevant to the management of the small and medium business centres;
3. Provide graduates with the training and support necessary to help them established a career in small and medium size business;
4. Provide graduate in training skills that will make them meet the manpower needs of society;
5. Provide graduates with enough training in risk management to make uncertainty become possible and easy;
6. Stimulate industrial and economic growth of rural and less developed areas;
7. Provide graduates with enough training that will make them creative and innovative in identifying new business opportunities.

However, for learners to be equipped with entrepreneurial skills it is believed that teacher's entrepreneurial skills must be up to date. In other words, teachers will find it challenging to teach entrepreneurship if they do not have the understanding of it (Seikkula-Leino et al.,

2010). Moreover for entrepreneurship education to be implemented in Gabonese schools there is a need to consider curriculum change (Kimiyaei, Gholami, Safari & Shirpour, 2015:458) as an entrepreneurship oriented curricula can assist learners in identifying new business opportunities.

### Curriculum design

Curriculum is a term used to designate an organized attempt made in education, in order to change learner's compoment (Achor & Kate, 2013:114). This simply refers to the way the action of learning takes place. According to Azim and Al-Kahtani (2014:129), the goals attached to the interest of learners determine the content a curriculum. In other words, if as mentioned above one of the objectives of schooling is to provide graduates in training with skills that will make them meet the manpower needs of society then there is a need for business oriented subjects in the curriculum. And for the success of the change, Huizinga *et al.*, (2014) argue that teachers must be involved. However, before talking about the necessity of curriculum design one must look at the curricular cycle. A curricular cycle for entrepreneurship education designed, and adapted from Peyton (1998) is presented below:

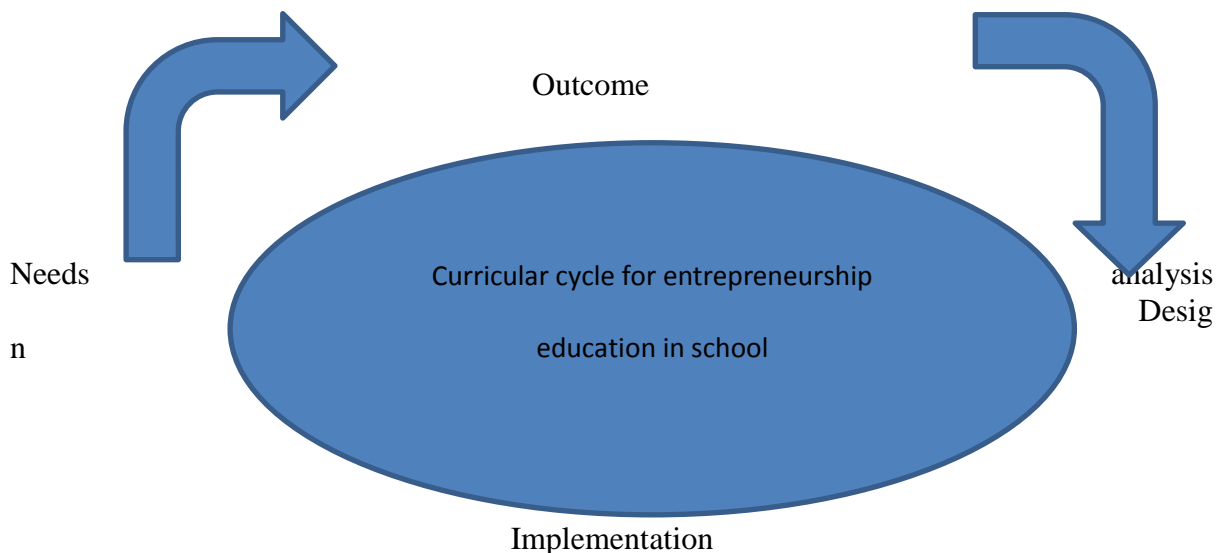


Figure 2: Curricular cycle for entrepreneurship education in school, adapted from Peyton and Peyton, 1998.

Before developing a new programme, one needs to evaluate whether there is need for this programme first. The outcome of the needs analysis will determine the design and then implementation of the new curriculum. The theoretical framework presented here will serve as the basis to discuss the outcome of the needs analysis.

### Activity Theory

This paper made use of the Activity Theory framework to understand the view of education stakeholders regarding the teaching of entrepreneurship education. As explained by Ahmed (2014:4), activity is the collaboration between (in this case) teachers and entrepreneurship education through the use of required equipment such as books, black/white boards,



computers. Activity theory is an activity system made of six elements namely Subject, Object, Tools, Community, Division of Labor, and Rules (Heo & Lee, 2013:135). This paper discusses subject as teachers, object as entrepreneurship education, tools as relevant material teaching of entrepreneurship education, community as teachers, learners, principals and Ministry of Education, division of labour as the role each stakeholder plays and rules as guidelines pertaining to the implementation of entrepreneurship education in school.

## **Methodology**

Data were collected in three selected schools in Libreville where entrepreneurship education is not taught. This study adopted a mixed method approach. As defined by Kvaal, Halding and Kvigne (2013:105), a mixed-methods design may be defined as 'research in which the investigator collects and analyzes data using quantitative and qualitative approaches in a single study. For the quantitative part of the study, the researcher randomly chose fifty grade 12 learners from three different schools. Purposive sampling method was employed in order to collect qualitative data. Participants in this exercise included principals, teachers and a government official. A total of 150 questionnaires were administered, but only 111 questionnaires were returned suggesting a response rate of 74%.

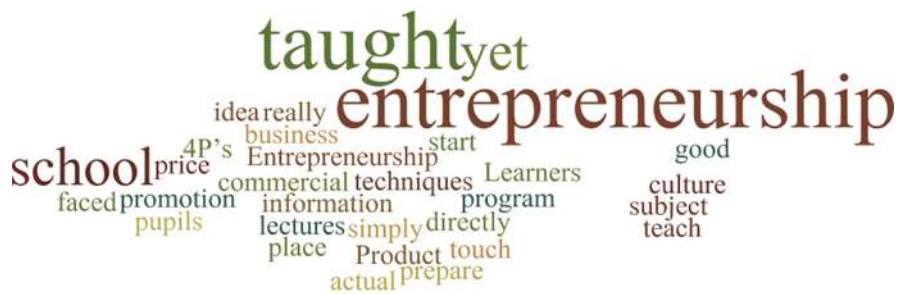
Although SPSS is a common software package used by many researchers, the program is not that user friendly (Tonidandel & LeBreton, 2014). Having said this, the researchers chose instead to use Microsoft Excel to analyze the quantitative data as it was easy to use, and also allowed the researchers to create graphs to analyze information (Niglas, 2007).

The researchers made use of codes, categorization and themes. To confirm the findings from coding and categorizing, wordle, a practical and useful research tool for qualitative analysis (McNaught & Lam, 2010) was used.

Good research requires strong adherence to ethics. Ethics in this instance is defined as protecting the rights and welfare of the subjects at the same time while getting the written permission of the institution in which data is to be collected from (Hansson, 2011:22). Ethical conduct in research demands that responses will be treated with strict confidentiality; participation is voluntary and participants will not be identified. In conducting this study, the researchers firstly ensured that informed consent was obtained from the head of each school. And secondly, anonymity was respected in that participants were not asked to disclose their identities during the survey.

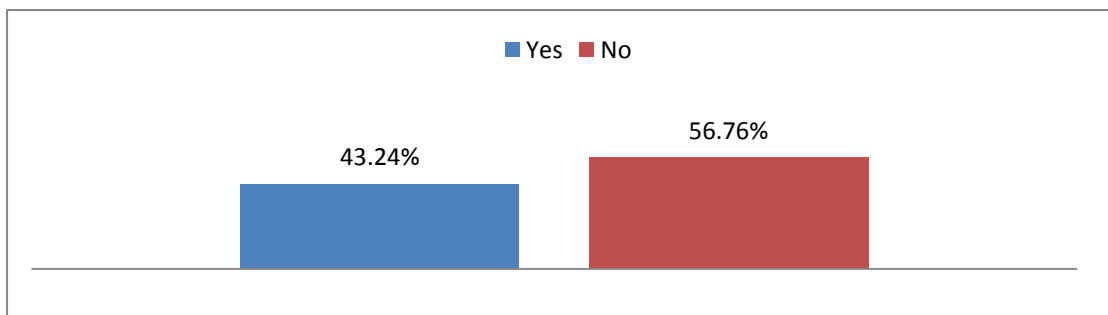
## **Results**

In our analysis we first evaluated if learners were familiar with the concept - entrepreneurship education or its associated subjects. Then we asked them if they would be interested in learning entrepreneurship education.



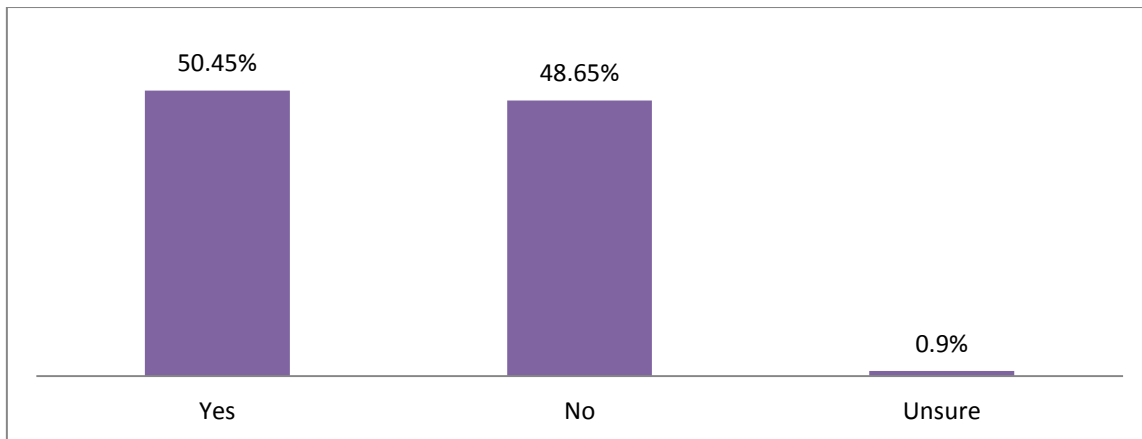
**Figure 3: Responses of the teachers regarding whether or not entrepreneurship education is taught in Gabonese schools**

Teacher 2 (school C) said: ‘we don’t directly teach entrepreneurship as a subject but in our Commercial Techniques lectures we touch the 4P’s: product, price, promotion and place.’ In addition, the official from the Ministry of Education stated: ‘Learners are not really faced with information on entrepreneurship. So entrepreneurship is not yet taught in school simply because it’s not yet in our culture’. Principal 1 affirmed that the actual subjects are not appropriate for potential entrepreneurs: ‘...the actual program does not prepare the pupils to start their own business.’



**Table 2: Learners awareness of entrepreneurship education**

When asked if they had ever heard of the object entrepreneurship education, 48 (43.24 per cent) learners said yes and 63 (56.76 per cent) learners said no. An assumption can be made that although a good percentage of learners (56.76%) have heard of the object, very few really know what it is exactly therefore there is a need for entrepreneurship education in schools. Table 2 above depicts the responses.



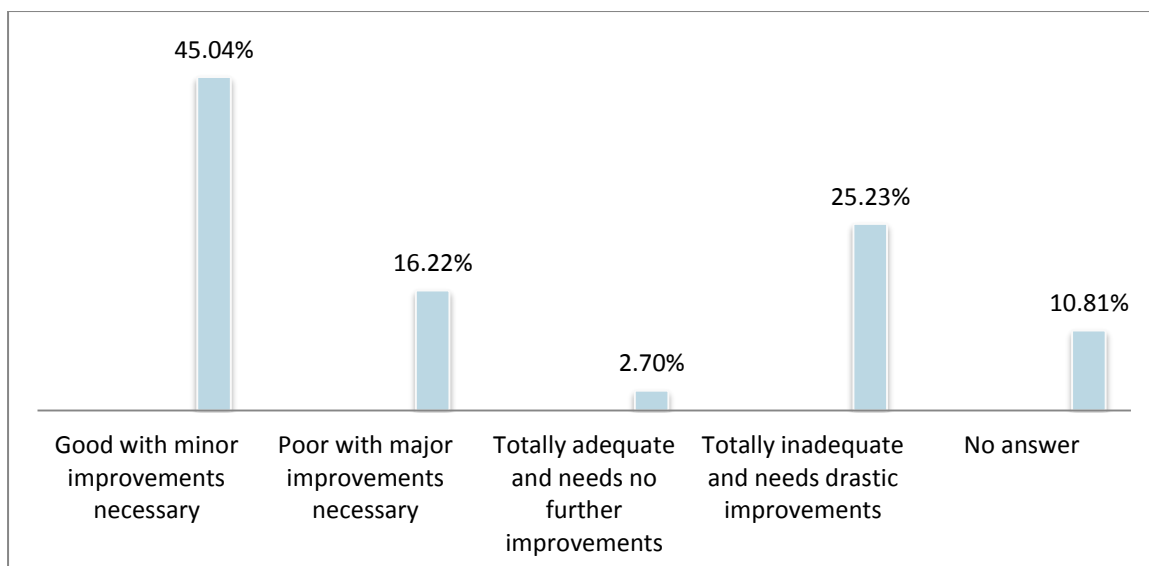
**Table 3: Learners' desire to become entrepreneurs**

To assess the interest of learners regarding the entrepreneurship education (object), they were asked whether or not they would want to become entrepreneurs at some point. Table 3 presents the responses of learners. Most of the learners harbor the desire to become entrepreneurs. Although the percentage difference between the two categories of learners is not huge, the results indicate that learners aspire to become entrepreneurs and this calls for a deeper look into the current curriculum which was not initially designed to accommodate pupils who want to engage into business later on.



**Figure 4: Teachers' views of the subjects that should be taught for entrepreneurship education classes**

Principal 1 only spoke about teaching methods without putting a particular accent on new subjects: *'Program will focus on practical activities and subjects such as marketing, accounting for all kinds of teaching either general or technical. We will use case studies with real life experiences.'* In order to give to learners a solid foundation in business, Teacher 2 (school A) thinks that there is a need to talk about how to start up a business: *'We will teach everything from how to start a business to how to keep the business growing, with some lessons in marketing and management as well'*. Figure 4 explains further.



**Table 4: Learners views on how adequate their current school curriculum is**

To determine the adequacy of their current subjects, learners were given four options in the data collection instrument: good with minor improvements necessary, poor with major improvements necessary, totally adequate and needs no further improvements and totally inadequate and needs drastic changes. The majority of learners (45,04%) said the school curriculum is good but needs minor improvements. However, very few (2.7%) thought the programme is totally adequate and needs no further improvements. An alarming number of participants did not respond to the question. The researchers believe that those learners refused to share their views for personal reasons although stipulated in the questionnaires was that identity would not be disclosed.

### Discussion

Several studies have found that entrepreneurship education enhances one's entrepreneurial skills (Osuala, 2010; Gibb, 1993; Jones & Iredale, 2010; Ekong, 2008) and desire to start a business (Maina, 2014; Marques & Albuquerque, 2012). Pursuant to this, we embarked on determining the relationship between the object entrepreneurship education and the need for curriculum change in Gabon. Interestingly, it emerged that firstly, very little is known about entrepreneurship among learners in Gabon. In this paper a considerable percentage of learners (25.23%) think that the current curriculum is inadequate and needs drastic improvements. This alone is a drive for a review of the Gabonese school curriculum. When asked if entrepreneurship education was taught in Gabonese schools, the teachers (subject) and principals main answer was 'ENTREPRENEURSHIP EDUCATION is not TAUGHT YET'. However, since education in Gabon is divided into two streams: technical teaching and general teaching, whatever is being taught in the technical stream is not necessarily taught in the general stream. Thus, teachers (subject) from technical stream précised that they do not teach entrepreneurship directly but commercial techniques which address the 4P's (Product, Price, Promotion and Place) also necessary for business (Teacher 2, school C).

The results suggest that there is no evidence of the entrepreneurship education being taught in secondary school in Libreville although most learners want to engage in business after school. In fact the results confirm that 50.45 per cent against 48.65 per cent of learners want to become entrepreneurs. It is shown in the results that 43.24 per cent against 56.76 percent

of learners have heard about entrepreneurship education. Ruskovaara, Pihkala, Seikkula-Leino and Jarvinen (2015:63) suggest that teachers use entrepreneurship education to empower learners with business skills for future business involvement. We believe that the first empowerment starts with the knowledge and understanding of entrepreneurship education. Our doubt concerning the lack of entrepreneurship education in Gabonese schools was definite by the finding that amongst the three schools which participated in the study, entrepreneurship is offered in none of them (Figure 3). It also emerged though that a number of business subjects should be taught in secondary school in order for learners to align with their desire to become entrepreneurs or businessmen and expect some successful results. These subjects include: business, marketing, accounting, management. However, although some of these subjects have the science side (management and business abilities) in terms of content there is need for the arts side (creative and innovative thinking that will lead to starting up a business) of teaching (Gibb, 2011). This suggests a mix of science and arts subjects which should be included in the new school curriculum of Gabonese schools or theory and practice (Maritz & Brown, 2012).

The results confirm the findings of a previous study (Akwara, Akwara, Enwuchola, Adekunle & Udaw, 2013) in terms of skills mismatch and high level of unemployment. We discovered that Gabonese learners are interested in business studies and would love to engage in business but the curriculum does not fully allow them. Knowing that entrepreneurship plays a specific role in a country's economic growth (Ahlstrom & Ding, 2014) and that the more people know about and practice entrepreneurship the more the economy grows (Smith, 2010), there is a need to align the Gabonese school curriculum with the global demand for entrepreneurship. When this is done, the youth will increase their knowledge of and practice of entrepreneurship which will allow them to create employment and grow the economy. This can only be possible if there is a link between subjects taught in school and the realities the Gabonese population is facing today (graduate unemployment and poverty).

## **Conclusion**

The purpose of this paper was to establish a relationship between entrepreneurship education in Gabonese schools and a need for curriculum change. This is on the backdrop of the high rates of unemployment and poverty. It is commonly argued that entrepreneurship education provides the opportunity for growth in an economy through better understanding of business processes and investment. Considering that entrepreneurship education is an opportunity for pupils today to become successful entrepreneurs and/or business people tomorrow, one can understand that classic subjects such as mathematics, philosophy and English or marketing, management and business are not enough but a rather mix curriculum will be more beneficial for learners.

The study provides insight for the authorities of Gabon to make some adjustments in the school curriculum. By encouraging learners to study entrepreneurship at school the population will be empowered with entrepreneurial skills from an early age and as a result might have a positive effect on the economy by creating employment. Our study recommends that entrepreneurship education be implemented in the Gabonese school curriculum and not only to university students as it will equip even those who are not willing to pursue tertiary education. However, the study has some limitations as well. For instance, the use of Microsoft Excel may have shortchanged the findings. Perhaps a more rigorous statistical tool such as SPSS may have interacted with the data better. Therefore, there is a need that future

studies engage in a more rigorous statistical application. Also, the participation of more schools in the study may have provided more diverse findings. Finally, future research should focus on designing a business-focused curriculum for Gabonese schools.

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# ANALYSING THE CAPACITY OF THE UNIVERSITY STUDENTS IN THEIR FIRST YEARS OF MATHEMATICS AND PHYSICS COURSES, TO CONVERT A SITUATION-CONTEXT INTO A GRAPHIC REGISTER

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## **Abstract**

This study examined university students' difficulties in converting a situation-context into a graphic representation. The purpose of this study was to perceive how the students were able to make the conversion of a situation-context into a graphic register, from the visual image that they could abstract from several given alternatives of cognitive variables to conversion operation between these two registers. The research was conducted through a questionnaire submitted to 30 students, whose main activities were the recognition of specific cognitive variables, relevant to the operation of conversion of a situation-context to graphic register. The individual results of the study show that the students are not able to recognize the specific cognitive variables, and to articulate these variables in order to carry out the conversion of situation-context to graphic representation. The "semantic congruence" factor has a very strong influence on the thinking of students to carry out the conversion of a situation-context to a graphical representation. However, the results showed a significant increase of about 10% of the performance of students in tasks of conversion of this kind. This growth may be explained as the result of the positive effect of the methodological approach used in this study.

**Keywords:** Situation-Context; Conversion; Graphic Register; Semantic Congruence;

## **Introduction**

The concept of function is one of the most important concepts in mathematics because it stands out in almost all topics of mathematics and also in other areas of knowledge. Already in school, early and not yet formally, the children engage implicitly with the concept of function, when they begin to deal with the concept of number. The concept of function is, according to Braga (2006), the soul of mathematics teaching.

The importance of studying functions is so obvious as much of the information on social phenomena, socio-economic, physical, etc. are disseminated by the media through graphical representations of functions.

However, despite the importance of the concept of function in many areas of knowledge, and this merit a formal special attention in school mathematics, seems to prevail even in students who complete high school and even some secondary school teachers, cognitive difficulties related to this concept, and these difficulties are revealed more when it comes especially to convert a situation of a real context into graphical representation.

That is what I found with my students of the 1st year of physics in the first half of 2015, when introducing the topic named generalities of Real functions. It was given a real situation-

context task, and the students were asked to build a graphic sketch that best represented the change of distance as a function of time. None of the students managed to give a reasonable answer to the question. The same difficulty was observed with 90 % of a group of secondary school teachers attending the 3rd year of Distance Mathematics Education.

According to da Silva (2007), it seems that many of the students that end the average level lost the fundamental ideas about the concept and the behaviour of the function. Consequently, they cannot produce a mental image of the graphical representation of a real context.

Everything that the students learned about the concept of the function at secondary and high schools, it seems that was not significant for appropriating knowledge and analytical skills to perform that operation. Where does the difficulty of the students lie?

According to Duval (2011), the deep reason for these difficulties should not be sought in mathematical concepts related to functions, but the lack of understanding about the links between the graphical representation semiotic registries and situation-context. It was in this perspective that this study was conducted.

This study aims to understand the cognitive potential of university students of the first years of mathematics and physics courses, in order to convert a situation-context to a graphic register, from the visual image that can be abstracted from several given alternatives of cognitive variables to conversion operation between the two registers.

## **Theoretical framework**

Conventional approaches on the graphing instruction is for marking and connecting some points in the Cartesian system from a table of values obtained by calculations of an analytical expression. Bell & Janvier (1981, p.35) points out that this form of approach about graph of function, not explicit in advance the kind of change that is intended; because a "function" is more than one object of ordered pairs. "Function" should be understood as "a definite connection between two things, called variables, that, when one is changing, the other also changes or does not change".

Probably these conventional approaches are one of the causes of the difficulties that the majority of students present when facing tasks of interpreting graphs, and the difficulties are increased when specifically, the task is about representing a situation-context by a graphic. According to da Silva (2007), most students have shown great difficulty in graphical sketching of a problem situation without resorting to their law of formation, that is, the algebraic expression. Costa (2010) refers to the work of Tairab & Al-Naqbi (2004), who found that students can perform better when the task is to interpret, but poor performance when the task is to sketch graphs (p.139).

However, students' performance on tasks of creating graphics can improve considerably if the approaches to teaching functions involve at least the interpretation of graphs representing situations-context. Bell & Janvier (1981) found that the graphical approaches with contexts improve the development of "graphic awareness" (p. 41).

Indeed, according to Costa (2010), to draft a graphical representation of a situation-context implies necessarily, to establish a relationship between two universes. In the universe of situation-context, we have a language that involves quantities and concepts whose meanings

are treated in different ways: simply (in popular language, without concern about different ways of their existence, etc.), and more rigorous and accurate form (in scientific language). In the universe of graphic, we have a language coded in features and numbers, which communicates the behaviour of a quantity that characterizes the state of a system that he represents.

Establish a connection between these two universes requires a certain cognitive potential which depends, not only on the individual's experience with the given situation-context, in terms of the individual's familiarity with the information presented (Junglenn & Del Pinto, 2009, p.11), but also the understanding that the individual has on relevant conceptual aspects of the behaviour of the involved quantities, and the standards of interpretation of graph construction in the scientific system in which the two universes are inserted.

Consequently, activity to create a graphic of a situation-context has not been easy for many students because, according to Costa (2010, p. 139), this activity involves the mobilization of knowledge and resources that are often not visible to the students, and also depend, in some way, to some forms of interpretation.

In the view of Duval (2003, 2012), a consistent analysis of the difficulties of the students, from the cognitive point of view, in situations of creating graphic, for example, should be in the production system of semiotic representations register. This is because, the replacement of an expression or representation by another that it is equivalent referentially, is the central cognitive process in mathematical activity.

The replacement of a representation by another equivalent referential to it is called change of representations register. The change of representations register can be done in two ways, known as "treatment" or "conversion". Treatment refers to the transformation of representations made within the same system; whereas "conversion" is the transformation of representations from one register to another target register, while retaining same reference objects (Duval, 2003, p. 14, 15).

According to these definitions, the activity of construction of the graphic draft of a given situation-context lies in the "conversion" domain. On the cognitive point of view, Duval (2003, p.16) refers to the conversion activity as the fundamental activity of transformation in mathematics, because it leads to the mechanisms underlying the understanding of mathematical knowledge area.

To perform a conversion of a register of representation to another, it is necessary to articulate between specific cognitive variables to the operation of each of the registers, because they are for determining the units of meaning relevant to each register. The difficulty of many students in mathematics lies precisely in inability to recognize the specific cognitive variables and carry out proper articulation. This difficulty grows when it requests, particularly, to convert a situation-context represented in natural language to corresponding representation in graphic design; because, in the perspective of this author, this passage touches a complex set of operations to designate objects (Duval, 2003, p . 17, 18).

The difficulty above can be explained within the perspective which Duval (2012, p 99) calls *the cognitive possibility of substitution between two expressions equivalent referentially*,

founded in the following two independent relations between two expressions: *relationship of reference equivalence* and *relationship of semantic congruence*<sup>1</sup>.

During mathematical activity, the spontaneous functioning of the thinking of most students tend to follow priority the semantic congruence. However, in converting the reference equivalence is not essentially reached by the semantic convergence. A jump is required for the substitution of at least one register that belongs to a semantic network with a register belongs to other semantic network. Is in this jump where students encounter an obstacle to overcome, according Duval (2012, p. 101).

## **Research Methodology**

The study consisted of analysis of data obtained from a questionnaire submitted to a group of 30 students of the Pedagogical University - Beira Campus, consisting of 21 students of the Mathematics course (1st year 11 and 10 of the 2nd year) and 9 of the 2nd year of the Physics course.

The questionnaire was composed of 4 activities. The first was a graph and a question with three alternative answers on a situation-context. The purpose of the first activity was to evaluate the student's knowledge about the relationship between height and inclination, according to the answer he gave to the question. The remaining three activities were constituted, each, for a situation-context of familiarity of the students, followed by a several statements - elements which are the cognitive variables - expressing the possible relative positions of the parts of a graph, where some of them corresponded to the given situation-context. The student marked the alternatives that thought correct, and then had to present the graphic register of that situation-context.

The purpose of the last three questions was to evaluate the student's capacity to establish the conversion of the situation-context into graphic register. The level of articulation that the student established between the statements selected was revealed by the graph register presented.

## **Results and discussion**

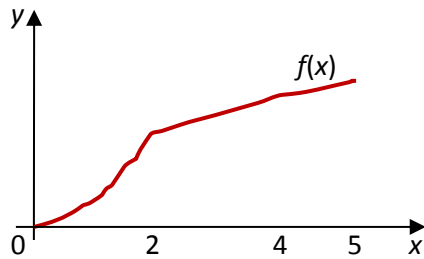
The questionnaire was formed by two categories: the first category consists of the activities 1 and 2, essentially aimed to diagnose the knowledge of students in this chapter. The second category, consisting of activities 3 and 4, is that attend the general objective of this study.

### **Results of Activity 1**

The activity 1 measured the capacity of students to recognize the *Variation of the magnitude of the dependent variable* as a function of the slope of the graph in a Cartesian system.

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<sup>1</sup> The relationship of reference equivalence is the possibility of two expressions refer to the same object or not, or whether or not to say the same thing. A relation of semantic congruence refers to the sense/meaning: if the two expressions keeps or not the same semantic meaning.



Suppose the graph of  $f(x)$  represent the distance traveled by a fly, as a function of time  $x$ :

Mark X on the appropriate time interval :

- The fly was fastest in the time interval :

0 to 2    2 to 4    4 to 5

Justify your answer

Only 23% of students gave correct answers and justifications (7% students of Mathematics and 16% of Physics). The remaining 77% had, or the correct option, but without justification or wrong reasons (47%), or incorrect answer without justification or wrong reasons (30%). However, despite the percentage differences, the variable "course" did not have a significantly influence to the results in this activity.

This result leads us to conclude that most students can not perceive, even seeing the figure, that the magnitude of the dependent variable varies directly with the graph slope. However, the magnitude of dependent variable graph and the graph slope are the critical variables are for the task of converting in this study.

## Results of Activity 2

In this activity was given the following situation-context:

*Put ice cubes in a glass of warm water, and leave it on a table*

First, the student described the temperature variation of the water with ice in the cup versus time, and then, constructed a graph draft which represents this phenomenon.

No student (0.0%) was able to present a description and correct graphic. Only 3.3% of the student presented an accurate description and a more or less correct graph. 13.3% students (all of the Mathematics course) had a proper graph, but with semi-correct description. Here too, the variable "course" did not have a significant influence on the results.

The results of the activities 1 and 2 indicate a most poor performance of the students. The students difficulties were to create a visual image of specific elements (cognitive variables), relevant to the conversion operation of a situation- context to graphic register.

## Results of the activities 3 and 4

The activities 3 and 4 were adopted, specifically to meet the objective of this study.

Indeed, to measure how the student can create a visual image of the specific elements (cognitive variables) and to make conversion, they were given, in each activity, several alternatives, according to the parties of situation-context phenomenon.

So, the activities 3 and 4 were structured with specific objectives to assess the ability of the students in:

- (a) Recognize the specific cognitive variables, which are relevant to reference equivalence between the situation-context e graphic register;
- (b) to convert a situation-context into graphic register, by articulating the recognized cognitive variables between the two registers. This capacity is measured by the relation between the response in (a) and the graph sketched.

### Results of the activities 3

The task was:

To go to school, the way that John runs is, first a straight line horizontally, then it ascend, and finally it descends.

Select the statements that you think are correct, assigning by a X at the right (Note: inclination = slope in relation with the horizontal line)

Kind of the way taken	statements about the graphic of traveled distance as a function of time
<b>Horizontal straight line</b>	The graph is not growing, nor is decreasing (is parallel to the $x$ axis)
	The graph is increasing and very inclined
	The graph is increasing and little inclined
	The graph is decreasing and very inclined
	The graph is decreasing and little inclined
<b>ascent</b>	The graph is increasing and very inclined
	The graph is increasing and little inclined
	The graph is decreasing and very inclined
	The graph is decreasing and little inclined
<b>descent</b>	The graph is increasing and very inclined
	The graph is increasing and little inclined
	The graph is decreasing and very inclined
	The graph is decreasing and little inclined
	The graph is increasing and very inclined

Now, build a graphic draft representing the distance  $y$  traveled by John to school, as a function of time  $t$  spent.

Only 3.3% of students indicated the correct alternatives, but had a wrong graph. 6.7% of students had a proper graphic draft, but the alternatives chosen were wrong.

It is difficult understandings here how these students made the link between the alternative chosen to obtain the graph presented.

An interesting result to note is that 57% of students chose exactly those alternatives which correspond to the semantic congruence with the kind of way, and presented a graph in accordance with these alternatives (horizontal line, growing line and decreasing line).

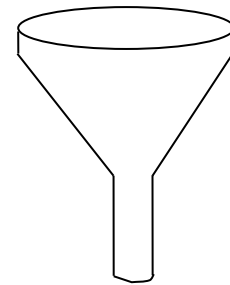
So, the *semantic congruence* was the factor that decisively influenced the thinking of the students, consequently, they didn't reach the reference equivalence.

### Results of the activities 3

The task was:

Consider the container presented at the right hand. As you are watching, the container is a funnel, with a closed bottom.

*Slowly, put water into the funnel, until it is completely full*



(a) Three parts of the funnel are distinguishable, according to the figure given in the following table.

Indicate the statement you think is true. Use a X to select your answer.

		<b>Statement about the variation of the water surface area in the funnel during the filling process, depending on the height reached by the water</b>
<b>Top</b>		The surface area of the water increases in the same proportion of the increase in height of the water
		The surface area of the water increases in a proportion greater than the increase in height of the water
		The surface area of the water does not vary as the height increases
<b>middle part</b>		The surface area of the water increases in the same proportion of the increase in height of water
		The surface area of the water increases in proportion greater than the increase in height of the water
		The surface area of the water increases in proportion lower than the increase in height of the water
		The surface area of the water does not vary as the height increases
<b>lower part</b>		The surface area of the water increases in the same proportion of the increase in height of the water
		The surface area of the water increases in proportion greater than the increase in height of the water
		The surface area of the water increases in proportion lower than the increase in height of water
		The surface area of the water does not vary as the height increases

(b) Now, construct a graph that represents the variation of the area  $A$  of the water surface in the funnel during filling, as a function of height  $h$  reached by the water.

Only 13% of students indicated the correct alternative and presented a correct graphic sketch. However, 7% of students could provide a correct graphic, but with incorrect choice of alternatives, and 10% chose the correct alternatives, but showed an incorrect graph.

It appears that some students can build a graphic of a situation-context, intuitively, without, however, to be able to reveal the cognitive variables used. This phenomenon may indicate

that, probably, some students made a random choice, or they cannot make the connection between the alternatives and the graph.

## Conclusions

All the results show very low levels of student performance in the activities. This means that students in the first years of Maths and Physics courses at university still have difficulties to convert a situation-context to the graph register.

Even being given the set of possible cognitive variables, it was found that many students failed to recognize and articulate the specific cognitive variables between the two registers of functional representation. From the results of activities 1 and 2, we can imagine that the difficulties for this purpose are due to poor understanding of the direct relationship between the magnitude of dependent variable and graph inclination, and the weak development of graphical awareness, though the students have studied a lot of functions.

Most students tend to use the semantic congruence to do the conversion of a situation-context to graphic register. This may mean that these students have not conceived a graph as a figure that establishes a relation between two variables, and what should prevail in a conversion is the reference equivalence of these relations in the two register.

Therefore, all results of this study, considered individually activity by activity, indicate a worrying situation of students' learning about functions and their representations.

However, if the results are considered together, we note that from the activity 3 to the activity 4, there was a growth performance of the students in about 10% (an increase from 3% to 13%). This increase can be considered significant in this type of activity. Indeed, according to Duval (2003), this type of conversion – from natural language, as the case of situation-context, to a graphic register - generally has been very difficult for students.

Therefore, the negative results of this study, only may indicate that the conversion activities of situation-context to graphic register were unfamiliar and not yet on the domain of the students' knowledge.

However, it should be noted that the relative growth observed in the performance of students, from the activity 3 to activity 4, may be related to the methodological quality of the research approach used in this study. It was noticed that the methodology adopted in the design and structuring of the activities in this research can contribute significantly to the rapid development of cognitive skills of students in tasks of conversion of a situation-context to a graphic register.

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# LESSON STUDY: A PROFESSIONAL DEVELOPMENT FOR UNIVERSITY TEACHER

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## **Abstract**

The purpose of this study was to establish and analyze the impact of a collaborative professional development program across the disciplines among the faculty of a Foundation Program through the use of a lesson study model. Though widely used among teachers in the same discipline, lesson study has also been identified as a means of bridging the professional expertise of teachers across disciplines. This study is the first to report on the use of lesson study to integrate language and content instruction in a university preparation program. In this study, science, mathematics, and English teachers collaboratively developed and taught integrated lessons, observed these lessons being taught, discussed their impact upon students, revised and re-taught the lessons with a new group of students. In the process, the teachers also reflected upon their own teaching practices and those of their colleagues in other disciplines by working together in a supportive and enriching cross-disciplinary environment. As a result, they were also able to provide instruction that helped make clear to students the relationships among the courses in which they were enrolled. Although time-consuming, the lesson study process was viewed as a valuable form of professional development.

**Keywords:** teacher development, lesson study, cross-disciplinary

## **Introduction**

The purpose of this study is to establish and analyze the impact of a collaborative professional development program across the disciplines among the faculty of a Foundation Program through the use of a lesson study model. Though widely used among teachers in the same discipline, lesson study has also been identified as a means of bridging the professional expertise of teachers across disciplines. This study is the first to report on the use of lesson study to integrate language and content instruction in a university preparation program.

English as Foreign Language (EFL) teachers in tertiary programs often find themselves teaching content-based English curricula that they are not familiar with, and/or they have not been trained to teach in their classrooms (Petroleum Institute of Abu Dhabi [PI], 2006). These curricula are designed to help students deal with the language they need for their field of study while improving their overall proficiency in English. At the same time, mathematics and science teachers in the tertiary programs also find themselves focusing on English language skills, rather than mathematics/science content, when teaching these students, trying to adapt their instruction to accommodate students who are still in the process of learning the language of instruction, though they have little or no prior preparation to enable them to accomplish this (PI, 2006).

Research has found that high school graduates in the UAE often demonstrate negative attitudes toward science and low achievement in science subjects. Balfakih (2003) stresses the urgent need to “find effective teaching methods” and “provide opportunities for students to develop essential scientific skills” (p. 623). Teachers in tertiary programs in the UAE

therefore need to implement new approaches to teaching science as they help them improve their English. With the collaborative and cross disciplinary professional development program used in this research, my goal was to learn how English and content (science and mathematics) faculty could examine their own practices and those of their colleagues to see how appropriate these were for students and for the Foundation curriculum of content and English courses, providing what Stigler and Hiebert in their (1999) book *The Teaching Gap* refer to as an opportunity “to examine current practices and then improve them” (p. 9).

### **Theoretical Background**

Lesson study is a professional development model that brings teachers together to collaborate, teach, observe, and reflect about their own teaching for the purpose of improving their instructional practices. According to Watanabe (2002), in lesson study, the focus is not on the individual teacher, but on the collective group of teachers who are equally responsible for planning and delivering a lesson as well as observing the students while the lesson is being taught. This model, which was developed in Japan, has been a principal form of professional development in elementary education for decades among teachers within the same discipline, principally mathematics (Yoshida, 1999). It was introduced into the United States in the 1990s, principally through *The Teaching Gap* (Stigler & Hiebert, 1999). In this book, Stigler and Hiebert described mathematics teaching in Germany, Japan, and the United States as part of a report of the Third International Mathematics and Science Study (TIMSS) video study. Since that time, lesson study has been implemented in many US K-12 settings, first among teachers of similar disciplines, and more recently as part of cross-curricula professional development in school districts (Richardson, 2004). In the last decade, institutes of higher education in the United States have also begun experimenting with this form of professional development, some in cross-curriculum programs. Columbia University, University of Wisconsin, and others have published information regarding collaborative teaching projects using lesson study (Cerbin & Kopp, 2004, 2006; Fernandez, 2002; Lewis, Perry & Murata, 2006).

Catherine Lewis, one of the first to bring the lesson study approach to the US, refers to lesson study as “a simple idea”: “If you want to improve instruction, what could be more obvious than collaborating with fellow teachers to plan, observe, and reflect on lessons?” However, she adds, “While it may be a simple idea, lesson study is a complex process, supported by collaborative goal setting, careful data collection on student learning, and protocols that enable productive discussion of difficult issues” (2002, p.10).

Lesson study represents a paradigm shift in how teachers are trained, who they interact with, and the role of observation in the teacher evaluation process (Stigler & Hiebert, 1999). In lesson study, the focus of the observation is on the students and their engagement and achievement during the lesson, and teacher discussion after the observation is used to revise lesson plans and instruction. While observation is focused on students, rather than the teacher (as is typical in observation conducted for the purposes of teacher evaluation), it still is one reason why teachers might be apprehensive about voluntarily participating, and adding to this, the practice of interdisciplinary observation and collaboration might increase that apprehension.

Although the concept of collaboration is not alien to teachers (though it may be more so among university faculty), the level of trust required in lesson study is alien: i.e., teachers

must allow their classes to be observed in person or on videotape and analyzed and, based on discussions about the lesson, to recommend how lessons could be improved. Collaboration and building trust are more complex when participating teachers are from different disciplines. Moreover, in this project, the Foundation Program faculty who are doing the observing are both inside and outside each other's disciplines. Being observed by one's disciplinary peers, as well as interdisciplinary colleagues, could cause apprehension. The videotaping, the observations, the continuous meetings, the decisions to revise the curricula, and the feedback from colleagues are all quite new and potentially threatening (Lewis, 2002). On the other hand, in the modeling of active engagement and researching of their own students, the participating teachers had little idea at the beginning that they were pioneers and becoming more active in their own learning.

Under the direction of Office of Vocational and Adult Education (OVAE) in the US Department of Education, the Center for Adult English Language Acquisition (CAELA) Network recently developed a framework that is designed to be used in the planning, implementing, and evaluating stages of professional development for teachers of adult English language learners. The framework identifies and endorses the effective features of high standard professional development in adult education found in the publication, *An Environmental Scan of Adult Numeracy Professional Development Initiatives and Practices* by the American Institutes of Research (Sherman et al., 2006). The features share a commonality to not only other professional development frameworks, but also to those found in the Lesson Study model (See Table 1.)

Table 1 *Common Features of the Framework & Lesson Study*

<b>Effective Features of the Framework</b>	<b>Effective Features of Lesson Study</b>
Occurs over time	Ongoing/over a period of time
Built on subject matter	Based on a theme/lesson in/across the curriculum
Connects content/materials to real problems	Is focused on improving lessons; Bridges between policy and practice
Reflects the research on how adults learn	Uses research-based elements of pedagogy
Incorporates an evaluative component	Revises based on classroom observations/discussions
Designed for different learners needs	Focused on the learners' needs

The key elements of the framework are structured around content, process, and context. In the terms of content, the framework allows stakeholders to examine the dynamic relationship between the received knowledge and constructed knowledge within professional development. Basically, teachers receive knowledge from attending and participating in a professional development session. In return they construct knowledge from applying and reflecting upon their practice (Crandall, 1993; Freeman & Johnson, 1998). Both types of content play a critical role in the professional growth of the classroom teacher. There is no clear distinction between the two since they share the same sphere as Vygotsky (1986) would

call ‘the zone of proximal development (ZPD).’ In lesson study, teachers receive and co-construct knowledge, with all the participants involved in every stage of the lesson study professional development process. In addition, the exchange and co-construction of knowledge happens mostly in the classroom through observations, teaching, reflecting, and revising the lessons with colleagues (Yoshida, 1999).

Kenkyujugyo (research lessons) have been widely used in Japan since the progressive era of 1950s where “child-centered education was a symbol of democratic society in the postwar age, and Dewey’s philosophy was the bible of almost every teacher” (Sato in Leavitt, 1992, p. 161). Teachers informally developed a professional culture inside their classrooms and schools where they conducted several workshops “based on classroom observation” (Sato in Leavitt, 1992, p.162) which are the basis of the lesson study model. Many of the teachers published books, journal articles, or reports sharing their reflections of these lesson studies for instructional improvements purposes (Lewis, Perry & Hurd, 2004). Sato adds that “excellent teachers in Japan have grown primarily by means of informal voluntary study networks or in-service training in their schools” (p. 163).

## Results and Discussion

Through the collaborative work, teachers believed that there was a degree of transfer of learning at both students’ and teachers’ levels. Students were able to comprehend through English the mathematics and science concepts better. They were also able to connect their disciplines with the language through the integrated lessons and make use of English in a more academic setting. At the same time, teachers across the disciplines were able to integrate the different disciplines in the lessons without losing their focus of the professional and academic expertise, be it content or language.

This project was a cross-disciplinary collaborative effort in which teachers shared their specific disciplinary curricula with others in order to create cohesive integrated lessons. Many, if not all, enjoyed working in this environment and had their concerns dispelled. As one teacher said,

*“...at the same time, I learned a lot in not only seeing, not only in knowing the importance of collaborating with other teachers but being able to express scientific terminology in ways, you know, again, I’ve done this before, but in even more so, the need to put into English.”*

Another teacher spoke of “...the common bond we have now that you know, we have the same students, and that we’re in the same boat, trying to do, really the same thing in training, educating the students.” This shared goal helped stimulate the discussions and strength of the experience among teachers and build a sense of working together as a team or part of a teaching and learning community.

From the start, teachers who were involved in the project predicted some level of complexity since this was a new approach to teaching and learning. In particular, trying to accommodate their varied schedules and workloads across two campuses was expected to be a challenge. However, in this project, these obstacles amongst the teachers were not as difficult as expected. One of the mathematics teachers noted that, “I thought it would be more difficult, partly because we’re on different campuses and because there are conflicts in our schedules. But it turned out to be not so bad at all because the English teacher is right next door, we both

come in early, or did come in early every day and we could talk about these things before class.”

One of the major reasons this project was initiated was to create a professional development environment across the different disciplines at the university that would increase the efficiency of the Foundation program in general. Teachers reported that lesson study provided a process for developing a more integrated, cohesive program. For example, an English teacher reported, “Hey, the teachers are not teaching completely different things. They're teaching the same thing from different angles.” A mathematics teacher agreed, even likened the experience to fishing, “...occasionally someone will surprise you and they'll work it out, and they get great pride knowing that... It's a bit like fishing...you suddenly got them hooked because when you go back and show them this totally new thing was in fact built from something that they already knew... they're going to buzz out of it. So if they're all brand new concepts, I don't see how you can do that. There's no such thing as a brand new concept.”

Lesson study has been found to promote collaboration in higher education, where many teachers are focused only on their own disciplines. This project facilitated the environment where faculty saw themselves as collaborating to support student learning. One English teacher reported that he saw “English teachers as support for the science and mathematics.” A mathematics teacher also viewed the collaboration as a plus, “So if I can team up with a group of physicists, chemists... linguists and can put something into context, then to me that's relevant and that's motivating for the students.” Moreover, the teachers believed that the benefits expanded beyond the classroom and the team to the institution as a whole. “When the students see that and they see cooperation among us, then it strengthens the institution, the department.”

English teachers also reported a positive impact on the instruction from being associated with content teachers and content in context. English teachers no longer saw themselves or were seen teaching language only; they also shared the value of the content of other disciplines. One English teacher felt that students “...have always more respect to these content teachers than us [English language teachers].” In using this modality, the English teacher felt a positive response from the students when applying this project, adding, “It's very refreshing to teach content. I mean, to me it was meaty.” One goal of lesson study is to turn observation, which is usually associated with supervision, into a process that fosters better curriculum, instruction, and outcomes for students. Teachers commented about their professional gains from observing their colleagues across the disciplines, as well as their students. Since lesson study focuses on students' interactions, teachers were impressed by the positive impact they noticed from their students. As one English teacher said, “What also surprised me was the dynamics in the classroom, the students, for all the teachers. The students who paid attention--paid attention. The students who didn't--didn't. I thought it would change with different teachers.” This teacher further said that the process was one in which he learned, “something about mathematics, I learned about physics, I really liked it. And also, I really liked how the students did not react differently to different teachers.” In addition, a mathematics teacher also said that he found the integrated lesson was a way “to get the students motivated, keep them interested because they tend to compartmentalize.... Now a stimulating math lesson is when I believe when you come in and you hit them with something they think they don't know.”

## Conclusion and Recommendation

While both language and content teachers said that they benefitted from working together, according to one English teacher, content teachers benefitted the most: “I think, my feeling is that science people might have benefitted. [*The chemistry teacher*] probably is good at this anyway, but I think they might have benefitted from just knowing ... [about] our bags of tricks in the classroom and our techniques.” However, a mathematics teacher found that working with a scientist was the most beneficial: “I found it enlightening; it was interesting to see how the physicists approach something, the way the mathematicians approach a little bit differently, so then you make a mental note.” And an English teacher enjoyed the cognitive challenge of teaching English with science and mathematics content as explained above.

Since each teacher is somewhat unique in his/her teaching methods, team observation made it possible to share those individualized instructional strategies. One English teacher said, “Coming together....when you do this type of thing, it forces the content and English teachers to work together so they have a better understanding of what they were doing and better understanding of the students.” This was similar to the experience of the mathematics teacher who recognized the differences in approach from teachers from various fields. On the other hand, group dynamics is a critical aspect of the collaboration that needs to be carefully addressed. One of the teachers pointed out, “It could be sabotaged... And there are people here who I wouldn't want to work with on this project. But given if those were particular people who believe in it, it was brilliant... I think it's really important to say, given the teacher motivation, and their belief, it'll work. But it could be totally sabotaged.”

In summary, in lesson study, classroom teachers develop and manage their professional development as they seek to improve student outcomes. The process combines features of effective professional development, especially for experienced teachers, including action research and learning communities. However, research on lesson study in higher education is still limited, especially with studies that involve interdisciplinary teams of teachers. Nor has there been any research on the use of lesson study with English, mathematics, and science teachers in a university preparation program.

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# AN EVALUATION OF THE CHALLENGES CAUSED BY DIVERSITY IN TEACHING AND LEARNING

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## **Abstract**

The aim of the research was to evaluate the challenges caused by diversity in teaching and learning. This study was underpinned by constructivism as a theory of teaching and learning. The constructivist classroom should be an environment based on inquiry which will lead the learners to deep understanding of the concepts under scrutiny. This study employed interactive methods, i.e. phenomenological and ethnographical designs. The researcher used purposeful sampling, in conjunction with the maximum variation sampling technique. The researcher analysed data through coding, categorising and establishing themes. It has been established in this study that most common challenges caused by diversity were domination and inferiority complex. Domination manifested itself in various forms, that is, majority language or age group over the minority, female learners over males, and fast learners over those who need more time to understand religious differences and learners who come from families which are well provided for over those who come from less privileged families. To address issues of domination and inferiority complex, teachers should encourage mutual respect amongst learners by addressing them with equal respect.

**Keywords:** Domination, diversity, inferiority complex, facilitation, interaction.

## **INTRODUCTION**

Most communities in South African urban areas are constituted by people of who differ according to racial background, customary practices, religion, culture and sexual orientation, among others. Thus, it is not always easy to understand and provide for their different needs. Schools in urban areas, as community structures, are faced with some challenges caused by diversity. The establishment of schools is determined by need and the number of these schools within a community is dependent on the number of potential learners, not by other factors, such as learners' racial or ethnic background and religion. A school in a community is expected to render a service of teaching and learning to all community members from diverse backgrounds. This means that a school will always be constituted by learners from diverse backgrounds. This article concentrates on the challenges of the facilitation of learning at schools with learners from diverse backgrounds. In other words, this article explores the challenges that are caused by diversity, which teachers experience when planning and facilitating the learning process.

Teachers experience challenges when facilitating learning in diverse classrooms and this has an impact on learners to work effectively together as members of a team or group. Due to their diverse backgrounds and cultural differences some learners have reservations about other learners' uniqueness; as a result, they criticize their judgments and behavior in response to the same eventuality. They evaluate others according to their own standards and personal prejudices. This may cause a breakdown in communication which deters learning. Communication is affected by language differences, ethnic idioms and figures of speech. Each learner interprets the statements of others according to his/her understanding; learners

who are conscious that other learners may not grasp their intentions are reluctant to participate in discussions. Another problem with a class of learners from diverse backgrounds is curriculum development. Each learner has individual needs. Teachers are expected to plan and facilitate the learning process that will satisfy all learners' needs.

South Africa, especially the Gauteng Province, is a multiracial, multicultural and multi-faith society. All people, regardless of their grouping according to race, culture, religion, gender, sexual orientation, social status, health, age, and disability, expect to be treated equally. According to the Constitution of South Africa, section 29 (Chapter 2 of the Bill of Rights), everyone has the right to basic education. The State has the responsibility to provide basic education to all its citizens regardless of their diversity. The Constitution of South Africa, Section 29 (Chapter 2 of the Bill of Rights) also addresses one of the most visible elements of diversity, language, by stipulating that everyone has the right to receive education in the official language or languages of their choice in public educational institutions where that education is reasonably practical. It means that learners should not be denied admission to a learning institution on the basis of language. The researcher wants to contribute towards creating an environment in classrooms that will promote peaceful coexistence of people with different cultures, religion, sex or gender, sexual orientation, social class, age, health and disability. This research seeks to reverse the impact of apartheid policy of separate development in homelands that were demarcated on the basis of language and ethnicity.

### **Theoretical Frameworks**

Research scholars argue that theoretical paradigms about knowledge and learning influence education systems of countries. This research was underpinned constructivism. According to Gay (2008), a constructivist teacher and a constructivist classroom are distinguished from a traditional teacher and classroom by a number of identifiable qualities: the learners are actively involved, the environment is democratic, the activities are interactive and student centred, and the teacher facilitates a process of learning in which the students are encouraged to be responsible and autonomous. Constructivist classroom is an environment in which student will have enough time to develop mental models of the content, which will assist in moving that knowledge away from primary content area, so that it can be applied elsewhere (Spiro 2006). Matthews (2007) states that the teacher is seen as a facilitator of learning, where learners are permitted to move around freely, use of time is flexible rather than structured, and evaluation compares learners to themselves rather than to peers, with de-emphasis on formal testing. Teachers need to recognise how learners use their own experiences, prior knowledge and perceptions. The constructivist classroom should be an environment based on inquiry which will leads the learners to deep understanding of the concepts under scrutiny. Social interactions and context is necessary for learning to occur. Constructivist classrooms are structured so that learners are immersed in experiences with which they may engage in interactions, invention and meaning-making inquiry.

Martin (1994) argue that although teachers do not necessarily follow a deliberate constructivist approach to teaching in their classrooms, a number of implications for teaching practice can be derived from it, namely:

- A constructivist approach recognises the value of a child's inherent curiosity
- Science is viewed as a dynamic, continual process of increasing a person's understanding of the natural world

- Knowledge construction occurs within each individual through interaction with other people and the environment
- The teacher following a constructivist approach largely functions as a facilitator of knowledge construction and takes the following alternative roles: presenter, observer, question asker and problem poser, environment organiser, public relations coordinator, documenter and theory builder.

In teaching and learning environment the learners' curiosity to learn should be aroused. This can be done by using attractive teaching and learning aids. As facilitators of learning teachers should guide learners to discover for themselves as they interact with the learning process. Knowledge can be regarded as an individual construction of reality through interaction with other people and the environment they live in. Constructivism is a theory of learning, not a theory of teaching. Therefore, instructional theories should translate the learning theories into instructional strategies. These instructional theories should prescribe series of strategies the educator should follow in order to produce certain types of learner learning. The objective of this research was to explore the challenges caused by diversity in teaching and learning. The main research question was as follows: What are the challenges caused by diversity in teaching and learning in South African urban schools?

## **RESEARCH DESIGN AND METHODS**

According to Creswell (2007), research design refers to the entire process of research, based on certain design principles. The qualitative research designs are categorised into interactive and non-interactive methods. Interactive is when the researcher collects data directly from the participant. There are four interactive approaches: ethnographic; phenomenological; critical race theory; and grounded theory designs. The non-interactive methods are methods that investigate the environment, current and historical evidence without direct contact with the participants like field observation, document analysis and artefact collection. This study employed interactive methods, i.e. phenomenological and ethnographical designs.

McMillan and Schumacher (2006) describe a phenomenological design as a study that describes the meanings of a lived experience. The phenomenological study is a process of understanding and reflecting what participants perceive about life/concepts from their own everyday experience. Just like the choice of a research approach, the choice of research design has an effect on the type of data collected. Springer (2010) maintains that a phenomenological approach differs from the ethnographic because it is more exclusively focussed on the subjective experience of the participant, while ethnographic approach examines individuals or groups in terms of how they represent a particular culture. Springer (2010) defines culture as the acquired behaviours, beliefs, meanings, and values shared by the members of the group.

It means that data that were collected through phenomenological design were collected from teachers themselves, whereby they were telling their own experiences regarding the challenges that are caused by learners' diversity. Data collected through the ethnographic design were collected during lesson observation whereby the researcher studied individuals or groups of learners that represent a particular culture, both as a collective and personal identity and teachers' reaction and/or innovativeness.

## **Data Collection**

Sampling is an essential part of research because the results of the investigation come from the targeted population. Population, as illustrated by Springer (2010:), is the entire group of people on whom investigation is intended to offer insight, and the sample are the selected few who will actively participate as participants. The researcher used purposeful sampling, in conjunction with the maximum variation sampling technique. I selected four schools in the Tshwane West District of the Gauteng Department of Education constituted by learners of different ethnicity, customs, languages, religious and sexual orientation. Springer (2010) cautions researchers to guard against “sampling biases”. Sampling bias is experienced when the sampled individuals are not representative of the targeted population, when the sampled individuals do not represent the diversity of the population and when the extent of attrition is very high. The researcher, as far as possible, made sure that teachers who were sampled represented all elements of diversity. All 16 sampled teachers were interviewed. Four out of the 16 (sampled) teachers, that is, one from each school, were selected for lesson observation and follow-up interviews.

This research required teachers to relate their experience and define its meaning and its effects; therefore in-depth interviews were employed. McMillan and Schumacher (2006) describe in-depth interviews as open-ended questions that obtain data of particular meanings as individuals conceive or interpret their world and as they explain or make sense of the important events in their lives.

To be focussed yet flexible, the researcher employed an interview guide approach. Questions were planned in advance but the sequence of questioning was guided by the situation and the manner in which participants responded. Some answers needed follow-up questions which were not written in the interviewing instrument. McMillan and Schumacher (2006) confirm that in the interview guide approach, topics are selected in advance, but the researcher decides the sequence and wording of the questions during the interviews. Furthermore, the researcher extended this by creating follow-up questions at times during the interviews. This is where active research fits in well. As indicated earlier, active research implies that both participant and researcher learn during the research encounter.

According to Merriam (2002), research findings are trustworthy to the extent that there has been some accounting for the validity. The researcher conducted this study in an ethical manner and used more than one data collection approach to develop insight together with the participant, through the way in which I have developed the results, also by liaising with participants. Van Der Nest (2012) agrees with Merriam when he maintains that the rich ‘thick’ detailed description of the background information and settings of research field serve to enable the reader to interpret general findings for future practice. According to McMillan and Schumacher (2006), ethics deal with beliefs about what is right or wrong, proper or improper, good or bad. The researcher sent an abstract of the research proposal, completed form to the Gauteng Department of Education that requested permission to conduct research in their province. The researcher indicated to participants that their participation was voluntary, they were free to withdraw from the study at any time and they have a right to refrain from answering questions with which they were not comfortable

### **Validity and reliability**

When qualitative measures are used in research they need to be looked at using measures of reliability and validity in order to sustain the trustworthiness of the results. Validity

determines whether the research truly measures that which it was intended to measure or how truthful the research results are. In this paper the researcher ensured reliability of the research by listening to the audio tape recordings by the same person or different people many times. The researcher also spent sufficient time with the participants and observed persistently in order to ascertain validity of information as well as by triangulation, which is, using more than one method of data collection. To ensure that reliability and validity is ascertained in this critical paper, the researcher first pilot-tested the research instruments and used opinions from experts.

### **Data analysis and Interpretation**

The researcher analyzed data through coding, categorizing and thematizing as described by De Vos, Strydom, Fouch and Delpont (2011). Merriam (2002) augments De Vos et al.'s argument by indicating that data analysis does not start at the end of data collection, but data collection and analysis is a simultaneous activity. The codes of the data in this study emerged from the interview questions and field observational statements. The clustering of these codes resulted in the categories that correspond with the objective of the research. The themes which revealed the findings of this study emerged from the clustering of these categories. McMillan and Schumacher (2006) maintain that categories, patterns and codes are not imposed on data, but they emerge as inductive analysis proceeds.

The researcher employed the splitting method of coding. Saldana (2008) maintains the splitting method of coding encourages careful scrutiny of social action represented in the data. Initial coding was done by rephrasing each and every participant's statement in very few words to describe the core meaning or implication of each statement. All sentences or participants' statements that had the same meaning or implication were allocated the same code.

After review and refinement of codes, codes which were addressing the same objective were clustered into one category. Codes like, different language groups; different age groups; different gender, etc., were shaded with the same colour and clustered under "Elements of diversity". Further scrutiny exposed the fact that all the challenges were expressed or committed by both learners and adult education facilitators through communication and language-use. All codes that implied communication and language-use by teachers were clustered, and those which implied communication and language-use by learners were clustered separately. As I was following an active research approach, participants' statements regarding lessons learned and new knowledge acquired were coded and clustered as "Participants' lessons and discovery during the interviews".

After grouping of different codes into clusters, I had to decide which clusters should be categories, which ones should be sub-categories and which categories should be clustered to form a theme. The cluster of "Elements of diversity" was identified as Theme no.1 because it was addressing research objective number one and it is one of the main components of the research topic. "Primary elements of diversity" was identified as Category no.1. Categories of domination and inferiority complex, with their sub-categories and the role of adult education facilitators were addressing objective no. 2, which is, to identify corresponding challenges that are caused by these elements of diversity. After the clustering of codes into categories, categories were clustered into themes. The objective of the study served as a guide.

## RESEARCH FINDINGS AND DISCUSSIONS

### Domination

One of the most evident challenges of diversity, which was raised by all participants, was domination. Domination happens in different ways. Teacher F said “*The class is divided into different language groupings that want to dominate one another*”. Teacher A said “*These senior learners, somehow, dominated the young learners, though not deliberately*”. The other teacher said “*Young learners, who are in the majority and also senior learners whose language group (Sepedi & Setswana) is in the majority, seem to want to dominate the learning process*”. Teacher J said “*Learners of my language group, IsiNdebele, misunderstood me as discriminating, they joined me. They did not respect learners of these minority languages, they were intolerant and abusive. They started to dominate the class*”. Teacher F observed that Sepedi-speaking learners, Christians, and learners who are repeating the grade seem to want to dominate the learning process. According to teacher L, senior learners who are familiar with the subject matter due to their background from the mainstream and those that are repeating the grade seem to want to dominate the discussions. Teacher C also pointed out that the privileged or learners of high social status also seem to want to dominate the discussions.

### Signs and Symptoms of Domination

Some of the symptoms of domination that were mentioned by participants are: majority age/language group discriminate against the minority ones; senior learners undermine young learners by interrupting them when they struggle to participate in the discussions. Teacher H observed the symptoms of domination in his class: “*The class is divided into different language groupings that want to dominate one another. Whenever one expresses him or herself in his/her home language, other groups interrupt him/her claiming that they don't hear him/her. Other learners resist dominance and criticize those who complain. Code switching causes chaos in my class. Which, I think, learners deliberately want to frustrate one another.*” Another symptom of domination is ethnocentrism. Teachers' observations are in conformity that the age factor is the source of domination when they respectively maintain: “*senior learners, who are in the majority in my class, want all learners to think from their perspective.*”

### Repercussions of Domination

This section highlights suppositions that participants presented as consequences of domination. Teachers identified conflict and resistance as one of the consequences of domination. Teacher P stated it as: “*Whenever one express himself or herself in his/her home language, other groups interrupt him/her claiming that they don't hear him/her.*” And the other group “*They resist dominance and criticize those who complain. Code switching causes chaos in my class. Which, I think, learners deliberately want to frustrate one another.*” Teacher L said that: “*learners who want to dominate are ones who cause conflict, They are bullies. They do not want to negotiate the solution*”. Teacher B said: “*Young learners repeatedly utter statements that suggest that they are intimidated. They said that your age and numbers will never overcome us. They are aggressive. Learners who are in conflict cannot learn cooperatively*”. Teacher L admitted that he may have exacerbated the repercussions by denying learners to use the own language: “*I have decided to discourage learners from code switching or use their home language when they express themselves.*” He

acknowledged during the initial interview that: *“Failing to express oneself is one of the barriers to learners’ participation.”* Other teachers’ observations were that learners were reluctant to participate and others dropped out because they were dominated by others.

Most teachers observed common sentiments of young learners, which results from domination: humiliation, fear, shyness and withdrawal. For example, teacher G said: *“young learners feel humiliated whenever interrupted by senior learners. They are afraid to answer questions or make inputs. Learners in the minority languages are shy to express themselves in their own languages. There are those who try to express themselves in the language of the majority and others withdraw from participating.”* Teacher C identified withdrawal from participation, and dropping out as resultant behaviour of senior learners; and teacher E identified quietness, a feeling of isolation and dropping out of Tshivenda and IsiNdebele speaking learners and non-Christians.

### **Inferiority Complex**

Inferiority complex, as highlighted by participants, is another challenge that is caused by diversity. Participants indicated that learners, in their diversity, which is, senior learners, young learners, learners from poor families and learners from minority language groups have a feeling of inferiority complex. Teacher G said: *“young learners, especially those in the minority language groupings display a feeling of inferiority or fear during learning facilitation processes”*. Teacher D said: *“Young learners and first time enrolments display a feeling of inferiority or fear during learning facilitation process”*. Teacher A said: *“Young learners feel rejected and unwelcomed”*. Teacher E also said: *“Underprivileged young learners display a feeling of inferiority complex or fear during the facilitation process of learning”*.

### **Causes of Inferiority Complex**

Inferiority complex happens when people have negative self-concept, which becomes worse when they experience domination. Participants in the study attribute the causes of inferiority complex to the fact that all cultural and religious groups are sensitive and irritated by negative criticism. Another cause of inferiority complex that was mentioned by some participants is fear of criticism, being ignored and being undermined. Young learners feel rejected and unwelcomed. Learners with low level of understanding are afraid to expose their unfamiliarity on the topic which is being discussed. Incapacity of learners to deal with big load of work also causes inferiority complex and may lead to dropping-out.

Some participants acknowledged that they might have exacerbated inferiority complex by ignoring learners whom they suspected they were struggling with inferiority complex. A teacher’s disclosure of his religious affiliation may cause learners of other religions to feel less important as compared to those who share the same religion with an adult the teacher. Teacher N said *“Yes, it is possible that non-Christian learners may think I am not talking to them when I motivate them from the Christian point of view. I did know that there are non-Christians in class but did not accommodate them. Maybe that is why some of them have dropped-out”*. Patrick relayed his role in the worsening of challenges of diversity: *“The problem with me was that I could not express myself in some of the learners’ languages. Maybe, the manner in which I told them that I don’t understand their languages sounded to them as if I am discriminating against them. Other learners, of my language, also understood my statement as discriminating too”*. Patrick acknowledged that he may be lacking a

professional communication skill, which resulted in conveying a message that he had not intended to learners. But he had the ability to correct the wrong impression and the courage to apologize to learners. Other teachers mentioned that they consulted their colleagues and assumed that teaching and learning might contribute towards low self-esteem of young learners because they give more attention to senior learners.

### **Symptoms and Repercussions of Inferiority Complex**

Participants said that they observed a feeling of inferiority complex among learners when young learners were afraid to answer questions or make inputs, when they refused to stand in front of the class and present their reports, when they withdrew their participation. Teacher G said: *“They showed their dissatisfaction and inferior feeling by immediately stopping to talk whenever they were interrupted, then stopped to participate for the whole session.”* She said that she, like other teachers, laid ground rules in class to foster respect. But it seems that her rules are not always adhered to.

Senior learners, in classes which they are in the minority, do show signs of inferiority complex. Teacher O said: *“Senior learners utter statements that suggest that they are being intimidated”*. Teacher I also raised the issue of learners turning to silence when they think others are trying to overcome them. As she indicated: *“The underprivileged do not participate during the facilitation process of learning. They are always silent. They only respond when called to. I think that they have a feeling of inferiority complex because they have lost hope about their self-concept which has been dented by other learners.”*

When asked if he did observe any groups or individuals who display a feeling of inferiority complex or fear during the learning process, teacher B said that it is not fear, but they are on guard against abuse. This is how he stated it: *“They always refer or remind one another of the previous abusive incidences which they will not allow to be repeated”*. He said that they were talking among themselves as young learners as a warning to all class mates (the senior ones) not to abuse them. That is why teacher F referred to it as aggression. He said that: *“It means that fear of abuse lead to aggression”*. Young learners and first time enrolments dropped out due to discrimination.

### **CONCLUSIONS**

Domination manifested itself in various forms, that is, majority language or age group over the minority, female learners over males, and fast learners over those who need more time to understand religious differences and learners who come from families which are well provided for over those who come from less privileged families. Findings also reveal that domination is experienced when the language group that dominates the area or the classroom expects the minority to speak the language of the majority. Participants' statements during interviews suggest that non participation and attrition of young learners is caused by, among others, domination by senior learners. Findings from this study suggest that an inferiority complex is an emotional reaction to domination. Findings indicate if a learner's language is undermined, they feel reduced and alienated and they do not feel that they are in control of their learning process, which Knowles (in Crous et al. 2002) propagates as a characteristic of diverse learners. They do not have confidence to participate during the discussions. They develop a negative self-concept, which results in an inferiority complex.



## RECOMMENDATIONS

To address issues of domination and inferiority complex, the researcher recommends that teachers should encourage mutual respect amongst learners by addressing them with equal respect, enable learners to shift preconceived attitudes and beliefs that are based on incorrect information, train them to recognize, respect and accept one another with their differences, and demonstrate to learners that their contributions are equally important, regardless of religious orientation, age, social class, sexual orientation and gender. When that happens, the integration dimension will be achieved; three dimensions of multicultural model of education (Content integration, Prejudice reduction and empowering learning culture) will be implemented; and objectives of the anti-racist model of education (Integrating multiple centres of knowledge and Recognition and respect for difference) will be achieved.

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# SELF-REGULATED LEARNING AMONG STUDENTS OF MOUNTAINS OF THE MOON UNIVERSITY

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## Abstract

The challenge in teaching and learning in the 21<sup>st</sup> Century is found in the over-reliance of learners on their teachers which leads them to be spoon fed without putting enough effort on their own for knowledge construction. This phenomenon can be reversed by inculcating a self-regulation approach for learners to enhance their own learning through assessing and critically evaluating knowledge sources. For this to happen, we need to first establish if learners possess self-regulatory learning behaviours in their life. This research reports the findings of a survey conducted at Mountains of the Moon University in Western Uganda about the presence of self-regulated learning among learners and gender differences in self-regulated learning behaviours of on-campus and off-campus students. A survey was conducted among 270 learners by the use of the online self-regulated learning questionnaire with scales of goal setting, environment structuring, help seeking, task strategies, self-evaluation and time management. Descriptive statistics were used to investigate the means and standard deviations of the presence of self-regulatory learning behaviours among learners as well as the levels of self-regulated learning behaviour. T-test was used to investigate the differences in male and female learners' exhibition of self-regulatory learning behaviours. Results show that learners displayed self-regulatory learning in the blended learning course units and male learners exhibited high self-regulation in their learning more than their female counterparts. It was again found out that learners applied help seeking behaviours more than the other behaviours followed by environment structuring, goal setting, self-evaluation, time management and task strategies. The practical application of self regulatory learning behaviours for learners is important and this remains the focus for future research.

**Keywords:** Gender perspectives; self-regulated learning; on-campus students; off-campus students.

## 1. Introduction

Any learning process should ordinarily result into effective learning and skills acquisition. Our students need to learn how to learn and learn how to think through processes of self-directed learning. They should develop skills of accessing and critically evaluating knowledge sources as well as select useful information. Therefore analytical and critical thinking skills are typical 21<sup>st</sup> Century key characteristics of curriculum and they need to be enhanced further to enable learning to occur without learner spoon feeding by teachers. These skills can bring about knowledge construction which is an important aspect of self-regulated learning. Self-regulated learning is understood as 'an integrated learning process, consisting of the development of a set of constructive behaviours that affect one's learning' (Siegle & Reis n.d). Pintrich (2000) understands it as 'an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate and control their cognition, motivation and behaviour, guided and constrained by their goals and the contextual features

of the environment' (p453). Therefore, in self-regulated learning, a total learning process is envisaged and the leaders of this process are the learners themselves. They have to be involved in problem perception, adoption as well as assessment of alternatives. Research shows that student self-regulated learning skills are meant for knowledge acquisition as well as resulting into academic success (Dabbagh & Kitsantas, 2004; Schunk, 2001). Self-regulated learners are described as those who can direct new efforts as they undergo learning, (Ruohotie, 2002). Such learners are also characterised by giving direction to their learning process and they do this by setting goals that are challenging in the course of their study. They need to exhibit good strategies geared towards achieving their set goals as well as good levels of motivation (Zimmerman, Bandura & Martinez-Pons, 1992). They also need to be highly participative in their learning. Learner self-regulation is known to bring about better learning performance than where it is not exhibited.

### **1.1 Justification for the present study**

A lot of studies have been done focussing on self-regulated learning more in regard to e-learning where online access through videos, animations and audio are used (Kramarski & Gutman, 2006; Vighnarajah, Wong & Kamariah, 2009) but self-regulated learning in traditional classrooms combined with online aspects through learning management systems has comparatively had little attention. It has not even been established in regard to its being present in rural school learners in Uganda and given the traditional home chores for females in a Ugandan setting, it has not been established if female learners can exhibit self-regulatory learning skills compared to their male counterparts. We note that self-regulatory skills can be taught, learned and controlled but if there should be self-regulatory skills in learners of MMU as this study should establish, they have been inadvertently taught and are therefore being unconsciously exhibited by the learners. This study therefore is meant to make a starting point to consciously impart self-regulatory learning skills by teachers to the learners once it is established that self-regulated learning behaviours are present in learners. This study is premised on the fact that there is 'permanent latent presence of self-regulation of behaviour in everyday life of an individual' (Vávrova, Hladik & Hrbáčková, 2012. P333) and all learners use regulatory processes to some degree in their learning process (Zimmerman, 1990).

### **1.2 Significance of the study**

Teachers and education administrators need to take advantage of the existence of self-regulated learning skills in learners and develop plans in their preparation to teach so that learners are assisted to use the skills to greater advantage and teachers can also tap into these skills. The education systems should be able to produce graduates who possess analytical and critical skills for knowledge construction in learning.

### **1.3 Theoretical framework**

Self-regulatory behaviours of goal setting, environment structuring, help seeking, task strategies and self-evaluation form the basis for learner satisfaction (Barnard, et al 2006) and their presence in learners consciously or unconsciously is worth exploring. It is important that learners get involved in setting goals for their study as this ensures better academic performance (Thompson, 1998; Cury, et al 1999; Schrum & Hong, 2002). Although Lynch and Dembo (2004) lay emphasis on environment structuring for distance education students as the ones who need to structure their learning environment at home or elsewhere, this can also apply to on-campus learners who study in lecture rooms but also do self-study at home

or elsewhere. The environment in both cases may not be so structured and controlled and therefore requires proper structuring for successful learning.

Learners in different environments need to manage their time and successful time management has been found to be related to academic performance (Balduf, 2009). Management of study time assists in learning efficiently and once learners possess time planning and management skills, they are able to use time efficiently in the process of learning (Zimmerman, et al 1994). Norris et al (2006) noted that once learners are organized and possess time management skills, it results into better academic achievement.

Help seeking as a self-regulatory behaviour is needed to reduce social distance between distance education learners and has been emphasised by Kirmizi (2014) especially through the use of technology and other means. It is also emphasised as an important aspect in distance education (Holmberg, 1995; Hara & Kling, 2000; Wang & Newlin, 2002). We note that learners, whether distance or on-campus experience some level of isolation away from peers and they all need some level of help seeking in their learning in order to reduce the social distance between learners.

Self-regulation also includes self-evaluation whereby learners need to do an evaluation of their effectiveness in the learning process and in doing this, they exhibit their self-regulatory skills and behaviours. Self-evaluation can best be done by learners gaining skills in monitoring themselves on the learning objectives. They should be able to develop strategic ways of going about their learning as well as make necessary adjustments where possible.

### **Self-regulation and gender**

Studies show no significant differences between males and females in their self-regulatory learning skills though some specifically observed self-regulatory behaviours show differences in regard to gender. For instance Kirmizi (2014) found differences in their environment structuring behaviours. Other studies however show that male and female learners exhibited differences in the use of self-regulated learning strategies in their learning (Young & McSporrán, 2001; Hargittai & Shafer, 2006). Zimmerman and Martinez-Pons (1990) noted gender differences in goal setting and environment structuring whereby females do better in these self-regulated learning aspects and Bidjerano (2005) found that female learners do well in time management skills than their male counterparts. However, the study found no significant differences between male and female learners with regard to help seeking

### **1.4 Aim of the study**

The general aim of this study is to investigate the level of self-regulatory learning behaviours among on-campus and off-campus learners of Mountains of the Moon University as well as the gender differences regarding self-regulatory learning behaviours.

### **1.5 Specific objectives of the study**

1. To find out if self-regulated learning behaviours are present among on-campus and off-campus learners at Mountains of the Moon University.
2. To identify the gender differences among male and female off- and on-campus learners' self-regulatory learning behaviours.
3. To investigate the level of self-regulatory learning behaviours of the learners.

## 1.6 Research questions

In view of the above general aim, the following research questions were formulated to guide the study.

1. Do on-campus and off-campus learners at Mountains of the Moon University exhibit self-regulated learning behaviours?
2. Are there differences in self-regulated learning behaviours between male and female learners at MMU?
3. What are the levels of the self-regulated learning behaviours of the learners at MMU?

## 2. Method

### 2.1 Research setting

The study was set up at Mountains of the Moon University in Western Uganda. Students from three schools out of five and those from the Postgraduate directorate participated in the survey during their blended learning study in an experiment involving Moodle as a learning management system in the period of September to November 2014. Students from the three schools were on-campus learners while students from the directorate were off-campus learners who only came to campus for registration and a general introduction of the course units to be studied. They came again to the campus for their final semester examinations at the end of the semester. On-campus learners had the first half of a 15 week semester done face-to-face while the second half was done online.

#### *Demographic characteristics of the participants*

A total of 270 learners participated in the study from the different schools as follows:

School of Education	48
School of Business and Management Studies	188
School of Informatics and Computing	18
Directorate of Post-graduate studies	16

**Table 1: Participant characteristics**

<b>Participant characteristics</b>	<b>Frequency</b>	<b>Percentage</b>
Gender :male	146	54.1
:Female	124	45.9
On-campus	16	06
Off-campus	254	94
Age groups: Young	236	87.4
:Middle-aged	24	8.9
:Old aged	06	2.2

### 2.2 Instrumentation

We primarily employed a survey design and quantitative approach and used the Online Self-regulated Learning Questionnaire by Barnard, et al (2009). This instrument has items of goal setting, environment structuring, task strategies, time management, help-seeking and self-evaluation. It was used to gather data on a five point likert scale ranging from 1=strongly disagree to 5=strongly agree with 3 as neutral. Reliability test results showed adequate internal consistency reliability of the scales with reliability coefficients between .66 and .85.

One item from the help-seeking scale was removed to raise internal reliability from .63 to .66 and was therefore not used in further analyses.

**Table 2: Instrument reliability**

Item	Reliability of the scale ( $\alpha$ )	Previous reliability results for the scale	
		(Barnard et al, 2009).	
Environment structuring	.77	.90	.79
Goal setting	.85	.86	.93
Time management	.68	.78	.73
Help-seeking	.66	.69	.74
Task strategies	.72	.67	.77
Self-evaluation	.78	.78	.73

### 2.3 Data analysis

Descriptive statistics were applied to establish frequencies of the demographic characteristics of the participants. The means and standard deviations regarding the presence of self-regulatory learning behaviours were established using descriptive statistics. T-tests were used to establish the gender differences in self-regulatory learning behaviours.

## 3. Results

### 3.1 Presence of self-regulatory learning behaviours among learners at MMU (RQ 1)

The students' ability to exhibit self-regulatory behaviours is depicted in the mean results that are between 3.4 and 3.7 for goal setting implying that learners do exhibit self-regulatory learning behaviours through goal setting. Table 3 below shows results for learners' ability to exhibit goal setting for self-regulatory learning:

**Table 3: Goal setting results**

Goal setting	Mean	SD
Setting standards for assignments in the courses	3.5	1.0
Setting short-term and long term goals for the semester	3.4	.99
Keeping a high standard for learning in the courses	3.6	.87
Setting goals to help manage studying time in the courses	3.7	.85
No compromise to quality of work because it is online	3.6	.90

### Environment structuring

Mean results for environment structuring show that learners were able to choose appropriate study environments for their study with mean results ranging from 3.5 to 3.7 as shown in table 4.

**Table 4: Results for environment structuring**

<b>Environment structuring</b>	<b>M</b>	<b>SD</b>
I choose the location where I study to avoid too much distraction	3.7	.98
I find a comfortable place to study	3.7	.88
I know where I can study most efficiently for my courses	3.6	.99
I choose a time with few distractions for studying for my courses	3.5	.99

**Task strategies**

Descriptive statistics results show that students were able to set out their tasks during their study online and in the regular class time accordingly. Mean results for the items range from 3.1 to 3.3 with standard deviation ranges of .96 to 1.1 as seen in table 5 below.

**Table 5: Results for task strategies**

<b>Task strategies</b>	<b>M</b>	<b>SD</b>
I try to take more thorough notes for my courses because notes are even more important for learning online than in a regular classroom.	3.3	1.1
I read aloud instructional materials posted online to fight against distractions.	3.1	1.1
I prepare my questions before joining in the chat room and discussion.	3.1	.99
I work extra problems in my online courses in addition to the assigned ones to master the course content	3.2	.96

**Time management**

The results of the items on time management showed good levels of learners' time management behaviours in regard to allocation of time to study activities, scheduling time and distributing it evenly for study. Mean and standard deviation results range from 3.2 to 3.6 and .97 to 1 respectively as shown in table 6 below.

**Table 6: Results for time management**

<b>Time management</b>	<b>M</b>	<b>SD</b>
I allocate extra studying time for my online courses because I know it is time-demanding	3.5	1.0
I try to schedule the same time everyday or every week to study for my online courses, and I observe the schedule.	3.2	.98
Although we don't have to attend daily classes, I still try to distribute my studying time evenly across days	3.6	.97

**Help seeking**

Learners' help seeking behaviours were good enough from the descriptive results with mean ranges from 3.7 to 4.1 and standard deviation ranges of .79 to 1.1 as seen in table 7 below.

**Table 7: Results for help seeking behaviours**

<b>Help seeking</b>	<b>M</b>	<b>SD</b>
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I find someone who is knowledgeable in course content so that I can consult with him or her when I need help	3.9	0.89
I share my problems with my classmates online so we know what we are struggling with and how to solve our problems	3.7	1.1
If needed, I try to meet my classmates face-to-face	4.1	.79

### Self-evaluation

Results for self-evaluation by learners show that they were able to evaluate their own learning through summarising it in short notes, asking themselves questions about the course as well as communicate with peers to establish own progress during the study. Mean ranges were between 3.4 and 3.6 and standard deviations were between 1 and 1.1 as shown in table 8.

**Table 8: Results for self-evaluation**

Self-evaluation	M	SD
I summarize my learning in the courses to examine my understanding of what I have learned	3.4	1.1
I ask myself a lot of questions about the course material when studying my courses	3.6	1.0
I communicate with my classmates to find out how I am doing in my classes	3.5	1.0
I communicate with my classmates to find out what I am learning that is different from what they are learning	3.5	1.1

### 3.2 Are there gender differences in self-regulated learning behaviours of learners at MMU? (RQ 2)

An independent samples t-test was conducted to compare the self-regulatory behaviours of male and female learners. Results show that self-regulatory learning behaviours are more evident in male learners (mean=3.59) than in their female counterparts (mean=3.41). The t-test results show that there are significant differences in self-regulatory learning behaviours between male and female learners ( $t=2.353$ ,  $df=250$ ,  $p<.005$ , one tailed). Estimated marginal means of male and female learners in regard to exhibiting self-regulatory learning behaviours indicated that male learners had higher means in all the self-regulatory learning behaviours compared to the female learners as shown in table 9 below:

**Table9: Marginal means of male and female learners' self-regulatory learning behaviours**

Self-regulatory learning behaviour	Gender	Estimated marginal means
Goal setting	male	3.67
	Female	3.43
Help-seeking	male	3.92
	female	3.81
Environment structuring	Male	3.73
	female	3.51



Self-evaluation	male	3.54
	female	3.45
Time management	male	3.52
	female	3.33
Task strategies	male	3.28
	female	3.09

### 3.3 What are the levels of the self-regulated learning behaviours of the learners at MMU? (RQ 3).

Descriptive statistics were used to establish the mean and standard deviation results showing the order in which self-regulation behaviours are exhibited by learners. Results indicate that help seeking is the most applied self-regulation learning behaviour by the learners (M=3.88; SD=.73) followed by environment structuring (M=3.63; SD=.74). The least applied behaviour is task strategies (M=3.19; SD=.78) as shown in table 9 below:

**Table 10: Order of self-regulatory learning behaviours as reported by learners**

Self-regulatory behaviour	M	SD
Help seeking	3.88	.73
Environment structuring	3.63	.74
Goal setting	3.55	.75
Self-evaluation	3.50	.83
Time management	3.43	.78
Task strategies	3.19	.78

## 4. Discussion, implications and conclusion

This study set out to find out the presence of self-regulatory learning behaviours among learners of Mountains of the Moon University, the differences between male and female self-regulatory learning behaviours and the most applied self-regulatory learning behaviours by the learners. The results show that learners exhibit self-regulatory learning behaviours. They are able to set goals for their learning, structure their study environment, set their strategies towards achieving learning goals and manage their study time appropriately. They are able to seek help from peers in order to harmonize their learning and finally, learners did self-evaluation to examine their progress in learning. We also found out that help seeking was highly exhibited by the learners and as Karabenick (n.d) noted, learners who seek help for instrumental reasons are generally self-regulating learners. Help-seeking was moreover the most applied self-regulatory learning behaviour and research shows that it is correlated with student achievement (Ames, 1983; Karabenick, 1998; Kitsantas, 2002; Magnusson & Perry, 1992). Compared to other researches which show that learners in courses having online components are more likely to seek help and feel less threatened to seek it than those in traditional learning environments (Kitsantas & Chow, 2007), our study showed help seeking mostly applied under a blended learning approach. Learners again did well in environment structuring aspects especially in choosing suitable and comfortable locations for their study to avoid distraction. We again found out that learners did poorly in task strategies which involved making thorough notes, reading instructional materials, preparing questions before

discussions on the forum and working extra problems in the topics. This could require some skills in learner autonomy by teachers who should help learners to assume greater control over their own learning by helping them become aware of and identify strategies that they can potentially make use of (Homes & Ramos, 1991).

It has been found that learners who exhibit self-regulatory learning skills are known to ably articulate learning goals as well as make analysis of tasks involved in learning in regard to requirements and the resources at their disposal (Garner & Bol, 2011). This is the whole purpose of inculcating self-regulatory learning behaviours in learners as prior mentioned in our introduction. Our results therefore can be used to assist learners in their articulation of goals for them to be analytical learners.

However, their self-regulatory behaviours in regard to time management and task strategies were less exhibited comparatively ( $M=3.43$  and  $3.19$  respectively). Zimmerman and Martinez-Pons (1992) noted that effective time management requires learners to set specific goals and should feel efficacious to learn a task within allotted time. This could improve time management for efficiency in learning and implies good levels of self-regulation. The learner capabilities in task strategies especially prior preparation and reading instructional materials aloud to fight distractions were less exhibited. Self-regulated learning behaviours are more visible among male learners than in females. This normally results from the differences in their life responsibility. Females in many traditions in Uganda and Africa in general have to balance a number of roles such as mother, wife and employee (Yukselturk & Bulut, 2009). This accounts for the low self-regulatory learning behaviours found in this study. This study has also noted that male learners do better in all the self regulated learning behaviours as opposed to Bidjerano (2005) who indicated that female learners do well in time management than male learners and Zimmerman and Martinez-Pons (1990) who found that female learners did better in goal setting behaviours.

### **Limitations and suggestions for future research**

This study investigated the presence of self-regulatory learning behaviours among learners, gender differences and levels of self-regulatory learning. We did not deal with the differences in self-regulatory learning among on-campus and off-campus learners. Future research can go ahead to tackle differences or similarities in self-regulatory learning behaviours among on-campus and off-campus learners. Such studies can bring out the factors involved in case of differences or the reasons for similarities, if any similarities are identified. Such studies could also go a long way in informing practice on the best approaches towards self-regulatory learning among on-campus and off-campus learners.

In conclusion, the presence of self-regulated learning behaviours among learners of MMU should give a green light to teachers to exploit this scenario and engage learners in a process that sees them develop their own learning habits and knowledge construction. Teachers can also teach with ease because learners are able to critically assess knowledge sources to heighten their comprehension in the process of learning. How to close the gender gap in terms of self-regulated learning behaviours remains a challenge for educational change and future research. The traditional home chores and social responsibilities in Uganda still put more work on females than males thereby affecting self-regulatory learning behaviours of the female learners. Solutions to this scenario can be found through more research in order to recommend possible remedies for this gender imbalance.

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# AN INVESTIGATION INTO THE EFFECTIVE FUNCTIONING OF THE SECTION 20 SCHOOL FUNDING SYSTEM: THE CASE OF THE TSHWANE SCHOOL DISTRICTS

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## **Abstract**

The South African school system mainly consists of private independent schools and public ordinary schools. Public schools are divided into Section 20 and Section 21 schools. Section 21 schools are financially self-managed, whilst Section 20 schools' finances are centrally managed by their respective provincial education departments. The only means of income for Section 20 schools in South Africa is an annual fund allocation from the government, which is based on an annual "paper budget" submitted by each school. This study investigated the effective functioning of the Section 20 school funding system in the Tshwane North, Tshwane South and Tshwane West districts of the Gauteng Province in South Africa. The study used structured questionnaires that were distributed to the principals of the targeted Section 20 schools and the relevant Provincial Government Officials (PGO) of the three Tshwane districts. Based on the analysis of the questionnaires, results revealed that the functioning of the funding system of Section 20 schools, as perceived by the majority of the respondents, is not effective. Participants provided measures which could be taken by the department in order to ensure that the system functions properly. It should be noted that in April 2015, the Member of the Executive Council (MEC) for Education in Gauteng, took a decision to convert all Gauteng Section 20 schools to that of Section 21. Many of these schools do not possess the required financial management skills to manage their own funds. This research contributes to the debate as to whether the MEC made the right decision and whether this decision can apply to the rest of the country.

**Keywords:** Centralisation, decentralisation, effectiveness, no-fee policy, Section 20 schools, Section 21 schools, school funding.

## **Introduction and background**

The South African education sector, under the apartheid regime (1949-93), was characterised by resource inequality and discrimination. Lekonyane and Maja (2014:2) articulated that "...prior to 1994, education in South Africa was differentiated by culture", with reference to the different racial groups in the country and the black population coming off worst. Thus the need emerged for the post 1994 government to develop policies and legislation to address inequality within the South African education sector. In 1996, a new Constitution for the Republic of South Africa was promulgated along with the South African Schools Act (SASA). The Constitution was the first piece of legislation to guide equity in the education sector (Vally, 2009), while SASA was introduced to support the Constitution in guiding the South African education system (Pampallis, 2008:11). In terms of Section 29(1)(a) of the Constitution, everyone has the right to a basic education (Constitution of the Republic of South Africa, 1996). Chapter 4 of SASA introduced a system of differentiating between

centralised (Section 20) and decentralised (Section 21) school funding systems whereby Section 21 schools retained the system where government subsidy is managed by the school governing body (SGB), whilst Section 20 schools fund are managed by their respective Provincial Department of Education (PDoE) (Hansraj, 2007:5-7; SASA, 1996; Thenga, 2012:37-38).

Historically, due to the pre-1994 racially based education system, poor black communities in South Africa were not given the opportunity to manage their allocated schools funds, as a result no capacity existed within the schools to manage these funds and thus government had to step in and assist in managing the school's operations and allocated funds (Bechmann & Prinsloo, 2009). In 1998 the Department of Education (DoE) adopted the policy of National Norms and Standards for School Funding (NNSSF), which in effect required each PDoE to allocate all available learner support material funds to provincial schools in an explicitly pro-poor manner based on the number of learners enrolled per school (Reschovsky, 2006:32). Upon the policy implementation, public schools were categorised into quintiles for the purposes of allocating funds, with the poor schools (quintile 1 to 3) receiving more funds while the affluent schools (quintiles 4 and 5) received less funds. In 2006, the DoE further amended Section 35 of SASA to introduce the Amended National Norms and Standards for Schools Funding (ANNSSF), this was to declare schools serving the poorest communities as no-fee schools (Ramothiwa, 2010:1). The no-fee schools policy applies to public schools which are financially disadvantaged based on the poverty level and literacy level of their community. The introduction of the policy was an integral part of the government's strategy to alleviate the effects of poverty and redress the imbalance of the past (DoE, 2009:2). Most Section 20 schools are no-fee schools as there is a high rate of convergence between schools serving poor communities and falling within low quintile status (Prew, Msimango & Chaka, & 2011:25).

However, in the time since the implementation of the mentioned policies and pieces of legislation, many instances have been reported on where the Section 20 system failed to function effectively, to the severe detriment of already marginalised learners. Challenges related to procurement, delivery of textbooks, and appointment of suppliers was raised amongst others (Giese, Zide, Koch & Hall, 2009:62). In October 2009, the DoE introduced the Curriculum and Assessment Policy Statement (CAPS) which was aimed at facilitating the development and distribution of new textbooks and workbooks at public schools, broadly termed Learning and Teaching Support Materials (LTSM) (South African Human Rights Council (SAHRC), 2014:5). This initiative proved to be ineffective as it was reported that the implementation of the curriculum has been beset with considerable difficulties arising from lack of delivery or late delivery of textbooks and the delivery of the incorrect learning (SAHRC, 2014:6). This was further corroborated by Themane and Mabasa (2002:275) when they indicated that "...one of the most intractable problems in the South African education is the problem of the delivery of textbooks or, more broadly, learning materials". It was thus imperative that a study be conducted to investigate the effective functioning of the Section 20 school funding system. The problem statement for this study is as follows:

*The Section 20 centralised school funding system of the South African government, introduced to address the issue of equitable education across all communities, is not functioning effectively.*

## **Objective of the study**

The main objective of this study was to investigate the effective functioning of the Section 20 school funding system by obtaining the perspectives of the Section 20 school principals and relevant PGOs of the three Tshwane school districts (North, South and West) and to further make recommendation on how the system can be improved. In support of the main objective the secondary objectives of the study were to:

- Obtain an international perspective of school funding systems from other countries.
- Review the South African school funding system.
- Obtain and analyse the perceptions of Section 20 school principals and PGOs.

## **Literature review**

### *International perspective*

Literature on the school funding system of Brazil, Australia and United State of America (USA) was conducted. These countries have reformed to a decentralised system of school funding from previously following a centralised system. Zajda and Gamage (2009) defines decentralisation in education as a process of delegating authority and responsibility concerning the distribution and the use of resources (e.g. finances, human and physical resources) by the central government to local schools. In recent decades, trends within Australia have been to reduce the involvement of the centre in the day-to-day operations of schools and to decentralise educational administration and give schools greater responsibility and authority over school planning and decision-making. The State of Victoria has led Australian education school funding reform by being relentless, with a consistent trend, to arrive at the system of decentralisation. Victoria serves as an excellent example of what has occurred across Australian education reform which began in the mid-1980s when the introduction of self-managing schools was initially aimed at improving school's capacity to respond to local community and individual student needs (Levacic & Downes, 2004:154). Prior to the school funding reforms, the Victoria schools were centrally administered while finances were held and managed centrally (Levacic & Downes, 2004:30-31). Many principals described the old centralised funding model of Australia as ill-adapted to the challenges they face and that it worked against flexibility which resulted in it being too complex (Lamb & Teese, 2012:8). Lamb and Teess (2012:20-21) supports the decentralised mode of funding as they indicated that this system ensures an increased better management at a local school level and that schools are given greater authority, responsibility and accountability over finances.

The Japan Bank for International Cooperation (JBIC) (2005:7) indicated that the features of Brazilian basic education are of an extremely decentralised nature, which provides great organisational autonomy in organising their educational systems. In Brazil, funding and all resources are directly allocated to schools while salaries of teachers are directly payed by the local government. Prior to 1997, the education budget of Brazil, with reference to the State of Rio Grande do Sul was extremely centralised. State Schools did not receive any cash allowance for any kind of school expenses and all school supplies, equipment, repairs and maintenance had to be requested from the regional offices (Levacic & Downes, 2004:44). In 1995, there was consensus among government officials about the inefficiency of the highly centralised State's education system due to numerous bureaucratic tiers between the State policy makers and the school principals and the lack of community involvement in the local school management. To address this, Brazil launched the decentralised public education system program called "*Municipalizacao do Ensign*" translated in English as

“municipalisation of education”. This reform was aimed at bringing the educational policy decision-making closer to the local communities (Madeira, 2012:7). Levacic and Downes (2004:45) indicated that the State of Rio Grande do Sul further implemented the 1996 State decree n. 37104/96 which introduced financial autonomy for State schools. Madeira (2012:24) concluded that government reforms in the decentralisation of public services delivery has been widely implemented in developing countries, with public education being one of primary targets of these reforms.

In the USA, a central education system was created for New York in 1902 until the mid-1960, this was imposed to reduce fraud and improve accountability (Johnson, 2006). During the mid-1960s the United State had no political support for complete centralisation of school systems as the New York State legislature passed a law in 1969/1970 to decentralise all elementary and middle schools in the city, leaving the high schools centralised (Buder, 1988; McGrain, 1976:240). Article 52-A of the Education Law76 caused a reorganisation of the New York City public school system into community districts (McGrain, 1976:249). Snell (2004) regards a decentralised funding system as more efficient and producing better student development in that the decentralised public school district have significantly less fraud, less centralised bureaucracy, more money at the classroom level and higher student achievement. Zajda and Gamage (2009) further indicated that the policy of decentralisation in State school systems is a concept that has been developed and practiced commonly in North America and England for many years. Advocates for school decentralisation believe that this system brings about better relations between school and community and that it provides more efficient maintenance and support for local schools.

Although the decentralised system of funding is seen by most researchers as the ideal mode of school funding, Snell (2004) indicated that it is essential for government of any country to ensure that post the introduction of a decentralised school system, all principals should attend management training programs to prepare them to be chief executive officers of their schools, with full responsibility for staffing, budgets and scheduling. This was further emphasised by Levacic and Downes (2004:139-144) who stated that the training of principals and administrative staff in financial management procedures must be thorough and constantly refreshed as this is an essential skill that most principals do not normally have as a result of their background. During the 1990’s and early twenty-first century, many of the countries began to decentralise education and this phenomenon proceeded fastest in Latin America and Eastern Europe, with several countries in Asia and Africa following suit (Winkler, n.d). Willian G Ouchi as quoted by Snell (2004), concluded that how a school is managed matters most and that schools perform better on fiscal and academic outcomes when there is; a) local control of school budget by principals and b) open enrolment, which allows the per-pupil funding to follow the child. The international perspective clearly indicates that contemporary practice for improved student development and school management leans towards a decentralised education system. However, a decentralised education system requires school principals capable of accepting the responsibility and accountability that decentralisation impose.

#### *South African perspective*

Prew *et al* (2011:24) indicated that due to the South African legacy of apartheid in the unequal provision of schooling and its resourcing, any funding policy introduced had to take into account the differences between schools in terms of resources, poverty level, skills of



teachers and SGB's. As mentioned, the funding system for no-fee schools and the separation of public schools into Section 20 and Section 21 was introduced to remedy the problem. Public schools are granted Section 21 status by the PDoE if they are considered competent enough to deal with funds that will be provided directly to schools (Prew *et al*, 2011:25-26). According to the SAHRC report, by the year 2013 the total number of public schools in Gauteng was 2058 of which 92% (1893) of these schools were Section 21 schools and 8% (165) was Section 20 schools (SAHRC, 2014:23). This indicates that only a few number of public schools in Gauteng were still operating under Section 20. Mestry and Naidoo (2009:108) indicated that where Section 21 school are totally self-managed, Section 20 schools are dependent on the PDoE district offices for the procurement of resources, covering the costs of repairs and maintenance, paying for services rendered to the school and other general management of their funds. If a Section 20 school needs to make minor purchases or require services to be rendered, they have to submit three quotations of relevant service providers to the department who will decide on behalf of the schools which supplier will be appointed.

The South African perspective indicates that the government largely follows a decentralised education system with a small percentage of schools following the centralised education system. The issue is that this small percentage of schools are by large situated in the most marginalised of communities and if the Section 20 system is not effective, it adversely affects the government's policy of historical redress and educational equity. The question is thus whether these Section 20 schools are in the position to manage themselves, since if they are not, the problems in the centralised system should be addressed and improved were necessary.

### **Methodology and research design**

A qualitative study, by means of a survey consisting of two structured questionnaires (one for Section 20 school principals and one for district PGOs) was conducted. Creswell (2007:47-48) indicated that a qualitative research is an appropriate type of research design to employ when the researcher needs to explore a problem and also when a detailed understanding of the problem is needed. One of the strength of qualitative research is that it focuses on specific situations and it emphasises words rather than numbers (Maxwell, 1996:17). The questionnaires focused on issues pertaining to the allocation, utilisation, management and reporting on the funding system of Section 20 schools. From a list of public schools within Gauteng, which was obtained from the DoEs head office, a total of 24 Section 20 schools were identified within the three Tshwane districts. Based on this low population of Section 20 schools, the study conducted a survey of the total population within the scope of the study. Purposive sampling was followed as the population of the study was of a specific type (Section 20 school principals and relevant provincial government officials of Tshwane districts). The three PGOs of the three Tshwane districts were requested to participate of which two PGOs elected to do so, while from the 24 Section 20 school principals only 15 schools participated in the study. Questionnaires included open and closed-ended questions. Penwarden (2013) indicated that questions that are open-ended provide rich qualitative data and they afford the researcher with an opportunity to gain insight into all the opinions on a topic they are not familiar with. Sincero (2012) believe that close-ended questions are time efficient and allow foreasy coding and interpretation of responses. As confidentiality refers to the need to keep identifiable information about participants private, data obtained from participants will be strictly limited to the researchers.

### Data analysis and research findings

The following labels were used to refer to Section 20 school principals per district and PGOs who participated in the study:

- Tshwane South District > TSDP1, TSDP2, TSDP3...
- Tshwane North District > TNDP1, TNDP2, TNDP3...
- Tshwane West District > TWDP1, TWDP2, TWDP3...
- Provincial government official > PGO1 and PGO2

#### *Analysis of Section 20 principal responses*

**Table 1: Years of experience as principal for Section 20 school**

Options	TSD	TND	TWD	N	Total
1-5 years	2	4	2	8	53%
6-10 years	1	1	1	3	20%
Over 10 years	2	2	-	4	27%

Table 1 indicates the respondents had a mixture of experience as principals of Section 20 schools and this provided an accurate account of the effective functioning of the system.

**Table 2: Area in which the schools are situated**

Options	TSD	TND	TWD	N	Total
Rural	1	4	-	5	33%
Township	3	2	2	7	47%
Urban	1	1	1	3	20%

**Table 3: Quintile rankings of schools**

Options	TSD	TND	TWD	N	Total
One	2	3	-	5	34%
Two	1	1	-	2	13%
Three	-	1	2	3	20%
Four	-	2	1	3	20%
Five	2	-	-	2	13%

Table 2 and 3 refer to the areas in which the schools are situated and their quintile rankings respectively. Most (80%) of the Section 20 schools were from disadvantaged areas (townships (47%) and rural areas (33%)), which are the areas where the majority of the poor South African communities reside while only three schools (20%) were from urban areas. This explains why two-thirds (67%) of the schools fall within the poor school quintiles (one: 34%; two: 13%; three: 20%), which are regarded as no-fee schools while only one-third of schools were more affluent schools under quintiles 4 (20%) and 5 (13%).

**Table 4: Principal's perception on the effective functioning of the Section 20 school funding system**

Options	TSD	TND	TWD	N	Total
Effective	2	3	-	5	33%
Ineffective	3	4	3	10	67%

From the above table, it is evident that majority (67%) of the principals regards the functioning of the system as ineffective. A principal (TSDP3) stated that the system of Section 20 “does not assist schools due to the long procedure required to be followed when utilising allocated funds”. Another principal (TWDP3) further stated that “most of our requisitions are not met and wrong or items are delivered and most are of low quality”. It was indicated by TNDP1 that “service providers’ prices are too expensive and they are not market related”. Another principal (TWDP2) further pointed out that “there are always shortages on delivery and principals should always account for such”. It was also asserted by another principal (TWDP1) that “the system is not very effective due to late payments made by the GDoE”. On the issue of the need for additional funding, a principal (TSDP2) affirmed that “the schools run difficult without any other additional financial assistance from the department, as +-R35000 a year (for day to day operational expenses) is very little.

**Table 5: Application for Section 21 status**

Options	TSD	TND	TWD	N	Total
Yes	1	3	2	6	40%
No	4	4	1	9	60%

Although Table 4 reveals that most of the principals perceive the Section 20 school system as ineffective, it is noted that only 40% of the principals have previously applied for Section 21 status. An important aspect or requirement of being a Section 21 school, is proven ability of the school to operate and manage its allocated funds independently, and for this to materialise, sufficient training on financial management is essential for the SGB, the principal and the finance committee members. This is supported by Mestry (2006:27) who indicated that members of SGB’s and principals either have little knowledge of the Schools Act or simply interpret it incorrectly, which results in many schools experiencing financial mismanagement. The fact that the majority of the participating schools did not apply for Section 21 status may indicate that these principals do not regard their schools as not having the necessary capacity to self-manage their allocated school fund.

**Table 6: Funding system preferred by the principals**

Options	TSD	TND	TWD	N	Total
Section 20	2	2	1	5	33%
Section 21	3	4	2	9	60%
Either system	-	1	-	1	7%

As indicated by Table 6, majority of principals (60%) to operate as Section 21 as opposed to the 33% who supports the Section 20 school system. This indicates that most of the Section 20 schools are not entirely satisfied with the current status of the Section 20 school system. This is supported by a principal (TWDP2) who indicated that “Section 21 school system enables the school to develop and get services at the time they need”. One principal (TNDP4) indicated that “Section 21...gives the school the responsibility to run its affairs and therefore being responsive to the needs of the learners and the broader community”.

#### *Analysis of provincial government official (PGO) responses*

One respondent (PGO1) had more than 10 years of experience while PGO2 had between 6-10 years of experience in school budgeting. This substantiated the credibility and reliability of

their responses as they have a length of experience in dealing with school budgeting. PGO1 further indicated that under the Section 20 system, schools do not receive sufficient funds to pay for essential services such as water and electricity and that these schools cannot supplement their allocations due to their no-fee status. There were conflicting perceptions between the officials as to whether the system benefits the schools. The PGO2 argued that the current procurement procedure required to be followed by the Section 20 schools at the departmental level is lengthy and prices charged by registered ventures are exorbitantly high and as a result, this disadvantages the Section 20 schools. The PGO1 indicated that the system only benefit the schools in a sense that if the school do not have sufficient budget for essential services such as water and electricity, the head office will bail out the school and pay the account. But it is to note that the additional funds used to bail out the school will be deducted from the school budget of the subsequent year.

Both officials agreed that Section 20 schools can operate as Section 21 schools, but on condition that the people entrusted with the management of funds should first be skilled and well trained in financial management of school budgets. Bush, Joubert, Quist, Chalufu, Heystek, Maile and Van Rooyen as quoted in Mestry (2006:35) supported this by stating that training in financial management is fundamental in preparing and equipping school managers with financial skills and that every member, not just a few, must receive training. Furthermore the secretary of the National Association of School Governing Bodies (NASGB), Matakanye echoed these sentiments by indicating that continuous SGB training should not only focus on how to handle finances but should also be about the development and running of the entire school (Macupe, 2015:5).

### **Conclusions and recommendations**

The major findings of this study were aimed at responding to the research problem that *the Section 20 school funding system of the South African government, introduced to address the issue of equitable education across all communities, is not functioning effectively*. The findings revealed that there were numerous factors both at school level and at departmental level which contributes to the ineffective functioning of the Section 20 school funding system. From the schools' perception there seems to be much frustration in having to work through the PDoE for all acquisitions. When considering most of the complaints it reflects that the PDoE that does not react in time and does not follow acceptable procurement policies and procedures in terms of the appointment of quality service providers. To add to this frustration both principals and PGOs feel that the government fund allocation is not enough and yet due to the inefficiency of the department, a percentage of these funds are forfeited annually as unused. However, the solution to grant the affected schools Section 21 status may not be the ideal decision at this stage as the majority of these schools, by their own admission may not have the capability to manage allocated school funds by themselves. As a result, the principals and participating PGOs were asked how the system of Section 20 school funding can be improved. Table 7 represents their recommended suggestions.

**Table 7: Ways of improving the Section 20 school funding system**

<b>Section 20 principals</b>	<b>Provincial government officials</b>
The PDoE may manage allocated funds of Section 20 schools but allow these schools to appoint service providers of their choice who are more cost effective and closer to their	Schools should process their own acquisition requests then approval can be granted at district level. This can be done by linking schools to procurement systems used by the

schools.	PDoE.
Address the time delay in the acquisition process.	Head office need to release purchases orders faster.
Provide additional funds for separate budget to finance specialised resources such as rooms for physical science, creative art, natural science and life science.	School budgets should be submitted on time by head office to the district at the beginning of the year.
Eliminate monopoly- Multiple suppliers should be appointed instead of one supplier and there should be regular rotation of service providers.	The finance department at the head office needs to pay invoices faster.
Department should treat orders as they are, and deliver goods as indicated on the requisitions.	.
Prices of suppliers on the PDoE supplier list must be market related.	

From literature it is evident that to promote the development of learners in a quality education environment it is best for a school to be managed by its own community represented by the SGBs. However, if that community does not have the necessary capability to perform this duty it is the duty of the government to manage the school on behalf of the community to ensure that the learners are not disadvantaged. It is thus the opinion of the researchers that the decision of the MEC of Education in Gauteng to grant all public schools the Section 21 status may be premature. It is a quick solution to rid the system of the frustrations experienced with the centrally managed Section 20 systems, but education and development of learners may be severely affected if their schools are not ready to accept this responsibility of self-management. The centralised system as practiced by the PDoE should rather be interrogated and improved as per the recommendations made in this research, until such time that all Section 20 schools are comfortable with the idea of self-management. The researchers support the assertion of Soga (2004:1) that schools run effectively and better if school communities are given control of their own affairs through a decentralised school system. This support is on condition that the provisions of Fisker (1996:35-26) be followed to ensure a successful school decentralisation, in that the country or relevant province should follow the eight steps of: identifying stakeholders and their interests; building legitimate interests into the model; organising public discussion; clarifying the purposes of decentralisation; analysing the obstacles to decentralisation; respecting the roles of various actors; providing adequate training and developing a monitoring system.

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# STRATEGIES FOR INCLUSION OF PERSONS WITH SPECIAL NEEDS IN REGULAR CLASSROOM

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## **Abstract**

Persons with special needs are often perceived as burdens and are incapable of being educated. Educational provisions are done in segregated settings as persons with special needs in the past. The current trend in the education of students with special needs is in the least restricted environment which is known as inclusive education. Inclusive education stress that all students with or without special needs must be educated in the same neighbouring schools without discrimination as the society is inclusive in nature. For effective inclusion of students with special needs in the regular classroom some issues such as addressing negative perceptions of disability, equipping schools and making school accessible to persons with special needs, balancing the need for integration and using of local resources and technology have to be addressed. The teacher in the inclusive setting has to adjust and adapt to these unique set of students with special needs. The regular classroom teacher must take note of the symptoms of disabilities and adapt the classroom situation to suit students with special needs to ensure effective teaching and learning in the inclusive classroom setting. Teaching strategies are suggested for the visually impaired, intellectually disabled and the hearing impaired in an inclusive classroom in this paper. If these strategies are utilized it would enhance academic achievements and social communication skills of students with special needs.

## **Introduction**

Inclusive classrooms might contain several students with special needs who are mainstreamed full time into the general classroom, or one or two students who spend time each day in both a special education classroom and a general classroom. Inclusion has been advocated as an alternative to segregated school provision for students with special needs. There are different models of integration, but they all involve the provision of educational services to children with special needs in the regular school system. The principle of inclusion emphasized that schools should accommodate all children regardless of their physical, intellectual, social, emotional, linguistic or other needs (Salamanca Statement 1994:6). This “school for all ideology” advocates that children with special needs as far as possible should attend the neighborhood school that the children would have attended if they do not have special needs. Hence, inclusion can be seen as a further step towards the normalization of children with special needs in the educational system.

Educational provision for students with special needs was mainly in segregated settings, mainstreamed setting and special schools. The current trend in educating persons with special needs is in inclusive settings. Inclusion involves keeping special education students in general education classrooms and bringing the support services to the child rather than bringing the child to the support services. Inclusion is a term which expresses commitment to educate each child, to the maximum extent appropriate in the school and classroom he or she



would otherwise attend (Beike & Mickios, 2001, Dada, 2002, Wiebe & Kim, 2008, Friend, Cook, Chamberlain & Shamberger, 2010).

Inclusion seeks to completely remove the distinction between special and regular education, and to provide an appropriate education for all students, despite their level of disability, in their schools. It involves restructuring of the educational system so that all schools would have the responsibility of providing facilities, resources and an appropriate curriculum for all students irrespective of their special needs. This trend is situated within a broad social justice agenda which argues that equality for all must include access for all students to their local schools. This trend has been supported by United Nations policies which affirm the rights of children such as the United Nations Convention on the rights of the Child, 1989; the United Nations Standard Rules for the Equalisation of Opportunities for Persons with Disabilities 1993; the UNESCO Salamanca Statement, 1994, United Nations Convention on Rights of Persons with Disabilities, 2006 and Nigeria National Policy on Education (2005). When students with special needs are educated in the neighbourhood school instead of special schools or schools that are far away from home, they become part of their local community. Students with special needs also have regular peers as models of behaviour, problem solving and other cognitive skills in cooperative groupings (Wills & Jackson 2000).

### **Theoretical framework**

Albert Bandura developed the social learning theory which states that both cognitive and behavioural, take place through the observation, modelling and imitation of others (Bandura, 1977). The main characteristic of the social learning theory, are the centrality of observational learning, a causal model that involves an environment – person – behaviour system, cognitive contributions and self-efficacy and agency (Miller, 2011). This theory proposes that academic and behaviour modelling takes place through verbal instruction, live modelling by a person, and symbolic modelling through four steps: attention, retention, reproduction and motivation. Inclusion classes capitalize on this theory because students with special needs can observe their non-disabled peers and their teachers and then imitate them both academically and behaviourally. Through this learning in inclusive classroom, students with special needs are able to interact with their peers and develop friendship skills. The ability to develop friendship skills is one of the social challenges of persons with special needs. Slavin (2009) posited that students with special needs can learn not only desired behaviours from their peers through social interaction, they can also learn academically within their learning community. These methods also promote social communication skills that children will need to possess when they become adults. Students with special needs can learn from their peers without special needs as well as with the support of adults' guidance to gain a better understanding of the concept being taught. For instance, peer tutoring has been found to be effective for students with special needs (Dada, 2004, McDuffie, Mastropieri, & Scruggs, 2009).

### **Considerations for inclusion of persons with special needs in the regular classroom**

Inclusive education is the placement of persons with Special needs in the regular classroom with students without special needs. For effective inclusion persons with special needs in the

regular classroom therefore considering the following for learning to take place is of utmost importance.

### **Address negative perceptions of disability**

Aside from the individual educational needs, programs must also address the negative perceptions of disability that exist within the individual, their family and their community. Often during times of crisis, these perceptions are often intensified as families; material and moral support help to counteract these feelings.

### **Ensure that schools are prepared, and that facilities are accessible and modified for persons with special needs**

Teachers and students should be prepared to accept students with special needs. Teachers and facilitators should be trained broadly in the background and justification of including children with special needs in the classroom. They should be well versed in principles of social justice diversity and inclusion. Teacher and students should understand disability issues and the challenges of different types of disabilities. Buildings, classrooms and furniture should be examined to ensure that they do not prevent students with special needs from moving effectively.

### **Balance the need for integration and learning**

Educational programs for children with special needs should take cognisance of the ability of the child to learn as special needs of a child does not necessarily deprive the child with special needs from learning if adequate strategies are put in place in the inclusive settings. In situations where special classes are justified, integration activities, and field trips must be included in the scheme of work.

### **Use local resources and technology**

Schools are hesitant to include people with special needs in programs because they believe that the costs will be too great. Community members should work together with schools to design interventions for the students with special needs that can be made or developed locally.

### **Strategies for inclusion of students with special needs in the regular classroom**

Students with special needs can be classified majorly into two categories, those with low incidence disabilities and those with high incidence disabilities. Those with low incidence disabilities include the visually impaired, hearing impaired, physically and health impaired while those with high incidence disabilities include the learning disabled, speech and language disordered, intellectually disabled and emotional and behaviour disordered. Strategies of managing the students with visual impairment, intellectual disabilities and hearing impairment are discussed in this paper.

### **The Visually Impaired**

The visually impaired are those in whom the sense of seeing is non-functional for the ordinary purpose of life. Visual impairment is the umbrella concept encompassing all degree of visual loss. Those with visual impairment are those that are totally blind or of low vision.

A totally blind person is a person who cannot utilise his or her sense of vision (Ajobiewe, 2014). The WHO (World Health Organisation) defines blindness as a visual acuity of less than 3/60 or corresponding visual field loss in the better eye with best possible correction. A person with low vision is able to utilise his or her vision using aids such as lamps, glasses and other visual aids. The WHO defines low vision as visual acuity of less than 6/18 but of better than 3/60 in the better eye with best possible correction.

There are number of symptoms that the teacher of the visually impaired should take note of in the inclusive classroom. The symptoms include eyes that are physically well-red; swollen watery eyes, crossed eyes and eyes that do not appear straight. The visually impaired have difficulty reading or doing visual work. Students may bring book or object close to the eyes or shuts or covers one eye when reading or tilts head. Students with visual impairment may have difficulty with written work, may avoid playground and unusual incidence of squinting, blinking frowning or facial distortions when reading. They may also be unable to locate small objects and lack sensitivity to light.

### **Classroom Adaptations**

In selecting instructional activities for teaching in classrooms that include students with special needs, teachers should keep in mind the content to be learnt. The teacher should consider the instructional activities that are best to promote learning for students who have difficulties in learning especially those with visual impairment. It may be necessary for the teachers to plan adaptations to accommodate individual differences among students. Adaptation can include general adaptations like slowing the pace of instruction or assignments or adaptation for textbooks and other assigned reading. The teacher may need to request that all textbooks are brailled for the totally blind students who could only read and write in braille. This could be done in the resource room by braillists to enhance teaching and learning. Some visually impaired students can also make use of computers with voice sensitizers to learn easily. All textbooks and other learning materials are recorded in the computer and with the aid of voice sensitizers the visually impaired could hear the learning materials for effective learning.

Students with visual impairment may have residual vision which can still enable them to see the chalkboard. The teacher should find out from the students the best place for them to see the chalkboard for example the front of the class. Light should not reflect on the board. Chalk should appear clearly on the board. If student is sensitive to light, seat them away from the window or provide a cardboard screen to shade reading and writing. The teacher should ensure that the child knows their way around the school and classroom. Teachers and sighted pupils can assist by walking slightly in front of visually impaired students or to one side/holding their elbow.

### **Teaching Strategies**

When teaching the visually impaired the teacher in the inclusive classroom should take note of the loss of vision whether it is total or partial. If the student is partially sighted the teacher should use large writing on the chalkboard and visual aids. Colour chalk is recommended. Students should be encouraged to come close to the board or teaching aids to see more clearly. The teacher should read aloud what is written on the chalkboard because the sense of hearing compensates for the vision loss and the visually impaired learn faster with their sense of hearing because they are highly sensitive to whatever they hear. The teacher should also

prepare teaching aids that students can read easily or provide photocopies with large print for those with partial sight. Students should be encouraged to use a pointer or their finger when reading. Sighted students should be paired with those with visual impairment to assist in organizing their work. When reinforcing the students with visual impairment the teacher should use verbal praise or touch and use the names of students during class discussion so that the student with visual impairment knows who is talking. Depending on student needs the school should provide paper with thicker lines on it to assist them in writing. Magnifiers can be used to enlarge prints for those with partial sight to enable them see clearly what is written. Abacus should also be utilised for math lessons (Sandy & Namita, 2000).

### **The intellectually disabled**

The intellectually disabled are those students formerly referred to as mentally retarded. Intellectual disability is a disability characterized by significant limitations in both intellectual functioning and in adaptive behaviour, which covers many everyday social and practical skills. This disability originates before the age of 18. Intellectual functioning—also called intelligence—refers to general mental capacity, such as learning, reasoning, problem solving, and so on. One way to measure intellectual functioning is an IQ test. Generally, an IQ test score of around 70 or as high as 75 indicates a limitation in intellectual functioning. Adaptive behavior is the collection of conceptional, social, and practical skills that are learned and performed by people in their everyday lives. Standardized tests can also determine limitations in adaptive behavior (Schalock, Borthwick-Duffy, Bradley, Buntinx, Coulter, Craig, Gomez, Lachapelle, Luckasson, Reeve, Shogren, Snell-Spreat, Tassé, Thompson, Verdugo-Alonso, Wehmeyer, and Yeager, 2010).

The signs and symptoms of intellectual disability are all behavioural. Typical appearance ascribed to people with intellectual disability is only present in a minority of cases, all of which are syndromic. Children with intellectual disability may learn to sit up, to crawl, or to walk later than other children, or they may learn to talk later. Both adults and children with intellectual disability may also exhibit delays in oral language development, deficits in memory skills; difficulty learning social rules and problem solving skills. Students with intellectual disabilities may also have delays in the development of adaptive behaviours such as self-help or self-care skills. Children with intellectual disability learn more slowly than a typical child. Children may take longer to learn language, develop social skills, and take care of their personal needs, such as dressing or eating. Learning will take them longer, require more repetition, and skills may need to be adapted to their learning levels. Nevertheless, virtually every child is able to learn, develop and become a participating member of the community.

### **Classroom Adaptations**

There are many ways teachers can help children with learning and attention issues succeed in school. Classroom adaptation could be in form of presentation, response; setting; timing; scheduling; organisation; assignment and curriculum modification. Presentation accommodations allow a student to listen to audio recordings instead of reading text; be given an outline of a lesson, use visual presentations of verbal material, such as word webs and visual organizers and given a written list of instructions. Response accommodations allow a student to give responses in a form (oral or written) that's easier for him; dictate answers to a scribe or capture responses on an audio recorder. Setting accommodations allow a student to work or take a test in a different setting, such as a quiet room with few distractions; sit where

he learns best (for example, near the teacher or use sensory tools such as an exercise band that can be looped around a chair's legs (so fidgety kids can kick it and quietly get their energy out).

Timing accommodations allow a student to take more time to complete a task or a test; have extra time to process oral information and directions and take frequent breaks, such as after completing a task. Scheduling accommodations allow a student to take more time to complete a project and take a test in several timed sessions or over several days. Curriculum modifications allow a student to learn different material (such as continuing to work on multiplication while classmates move on to fractions); get graded or assessed using a different standard than the one for classmates be excused from particular project. The teacher should also reduce distractions by keeping desk clear. With students who are inclined to run around, seat them by the wall with bigger students beside them. Tasks can be assigned that allow them to move without being disruptive (Dada, 2002).

### **Teaching Strategies**

Students with intellectual disabilities can learn math, literacy and science. They just need to be taught in a different way. Here are some effective teaching strategies for students with intellectual disabilities that you can use in your classroom. The teacher should show the student what you want him or her to do rather than simply telling; use simple words when giving instructions and check that the student understood the instruction, use real objects that the student can feel and handle rather than doing paper and pencil work and do one activity at a time and complete it. Break tasks down into small steps or learning objectives and make the student start with what they can do before moving to a harder step. The teacher and other students should give plenty of praise and encouragement to the student; give extra time for practice and pair the student with a peer who can focus their attention (Reynolds, Zupanick & Dombek, 2005).

### **The Hearing Impaired**

Hearing impairment is a hearing loss that prevents a person from totally receiving sounds through the ear. If the loss is mild, the person will have difficulty in hearing faint or distant speech. A person with this degree of hearing impairment may use a hearing aid to amplify sounds. There are four types of hearing loss. Conductive hearing loss is caused by diseases or obstructions in the outer or middle ear that usually affect all frequencies of hearing. A hearing aid generally helps a person with a conductive hearing loss. Sensor neural hearing loss results from damage to the inner ear. This loss can range from mild to profound and often affects certain frequencies more than others. Sounds are often distorted, even with a hearing aid. Mixed hearing loss occurs in both the inner and outer or middle ear. Central hearing loss results from damage to the central nervous system.

Symptoms of hearing impairment include poor attention; poor speech development or talking in a very loud or soft voice, difficulty following instructions and turning or cocking head when listening. The hearing impaired may watch what other students are doing before starting his or her work; give inappropriate answers, may be shy or appear stubborn and disobedient and reluctant to participate in oral activities. Students with hearing impairment may complain of ear aches, colds or sore throat (Okuoyibo, 2006).

## **Classroom Adaptations**

The hearing impaired child in a regular classroom needs various forms of assistance, if he or she is to perform as well as the hearing children. Assistance can be offered in the areas of classroom arrangement and adaptation which aim at making the child to succeed in spite of all odds. Students with hearing impairment should seat as close as possible to teacher. Teacher should make sure that he or she to face the students and not cover their faces or talk when writing on the chalkboard. It is important that the students can see teacher's face, hands and lips. Ensure that student can see both the teacher and other pupils at the same time to see how they are responding. Noise should be minimized in the classroom by possibly using a quieter part of the school. Apart from the classroom arrangement, the lighting condition in the classroom is very important. The classroom should be properly illuminated to enable the students to see the hands of the teacher when signing with fingers because sign language is the mode of communication for the hearing impaired. When the classroom is not illuminated the hearing impaired may not see the fingers of the teacher which could distort the communication process.

## **Teaching Strategies**

The teacher should apply total communication for effective teaching. The teacher and the students with hearing impairment must have a good understanding of the communication modes that is, they should be able to use and interpret the sign language, finger spelling, cues and pantomimes. In addition the student with hearing impairment must be good at speech and lip reading. The teacher should speak clearly and loudly and make sure students hearing aids are switched on. Visual aids should be used for teaching to compensate for hearing loss. Students with hearing impairment should be paired with those without hearing loss. The teacher should check with student to ensure they have understood and take time to listen to what the student is saying. The teacher should also encourage the hearing impaired child to ask questions through writing. This method has dual function because it improves the child's ability to write and it provides an opportunity for the expression of ideas which cannot be effectively done through sign language.

## **Recommendations**

In order to effectively plan for the inclusion of students with special needs in the regular classroom assessment should be carried out to identify student's abilities as well as their disabilities. Assessing and addressing the needs of students with special needs should be included from the beginning of the program and framed within human rights context. Teachers should share information about impairments when students move from one grade to the next. Cultural views regarding disability and low expectations of students with special needs should be addressed at various levels. The community should be sensitized on disability issues, and the specific needs of those among them. Schools equipped for students with special needs should be assessed, and locally available materials used to renovate the facilities. Rehabilitate schools for disability by widening doors, installing ramps, and building adapted latrines. All teachers targeted to meet the needs of the specific disabilities of the student within their classes should do this with utmost care by taking note of individual differences of students with special needs in their classroom. Difficulties in transporting children with special needs to school could be addressed by providing bicycles or wheelbarrows for their transportation. Educational programs for students with special needs

must not only focus on formal education, literacy and numeracy but also on daily life skills such as mobility, communication, and sometimes even simple skills like cooking, dressing and eating. While requiring some additional resources and expertise, addressing disability is not as expensive or as unsustainable as it is commonly perceived. Building capacity to work effectively with people with special needs has been shown to improve the skills of parents, teachers and communities.

## Conclusion

In as much as it is feasible, students with special needs especially the visually impaired, intellectually disabled and the hearing impaired should be educated in the regular classroom alongside their peers without special needs since the world itself is inclusive in nature. The presenter continues to stress the importance of inclusive education because it leads to greater gains in achievement for students with and without special needs hence the drive for inclusive placement will continue to rise. Different strategies will continue to be in place to ensure that students with special needs have full access to the curriculum alongside their peers without special needs. It is essential that collaborative strategies that include expertise are displayed when students with special needs are placed in the inclusive classroom setting. When effective strategies are put in place there is no doubt that the students with visual impairment, intellectual disabilities and hearing impairment would be able to gain maximally from the inclusive classroom as they will have a sense of belonging and be readily accepted by their peers and the society at large.

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# CONSIDERING CHILDREN WITH SPECIAL EDUCATIONAL NEEDS IN THE IMPLEMENTATION OF EARLY CHILDHOOD DEVELOPMENT POLICIES IN SOUTH AFRICA

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## Abstract

Inclusivity in education is a worldwide phenomenon. South Africa like most countries of the world has introduced a policy on inclusive education. However, this policy does not specifically address how issues of disabilities should be taken care of in early childhood development programmes; instead it adopts a blanket approach to deal with issues of inclusivity in education. Furthermore, schools seem to be having a problem of integrating learners with disabilities in Early Childhood Development (ECD) programmes. This article therefore explores the literature regarding how children with special educational needs are catered for in implementing ECD policies in South Africa. The article interrogates the extent to which the implementation of ECD policies covers children with special educational needs given the South African government's commitment to inclusive education. From the data it emerged that children with special education needs are not adequately taken care of by most governments and this results in them finding difficulty in coping with their academic work. The data also revealed that although in South Africa there has been some progress in incorporating children with special educational needs into policies, numerous challenges such as the lack of alignment of policies with programmes of action and the absence of effective monitoring mechanism remain. It is therefore recommended that the government employs strategies that would align its policies with the integration of learners with disabilities in the ECD programmes and their implementation thereof.

**Keywords:** Special Educational Needs, Early Childhood Development, implementation, Disabilities, Learners with Special Education Needs

## INTRODUCTION

The importance of including learners with special needs (learners with disabilities) in regular classrooms has been emphasized recently by most of the world countries (Mangope, Kuyini & Major, 2012). This has gained a significant momentum in the past ten years and it is believed to bring about social, academic and even financial benefits for school systems and children. The protagonists of inclusive education believe that children with special needs should learn in the regular school classroom alongside their peers (Mangope, Kuyini & Major, 2012). South Africa like other countries of the world has legislated policies on the inclusion of learners with disabilities. South African government through its policy shift has recognised the need to focus on early childhood development (ECD) and three national departments (Health, Education and Social Development) have been mandated to drive ECD. However, there has been no clear direction as to how policy will be implemented and nor there are any specifics with regards to effectively serving the particular needs of children with disabilities (Storbeck & Moodley, 2010). This paper therefore explores how learners with

disabilities are considered in the implementation of ECD programmes in South Africa. Although this paper covers the literature about South Africa a specific mention of the Eastern Cape Province is made.

## **BACKGROUND OF THE STUDY**

Disability when defined according to World Health Organisation (2012) means the interaction between impairment, in a person's body function or structure, and the society in which that person lives. South African government through White Paper 6 on inclusive education believes that the place of children with disabilities is not one of isolation in dark backrooms and sheds. It believes that these children can be nurtured alongside with their peers, in schools, on the playgrounds, on the streets and in places of worship where they can become part of the local community and cultural life, and contribute meaningfully in the reconstruction and development of our country (White Paper 6, 2001). One of the founding principles of the White Paper 6 on inclusive education was to pursue the holistic development of centres of learning to ensure a barrier-free physical environment and a supportive and inclusive psycho-social learning environment and developing a flexible curriculum to ensure access to all learners. South African government aims to targeting of early identification of the range of diverse learning needs and intervention in the Foundation Phase (White Paper 6, 2001). However, learners with disabilities seem to be neglected in the implementation of ECD programmes (Eastern Cape Planning Commission, 2014).

From the moment of conception to the initial, tentative step into a kindergarten classroom, approximately 8 years early childhood development takes place at a rate that exceeds any other stage of life of human being. The capacity to learn and absorb is simply fast and quite astonishing in these first years of life. Raising a child is therefore one of the most complicated and important challenges for parents, caregivers, teachers and policy makers (Shonkoff & Phillips, 2000). In responding to the history of South Africa that has created the majority of young children especially those with disabilities, who are negatively impacted by social and economic inequalities (Atmore, van Niekerk, & Ashley-Cooper, 2012) the South African Department of Education has since considered Early Child Development (ECD) as processes by which children aged between birth and 9 years grow and develop meaningfully physically, socially, morally and mentally (White Paper 5, 2001). Early childhood stretches from still born up to the period 8 years of age is critical to a child's cognitive, social, emotional and physical development (UNICEF, 2012). Events in the first few years of life play a vital role in shaping health and social outcomes of a child. They also establish a foundation for building human capital, since healthy and socially adjusted children are more likely to grow into economically productive adults (Olaleye, Florence & Omotayo, 2009). Thus, ECD is seen as the foundation of meaningful growth and development. Initiated and coordinated well before children become eligible for preschools and schools, early assessment and intervention should be made available to identify and support young children with disabilities who are therefore at risk. This intervention is most effective when families are closely involved in the process, enabling them to seek appropriate diagnostic and therapeutic services to support their child's well-being and development (UNESCO, 2009). Early intervention and assessment give families opportunities to gain relevant information

about their children. This means that they get information about what their children can do and about interventions that will optimize their learning potential (UNESCO, 2009).

Intervention in the ECD allows a number of infants and young children with and without disabilities play, develop, and learn together in a variety of places – homes, early childhood programs, neighbourhoods, and other community-based settings. It recognises that young children with disabilities and their families are full members of the community in which societal values about promoting opportunities for development and learning, and a sense of belonging for every child are reflected (Division for Early Childhood and National Association for the Education of Young Children, 2009) (DEC and NAEYC). It is about reacting against previous educational practices of separating and isolating children with disabilities. In reacting against the injustices of the past, laws on the inclusion of children with disabilities have been legislated by other countries in the United States of America and this movement has become known as early childhood inclusion (DEC and NAEYC, 2009). In South Africa apartheid and the resultant socio-economic inequalities have brought about inadequate access to health care, education, social services and quality nutrition and this has undermined the development of our youngest children (Atmore, van Niekerk, & Ashley-Cooper, 2012). However, in South Africa there seems to be no policies and programmes that specifically seek to address the issue of early childhood inclusion.

DEC and NAEYC (2009, p.2) define early childhood inclusion as:

...the values, policies, and practices that supports the right of every infant and young child and his or her family, regardless of ability, to participate in a broad range of activities and contexts as full members of families, communities, and society.

Globally, literature extols the benefits of early childhood education and intervention such as higher levels of school readiness, improvement in academic skills, cognitive and language skills, more diverse interactions with peers. The overall aim is to increase opportunities for them so that they enter formal school in a state of better preparedness (South African National Integrated Plan for ECD, 2005; 2010). The policy document on inclusive education called Education White Paper 6 of 2001 unpacks and accepts its responsibility to provide a supportive inclusive education environment for learners with special needs. Although White paper 6 promises to support learners with disabilities there is a concern of inclusive education with regards to poor and ineffective evaluation, coordination, implementation and monitoring which would lend learners who are visually impaired to a different and inferior education than their sighted counterparts (Sukhraj, 2006). There is no consensus about what should and should not be regarded or classified as a disability in South Africa (Donohue & Bornman, 2014). Furthermore, the policy on inclusivity does not specifically address how learners with special education needs (learners with disabilities) should be included in the ECD. This policy adopts a blanket approach in terms of inclusivity in education. ECD policies and how they are implemented do not seem to acknowledge the importance of early childhood inclusion (Stofile, 2008). This study therefore sought to investigate how children with disabilities are considered in the implementation of ECD policies. South African constitution recognises the right of every child to basic quality education (RSA, 1996). Quality in the case of ECD is regarded as a situation where every child should be with or closely supervised by the most competent caring adult. The establishment of stable and loving relationship between

young children and their parents, caregivers and teachers plays a very crucial role in the healthy intellectual, social and emotional development (Olaleye, Florence & Omotayo, 2009).

In an effort to bring about equality, dignity, and respect for all its citizens, the South African government introduced a number of disability-specific policies, legislation and strategies directed at addressing these issues (Dalton, Mackenzie & Kahonde, 2012). In 1997, the Integrated National Disability Strategy came into existence. Its basic aim was the inclusion of all learners with special educational needs into regular schools and classrooms. It also brought free health care for all up to the age of six (6 years). Subsequent to this, was the Equality Act of 2000 whose main aim was to eradicate all forms of discrimination and stigmatisation. The national integrated plan for early childhood in South Africa also aims at giving the children of our country the best start in life by building a solid foundation of physical, emotional, psychosocial, cognitive, and healthy development (UNICEF, 2005 and DPME, 2014). The White Paper 6 (2001) further emphasises that children with special educational needs or disabilities should be included in mainstream schools. In 2007, the South African government ratified the Convention on the Rights of Persons which aimed at promoting and protecting the rights of children with disabilities. Between 2005 and 2010, the Disability Policy and Strategy was developed by the Department of Social Development. However, there is no policy that specifically addresses issues of inclusivity at ECD level. All the policies address inclusivity adopting one size fit all approach. Schools seem to be struggling in integrating learners with disabilities in their ECD programmes. It is for this reason that this study explored the literature on the inclusion of learners with disabilities in ECD programmes. The inclusion of learners with disabilities in the main stream education is not the South African problem only.

The literature reveals that approximately 800 million young children worldwide are affected by biological, environmental and psychosocial conditions that can limit their cognitive development. In Europe alone, recent estimates place the number of children with special educational needs (SEN) at 15 million (European Commission, 2013). It is estimated that dyslexia, affects approximately 6 percent of Europe's population, whilst the prevalence of autistic spectrum disorders is also estimated to be higher than previously thought. Children with SEN frequently leave school with few qualifications and are much more likely to become unemployed or economically inactive (European Commission, 2013). However, in some European countries the general trend is that education systems are moving gradually towards the reduction of the number of special schools and the number of learners with special education needs is increased in the main schooling. Special schools are converted to resource centres for mains stream schools (European Commission, 2013). This means that to a certain extent there is a plan to cater for learners with special education needs in these countries.

In United States countries like Mississippi are faced with a problem of inclusion in the early childhood education (Belk, 2005). Implementing inclusion in early childhood classrooms creates more diversity among the children. In Mississippi inclusion of learners with various disabilities has caused concern among parents and teachers and there are some concerns that need special attention when including learners with disabilities in the early childhood classrooms. Belk (2005) argue that 6% to 10% of children and youths have emotional or behavioural, and or psychological problems that seriously impede their development and

require treatment in order for these children to function adequately in school and society. Though according to Belk (2005) the inclusion of learners with disabilities has positive and negative aspects, inclusion of children with disabilities in the regular classrooms requires that the teachers provide individualized instruction for the inclusion of children and this is time consuming as it takes away much of their time. It also needs thorough preparation of teachers to deal with inclusion and many teachers feel inadequately prepared to deal with the inclusion of children with disabilities (Belk, 2005). Another concern in Mississippi is the classroom environment. The physical arrangement of the classroom may need to be modified.

In countries like Zimbabwe where ECD programmes have been a major concern to government there are no plans in place that specifically address the issue of incorporation of learners with disabilities. In Zimbabwe the government has established pre-schools in the communal areas, especially in rural areas where ECD facilities have been lacking, so as to provide educational facilities for the children in those areas (Kurebwa & Wedasango, 2012), however, ECD programmes have not been fully implemented and some of the developed infrastructures have been abandon especially in rural areas (Moyo, Wadesango, and Kurebwa, 2012). This suggests that those rural communities are not fully aware of the value of Early Childhood Development programmes. In Nigeria the concern is on the quality of provision of early child hood development programmes. This is not only the government concern but of the other stakeholders. Recently, in Nigeria there have been heightening concerns raised by stakeholders concerning the quality of education in Early Childhood Development and Education (ECDE) (Oluwafemi, Nma, Osita & Olubenga, 2014). However, there is no specific mention of how learners with special education needs should be incorporated in the ECD programmes.

## **RESEARCH QUESTION AND OBJECTIVES**

The main research question that this paper sought to answer was:

- How learners with special education needs are considered in the early childhood development (ECD) programmes in South Africa?

The objective of the paper was to investigate how learners with special education needs are considered in the implementation of ECD programmes in South Africa. This means that this paper explored the incorporation of learners with disabilities in the ECD programmes in South Africa. It also investigated the extent to which learners with disabilities are considered in the implementation of ECD programmes in the Eastern Cape Province.

## **RESEARCH METHODOLOGY**

Although the literature about implementation of ECD programmes in the South Africa was reviewed, specific reference was made in the Eastern Cape Province. The data was collected through desktop data collection method. This means that this study was done by means of secondary research. Researchers reviewed literature on ECD by other scholars. Polices on ECD and inclusive education were also analysed.

## **RESEARCH FINDINGS AND DISCUSSION**

### **How Children with Special Educational Needs are catered for in ECD programmes**

In the World Education Forum held at Dakar Education For All (EFA) goals were spelt out, and a framework for action was clearly defined (UNESCO, 2009). This framework for action makes reference to the groups of children who are most vulnerable and disadvantaged and calls for inclusive education practices to ensure that they are included in the education process and have access to schools ((UNESCO, 2009). However, in pursuing the EFA goals, most countries have not focused extensively on these groups of children who are widely excluded from school and the education system. Focus has been more on increasing the provision of free and compulsory primary education, achieving gender equality and adult literacy. Nonetheless South Africa has policies that seek to achieve EFA goals but these policies seem to be failing to deal with issues of disability at ECD level (Storbeck & Moodley, 2010).

With the advent of democracy in 1994, approximately 70% of children with disabilities were completely out of the school system (The Secretariat of the African Decade of Persons with Disabilities, 2012). Although it is difficult to ascertain to what extent this situation has changed as statistics on the number of children with disabilities in schools tend to rely only on the number of children attending special schools it is important to note that substantially more learners with disabilities are now attending school (The Secretariat of the African Decade of Persons with Disabilities, 2012). This means that South African government is hell bent on making sure as per Education For All (EFA) goals that those children with special education needs attend school. Furthermore, ECD is bedrock on which to establish and launch development initiatives that make a different kind of society thinkable and therefore possible (Eastern Cape planning commission, 2014). This means that recognition of ECD as integral to a development agenda of the Eastern Cape and South Africa as a whole. However, access to ECD programmes in the Eastern Cape still need more intervention in terms of learners with disabilities. Access is currently skewed in favour of children with some means who and who are slightly older, whereas the most vulnerable and youngest children are likely to be excluded from the services they most need (Eastern Cape Planning Commission, 2014).

However, unlike in some of the European countries (Co. Meath in Ireland) where there is a framework for inclusion of learners with disabilities (National Council for Special education, 2011), South Africa does not have a framework that seeks to explicitly explain how the inclusion of learners with special education needs should be done (Donhue & Bornman, 2014). Though there is ECD policy, it does not unpack the strategy to include learners with special education needs in the ECD programmes.

Despite all the efforts by the government, children with special educational needs including those from poor and disadvantaged communities, continue to be discriminated and compromised in many ways (Nkeli, 2008). For Nkeli (2008), although there has been some progress in incorporating children with special educational needs into policies, numerous challenges such as the lack of alignment of policies with programmes of action and the absence of effective monitoring mechanism remain. Indeed from the authors' experiences and observations, very little, if any, is being done to see how many children with disabilities are

in ECD programmes. Many of these children especially those with major disabilities such as the blind, the deaf and the dumb, remain outside these programmes mostly because of the quality of the teachers in the programmes school (The Secretariat of the African Decade of Persons with Disabilities, 2012). Furthermore, up to 70% of children of school-going age with disabilities are out of school. The few of those who happen to attend most are still in separate, special schools specifically designated for learners with disabilities. This situation prevails in spite of the provisions of the Education White paper 6 (Donohue & Bornman, 2014). Dalton, Mackenzie & Kahonde (2012), further agree that, South Africa has adopted a progressive and an inclusive education policy in order to deal with barriers to learning in the education system. However, the implementation of this policy is hampered by among other things the lack of teachers' skills and knowledge in differentiating the curriculum to address a wide range of learning needs. This is despite the provision of the Promotion of Equality and Prevention of Unfair Discrimination Act (2000) which states that, failing to eliminate obstacles that unfairly limit or restrict persons with disabilities from enjoying equal opportunities or failing to take steps to reasonably accommodate the needs of such persons is discrimination. It further states that denying or removing from any person who has a disability, any facility that supports or helps them function in society is unlawful. The fact this happens in the entire schooling system suggest that there are no systems in place at ECD level to cater for children with special needs in education.

Mangope, Kuyini & Majoi (2012, p. 139) argue that:

While access to equal education is necessary for every learner regardless of ability, some children do not fully benefit from teaching because of undiagnosed special needs. It is therefore vital that learners are assessed early on or upon entry into primary school to ensure that schools are able to provide them with the necessary services to support their in-classroom learning.

Current legislation and policies reflect a lack of mandatory obligation on the government to ensure that such children have access to ECD services. This indicates that ECD policy implementation does not fully and adequately cater for children with special educational needs (Storbeck & Moodley, 2010). Providing children access to a wide range of learning opportunities, activities, programmes, settings, and environments is a defining feature of high quality early childhood inclusion. This should be coupled with programmes that seek to provide an additional individualized accommodations and supports to make children participate fully in play and learning activities with peers and adults (DEC and NAEYC, 2009). As already seen, a study by de Koker, de Waal and Voster (2006) confirms the limited access to early learning of children with special educational needs. Another study by Salojee et al., (2007) in Gauteng established that only 35% of children with special educational needs attended pre-school. For the Department of Social Development (2012), where children with disabilities access early learning, it is usually in community-based centres, with women (more often mothers of the children), running the programmes. The Department of Basic Education stresses inclusive education but mostly, the focus is on primary schools – with little or no attention on pre-school education worse than pre-school education with disabilities, yet it is here that a strong foundation for these children should be established. For Storbeck & Moodley (2011, p1), although there are ECD policies regarding children with disabilities, “there is no institution of how policy will be implemented, nor how the young child with disabilities in particular would be served effectively”. For Storbeck & Moodley, the main

stumbling block in the pre-school education of the child with special education needs is the highly a specific budget for these children – making it very difficult to provide ECD services for children with special educational needs. This is despite the fact that the National Department of Education (2007) clearly says that policy should focus on the most vulnerable members of society such as children with disabilities, elderly people and women. However, for Storbeck & Moodley, disturbingly the Department is silent on how this will be achieved and realised in terms of resource allocation. Action plans are not explicit, indicating that children with special educational needs are not well catered for in the implementation of ECD policies. Donohue & Bornman (2014, p.10) note that, “the implementation of an inclusive education policy is at an apparent standstill as a result of ambiguity about the means through which the goals of inclusive education can be achieved”. This therefore suggests that even at ECD level programmes in South Africa are not taking care of inclusion of learners with disabilities.

The problem of poor education provisioning on learners with special education needs is not peculiar to South Africa only. It is a universal problem. For instance in Southern Africa as whole children with disabilities live with the effects of disability and struggle with a myriad of challenges that can be attributed to the absence of an enabling environment. There is a dire lack of resources and services that would enable them to access education which will contribute to their fullest development (The Secretariat of the African Decade of Persons with Disabilities, 2012). Another problem that arises with regard to the implementation of ECD policy for children with special educational needs is that there is lack of provision of early identification of disability among those children especially those aged between birth and 3 years and the strategies that should be useful to ensure early identification and intervention so that there is very little disruption to the child’s growth and development (Storbeck & Moodley, 2011). Even the National Integrated ECD plan “does not make every reference to early identification programmes nor of implementation plans and budgetary implications” (Storbeck & Moodley, 2011, p.3). In the present authors’ views, effective early identification and intervention strategies would have been more clearly spelt out – this is critical if these children with special educational needs are to be assisted to develop fully. For example, children with long impediments or with hearing loss can benefit enormously if these impairments are identified and dealt with in good time. The fact that the National Screening, Identification, Assessment and Support Department (Department of Education, 2008) gives mandate to NGOs to do screening, identification and assessment of children with disabilities may suggest the little importance government attaches to the education of these children. Government should be actively involved in monitoring what is happening on the ground. This is perhaps why Hessehink – Louw, Joubert & Maree (2003) say that children with disabilities are vulnerable to abuse, neglect and negligent treatment by many people since they are seen as placing extra physical and financial burden to those concerned.

Data from elsewhere (e.g. Olusanya, Renner & Okolo, 2008) suggest that it is not only in South Africa where there is a lack of focus on children with disabilities – many countries, especially developing countries, share blame. Many children with hearing loss, go undetected until perhaps much later in life yet, hearing loss affects the child’s linguistic, social and cognitive development (Moeller, 2000 and Maree, Aldous, Hattingh, Swanepoel, & van der Linde, 2006). They have fatal repression on the child’s later life, including schooling and employment opportunities. All this suggests that as current structural, ECD for children with special educational needs does not help them much in providing them with equal



opportunities in school and in life in general. Another problem that seems to prevail in South Africa is the cultural barrier that impedes the implementation of inclusive education in South Africa (Donohue & Bornman, 2014). The meaningful participation and involvement of children and adults with disabilities in the school system and the community of the developing countries including South Africa is affected by the cultural attitudes and values of its citizens. In most cases community members display disregard and prejudice towards people with disabilities and this leads to perpetuation of exclusion of children with disabilities (Donohue & Bornman, 2014).

Another issue regarding how children with special educational needs are catered for relates to resources and training staff. There is evidence that resources and equipment such as braille, hearing aids etc. are not easily available in schools. Again many of the ECD teachers for children with special educational needs are not adequately trained to effectively help these children. Many of the children could use braille; neither can they use South African Sign Language. All this is an institution that children with special educational needs are not adequately catered for in the implementation of ECD policies (Donohue & Bornman, 2014). Education officials in South Africa are unsure regarding the goals of inclusive education, with some officials reporting they were unclear about how ordinary and special schools would be transformed into schools more suitable for inclusive education ((Donohue & Bornman, 2014). Other officials are confused about the parameters of barriers to learning and exactly how these barriers would be addressed within inclusive schools.

## **CONCLUSION AND RECOMMENDATIONS**

It can be noted from the above presentation that South African still lags behind when it comes to the implementation of Education For All goals on inclusive education. Although there has been a significant progress with regards to the legislation of inclusive education policy implementation of inclusive education is still a problem and this is particularly so in the Early Childhood Development (ECD). The fact that implementation still a problem might be as a result of lack of detailed clarity by White Paper 6 and divergent interpretation thereof. Furthermore the fact that White Paper 5 on ECD does not provide clear guidelines on the inclusion of learners with disabilities in the ECD programmes might be the cause of the problem that leads to lack of consideration of children with disabilities in the ECD programmes.

It is therefore recommended that when addressing barriers to implementation of inclusivity in the ECD programmes the government must employ strategies that explicitly define how learners with disabilities are catered for in the ECD programmes. This should include the clear process of classifying learners with disabilities and clear strategy to integrate them in the main stream classroom. The government should also determine the extent to which teachers are trained to deal with a diverse body of learners within one classroom. It is also recommended that necessary resource and infrastructure are provided for to allow smooth inclusion of learners with disabilities. This means that there must be a shared understanding about the meaning of inclusion in the ECD and clear systems of support and services be developed to respond to the needs of children with disabilities at ECD level.

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# **SOCIAL MEDIA AND ACADEMIC ADJUSTMENT: AN ASSESSMENT OF NIGERIAN UNIVERSITY'S STUDENTS**

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## **Abstract**

In the last couple of years the social networking sites (social media) have become that kind of popular global online terminus with foci attention from large and diverse perspectives. Those sites support social interactions composing of the small and larger global nodes of online social network. Adjustment on one side is a process of fitting individual or collective patterns of activity carried out with some awareness of purposefulness. This comes in various forms: socially, psychologically, emotionally, economically and academically. This work runs cross-sectional survey on 400 samples. It employs questionnaires to investigate on the level of social media usage and its effect on academic adjustment among Nigerian university's students. The quantitative descriptive results indicate the extent and patterns of social media usage as well as moderate influence of social media usage on academic adjustment. The correlation result indicates a moderately high positive relationship between social media usage and academic adjustment among Nigerian university's students which suggest a moderate level of effect.

**Keywords:** Academic Adjustment, Social Networking Sites, Nigeria, University Students.

## **Introduction**

Social networking sites or social media as they are popularly called are much admired with not only youth but all categories of people. It is a new paradigm that attracts minds of all and sundry both the academics and non-academics all together. Social media cut across all aspects of life education inclusive. Such environments like Facebook, Twitter, and YouTube to mention a few were seen as hubs and platforms that many people rely on for their day to day interactions in terms of business, education, politics, sociology, religion and host of other affairs (Ellison, Steinfield, & Lampe, 2007).

Social network sites (social media) are becoming popular online terminus in recent years. Students are found to be highly engaged in browsing social media. Not surprisingly, the user attraction level has been accompanied by wide coverage in the popularity of press, including speculations about the potential advantages gained and harms stemming from the use of such SNSs services (Ellison, Steinfield, & Lampe, 2007). Academic researchers have started studying these social media, with questions ranging from their usage and roles in identity construction; expression to the building and maintenance of socialization as well as social capital and concerns about morality alongside privacy. One major point of concern is that, it is not yet quite clear whether using social media enhance academic adjustment bearing that student are heavy users of the social media (Suleiman, 2014).

Academic adjustment can therefore refers to as students' adoption and adaption to changes in their attitudes, behaviors, values, rules, regulations and social norms of the school environment in order to fit into and be accepted into new study environment. Baker and Siryk

(1999) viewed that “adjustment to university is multifaceted that involved an array of demands varying in kinds and degrees which require a variety of coping responses.” The key adjustment problems usually faced by students are seen in four categories: academic adjustment, socio-cultural adjustment, psychological adjustment, and general living adjustment (Tseng & Newton, 2002). Adjustment thus, is a process of fitting individual and or collective patterns of activity to other such patterns carried out with some awareness of purposefulness.

### **Objectives**

The following are objectives for this study:

To understand the pattern of social media usage among Nigerian university students

To determine the extent of academic adjustment among Nigerian university students

To ascertain on the impact of social media usage on academic adjustment among Nigerian university students

### **Hypotheses**

There is no any pattern of social media usage among Nigerian university’s students

There is no significant extent of academic adjustment among Nigerian university’s students

Social media usage has no significant impact on academic adjustment among Nigerian university’s students

### **Literature**

#### **Social networking sites**

The early beginning of online social media can be trace back to 1997 to 2001 when it openly started. A number of online community tools began supporting various combinations of profiles and publicly articulated friends. Social network sites (SNSs) are becoming popular online terminus in recent decade. Academic researchers have started studying these social media platforms, with questions ranging from their usage and roles in identity construction and expression to the building and maintenance of socialization as well as social capital and more concerns about morality and privacy. Boyd and Ellison, (2007) defined social networking sites as those “web-based services that allow individuals to: construct a public or semi-public profile within a bounded system; articulate a list of other users with whom they share a connection.” Social media sites e.g. Twitter, YouTube and Facebook, and many more are very popular online communication platforms among adolescents and emerging adults. Yet little is known about young people's activities on these sites by their countries, regions, gender, and so forth. It is not also well known or well articulated how these networks of friends relate to each other online; as well as on offline networks as such. The use of these sites might also be highly associated to not only a person's gender but also race, faith, ethnicity and family or parental educational background.

#### **Social Media Structure**

Most social networking sites or social media as they are popularly called are similar to each

other in many respects. For instance there is commonality in their technical features (Lockyer & Patterson, 2008) and the structure (Hosio & Riekk, 2008) as well as mode of the operation in such a way that users must sign up to be part of the database. This is because most of the sites provide a profile which may include two specific modules: a comment section where other signed up users can leave their messages, comments or likes/dislikes; and a list of the user's friends and connections. By their default, when a particular user account is created the profile remains private and the profile may be offering stuffs such as photos/video galleries, posts, blogs and so many information on the users' hobbies, interests and activities (Hosio & Riekk, 2008).

One of the major issues of social networking sites is privacy. This is simply because all these sites are controlled by third parties those who pioneered and own the corporations. The sites also represent a space whose owners create the parameters for what is possible within. Hence, users would find it almost impossible to effectively hide their information such as: location, age or gender from the third party (owners of the site). The terms and user agreements were usually stated to be read and accepted as a condition to use the site. Yet the users hardly care to read it but just accept. On Facebook, for instance, users' choices are even more limited and new applications are required in order to add features to a profile (Fernandez, 2009; Lenhart & Madden, 2007). Upon all these, many youths heavily use these sites. Many students in academic institutions in Nigeria for instance and other parts of the world use such sites like Twitter, Facebook and YouTube. Out of the total numbers of 76,319,186 internet users in Nigeria which is the highest in Africa, almost 6,630,200 use Facebook (internet world statistics, 2014). Many among the population in Nigeria came to know of Facebook and Twitter through the media services for discussion on several topics related to Nigeria's socio-cultural, economical, educational and political issues (Suleiman, 2014). TAM has been applied in numerous studies testing user acceptance of technology such as websites, e-collaboration the e-learning. Davis, (1989) proposes that ease of use and usefulness of technology are predictors of user attitude towards using the technology, subsequent behavioral intentions and actual usage. Perceived ease of use was also considered to influence perceived usefulness of technology.(Suleiman, 2014)

### **Academic Adjustment**

Adjustment is a process of fitting individual or collective patterns of activity to other such patterns carried out with some awareness of purposefulness. This is significantly identified in these forms socially, psychologically, emotionally, economically and academically. In their view Zhou, Peverly, Huang, Wang and Xin, (2003) see students' school adjustment occurs primarily in three domains: academically (achievement and motivation), socially (quality of peer and adult relationships) and behaviorally (externalized and internalized distress). It thus contradicts the maladjusted situation where a person feels and behaves very awkward in a social setting.

The key adjustment problems faced by students were categorized by Tseng and Newton (2002) into four categories i.e.: academic adjustment, socio-cultural adjustment, psychological adjustment, and general living adjustment. Academic adjustment being the most popular among the four has to deal with students' difficulties with learning new educational system, new academic rules, language proficiency, and acquiring new learning strategies.

Autumn, (2009) posited that university adjustment is seen in terms of college achievement which covered students' academic achievement and personal growth. Van Eman, (2009) viewed academic adjustment as having such dimension like: attitudes toward school, towards classes and teachers, academic self-perceptions, goal values, and motivation as well as self-regulation.

This leads to the 'question of whether online social networking involvement contributes to academic adjustment.' If it can complements traditional interactions where students share with peers and faculty; then, it may also raises questions about the negative influences social media has for students who isolated themselves in their own constructed private spaces, blogs, profiles or walls instead of being involved in the general offline on-campus social, academic and spiritual activities (Kord, 2008; Murray & Malmgren 2005). Students use the Facebook website as a medium or avenue where they can adjust by expressing themselves, share their daily lives with friends and family members, and keep in constant touch with a group of new and old friends. And stay in, to know about what is happening around them (Kord, 2008).

It has been widely observed (Abdullah et al, 2009; Lent, Taveira, Sheu & Singley, 2009; Rice, Vergara, Deborah, Mirela & Aldea, 2006) that transition for students from secondary school to university is greatly influenced by whether they have been taught to go on their own way to take responsibilities for their own paths. Many students rely mainly on things to be done for them at schools; which may include even thinking to be done for them. "Many students have difficulty adjusting to the fact that they need to be self-disciplined and self-motivating. At school the discipline used to be imposed on them" (Abdullah, et al 2009). It is usually said that students lack self confidence to answer many questions in class. Some even may miss lectures because they cannot find the venues easily. Other issues attributed to the new students are plagiarism, rules and use of the internet as a source for assignments (Abdullah, et al 2009; Lent et al, 2009). Generally new students lack respect for teachers and colleagues and find difficulties adjusting to an environment which they control because there is no teacher standing over them telling them what to do and when to do (Murray & Malmgren 2005; Tseng, 2004).

Prapas, (2009) compared the relationship among the achievement, motivation, adjustment and self confidence among the participant and non participants in college activities of Thailand. He stated that adjustment is an essential, usual and social conference with the present globalization. He also sees adjustment as a continued process in life and tool for globalization fitness. In the same vein Campbell, (2002) asserted that the college or university setting and interpersonal interactions affect the college students' adjustment. University adjustment aspects include acceptance, culture, withdrawal, and cooperation that affect the perceptions and experiences that the students have about the university. In terms of the social and academic adjustment students were reported to have faculty members and other college employees as part of their social network.

In their study Buote, et al, (2007); Rice, et al, (2005) assessed the quality of new friendships and adjustment in a university. They found significant positive relationship between new friendships and adjustment to university. Stronger association was found between students living on campus than on those living off campus or commuting daily from home to university.

In another similar study Abdallah et al, (2009) used the “adjustment model” (Baker & Siryk, 1999) on their study which explored university adjustment. Their findings showed that “students overall adjustment was at a moderate level and male students were found to be better adjusted compared to female students.” More so, one semester, students’ academic achievement was found to be “significantly predicted by college overall adjustment, academic adjustment, and personal-emotional adjustment.”

Hesse, (2007) also explored the social media usage among international exchange students in the United States and reported that “some social media provide search functionality based on lexical descriptions of interests, attitudes, and biographical factors, such as age and location.” Hesse, (2007) further postulated that use of social media among exchange students shapes their adjustment process. The social media use is not a substitute to personal interaction, but a kind of “augmented reality.” He states that it helps the students get information of their new environments and expand contact with the other culture. Social media extend information accessibility on the schools social fabric and of peer groups. Using social media helps in a faculty-student interaction strategy which keeps them abreast with the school environment. It is evident that students continued to spend time engaging in social media to stay firm to school after they began attending classes.

### **Methodology**

This study examined the extent and pattern of social media usage and academic adjustment as well as the relationship between the use of social networking sites and academic adjustment among the university’s students in Nigeria. The research used quantitative method in both data collection and data analysis stages. This quantitative research designs was descriptive in nature and the subjects were measured once by administering questionnaires. The main goal of quantitative methods is to determine whether the predictive generalizations of a assumptions held are true.

### **Population**

The population for this study composed of university students who are using social media in Nigeria. It involves both males and females in all levels of the undergraduate section. For this study the accessible populations were six selected federal university students in Northern Nigeria with an estimated population of 126,988 students. Two universities were selected from each of the three geo-political zones i.e.: North/East; North/ Central; North/ West

*Table: 1: Accessible population*

NORTH/EAST	Population	NORTH/ CENTRAL	Population	NORTH/ WEST	Population	
<b>ATBU</b>	7,000	<b>ABUJA</b>	20,400	<b>ABU</b>	40,000	
<b>BUK</b>	20,560	<b>UNIILORIN</b>	20,084	<b>UDUS</b>	18,944	
<b>Total</b>	<b>27,560</b>		<b>40,484</b>		<b>58,944</b>	<b>126,988</b>

### **Sample**



The total sampled universities were six and the total number of the students that participated was merely 400 in number. The universities were randomly selected by a stratified random, cluster and snowball ways at various stages. The sample error was minimized as much as possible by drawing an appropriate sample in a proportional manner to give a proportional representation. In quantitative approach it is believed that the bigger the sample the less the error. Given the fact that there were many respondents of up to 400 they were derived from the six universities located in different geographic area across Northern Nigeria.

***Instrumentation***

This study administered questionnaires for data collection and it runs a quantitative approach for the data analysis as it is subjects’ centered. As a cross-sectional the research retrieved the recorded responses from the subjects in a short while after administration of the tools.

The questionnaires investigated students’ extent and pattern of using social media and its influence on academic adjustment. This survey tool used a five point Likert scale i.e.: Strongly Agree (SA), Agree (A) Undecided (U), Disagree (D) and Strongly Disagree (SD). The first sections of the questionnaire had 7 items which seek to obtain demographic information such as: faculty, gender, ethnicity and socioeconomic background. The other section (3) of the questionnaire had 25 items reflecting the construct social media usage and academic adjustment. The Chronbach alpha reliability result stands at (0.78).

***Procedure***

The data were collected by the use of valid and reliable questionnaire tool. As a cross-sectional study the data were collected at a given shortest time (three months). The subjects were issued the questionnaires accompanied by physical stimuli (pen). The distribution and collection of the instruments was done by the researcher with the help of few research assistants in the six accessible institutions selected for the study.

***Data analysis tool***

Data were analyzed quantitatively in order to address the three hypotheses. Descriptive statistics and correlation were used to describe the strength and the direction of relationship between constructed variables social networking sites usage and students’ academic adjustment. Simple bivariate correlation illustrates the correlation between two continuous variables and is mainly the common measure of linear relationship. A parametric statistical tool i.e. Pearson Product Moment correlation was used to correlate the two major variables by the fact that the data was found to be normal.

***Results/findings***

Here the result on the patterns of social media usage and the extent of academic adjustment as well as the impact of social media usage on the academic adjustment among Nigerian university’s students was presented.

*Table 2: Cumulative descriptive statistic of the Patterns and extent of SNSU among Nigerian University’s students.*

	SD		D		U		A		SA			
Patterns of SNS Usage	F	%	F	%	F	%	F	%	F	%	M	SD

I frequently use at least one of the Social Networking Sites (SNSs) (TIME)	7	1.8	21	5.2	24	6.0	176	44.0	172	43.0	<b>4.2*</b>	.902
I spend approximately more than one hour per day on SNS (TIME)	28	7.0	77	19.2	60	15.0	143	35.8	92	23.0	3.4	1.23
I have been using SNS for the past one year (TIME)	25	6.2	50	12.5	38	9.5	125	31.2	162	40.5	<b>3.8*</b>	1.24
I came to know about SNS through browsing the Internet (SOURCE)	26	6.5	46	11.5	34	8.5	145	36.2	149	37.2	<b>3.8*</b>	1.21
I came to know about SNS through a friend's invitation (SOURCE)	53	13.2	87	21.8	46	11.5	123	30.8	91	22.8	3.2	1.37
I am interested in viewing pornography often on SNS (MODE)	205	51.2	65	16.2	46	11.5	52	13.0	32	8.0	2.1	1.36
I came to know about SNS through invitation by unknown user (SOURCE)	159	39.8	108	27.0	60	15.0	45	11.2	28	7.0	2.1	1.26
I do browse SNS mainly in the university's computer laboratory (PLACE)	122	30.5	99	24.8	56	14.0	74	18.5	49	12.2	2.5	1.40
I browse SNS mainly in the private internet cafes around the campus (PLACE)	45	11.2	78	19.5	59	14.8	134	33.5	84	21.0	3.3	1.30
I browse SNS mainly in the wireless hot-spots / mobile broadband (PLACE)	45	11.2	84	21.0	54	13.5	140	35.0	77	19.2	3.3	1.30
I use to hide some of my identities when signing up on SNS (MODE)	104	26.0	75	18.8	46	11.5	109	27.2	66	16.5	2.8	1.46
Online interaction makes me feel ok just like the offline interaction (BENEFIT)	25	6.2	52	13.0	61	15.2	171	42.8	91	22.8	3.6	1.15
Using SNS makes my interpersonal relationship always stronger (BENEFIT)	23	5.8	43	10.8	61	15.2	161	40.2	112	28.0	3.7	1.14
I prefer doing things in isolation especially when using SNS (PREFERENCE)	51	12.8	75	18.8	87	21.8	118	29.5	69	17.2	3.1	1.28
I use special (short) language and jargons when using SNS. (PREFERENCE)	54	13.5	76	19.0	56	14.0	126	31.5	88	22.0	3.2	1.35
Compared to other SNS users, I am very popular on SNS (BENEFIT)	63	15.8	98	24.5	113	28.2	83	20.8	43	10.8	2.8	1.22
I feel that females are more interested in using SNS more than males (MODE)	62	15.5	70	17.5	65	16.2	101	25.2	102	25.5	3.2	1.41

I feel I am a heavy user of SNS (BENEFIT)	44	11.0	95	23.8	105	26.2	108	27.0	48	12.0	3.0	1.19
I use SNS at any time and I don't care managing my time. (TIME)	95	23.8	118	29.5	70	17.5	70	17.5	47	11.8	2.6	1.32
I cannot share so many things with real-life friend but can share strangers (PREFERENCE)	104	26.0	110	27.5	61	15.2	76	19.0	49	12.2	2.6	1.36
I prefer using SNS in group or company of other people (PREFERENCE)	48	12.0	82	20.5	88	22.0	115	28.8	67	16.8	3.1	1.27
I sometimes log onto SNS like Facebook through links from others sites (SOURCE)	34	8.5	104	26.0	83	20.8	123	30.8	56	14.0	3.1	1.20
I always browse SNS in isolation just to keep some of my secrets (PREFERENCE)	66	16.5	103	25.8	69	17.2	106	26.5	56	14.0	2.9	1.32
I use to tag friend users who have more pictures (BENEFIT)	59	14.8	95	23.8	77	19.2	103	25.8	66	16.5	3.0	1.32
When using SNS I get excited and motivated not to stop (PREFERENCE)	26	6.5	38	9.5	55	13.8	167	41.8	114	28.5	3.7	1.15
<b>Valid N (listwise)</b>	<b>400</b>	<b>100</b>	<b>400</b>	<b>100</b>	<b>400</b>	<b>100</b>	<b>400</b>	<b>100</b>	<b>400</b>	<b>100</b>		

Out of the 25 questions asked, one case (*I frequently use at least one or more of the social networking sites*) indicates the highest mean of (M=4.2; SD=0.90). Other sixteen cases indicated the mean (M>=3) and above. Those items with lower mean among all the cases examined were only six (6 items) showing the mean below 3 (M=2.1 to 3)

Table 3: Descriptive statistic on the extent of academic adjustment among Nigerian university's students

Extent of Academic Adjustment	SD		D		U		A		SA		M	SD
	F	%	F	%	F	%	F	%	F	%		
Using SNS makes me feel motivated to be on campus	15	3.8	48	12.0	71	17.8	150	37.5	116	29.0	3.8*	1.1
Preparing for my class early helps ease many difficulties with academic pursuit	14	3.5	32	8.0	51	12.8	150	37.5	153	38.3	4.0*	1.1
I have developed a close offline personal relationship with my teachers	24	6.0	47	11.8	69	17.3	149	37.3	111	27.8	3.7	1.2
As a result of using SNS I found no difficulties in conducting and submitting assignments	92	23.0	122	30.5	73	18.3	66	16.5	47	11.8	2.6	1.3
Since coming to this university I have developed close offline relationships	18	4.5	59	14.8	52	13.0	175	43.8	96	24.0	3.7	1.1

I can discuss on my academic activities through interaction informally	30	7.5	66	16.5	81	20.3	151	37.8	72	18.0	3.4	1.2
Some of the lecturers I have had contact with are genuinely interested in using SNS	53	13.3	86	21.5	94	23.5	107	26.8	60	15.0	3.1	1.3
Some of the comments I come across on SNS change my feelings positively	39	9.8	60	15.0	86	21.5	139	34.8	76	19.0	3.4	1.2
Using SNS is important to me in the university life because it increases my performance	73	18.3	82	20.5	91	22.8	93	23.3	61	15.3	3.0	1.3
Using SNS makes me tend to forget time and even miss classes	121	30.3	95	23.8	45	11.3	45	11.3	94	23.5	2.7	1.6
I study early in the morning than in the night which helps my stay in school	39	9.8	70	17.5	71	17.8	130	32.5	90	22.5	3.4	1.3
The rules in this university prevent moderate use of SNS among the students	70	17.5	98	24.5	88	22.0	95	23.8	49	12.3	2.9	1.3
SNS usage makes my courses intellectually stimulating	24	6.0	70	17.5	94	23.5	154	38.5	58	14.5	3.4	1.1
SNS make me integrated into university system by participating in all academic events	26	6.5	53	13.3	83	20.8	170	42.5	68	17.0	3.5	1.1
I use to get some of my study related items (course outline) from SNS e.g. from YouTube.	40	10.0	80	20.0	72	18.0	133	33.3	75	18.8	3.3	1.3
SNS usage makes me isolated from the normal academic activities	78	19.5	101	25.3	65	16.3	91	22.8	65	16.3	2.9	1.4
Frequent SNS usage makes it difficult for me to find, make, or meet new friends	72	18.0	123	30.8	81	20.3	80	20.0	44	11.0	2.8	1.3
SNS allows me to establish new friends which may boost my popularity	18	4.5	42	10.5	73	18.3	171	42.8	96	24.0	3.7	1.1
I am always getting in touch with my old friends and family members on SNS	18	4.5	31	7.8	42	10.5	165	41.3	144	36.0	<b>3.9*</b>	1.1
SNS makes ease in the students organizing meetings and publicizing something	26	6.5	53	13.3	62	15.5	158	39.5	101	25.3	3.6	1.2
Using SNS helps me perform academically well as I anticipated	13	3.3	72	18.0	99	24.8	107	26.8	109	27.3	3.6	1.2
Most of the lecturers I have had contact with are interested in helping students through SNS	35	8.8	101	25.3	88	22.0	115	28.8	61	15.3	3.2	1.2

Using SNS makes me feel confident and be contributive in class activities	13	3.3	66	16.5	96	24.0	156	39.0	69	17.3	3.5	1.1
Using SNS helps me solve many of my academic problems	21	5.3	64	16.0	87	21.8	153	38.3	75	18.8	3.5	1.1
Frequent SNS usage is detrimental to my intellectual and social values	39	9.8	93	23.3	117	29.3	104	26.0	47	11.8	3.1	1.2
<b>Total</b>	<b>400</b>	<b>100</b>	<b>400</b>	<b>100</b>	<b>400</b>	<b>100</b>	<b>400</b>	<b>100</b>	<b>400</b>	<b>100</b>	<b>3.34</b>	<b>.381</b>

Out of the 25 questions asked, six cases indicated the mean of less than 3. Items with the highest scores of the means and low SD were (Preparing for my class so early helps ease many difficulties) with  $M= 4.0$  and  $SD= 1.1$ . Other items were: (Getting in touch with my old friends and family members on SNS) and: (Using SNS makes me feel motivated to be on campus and carry out) which has  $M=4.0$ ,  $SD= 1.1$  and  $M= 3.8$ ,  $SD= 1.1$  respectively.

Those items with lower mean among all the cases examined were: (As a result of using SNS I found difficulties in conducting and submitting.) having the  $M= 2.6$  and  $SD = 1.3$ . The other items are: (Using SNS makes me depressed that I tend to forget time and even miss classes) which has the lowest mean of 2.7 the  $SD= 1.6$ . And: (Frequent SNS usage makes it difficult for me to find, make, or meet new friends) which has Mean= 2.8,  $SD= 1.1$ .

Table 4: Correlation statistic of the relationship between Social Media usage and Academic Adjustment in Nigeria Universities

		SNSU	SAA
Social Media usage	Pearson Correlation	1	.59(**)
	Sig. (2-tailed)	.	.000
	N	400	400
Academic Adjustment	Pearson Correlation	.59(**)	1
	Sig. (2-tailed)	.000	.
	N	400	400

\*\* Correlation is significant at the 0.01 level (2-tailed).

The question examined the relationship between the social media usage and students' academic adjustment. The Pearson Correlation was used on this question. Table 4 above shows the correlations between social media usage and students' academic adjustment. The result indicated the highly significant correlation figure  $r=.59(**)$ . It means the r value move towards 1.0. So the value 0.59 is almost more than half of the cutoff point of 1. This means it is significant at 0.01 (two tailed). There is a highly positive relationship between social networking site usage and students' academic adjustment in Nigerian Universities.

## Discussion

On this section a discussion was made on the result according to the three null hypotheses set. The first question finds out on the extent of social media usage among Nigerian university students. Out of the 25 questions asked one case (I frequently use at least one or more of the

Social Networking Sites) indicates the highest mean of (M=4.2; SD=0.90). Other sixteen cases indicated the mean (M=3) and above. Those items with lower mean among all the cases examined were only six showing below 3 to 2.1. The results also indicate on the patterns of the social media usage which were equally identified in terms of preference, time spent when using, the source of connectivity, the place and the benefits derive from the use of the social media. Thus the H<sub>01</sub> 'there is no any pattern of social media usage among Nigerian university's students' was rejected.

The second question attempted to investigate the level of the student academic adjustment. It revealed that the extent of academic adjustment among the students in Nigerian universities was also significantly high. The scores shows the mean (M=3.34) and the standard deviation (SD= .382). This suggest that the finding here supported some views from previous literature. Kord, (2008) posits students use the Facebook website as a medium or avenue where they can adjust by expressing themselves, share their daily lives with friends and family members, and keep in constant touch with a group of new and old friends. And stay to know about what is happening around them. The present result suggest that the item using SNS makes me feel motivated to be on campus and carry out academic activities *was* highly supported when the strongly agree scored the frequency (N=150) which is (37.5%) and agree scored the frequency (N=116) which stands at (29.0%) with the mean of (M=3.8) and standard deviation (SD=1.1). This indicated that SNS is an avenue and a tool for academic adjustment. In the present study some students reported transition difficulty which supported (Abdullah et al, 2009; Lent, et al, 2009; Rice, et al 2006; Tseng, 2004; Van Eman, 2009) who viewed academic adjustment as having dimensions and reported that transition for students from school to university is greatly influenced contemplation on their own way to take responsibilities for their own paths. They also revealed that difficulty adjusting to the fact that they need to be self-disciplined and self-motivating. At school the discipline used to be imposed on them. This study tallied with (Abdullah, et al 2009) who also posit that students lack self-confidence to answer many questions in class. Some even miss lectures and difficulty finding the lecture venues easily. Other issues attributed to the new students are plagiarism rules and assignments submission. This study concord with Abdullah, et al 2009; Murray and Kimber, 2005; Lent et al, 2009; they all assert that new students lack respect for teachers and colleagues and find difficulties adjusting to an environment. Prapas, (2009) also sees that adjustment is an essential and usual social confidence with the present globalization. He further indicates that the university setting in terms of infrastructure and provisions significantly influence the level of students' adjustment. This study as well coincides with Prapas (2009) and Campbell, (2002) who also asserts that the school setting and interpersonal interactions affect the students' adjustment. Aspect of university adjustment include: acceptance, culture, withdrawal, and cooperation which all affect the perceptions and experiences the students have about the university. This study supported the (Campbell, 2002 & Prapas 2009) where it found that on the item I feel that harmony among students from diverse cultures was supported where the scores shows strongly agree got the mean as (M=139) which is (34.8%) whereas mean under 'agree option' was rated at (M=130) which stands at (32.5%). Many students on the questionnaire show their friendship influence their adjustment in their various institutions. This therefore confirmed the (Buote, et al, 2007; Rice, et al, 2005) who indicated a significant positive relation between new friendships and adjustment to university. There is an association which was found to be stronger for students living in residence than for those commuting from home to university. The present study also correlated to (Tseng, 2004) which also distinguished between family interdependence,

attitudes and behaviours and found that they correlated significantly and that they had counteracting influences on academic adjustment. She added school can be a time of increased conflict between the youth's family and their academic demands as reported by some respondent. On this issue the  $H_02$  'there is no significant extent of academic adjustment among Nigerian university's students' was rejected.

The third question examines the relationship between social media usage and students' academic adjustment. The statistical result indicates ( $r = .592^{**}$ )  $p < 0.05$  which is quite significant. Thus, suggesting moderately high positive significant correlation between the SNS usage and the students' academic adjustment at the 0.01 level (2-tailed). In view of that it concurs to Kord (2008) who also reported on positive correlation of the relationship between academic internet usage and interactions with the faculty. This information supports faculty use of online tools to engage students and to encourage an academic presence and adjustment through the use of such technology. This led to the conclusion that online social networking has a positive influence on the college students' academic experience. Therefore there is a highly positive relationship between social media and students' academic adjustment in Northern Nigerian universities. In this we can deduce to the fact that the social media usage has effect on students' academic adjustment. Hence, the hypothesis ( $H_03$ ) there is no significant relationship between social media usage and students' academic adjustment has been rejected. This study is also similar to Hesse, (2007) who explored the use of social media among international students on exchange in the United States. His evidence suggests that most students use social media at least partly, this is to stay connected with friends back home and to network with other exchange students and to stay attached to their new school. He added that students often report that they have difficulties in building upon interactions and transforming into more lasting relationships. This idea as well conforms to the present study in this regards.

### **Conclusion**

The conclusion of this study is clear as it reports of transition difficulty among students. This supports the views of Abdullah et al, 2009; Lent, et al, 2009; Rice, et al 2006; Tseng, 2004; Van Eman, 2009) that academic adjustment as having dimensions and that transition for students from secondary school to university is greatly influenced by contemplation on their own way to take responsibilities for their own paths. This study also concludes that using social media as a faculty-student interaction strategy keeps them firmly abreast with the school environment. This result concluded in disagreement with Kord (2008) who concluded that social networking was a negative influence on the college student academic experience. This study also distinguishes between family interdependence, attitudes and behaviours; thus the study found that they correlated significantly with each other and that they had counteracting influences on academic adjustment. This study also confirms that the university's provisions, settings, rules, regulations and interpersonal interactions among the students as well as with their teachers affect positively the students' academic adjustment. More so, that engaging moderately in social media helps the students stay firm to university.

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# IMPERATIVES OF INCLUDING TRAINING IN “SCHOOL/TEACHER SUPPORT” SERVICES IN TEACHER EDUCATION CURRICULUM IN NIGERIA

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## Abstract

The imperative for including training in school/teacher support services as regular study program by Universities and Colleges of education in Nigeria is the subject of examination in this paper. Three teacher preparation models were discussed which include Pre-service teacher (PRESET), In-service teachers (INSET), and the Continuous professional development (CPD) approaches. The paper explores literature on the relationship between learners' achievement, teacher competence and teacher standard against the backlog of knowledge explosion in different subject areas. The capacity that teachers possess in responding to unanticipated behaviors in classroom interactions and emerging contents in the curriculum without new training and additional knowledge to guide the teacher, is a challenge to most teachers of our time. Most teachers in Nigeria hardly have opportunities for lifelong learning (LLL) to update their knowledge. The 21<sup>st</sup> century learners' quest for robust engagement with teachers and school leadership has further been boosted by the varieties of learning resources and media that are within their reach through the internet and other social network platforms. Teacher education curriculum review and development therefore become imperative. The avenue to enhance teachers' competence in our time is to institute a teacher education program with a built in mechanism for teacher continuous capacity development to complement the regular teacher preparation patterns.

**Keywords:** curriculum, school / teacher support officers, teacher education, professional development, school improvement

## Introduction

Economic, social and technological transformations are linking people worldwide. Students of today need extensive knowledge of the world and the skills and dispositions to engage with people from many cultures and countries. They need to be effective participants in the global marketplace of the 21<sup>st</sup> century. Few teachers today possess the required knowledge and are well prepared to educate students for this new global context. The reason for this can be largely located in the teacher training programmes in Colleges of Education and Faculties of education in the universities.

Learners are enrolled in schools to become literate, numerate and competefavorably with their peers globally. For this to happen, teachers must be able to facilitate friendly and focused in teaching learning interactions, engage in peer mentoring, seek new knowledge in

their area(s) of specialization. There is no single teacher preparation model that has proven to be so inclusive to provide the pre-service teachers with all skills and knowledge that he/ she will require in all the years of service as a professional. Therefore, for teachers to be able to respond to the expectations of the society as custodians of new knowledge, teachers will need to be supported on a continuous basis by trained specialist school / teacher support officers by teacher training institutions.

The teacher is a significant factor in the teaching /learning process, and the level of support (re- training) he gets in the course of professional practice may impact correlate in predicting achievement of learners. Nigeria's policy on education agrees with this statement for instance by inferring inter alia that; *no system of education can rise above the quality of its teachers*(NPE 2004).

### **Teacher preparation models in Nigeria and the missing gap**

The two common approaches to teacher training in Nigeria are the conventional Pre- service (PRESET) and the in- service (INSET) models. PRESET is the arrangement where individuals are taken from the beginning through regular teacher education programmes over a period of time (usually between 3-4 years), to acquire skills in pedagogy and subject content before becoming certified teachers. The training could end with the award of Nigeria Certificate in Education (NCE) or Bachelor of Arts, Bachelor of Science or Bachelor of Education (B.A/BSC/B.ED) degrees. INSET operates with the principle of the job training to strengthen the capacities of trained teachers who intend to acquire additional qualifications or for individual who are teaching without appropriate teaching certificates. The strength and capacities of individuals produced through any of the approaches to teach effectively and impact meaningfully on learners' achievement will depend on the quality of the training content as well as the background of the trainee. A cross comparison of the competence and efficiency of products from the two approaches has not revealed a significant difference in skill.

In the two teacher training models, the curriculum comprise of four major elements:

- Subject Content courses with focus on in- depth knowledge of specific subject discipline.
- Background studies in education, history, philosophy, administration, education psychology and sociology of education.
- Method courses involving acquisition of professional teaching skills, technical competences in the use of materials, medial (Instruction design/instructional architecture, instructional means, instructional method, instructional materials}, assessment and adjustment procedures.
- Practical exposures (Teaching practice in schools etc.).

It is arguable whether teachers produced through any of these conventions is sufficiently equipped with skills and knowledge required to practise throughout his years of service as a teacher at any level of education, more so, when new and innovative ideas continue to emerge in all disciplines on a daily basis. A plausible

avenue to fill this knowledge gap is to organise periodic workshops and seminars to support the teacher on a regular basis. The near absence of a conscious effort to improve practicing teachers' knowledge to be acquainted with new developments in the curriculum has been identified as a factor in the disconnect between course content and content delivery in basic education. It is common knowledge that teachers deliberately skip topics that are strange on the syllabus, difficult and such to which they were not exposed in the course of their training as teachers (Olaogun & Fowowe, 2011). Ogoji (2006), equally remarked that, there are no systematic professional arrangements to support teachers professional skill update that can from time, lead to an efficient evaluation of teachers' competencies. It is unconventional in Nigeria to classify teachers in terms of output and capacity base on realistic standards. At best, teachers generally assume seniority by years of service not on the strength of best performance. This is not in tandem with practices where teachers are mandated to take periodic test to justify their ratings to be issued licences to and confirmed employable.

### **Challenges of teacher competence in Nigeria**

In spite of the richness of the PRESET & INSET models of teacher preparation, there are still arguments on the ability of teachers in system to meet the knowledge expectations in their fields. This pessimism is not about teachers alone, perhaps, it applies to most professions with the general perception that, tertiary institutions now produce graduates that are unemployable.

The focus of this paper is to explore an institutional framework for effective training of school / teacher support personnel who are responsible for teacher knowledge upgrade and the general school improvement process (SIP). The most common approach to teacher capacity building through one shot, all seminar, workshops and pull back practice holiday sandwich and part time studies geared towards the acquisition of higher certificates often do not enhance teachers' effectiveness in the classroom. The paper presents an alternative method for teacher and school development that benefits the learner, the teacher and the entire school system in a variety of ways. The practice is less disruptive of the teachers' routine while learning on the job. He is supported at different levels by professional 'teacher/school support officers' who are well grounded in the theory and practice of identifying school/teachers' needs and equally sharing the knowledge through individualized planned and agreed programmes' to support each teacher in his specific area of need through an approach that recognizes the principles of adult learning.

Teaching is a complex and demanding work that require highly specialized skills and knowledge to impact significantly on students' learning. To improve the learning outcomes of all students regardless of their socioeconomic background or geographic location, it is important to design and implement viable teacher professional development programmes. In recognition of the correlation between effective teaching and student achievement , enhancing the skills and knowledge of the education workforce involve a continuous and

progressive teacher support services in which teachers engage in effective , ongoing professional learning to develop progressively higher levels of expertise.

In the publication on ‘The professional Learning of Teachers’ (2004) seven principles of highly effective professional learning were identified as a necessary components of the teacher support needs. The principles make explicit, the key characteristics of effective professional learning and provide a common language for describing good practice in teacher skill upscale. Central to the vision is the recognition that as professionals, teachers need to update their skills and knowledge continuously, not only in response to a changing world but in response to new research and emerging knowledge about learning and teaching.

Teacher quality is at the very centre of learning. It is based on research that consistently highlights the quality of teachers as a key determinant of variation in student achievement (Ferguson &Ladd 1996; Wenglinsky 2000; Darling – Hammond 2000). The postulation asserts that, in order to be effective, teachers need a deep understanding of their subject area, knowledge of how students learn specific subject matter and a range of strategies and practices that support student learning. The research also affirms that engaging teachers in high quality professional learning is the most successful way to improve teacher effectiveness (Greenwald, Hedges & Laine 1995; Guskey & Hubberman 1995; Elmore & Burney 1997; Hawley & Valli 1999; Elmore 2002). Furthermore, teaching is a dynamic profession and as new knowledge about teaching and learning emerges; new means of expertise are required by educators. Teachers must keep abreast of this knowledge base and use it to continually refine their conceptual and pedagogical skills. The field of inquiry that has had most significance impacts for teachers and teaching is that of how students learn. The growing evidence base about student learning forms a compelling case for engaging teachers in highly effective professional learning and has profound implications for what is taught, how it is taught, and how learning is assessed (Bransford et al. 2004).

Creemers (1994) and Haron (1995) emphasized the importance of the quality of the teacher competence and performance by positing that the training of teachers should prepare them for the improvement of the educational quality, pedagogical techniques and school management. Further to this , the teacher must receive adequate training and retraining to enhance his/her competence because, the extent to which the school achieves its aims and objectives is based on the quality of training and retraining programmes the teachers are exposed to (Ogboji, 2006).

Ogboji (2006) investigated the availability of retraining programmes for practicing teachers in Nigeria and concluded that the training and retraining of teachers is yet to receive the desired level of attention from all levels or tiers of government as a policy issue and has not become a key factor in teacher promotion. There has not been enough systematic attention to update regularly the knowledge and skills of the teachers in the light of the changes in the basic education curriculum and the widersociety. This neglect has in turn affected the quality of scholarship in the school system.

Many teachers performed below expectation when subjected to standardized test such as reflected in the ‘Teachers’ Development and Needs Assessment’ (TDNA) conducted in 2011

by the Kwara state government, in Nigeria, where less than ten percent of teachers who took part in a test that failed the test. In Edo and Ekiti states, Nigeria, teachers refused to take part in promotional competency tests out of fear of failure, demotion and possible loss of jobs.

Odutola (2014) reported that; the

*'Teachers' Development Needs Assessment' (TDNA), policy is another controversial policy introduced by the Fayemi's (Governor of the state) administration to test teachers' competence. The exercise got some school principals demoted to vice principals and vice-principals to classroom teachers. In fact, some of those affected teachers could not accept the humiliation' and as a result put in their retirement notices.*

But the reality of today's expectation is that, the teacher of the 21st century must be prepared to match the knowledge expectation and inquisitiveness of the learner of this age. The 21<sup>st</sup> century is driven more by knowledge, innovations and technology than population and military prowess. Upgrading the school and the practicing teachers' skills and knowledge base should be an institutionalized programme of study in the curriculum of teacher training institutions in Nigeria.

### **Justification for exploring the school / teacher support -Continuous Professional Development (CPD) model in teacher skills update**

There are arguments on drop in learning achievements in the Nigerian education system which many attribute to the quality of teachers and the teacher preparation models in the country. Correcting this view point may require a consideration of an alternate pattern of supporting teachers' preparation and skill enhancement. Teachers and the quality of their teaching are now widely recognized as the most critical of many important factors that combine to create overall quality of education. What follows therefore is that the quality and depth of instruction and practice that the teacher is exposed to and the record of peer support and relationship received over a period of time can significantly assist in reshaping the teachers skills in all areas of professional upgrade as opposed to emphasis on the accumulation of more academic certificates course content appear repetitive of those with which previous certificates were earned. Support from professionally trained schoolteacher support officers practice as against the grade he made upon graduation from the training institutions

The quality of education provided by nations and the competence of their graduates is measured by variables that include the strength of the mechanism that provide further support to teachers' professional capacity development on a continuous basis without disrupting the school schedule. Pulling out teachers to attend workshops and seminars that are not individual teacher need specific, constitute one significant source of wasting learning time of learners. Learning time is calculated by the number of minutes that active learner centered activities and interactions occur as against the time allocated for subject teaching on the time

table. Learning time in Nigerian schools is considered the lowest when compared to the hours of engaging learners worldwide.

### **The School/teacher support approach – How it works**

Teachers support system is an integral part of teachers' continuous development programme that revolve like a cycle of activities that resort in input teacher performance and people achievement .and effective development programme. It involves a trained external person designated as a School / Teacher Support Officer (SSO / TSO), who facilitates the process within the environment familiar to the learners. Kolb, 1984 opines that the work place is a critical site for experiential learning, as a continuous process that is grounded in experience and which fosters development through work activities and tasks. The key point is learning from action in real situation, with concrete, hand on experience and, often, the feedback of a mentor. For teachers, learning within the school environment and with a familiar colleague make them improve faster on the job. The support officer and the teacher are both involved in the identification of the needs of the teacher after a period of constant interaction, lesson observation and constructive feedback. After evidenced proficiency in an identified area of support and evaluation, the next circle is started and the process move on. In the opinion of Opfer, Pedder and Lavicza (2008), teachers value professional learning approaches that enable them to experiment with their classroom practice and adapt it in the light of reflection and feedback from pupils and colleagues better than acquiring more certificates. Teachers acquire new knowledge through the external person and put same into practice with support from different levels.

Support system in schools affords teachers the opportunity to communicate freely with their mentors who in some cases are the head teachers, a school / teacher support officer or a colleague who has a better knowledge of the concept or method in context. Through lesson observation and feedback, the teacher identifies his challenges and discusses with the observer, ways of ameliorating the challenges for better performance. Some of the areas where such support could be required are: Knowledge of curriculum content, the use of relevant and adequate instructional materials, the use of praise more than reprimand and Classroom organization, organizing children in different ways and assigning group, individual and pair tasks.

Support system also includes organizing professional development meetings (PDM) within the school to address challenges affecting more than one member of the school staff in their teaching processes. This process could be led by any member of staff or the head teacher or principal who has a better knowledge of the concept.

Support system has been found highly effective in the Lagos state public primary schools since it was introduced in 2010. Its introduction was based on the result from the Monitoring Learning Achievement (MLA) test, teachers development needs assessment (TDNA) and head teachers' shadow survey carried out in schools prior to its introduction. The survey result in summary showed that, children were not achieving the expected learning outcome in English and Mathematics because teachers were not using the right approaches to teach them. Head teachers' approach to academic leadership did not show any traces of international best

practices. As a result, the integrated approach to school improvement was introduced with the support of a DFID education support programme known as Education Sector Support Program in Nigeria (ESSPIN).

A system of support staff known as the school improvement team and the school improvement officers was established to train, support and follow up head teachers (HTs) and teachers for the purpose of improving teaching and learning in schools. School personnel have since then gone through series of curriculum contents on leadership and classroom processes which have brought appreciable result and found relevant improvement in the capacities of practicing teacher.

A composite survey carried out by ESSPIN in 2014 showed a significant improvement in both teacher competence and pupils' learning achievement. The report shows that 70% of teachers in government owned primary schools met the standard of teacher competence as stated in the log frame for, measurement, 89% of them improved in using teaching aid while about 75% was able to organize children in different ways when teaching.

### **Recommendations**

The tremendous achievements in the teacher / school support have been widely documented. In view of the immense contribution of school support system to improvement in teaching and learning and the competence of teachers, it is recommended that teacher training curriculum in Nigeria should make provision for institutional training of personnel in this direction. The programme can be infused as a specialist post graduate programme for teachers and school personnel with a considerable length of service as teachers and administrators. Since the world has moved from the era of teacher inspection to quality assurance, the programme will supply the required personnel to engage teachers in a more supportive and skill enhancement approach.

The content of the programme may include the following themes: Leadership training for head teachers and school heads, the role of the head-teacher in the School improvement programme, managing adults – (principles of adult learning), managing change- the theory of change and leading teaching and learning, a system of lesson observation. It also entails: Lesson observations- principles and practical sessions, keeping a record of lesson observation – document/ format giving feedback, school based tasks /support activities, organizing professional development meeting,maximizing learning time, what an effective Head – teacher should do, promoting learning time – developing a school policy, developing and assessing learning outcome bench marks (LOBs), meeting the needs of all pupils – establish a system of record keeping, financial management – basic principles of financial management techniques, school self-evaluation (SSE), writing reports and how children learn best / managing large classes.

This shall be a marked departure from all the theories and practices that have become obsolete in the processes of rendering teaching and learning services in schools. For effective classroom processes, the following may be added to the teacher training curriculum: Improving teacher/ pupil relationship (self-esteem for learning), organizing learners in different ways (group – pair, individual, whole class teaching), teaching materials



development and use of adequate teaching materials easily available, low cost or no cost materials, engaging teachers in the practice of improvisation, participatory and interactive learning skills, use of games and songs in teaching, role play, asking questions for creative thinking in the classroom, innovative skills in curriculum content delivery in core subject areas like English language, Mathematics, Science, etc.

Lesson observations why /how, pair mentoring – principles and practice of critical friendship and relationship, assessments, using more than one method of assessment, analyzing written assessments, creating assessment materials, evaluation of assessment results for improvement

Some of the topics above could be found in the existing curriculum, emphasis here is to ensure that practice and participatory approach is adopted during learning facilitation. More so, the internship period for trainees should be meant for regular support within the school of internship. Supervisors should also have more like critical friends, doing lesson observation and giving useful feedback all through the same period.

### **Conclusion**

The importance of effective teaching in global, knowledge based societies cannot be overstated. In a world that is rich in information and communication technologies and characterized by complex social, economic, cultural and political interactions young people need high level problem solving skills and ability to apply knowledge to new and different situations. The extent to which students develop these capacities will depend in large part on the quality of teaching they experience at school.

Teaching is a complex and challenging work. Teachers need in depth knowledge of the subject areas they teach, how student learn that content and an understanding of classroom environments that optimize learning. They need access to ongoing, high quality professional learning opportunities to develop and enhance the necessary skills and understandings. Like the members of other professions, teachers need to be continuous learners (Lifelong learning, LLL) who see their own learning as being fundamental to membership of the profession rather than something that is incidental or optional. The extent to which a school promotes the condition for effective professional learning depends largely on its organizational culture the belief attitudes values knowledge and skill of its teacher and leaders. Effective schools have cultures that value continuous learning and encourage all staff to reach progressively higher levels of performance. Importantly, effective school leaders know how effective professional learning can be put into operation as part of an overall strategy for school improvement. Investing in professional learning is the key to ensuring that schools become learning communities where teachers work together, learn from each other (we learning) and share best practices on effective teaching and learning. It is only through the collective work of teachers and by creating a shared professional knowledge that sustained school improvement will be secured. Effective professional learning has profound implications for what is taught, how it is taught and how learning is assessed (Bransford et al., 2000).

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# TEACHERS' SUPPORT OF LEARNERS FROM GRANDPARENT-HEADED FAMILIES

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## **Abstract**

The study reports on a qualitative study that was conducted in selected secondary schools in Port Elizabeth, South Africa. In this purposive enquiry we used in-depth individual interviews to explore the support that teachers are providing to the learners from grandparent-headed families. The findings reveal that some teachers do not provide adequate support because they are uncomfortable to discuss sensitive issues with these learners. Another crucial matter that some of the participants revealed were the lack of interaction and communication between the grandparents who are taking care of these learners, and teachers. Hence recommendations are made for intervention strategies that provide the educational bridge between the teachers and the grandparents.

**Keywords:** Educational-bridge, parental/teacher involvement, anti-social behaviour, grandparent-headed families, learners from grandparent-headed families

## **Introduction**

It is documented that grandparent-headed families are gradually taking on the role of biological parents. This may be due to many factors, such as the high divorce rate, HIV/AIDS-related deaths, the high mortality rate, financial constraints, incarceration and other limitations and restraints which prevent parents from raising their children. The sudden takeover of parental roles sometimes results in many grandparents feeling isolated, overwhelmed, and incompetent as they are taking on the roles for which they are not fully prepared (Cox, 2007; Horner, Downie, Hay & Wichmann, 2007). The situation does not only affect the grandparents but also the children in their care. It may become worse if the children are grown up and attending school as they may have more school needs that grandparent cannot fulfill. In the end all these challenges may affect the academic performance of these learners and place more demands on teachers as they are expected to fill this void by providing appropriate support to these learners (Gasa, 2012).

The above scenario has left us with a question: What support are the teachers providing for the learners who are raised in grandparent-headed families? Therefore, the aim of this paper is to explore the support that teachers are providing for the learners from grandparent-headed families. The paper discusses the findings of the study and recommends intervention strategies that will help teachers and grandparent to recognise the special roles that they play in the academic achievement of these learners. It also outlines the support strategies that teachers can provide to grandparents in order to tighten the educational gap that exists between grandparents and teachers.

## **Theoretical framework**

This paper draws on the Empathy-altruism theory that was advocated by Daniel Batson, an American Social Psychologist (Batson, 2008). This theory makes one to understand why it is important for teachers to develop a genuine desire to increase another's welfare, in the context of this paper it means the welfare of learners from grandparent headed families. This theory carries with it 'empathic concern' and 'altruistic motivation' that is most needed by some learners from grandparent headed families. Sometimes these learners are experiencing stressful situations as their grandparents may not be able to fulfill their school demands (Gasa, 2012). Then it becomes so important for teachers to show empathy and altruism towards these learners. Empathy evokes altruistic motivation to reduce another person's distress. Altruism is the unselfish regard for the well-being of others (Batson, 2010). Empathic concern that is emphasized by this theory means an 'other-oriented' emotional response elicited by and congruent with the perceived welfare of someone in need. It is said that empathic concern is 'other-oriented' because it involves the feelings for the other person. It includes feelings of sympathy, compassion, tenderness, and the like (Batson, 2008, 2010; Cialdini, 1997). It is believed that empathy and altruism may go a long way and also lead to academic excellence.

### **Challenges on teaching learners from grandparent-headed families**

Some studies have portrayed the teaching environment as generally taxing (Gasa, 2012). Teachers' experiences with learners raised in grandparent-headed households may add more challenges to this environment. The reason for this is because learners living in grandparent-headed households may have more to cope with than their peers. Some of the stressors teachers could encounter at school are frequent absenteeism of these learners, projects and task that are not handed in, and learners not attending extra classes and extra-mural activities. Some of these learners have to take care of their grandparents because they are old or sickly. This could be one of the reasons for their absenteeism (Hayslip & Kaminski, 2008).

Teachers may regard the absenteeism of these learners as unnecessary or even feel that other arrangements could have been made for their grandparents. Although such learners are missing vital information when they are absent and continuous assessment cannot be monitored, they may still feel that their loyalty should be with their grandparents. They may feel obligated or indebted towards their grandparents for sheltering them during the time of need (Hayslip & Kaminski, 2008). The unresolved challenges that characterise grandparent-headed families are sometimes inherited by the teachers. Some grandparents resume their new role of being the second-time parents unprepared and thus face considerable challenges, especially when dealing with school-going grandchildren or learners. When they become second-time parents to these learners they are expected to be their primary teachers. But some of them are not able to fulfil the educational needs of these learners. In the end all these challenges become the burden of the teachers and affect the academic performance of these learners (Cox, 2007).

Parental involvement is a critical factor in learners' school achievement at all grade levels. Despite the critical role that these grandparents need to play, they sometimes feel intimidated when dealing with the personnel and the school system. This is because they lack the necessary skills for dealing with the evolution of the educational system as well as for assisting the modern-day learner (Cox, 2007). It is true that families provide the social, cultural and emotional support so that learners are able to function well at school (Deplanty, Coulter-Kern & Duchane, 2007). Although the grandparents may not have legal custody

over their grandchildren, it is still expected that the grandchildren in their care receive holistic parenting. If these learners are in the adolescence stage, it should be understood that adolescence encompasses not only rapid physiological and psychological changes associated with puberty, but also social transformations that follow the transition to secondary school (Gutman, Sameroff & Eccles, 2002). Due to illiteracy or limited schooling their grandparents may not be in a position to assist them because they are not aware of their transitional stage and the changes that have occurred in education. This cause more stress for teachers.

Another challenge that becomes a worrying factor to teachers is that some of the grandparents are unable to attend parent-teacher consultations. They sometimes avoid any contact or communication with their grandchildren's teachers because they feel that they are being summoned to learn how they are failing their grandchildren. Some grandparents might not realise the importance of education because they have not received any formal education themselves (Mansfield, 2009). School systems have changed over the years which cause some grandparents not to be familiar with these changes and terminology. Some grandparents still view teachers as solely responsible for the academic development of learners. The grandparents' lack of education, socio-economic status and occupation could be barriers when dealing with the school and this usually frustrates teachers (Mansfield, 2009).

Learners living in grandparent-headed households may have experienced traumatic loss, having lost or been taken away from their parents. These factors may be stressful to these learners and may negatively influence their behaviour as well as their relationships with their family, teachers and community. As a result of loss and separation they may not be able to form relationships of trust. It may also happen that they have been abused physically or emotionally by people they trusted. Consequently they sometimes become loners, promiscuous, attention seekers or adopt a devil-may-care attitude because of the trauma they may have experienced. The inability of these learners to fit in with their peer group may lead to anti-social behaviour (Conway, 2004). Even though they need more support and motivation to perform in a positive manner, their grandparents may be unable to assist them due to a lack of knowledge, proper skills and financial constraints. The inability to remedy the situation may have a negative impact on learners' scholastic achievement, which sometimes dents the image of teachers.

## **Method**

The paper is based on qualitative research that was conducted in five secondary schools within the northern areas of Port Elizabeth. The reason for using qualitative research is because it focuses on the subjective views of research participants and it also allows the researchers to use in-depth interviews in a small sample of participants. It has been debated that in qualitative research the number of samples is inadequate when the emerging themes have been efficiently and effectively saturated with optimal quality and sufficient data to account for all aspect of the phenomenon (Liamputtong, 2013). This is also in line with Burns and Grove (2005) argument that qualitative researchers focus on the quality of information rather than the size of the sample.

### *Participants and Procedure*

The participants in the study were grade ten teachers who are teaching Life Orientation in the selected schools. Two participants in each school who had been teaching Life Orientation for more than three years were selected. The teachers who are teaching Life Orientation were

selected because most South African schools do not have an in-house or residential psychologists, social workers or professional counsellors. As a result, Life Orientation teachers are entrusted with some of the roles that these professionals are supposed to provide. Life Orientation teachers are the ones who are providing guidance and counseling to all the learners and are expected to have an-depth information concerning the diverse needs of the learners. Specifically, teachers who are teaching grade ten learners were selected because the learners that they are teaching are adolescents, as their age mostly ranges between 14 and 16, and these learners may have more needs, demands, uncertainties and life challenges.

In this purposive enquiry we have used in-depth individual interviews to explore the support that teachers are providing to the learners from grandparent-headed families. Purposive sampling is useful for small-scale studies in which the researcher knows exactly what kind of sample is required and how it can be accessed (Basit, 2010). We conducted semi-structured interviews with the participants and recorded them on audio-tape. The participants were interviewed at each selected school after obtaining consent from them, the school and the Department of Education.

#### *Data analysis*

The raw data collected through semi-structured interviews were organised and analysed. The data were then tabulated into hard copies and organised according to themes. These themes were grouped together using codes in order to identify similarities and differences. Different questions that were posed during the open-ended interviews yielded the themes, such as teachers' role regarding these learners, relationship between learners and their teachers, relationship between the grandparents and the teachers and the availability of support groups or counseling. The results that are drawn from the data are discussed below.

### **Results and discussion**

Mentioned has been made that a number of themes emerged from the data that were collected from the participants.

#### ***The teachers' role regarding the learners from grandparent-headed families***

As far as the teachers' role regarding these learners is concerned, most participants revealed that they are not only teachers to the learners who are from grandparent-headed families but that they are also parents. They are very comfortable in playing these roles, both as parents and as teachers, because they want these learners to trust them and also know that they are always there for support. Some participants reveal that: "*they see me as an educator and as a parent ... every child is my child ...*" while others confirmed that "*... learners feel comfortable speaking to some teachers ...*" It is true that teachers play a major role in assisting learners in the educational, emotional and social spheres (Christenson, 2004).

Most of the participants acknowledged that teachers play significant roles in the lives of these learners as they commented that: "*... the learners look up to me ... see in me their own parent ...*" They stated that support and guidance is crucial in order to instill the sense of belonging and pride in these learners. They pointed out that it is their duty to "*... give the necessary support that the child requires to become a better individual ...*" Christenson (2004) believes that teachers are expected to be role models so that these learners will emulate their good behaviour and become responsible citizens. In addition, Gutman et al (2002) concur that

support is important to ensure that these learners have the possibility of becoming productive members of society. They also confirm that every learner with the support from significant others has a good chance of having positive achievement related outcomes.

### ***The relationship between the learners from grandparent-headed families and their teachers***

The issue of the relationship between the learners and their teachers also emerged. The positive academic achievement outcomes depend mainly on how the learners and their teachers relate. The absence of this relationship may hamper learners' academic achievement, their socialisation and the smooth running of the school. Most of the participants revealed that they have a good relationship that is based on trust with these learners: *"Many learners also confide in me and I also have an open door policy for them as well to come and sit and talk to me."* Social support from teachers gives these learners a feeling that somebody other than their family members loves, cares for, and values them as individuals (Gutman et al, 2002). Some of the participants pointed out that: *"They do come to me because in my capacity as Life Orientation teacher, they come to me and speak about their difficulties at home. Usually I give support."* The levels of support, trust and positive relationships are regarded as crucial. Teachers are expected to gain this trust relationship by being involved in these learners' lives and understanding their home backgrounds (Mansfield, 2009; Christenson, 2004).

We discovered in the course of these interviews that some participants are afraid to discuss sensitive issues with these learners. They only ask them general questions which do not address the real issues *"I don't think children normally speak out about situations unless it is very, very bad ... so yes we share. I would usually ask how things are at home... but those are general questions that I normally ask but no specific one ..."* If teachers are afraid to address the most crucial issues in the learners' lives, this could cause these learners to not open up and to withdraw socially and academically. The relationship that is expected between learners and teachers may be hampered.

### ***The relationship between the grandparents and the teachers***

Another important theme that emerged was that of the relationship between the grandparents and the teachers. The relationship between grandparents and teachers is important because grandparents as second-time parents may not be as familiar with the school setting. It is also important that teachers make the school processes and procedures more grandparent-friendly. Most of the participants acknowledged that *"... the grandparent is older and does not have the time, energy ... does not have the skills and ability to help learner with school work ... as should the parent have the ability for learners' scholastic performance."* This acknowledgement calls for teachers to provide positive relationships and support to these grandparents. It shows how important it is for teachers to be mediators between the grandparents and these learners and the school. When all three role players – grandparents, teachers and learners – work together, the academic performance of these learners may improve.

Most of the participants confirmed that there is consultation between grandparents and teachers when the need arises: *"... where there is a problem they call the grandparents to the school and speak to the grandparents. Basically the grandparents are taking the role of the parents so they speak to the grandparent as if they are speaking to the parent."* This can be

seen as strengthening the relationship between the teachers and grandparents. Teachers need to be aware of who the parent/guardian is of each learner entrusted in their care. They should know who to contact if there is a need. Grandparents need to be given the necessary support by teachers in order to fill the gap left by the biological parents who failed or are not available to fulfil their classically defined role as parents (Szolnoki & Cahn, 2002). Some participants felt that these grandparents are not cooperative as they make excuses when they are requested to come to school *“Our grandparents must walk up to school if we need them, which mean there are always excuses.”* These excuses frustrate the teachers as they do not know who to turn to if these grandparents do not attend parent-teacher consultations. But Mudavanhu, Segalo and Fourie (2008) suggest that there should be a level of understanding and mutual trust because some of these grandparents lack finances and the distance between the schools and their homes compel them to use public transport which could be costly and unreliable.

Most of the participants felt that the grandparents lack discipline when it comes to these learners. Some of these learners get away with lies because the grandparents do not check their school work; they just take the learners’ words that the school work has been done *“... grandparents do not have the time to check up on their work ... they take their word as if they say they don’t have homework ...”*. Other participants were in agreement with this when saying: *“... grandparents only ask how your day was ... they have other priorities, like looking after the children ...”* In addition to these statements some participants stated that *“... learners in class take their grandparents for granted.”* This shows that the level of influence that should be exercised by these grandparents and teachers is not strong enough.

Communication is an important tool that can help two or more parties to reach an agreement, to build positive relationships, to know the expectations of one another, to be able to provide the required support and to trust in one another’s abilities. Most participants revealed that there is lack of interaction and communication between these grandparents and teachers: *“... there is no communication ... there is a lack of communication between grandparents, teachers and learners ...”* Some participants went further, saying: *“... we don’t have that interaction with the grandparents ... we only get to see the grandparents when they come the first year with them to school... so we never ever see them... that is actually a problem for us ...”* It is clear that these grandparents do not understand the roles that they are expected to commit to regarding the learners entrusted to them. They may be shocked or overwhelmed by circumstances and never given time to adjust to the role change. The transition from grandparent to parent poses internal conflict for them. The situation is worsened when the reality of being a parent and not enacting a traditional grandparent role sets in and this contributes to a sense of conflict. It becomes challenging to them to assume a parental role which comes with the responsibility of being a disciplinarian, provider, and authority figure in a parent-child relationship. As mentioned before, these grandparents may have agreed or been forced by the circumstances to take over the parenting of their grandchildren. When the emotional state that they were in when they took over parenthood subsides, they begin to wonder if they are capable of fulfilling the needs of these learners (Landry-Meyer & Newman, 2004).

### ***The availability of support groups or counselling in the schools***

Different views emanated from this study regarding the availability of support groups or counselling in the schools. We learned that some schools have professional experts that these



learners are referred to, whereas other schools are not privileged to have these experts. This was gathered when some of the participants confirmed that: *“there are qualified psychologists .... that are available to these learners.”* Other participants also expressed the same sentiments when saying: *“... we have the school psychologist who meet with different individual learners ... there is some form of mechanism in place regarding a support group for the kids at our school.”* A variety of support provided to these learners was captured in this statement: *“... yes our welfare organisations are really always available ...”* But not all the participants confirmed the availability of support groups and counselling; some revealed that there are no professional experts in their schools and it becomes the role of teachers to provide support *“... the help usually comes from the teachers ... they give support ...”*. It is possible that learners living in grandparent-headed households might have experienced a traumatic loss of parents which requires professional intervention. Schooling may in some way also be a disheartening experience to them because they feel isolated, lacking a proper identity and coming from a home that is not recognised by their peers or the school personnel. As teenagers they may be undergoing physical and emotional changes. These factors can be stressful to these learners and may negatively influence their behaviour as well as their relationships with their family, teachers and community. It may also happen that they have been abused physically or emotionally by people they trust and love. This becomes a major challenge if some of the schools cannot acquire the immediate intervention of professional experts (Gutman et al, 2002).

Some participants blamed the unavailability of support groups and counselling in some of the schools: *“I would say no support ... presently the limitations are that most of our learners come from disadvantaged areas.”* There are a lot of challenges facing some of the learners who are raised in disadvantaged areas. Their situation may lead to low self-esteem, a minimal sense of belonging and an inability to fit in with their peer group. Even though they need more support and motivation to perform in a positive manner, their grandparents may be unable to assist them due to lack of knowledge, proper skills and financial constraints. The inability to remedy the situation may have a negative impact on their scholastic achievement (Conway, 2004).

Providing these grandparent-headed families with support is essential. A grandparent-headed family needs to be uplifted and strengthened. I discovered that grandparents in this study do not receive any support from their respective communities. Grandparent-headed families are a reality and society should be made aware that these families need their support. During the interviews most of the participants revealed that support programmes are not available in their schools and in the community at large. This was revealed when some of them said *“no support groups are available...”* Communities must be able to provide support for all the members living in a grandparent-headed household. This support could be in the form of support groups or counselling from professional experts. The schools should also give immediate support to these families. Schools should be the centre where grandparent-headed families could receive information on alternative support groups and counselling. The partnership between the school, community and professional experts is encouraged in order to maximise intervention or support that these grandparents need (Christenson, 2004).

## **Recommendations**

Teachers need to become aware of this fast growing substitute family structure. The need to explain the importance of grandparent-headed families' involvement in their grandchildren's

schooling should be explained and encouraged. Grandparents may perhaps be under the impression that if they send these learners to school they have fulfilled their duty. It might be out of ignorance, ill health or lack of education that those grandparents expect teachers to be solely responsible for these learners' schooling. Christenson (2004:86) emphasises that "partnering with families to enhance learning outcomes is essential to meet the new accountability demands of schooling". Schooling has changed considerably since the days that the parents of these learners went to school. Grandparents may be ignorant of these changes or simply do not care. It is therefore recommended that teachers play a key role as part of the learner's village to reach out to grandparents who do not cope with the demands placed on them.

Encouraging grandparents to share their experiences with the schooling system and with each other in a non-threatening environment might help them not to feel so isolated. It is, therefore, recommended that teachers should organise workshops for these grandparents to explain what is expected from them in order to assist these learners in their school careers. They should also encourage the grandparents to form support groups which may assist other grandparent-headed households. Inviting these grandparents to extra-mural activities and on excursions may well give them the opportunity to speak to teachers in a less formal environment. Teachers are expected to emphasise the importance of grandparent involvement in the schooling of these learners and it must be seen as a partnership and not as the sole responsibility of the teacher. They should implement programmes within their schools and involve grandparents. If teachers assist grandparent-headed families in understanding the schooling system these grandparents would possibly feel less stressed and more informed, which may result in better co-operation in the future. Teachers who are in the service of their community will be of greater help not only to the learner in the classroom but also to the grandparent of that learner. They should make learning fun for the learners in their care and more user-friendly to their grandparents. This will enforce a strong bond between the school, grandparent and learner. Teachers should be aware of the uniqueness of each learner's circumstances in their class. This will make it easier for the learner and even their grandparents to disclose relevant information that will benefit the learner in their care.

The dynamics of families should be understood by all teachers in order to cater for these learners who do not live in the conventional family structure consisting of the father, mother and siblings, but in alternative family structures. Many of these learners have been through traumatic life experiences and may be the victims of their parents' state of affairs. Teachers should be sensitive towards these learners and give them necessary support. Concerted efforts should be made by teachers to encourage these learners to participate in school programmes and extra-mural activities. Ideally, these learners may experience a sense of belonging, school pride and camaraderie with their peers. Peer support groups under guidance of a school counselor or a teacher should also be formed for learners who live in grandparent-headed households. Within this non-threatening environment these learners may have the freedom to speak about their parents and grandparents without feeling guilty. They could also give support and assistance to other learners who experience the same living conditions.

The learner, grandparent and the teacher should form a partnership. It should be noted that without the teacher the learner may not be able to learn. Without the learner the teacher will not be able to teach. Without the parent/grandparent, the teacher may not be able to guide the learner to reach his or her full potential. It is also important to recognise that teachers and

grandparents are interlinked and responsible to fulfill their respective roles. Thus, it becomes of cardinal importance for the teacher to take the first initiative to assist the grandparent by building a parent-teacher relationship. In their capacities as teachers they are able to guide the grandparents to be actively involved with these learners' education. By initiating the relationship, teachers are taking the position as an outsider to the relationship, which could be stressful for the grandparent and grandchild. The teacher is able to assist and explain the demands of the education system to the grandparent in such a manner that they are able to understand its requirements.

The teachers should also become part of the support group for the members of the grandparent-headed family. Learners may see the teacher as a person that takes an interest in them as individuals. This may lead to the learner forming a positive relationship with the teacher that is based on trust and mutual respect that could positively influence their schooling. Counselling from professionals such as social workers, pastoral leaders and educational psychologists is needed to support all members of the family. Home visits from teachers should be encouraged. Implementing a homework period during school hours under the supervision of teachers could benefit these learners with regard to academic performance.

### **Conclusion**

Considering grandparent-headed families to be an asset and not a liability, and following the realisation that this family unit is often not recognised and thereby not given necessary support by the schools, we engaged in this study in order to explore and identify support that teachers can provide to this often neglected family unit. The disregard of this family unit was regarded as negatively impacting on the academic achievement of learners. Throughout the discussions, the sample of teachers who were interviewed in this study revealed that they give support to these learners to the best of their ability. The only concern for them was the non-availability of professional support system in some of the schools, less involvement of grandparents in the educational demands of their grandchildren and less interaction between the school and grandparents. Having seen this educational gap between teachers and grandparents, the recommendations were tabled to help them to tighten the gap and to assist these learners as they wade through this period of their life.

These recommendations emphasise that identifying and supporting learners from grandparent-headed families cannot be achieved solely by teachers but also by grandparents. However, the most important emphasis is placed on teachers because it has been debated that the successful support programmes are those delivered by people who possess knowledge, who are thoroughly rooted in the communities where these families reside, who have credibility and resources to identify and assist vulnerable individuals. These knowledgeable people are expected to identify vulnerabilities in their schools and in communities surrounding the schools, suggest responses and give support where it is most needed.

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# UNIVERSITY STUDENTS USE OF COMPUTERS AND MOBILE DEVICES FOR LEARNING AND THEIR READING SPEED ON DIFFERENT PLATFORMS

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## Abstract

This research was aimed at the investigation of mobile device and computer use at a higher learning institution. The goal was to determine the current use of computers and mobile devices for learning and the students' reading speed on different platforms. The research was contextualised in a sample of students at the University of South Africa. Students indicated their use of computers and mobile devices for educational purposes in closed questions that were in questionnaires. The results of this case study showed that most students preferred reading from university supplied printed materials than from notes downloaded on computers or mobile devices. The percentages of students who use computers and mobile devices were calculated. Students currently use computers more than mobile devices for reading downloaded notes. A mobile eye tracker was used to analyse the students' reading speed on paper, and on a mobile device. Screen based eye tracking was also used to analyse the participants' reading speed when reading on a desktop screen. Participants who read on paper had the fastest reading speed than those who read on mobile device or computer screen.

**Keywords:** Distance Education, E-learning, Mobile Devices, Digitised Books, Eye Tracker, Reading Speed, Fixations

## INTRODUCTION

The increased availability and evolution of technology has made it easier for computers and mobile phones to be accessible at educational institutions, homes and workplaces (Wei, Moldovan and Muntean, 2009). More students now have access to the Internet on both computers and mobile phones. E-learning is now acceptable to many people. E-learning refers to learning where learners and tutors are separated by distance, time or both (Raab, Ellis & Abdon, 2002; Cantoni, Cellario & Porta, 2004). It has decreased the distance learning limitation of learning location (Blocher, De Montes, Willis and Tucker, 2002).

The University of South Africa (UNISA) is an open distance learning institution. A paper based education has been UNISA's main delivery mechanism for many decades but the university's educational content can now be delivered on computers and on mobile devices. The purpose of this study was to investigate the use of mobile devices and computers for learning. Comparison of the reading speed on mobile device, paper and computer screen was also done.

## 1. Distance Education and E-Learning

Distance education consists of processes and methods of delivering educational instruction on an individual basis to students who are physically separated from the learning institution, tutors as well as other students (Adams, 2006; Unisa, 2008). Distance education began in 1728 when Caleb Phillips advertised weekly shorthand lessons by post to students in their country (Tejeda-Delgado, Millan and Slate, 2011). This type of learning was stimulated by the development of the postal service in the 19th century (Stefanescu, Dumitru and Moga, 2009). Isaac Pitman taught shorthand by correspondence in Bath, England in the 1840s. The University of London was the first university to offer distance learning degrees in 1858. Universities used correspondence courses in the first half of the 20th century, which benefited mostly rural students (Tejeda-Delgado, Millan, & Slate, 2011).

E-learning is the use of electronic media, including the Internet, intranet, extranet, satellite broadcasts, CD-ROM, audio/video and interactive TV to deliver learning courses (Henry, 2001; Kahiigi, Ekenberg, Hansson, Tusubira, & Danielson, 2008; Dharmawansa, Nakahira, & Fukumura, 2013). Geographically dispersed students from different backgrounds can study without leaving their employment or homes (Blocher, De Montes, Willis, & Tucker, 2002). The benefits of e-learning include liberating interactions between learners and instructors, or learners and learners, from limitations of time, distance and resources (Sun, Tsai, Finger, Chen, & Yeh, 2008).

## 2. Theoretical Framework

Learning theories have been used to provide a basis on which to propose and evaluate different ways of teaching to meet the needs of learners. Davis (1989) presented the Technology Acceptance Model to model technology acceptance within organisations.

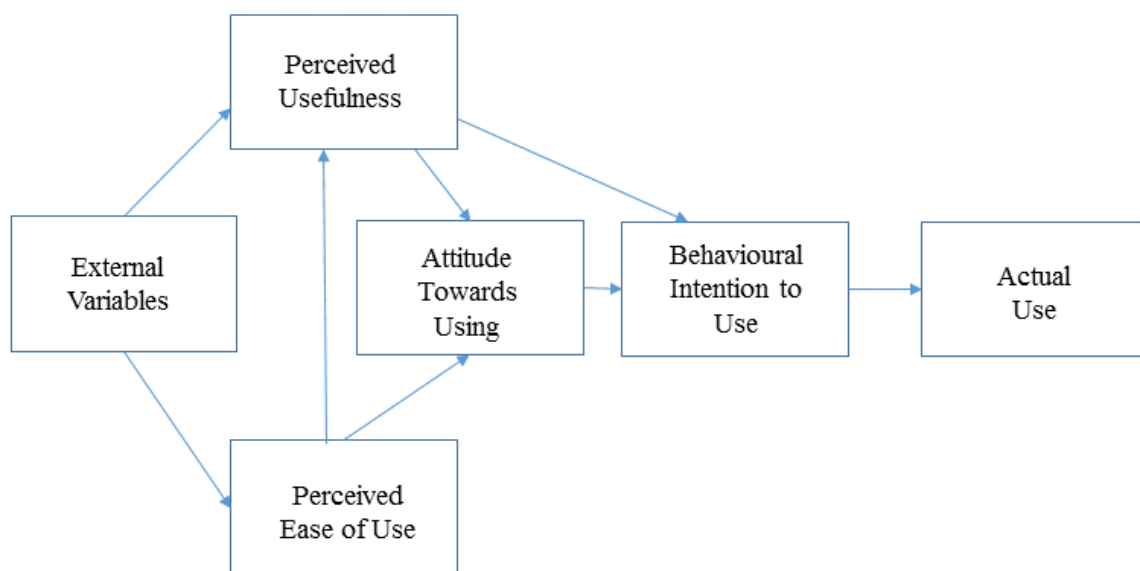


Figure 1. Technology Acceptance Model

The model proposes the following factors (Davis, 1989; Wang, Park, Chung, & Choi, 2014);

- Perceived ease of use affects the adoption of a system. It is the degree of a user's belief that a certain system can be used easily without assistance.
- Perceived usefulness represents the degree of belief that a certain system will help them perform their job better.
- External variables, such as users' characteristics affect perceived usefulness and perceived ease of use.
- Attitude towards use is the user desirability of using a system and it increases if the system is perceived to be easy to use and useful.
- Behavioural intention is predicted by attitude towards use and perceived usefulness of a system.
- Actual use of a system is affected by the behavioural intention.

These factors may be used to explain and determine the use of mobile devices and computers for educational purposes.

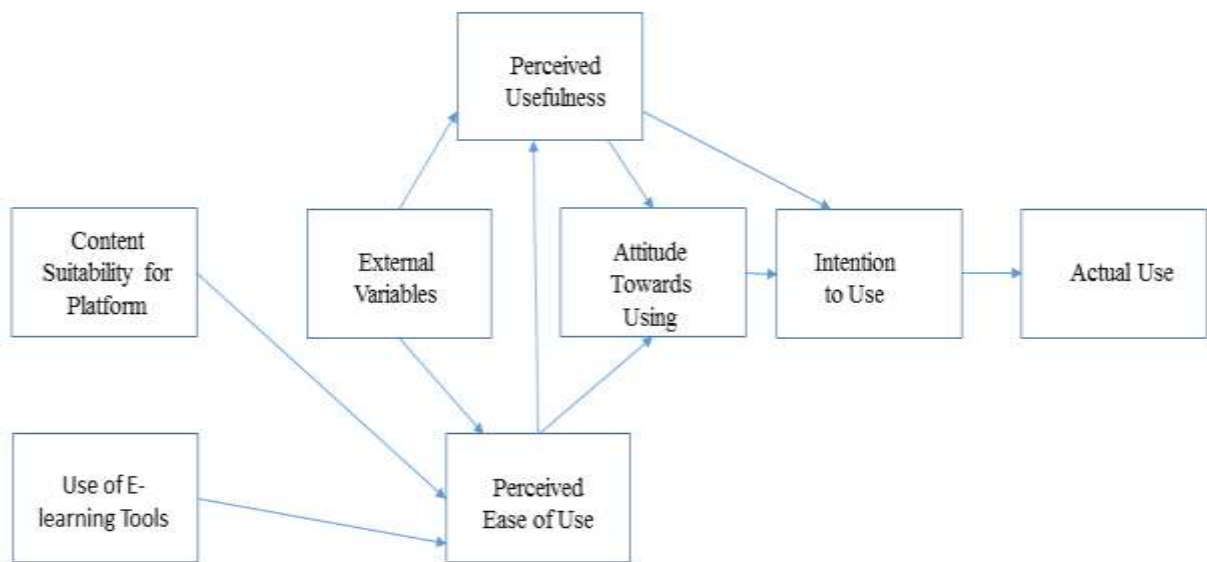


Figure 2. Model for Content Designed for Different Platforms

In this study, the researcher proposes a model for the design of content suitable for a specific platform. The Content Platform Technology Acceptance Model (CPTAM), shown in Figure 2, proposes that e-learning content designers must implement the best design strategies to suit the specific platform so that e-learning could be carried out effectively. Students may utilise tools that support e-learning, e.g. online tutorials and e-books, digital library, email, discussion forums, blogs, and the announcements area.

### 3. Mobile Devices in E-Learning

Mobile learning is a form of distance learning where the sole technologies are handheld or palmtop devices. Educational content is delivered on devices such as mobile phones, smartphones, personal digital assistants (PDAs). Mobile phones are portable, have advanced capabilities and can be used for situated learning. In the situated learning approach,

knowledge and skills are acquired in the same context in which they are applied. Some mobile phones have components such as a keyboard, touch screen, built in camera and secure email facilities (Traxler, 2005). Educators are considering mobile devices for the delivery of study materials due to their spontaneous access to online resources and their low cost compared to desktop computers and notebooks. Mobile devices can be used alongside paper and pencil due to their small size.

#### 4. Eye Tracking of Paper, Computer Screen and Mobile Device Readers

Eye tracking is a process of measuring the location and sequence of eye movements. An eye tracker is used to record eye movements and eye fixations and to evaluate usability issues and understand human performance (Conati & Merten, 2007). An eye tracker can be a head mounted or a table mounted system (Almeida, Veloso, Roque, & Mealha, 2011). These eye trackers use infrared light that is reflected from the cornea and the retina to obtain data on participants' eye movements (Cantoni, Perez, Porta, & Ricotti, 2012).

The application areas of eye tracking include usability research and market research. An analysis of user reaction to placement and variations of advertisements and products is done in order to design better products and advertisements (Morimoto & Mimica, 2005). In the automotive industry, eye tracking can be used to detect drowsiness or distraction. A controller triggers an alarm if the head position drops or if eyes close (Dasgupta & George, 2013). In a study, eye tracking technology was used to investigate the association between cognitive abilities and the complexity of a web page. Tasks were performed on simple, medium and complex Web pages. The results were used to model human behaviour by designing suitable and adaptive environments based on the assumption that individuals interact differently in web pages of different complexity (Nisiforou, Michailidou, & Laghos, 2014). Eye tracking has also been used to monitor expert and non-expert students completing tasks on a Learning Management System (LMS). The results indicated usability problems faced by the students when using the LMS (Pretorius, van Biljon, & de Kock, 2010).

#### 5. Research Questions and Objectives

The objective of this research was to study how students currently use computers and mobile devices for educational purposes. The research also sought to investigate if there were differences in reading speed on paper, mobile device and computer screen.

## **METHODOLOGY**

### **Research Design**

Thirty participants took part in this case study. Seventeen were male and thirteen were female. One participant was below the age of 21, eleven were between the ages of 21 and 25, eleven participants were between the ages of 26 and 30 and only one participant was aged between 31 and 40. Fifteen participants indicated that they had average computer skills; thirteen reported they had high level computer skills and two stated that they had very high level computer skills. Almost all participants reported using computers and/or mobile devices for receiving and sending emails, downloading music and for communicating using Facebook



and Twitter.

In this study, quantitative methods were employed to analyse eye tracking results obtained from the experiments and qualitative methods were used to enhance interpretation of the results, thus the study was based on both the positivist and the interpretivist paradigms.

### 1. Questionnaires

Questionnaires and eye trackers were used for data collection. This research was conducted in the context of the University of South Africa (UNISA). In this research, convenience sampling was used. It is the selection of participants from the population using non-random procedures. Convenience sampling is a non-probability sampling technique that involves obtaining responses from people who are available and willing to take part (Kitchenham & Pfleeger, 2002). The researcher sent an invitation email to registered students. Available, accessible and registered UNISA students took part in the study.

The questionnaire comprised a set of questions to investigate the level of the participants' computer skills and the use of computers or a mobile devices for educational purposes. Students had to state the platform they used for studying their study material. They were also requested to describe their attitude towards the Internet.

### 2. Eye Tracking

The Tobii T120 eye tracker was used to record how participants studied on a computer screen while the Tobii X120 eye tracker was used for the eye tracking of participants reading on paper and on mobile devices (see Figure 2). The eye trackers have an accuracy of 0.5 degrees, a drift that is less than 0.3 degrees, sampling frequency of either 60 or 120 Hz and use infrared diodes to generate patterns on a participant's eyes. Eye tracking is the process of measuring the point of gaze or the motion of an eye relative to the head. Normal reading consists of a series of saccadic eye movements along lines of text, separated by periods of brief fixations during which the eye is relatively stationary and visual information is acquired from the text (Rayner, 2009). The eye tracking data was exported from Tobii Studio™. It is the eye tracking software that allows researchers to record and analyse eye tracking tests. The software supports the calculation of key eye tracking metrics in addition to tables and graphs to enable quantitative analysis and interpretation as well as display of results. The metrics can be exported to text, spreadsheet or to an analysis application. In this study, the researcher exported the statistical data to Microsoft Excel®. The inferential statistical analysis was done using the IBM SPSS Statistics.



1. Tobii X120 and iPad



2. Tobii T120 Eye Tracker

Figure 2. Eye trackers – Left: Tobii X120, Right: Tobii T120 Eye Tracker

### Validity or Reliability of the Instruments

Calibration of the participant's eyes was carried out before the eye tracking sessions. Calibration enables the identification of a participant's eye characteristics so as to estimate the gaze point with high accuracy. Eye tracking produces precise eye tracking data, i.e. fixations and saccades. The exported statistics file also includes areas where the eye gaze was lost. The areas are indicated by a validity column whose values range from 0 to 4. If the validity is 0, it implies that the gaze point was computed with high accuracy. If validity is 4, it indicates that the eye tracker was unable to locate the participant's eye gaze. The areas that the eye tracker was not able to measure were not included in the data analysis.

Questions included in the questionnaire were tested for reliability and validity. The Cronbach's internal consistency reliability and test-retest reliability were used to assess the reliability of the questions. Validity was assessed using face, content and construct validity. The wording, sentence structure, language and context of the questions in the questionnaire were examined.

## DATA ANALYSIS AND RESULTS

### 1. Use of computers and mobile devices for learning

The aim was to determine the current use of computers and mobile devices for learning. Students indicated their use of computers and mobile devices for educational purposes in closed questions that were in the questionnaire, see Table 1.

The students who reported using mobile devices for sending and receiving emails were 83%. Those who indicated using computers for sending and receiving emails were 97%. More students reported reading online applications on computer screen than on mobile device. Those who currently read their online applications on mobile device were 70% whilst 90% of

the students read online applications on computer screen. More students use the computer screen for downloading and reading notes that are on myUnisa. Students that read notes from myUnisa on mobile device were 57% and those who currently read on computer screen were 90%. The results indicate that the majority of students currently use computers than mobile devices for reading educational materials.

Table 1. Current Use of Computers and Mobile Devices

	Receive, Send Emails	Online applications	Download music	Games, Facebook , Twitter	myUnisa
Mobile Device Use	83%	70%	50%	73%	57%
Computer Screen	97%	90%	63%	73%	90%

## 2. Reading Speed

The page that was read by participants consisted of seven sections. The participant's reading speed for the whole page was calculated. The average speed for participants who read on paper was 150 words per minute. Participants who read on computer screen had an average of 106 words read per minute. Those who read on mobile device had an average speed of 110 words per minute, see Table 2.

Table 2. Number of words read per minute

Participant	Mobile	Computer	Paper
P1	85	95	211
P2	121	141	175
P3	89	60	116
P4	85	83	73
P5	170	97	132
P6	109	108	128
P7	125	90	266
P8	98	124	134
P9	110	135	160
P10	110	131	109
Average	110	106	150

The results indicated that participants read more words on paper than on computer screen or mobile device.

The One Way Analysis of Variance, (ANOVA) was used to test if the differences in reading speed when reading on different platforms were significant. The p-value was 0.029, which was less than the alpha level of 0.05. This meant that there were statistically significant differences in the reading speed among the groups of participants that read on mobile, paper and computer screen.

## Recommendations and conclusion

The study sought to find out how students use computers and mobile devices for reading. A comparison of the number of words read per minute on the different platforms was done. In this study, more students indicated that they use computers more than mobile devices for reading notes online. In the experiment students read the least words per minute on the computer screen. E-learning designers may split computer screen text into columns in order to increase the reading speed on computer screen. Reading is slightly faster for text in two columns (Dyson, 2004).

Students must be educated on the potential use of computers and mobile technology for learning. Resources and collaborative tools that are available on myUnisa include official study materials, literature search and announcements. Collaborative tools that students may make use of include discussion forums and blogs.

E-learning designers may utilise tools and technologies to improve the usability and the quality of content, such as the annotation tools that provide students the capability to annotate directly on Web documents or pages and highlight sections of digitised books.

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# **IMPROVING TEACHER-LEARNER ASSESSMENT THEORY AND TECHNIQUES IN HIGHER EDUCATION: CASES OF MAKERERE, KYAMBOGO AND UGANDA MARTYRS UNIVERSITIES OF UGANDA**

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## **Abstract**

One of the most important aspects in Higher Education (HE) is assessing learners in order to ascertain their levels of achievements. This study on Improving Teacher-Learner Assessment Theory and Techniques in HE: the Case of Makerere, Kyambogo and Uganda Martyrs Universities of Uganda shows the meaning of assessment, techniques and the need to assess holistically the educational domains in order to attain reliable and valid results. The researcher used both qualitative and quantitative approaches of research with case study as the research design where 200 respondents (students and lecturers) from Makerere, Kyambogo and Uganda Martyrs Universities of Uganda were contacted. The study reveals the common methods of assessment used by lecturers as examinations, tests, course works, research projects, class attendance and presentations which were largely rated good because they were examination oriented with its merits not withstanding weakness particularly of assessing majorly the cognitive domain. The study concludes that holistic assessment is vital for producing right graduates and therefore recommends that continuous and final assessment should reflect the taxonomy of education (cognitive, affective and psychomotor) with 50% as pass mark for all before a learner is pronounced to have passed.

**Keywords:** Assessment Techniques; Educational Domains; Higher Education; Uganda

## **1.0 Introduction and Objective**

Assessment in Higher Education (HE) is essential in determining levels of achievements of learners. In education, the teaching-learning process is complete when we see results which are a product of assessment. This makes assessment a strong tool in any education system and it requires review. This study looks at assessment in Higher Education (HE) in terms of theory, practice and the way forward in Ugandan Universities; the cases of Makerere University-public (1922), Kyambogo University-public (2003) and Uganda Martyrs University-private (1993). It aims at establishing HE's assessment techniques, their operations and effectiveness in producing valid and reliable results in line with the taxonomy educational domains (cognitive, affective, and psychomotor).

## **2.0 Literature Review/ Theoretical Background**

The study that looks at assessment in HE, theory, practice and way forward aimed at establishing HE's assessment techniques, their operations and effectiveness in producing valid and reliable results in line with educational domains. It was carried out in three universities of Uganda: I) Makerere University (Mak) the oldest in Uganda (founded in 1922) now with the largest number of staff, students and programmes. II) Kyambogo University (KyU) founded in 2003 with huge number of students, staff and programmes second to Mak. III) Uganda Martyrs University (UMU) founded in 1993. It is one of the leading private

universities in Uganda with many students, staff and programmes, besides being the first chartered private University in Uganda.

In education, assessment refers to the process of judging/delivering a learner's achievement and performance (ITEK, 1999; Taba, 1962). There are several methods that are used to assess learners in education like: examinations, tests, coursework, field work and reports (Gipps, 2002; Worthen & Sanders, 1987). After assessment, one evaluates and in education, evaluation refers to the systematic process of determining the effectiveness of education endeavours in the light of evidence (Ahmann & Glock, 1987; Ureubu, 1991; Gipps, 1994; Worthen & Sanders, 1987). There are two major types of evaluation in education namely; formative and summative evaluation.

Formative evaluation takes place as the unit, course or sequence progress (Collahan & Clark 1983). It is in form of continuous assessment with the major purpose of establishing how learners are performing at every stage. In brief, the functions of formative evaluation are to:

- 1 Determine which objectives individual learners have achieved.
2. Indicate student's attainment of specific instructional objectives
3. Concentrate on a limited number of objectives to ensure that they are thoroughly achieved in proportions
4. Ensure that a student has learnt certain things before s/he progresses to the next level (ITEK,1999; Ureubu, 1991; Davis, 2001; Gipps, 1994; Worthen & Sanders, 1987).

While summative evaluation sums up the results of instruction and progress of the group (Collahan and Clark, 1983). In other words, summative evaluation determines whether to promote, or maintain or demote a learner at a given level of education normally at end of either a semester or year, or term, or module. In brief, the functions of summative evaluation are to:

1. Determine the learners overall knowledge of the subject.
2. Determine the learners standing position in the group.
3. Cover a large amount of subject matter
4. Indicating a student's degree of success in learning (ITEK, 1999; Ureubu, 1991; Davis, 2001; Gipps, 1994; Worthen & Sanders, 1987).

The background to this is that many students are graduating with degrees but their contribution to national development, professional and personal growth is wanting hence the question whether they were assessed correctly/ holistically in order to graduate!

### **3.0 Methods/Techniques**

The study used both qualitative and quantitative approaches of research with case study as the research design where 200 respondents (students and lecturers) from three Universities of Makerere, Kyambogo and Uganda Martyrs of Uganda were contacted. The contact was through questionnaires and interview guide. Given the nature of the research, respondents and geographical scope, the two approaches were able to produce results in time. The study was analytical with the view of establishing HE's assessment techniques, their operations and effectiveness in terms of producing valid and reliable results in line with educational domains. The study used greatly education literature and theories of Curriculum studies and Educational psychology in general and teaching, learning and assessment in particular. The entire work is well sectioned in the order of abstract, introduction, assessment techniques, taxonomy of education, conclusion, recommendations and references. This representative sample in terms of respondents, institutions and design makes the study transparent, reliable and explicit.

## **4.0 Results/ Findings**

### **Assessment Techniques used in Higher Education**

The study aims at establishing the various methods of assessing learners in HE and their effectiveness in producing reliable and valid results. The following were discovered as the most common techniques of assessing in HE: Examination, Test, Course work, Research Projects, Class attendance and Presentations.

#### **4.1 Examination**

This technique was the most mentioned by 200(100%) respondents out of whom, 120 rated it very good, 69 good, and 11 as poor. This method normally in form of summative evaluation is given to the learners normally in form of written examinations at the end of the semester. It was rated very good because it is common and the most acceptable way of assessing people in Uganda (Ministry of Education Information Desk, 2007), in this era of formal education in which people must use results (Academic transcripts) as a proof that they studied and passed. The examination helps to sort out brilliant from less brilliant and streamlines the intellectual abilities of learners. There is less cheating or no cheating of examinations if invigilation is strict; besides it involves the learner's personal presence. The examinations are marked according to stipulated marking guidelines and results released. The method should continue respondents said and the study concurs. However, critics to the method said that written examination alone in three hours are inadequate to assess one's ability for the subject work done in 15 weeks of a semester that is; 60 hours of teaching contact if the course is of 4 Credit Units (means every week you study 4 hours of lecture time for that course). Further, they assert that this examination does not take care of other life challenges that people may encounter during examination period for example fear, sickness, and stress. In the event of cheating and unfair marking, less reliable and valid results are given to learners. Learners with handwriting difficulties and memory retention challenges are not favoured by this system. Furthermore, the ways exams are set in Uganda are not fully able to assess the three domains of education that is; cognitive, affective, and psychomotor.

**4.2 Course Work:** This technique of assessment was mentioned by respondents as happening in two ways namely individual course work and group course work assessment. Individual coursework assessment is where the lecturer gives a question to every individual to research and hand in on agreed date. This method, 60 said it was very good, 90 good and 11 poor thus mentioned by 161 (80.5%). It was rated good because individuals are able to do research in the library, interview respondents and observe phenomenon in the community and write a study for submission. The demerit of it is that lecturers have too much to mark if learners are many, thus the results produced may not be reliable and valid enough. Further, some learners would copy other peoples' coursework and hand in or even hire professionals to do for them hence earning free marks. The lecturers have limited abilities and time to detect plagiarism and therefore punish such candidates.

Group course work assessment was mentioned by 76 (38%) respondents where a lecturer gives various questions or same question to the learners in groups to research and submit. When the lecturer marks all, the marks attained apply to those group members. In response, 5 rated it very good, 30 good and 41 poor. The merit in it is that it encourages learners' interaction, discussion and discovery by themselves in their groups. The method presents critical challenges of abuse by learners in groups where not all participate, but often times, one or a few individuals do the work and write names of others and they earn 'free marks'.



Another challenge is other groups plagiarising other groups' work and present, consequently, all affecting the quality of assessing learners. One respondent, a lecturer from KyU told the researcher of how he gave a coursework in political economy in 2005 and noted that 17 learners had plagiarised other learners' course work. Fortuitously he was able to detect because the group was small coupled with his professional keen interests. At another and different level of plagiarism, he narrated how he gave a coursework, to be done in two weeks, and all learners compiled and submitted. What surprised him was to read about one of his student in the newspaper doing some activity in USA for three weeks in which he had given the coursework and this student had submitted on time. To make more investigations, this student had asked his friend to do the coursework for him, and the hand writing of the student in USA was totally different from the handwriting in the coursework submitted. This reveals weakness in coursework assessment.

### **4.3 Test**

In education, a test refers to a collection of items developed to measure some human educational or psychological attribute (Worthen & Sanders, 1987). According to Crombach (1970), a test is a systematic procedure for observing a person's behaviour and describing it by means of a numerical scale or a category system. This definition is broader and includes many things that occur in testing. In education, tests are normally administered in order to find out how much knowledge, and skills candidates possess and further what values and attributes they have developed. The psychological attributes tested include intelligence, anxiety, introversion, and aptitude. Therefore a test in HE becomes very essential to collect data from learners in order to see areas that they have mastered, that need to be improved or strengthened. In education, there are four common types of tests used to achieve the above namely classroom tests, standardized tests, essay tests, and objective tests.

I) Classroom tests are normally called teacher made tests simply because the teachers constructs them themselves and determine the objectives and conditions under which to be administered.

II) Standardised tests are set by a few expert teachers who determine its scope, conditions in which it should be administered, directions for scoring and techniques for interpreting the scores to various classes.

III) Essay tests require responses which have to be composed (designed) by the examinee. The questions allow freedom of response; require a creative type of responses, in addition, the degree of creativity dependence on the structure of the question.

IV) Objective type question tests ask questions that follow a given order and the answers are specific that is to say either right or wrong and there is no room for variations as in essay tests (Kline, 1987; Worthen & Sanders, 1987; Pratt, 1980; ITEK, 1999; Davis, 2001; Gipps 1994). Each of the above tests has specific objectives, require specific competences in construction and have specific strength and weakness and therefore care is needed in administering a test.

The study reveals that generally the lecturers were merely setting tests to fulfil their duties of assessing learners and followed the available routine with less specific competences needed and over 70% confessed limited knowledge of the types of tests and their objectives. This is because they are not trained teachers although even those with knowledge of constructing tests, put little or no care in constructing the correct test. This substantially affects the reliability and validity of the results that tests set by lecturers produce. Nonetheless, 129 (64.5%) respondents alluded to the use of tests in assessing them during the course and 91

rated it very good, 31 good and 7 poor. The merit is that learners are required to be present themselves in the test room and there is limited plagiarism if well invigilated. However, the testing method may not be fair to learners with examination fear, and anxiety as well as to those with stress and life challenges at the time of the test which may affect their performance, besides those with handwriting difficulties and weak memory retention. The study also revealed that if the test is not professionally set; its results are may be less reliable and valid.

#### **4.5 Research Reports**

Here a lecturer may give a particular work for learners to research on and bring a report at the end of the term. It could also be a dissertation on given topic in which learners submit at the end of their course as partial fulfilment. It has a merit of encouraging research, discovery and enabling the student access information in this knowledge revolution. It enables learners go into the field and do research, which gives them an opportunity to learn the community development dynamics so that when they graduate, they will have a fair starting point. The challenge of this method in universities is large numbers to supervise visa via limited staff which lowers the quality of supervision and subsequently values and skills learnt by the student. Because of this, learning institutions have made research projects and dissertations optional instead of making it a core curriculum for all learners to enjoy and learn how to search and write knowledge. The other challenge is that research is increasingly being abused by research bureaus in towns where learners take their topics, they do the work and learners submit for marking. In some cases, learners merely go to the library and plagiarise other peoples' dissertations and present, respondents attested. While in some cases, other learners do not go to the field to collect data and interact with the community, they just sit in their halls of residence, imagine for the respondents with guidance of some research fellows and produce a report. Lecturers are less able sometimes to detect such plagiarism and learners end up earning 'free marks'. These challenges have affected the quality of research in learning institutions and the nation at large because such graduates are less capable of researching so as to create, preserve and disseminate knowledge besides the vice of academic plagiarism that goes unpunished and may suffice in their field work reports at work.

#### **4.6 Presentations**

This technique was mentioned by 59 (29.5%) respondents of whom, 21 rated it as very good, 23 good and 15 poor. In presentation sessions, the lecturer would give questions to the candidates to research on and present papers in the class. This increased high attention of learners, research abilities, and thinking, besides reduced work load on the lecturer's part. However, this was sometimes abused by the learners for example by participating in groups; few would research and thus learn research and presentation skills. While the rest (majority) would earn 'free marks' and thus less or no research/presentation skills respondents told the researcher.

#### **4.7 Class Attendance and Participation**

This technique was mentioned by 21 (10.5%) of whom 7 rated it as very good, 9 good and 5 poor. Class attendance was a good method of assessment in which learners would be motivated to attend because of 'free' marks but eventually they would end up learning more and effectively participating in class lectures, discussions and presentations. However, this method would not work in large classes because it is difficult to register all and assess their participation. Further, the method was limited in transparency where lecturers would even

award marks to their “class friends” respondents said. In most cases, lecturers gave these marks by estimation and imagination which would not be fair to all class learners because the attendance and participation was not at the same level. One respondent from Umu, 2003 – 2005 recalls how one of her classmate attended 8 lectures out of 60 lectures but his name was perfectly ticked for the all lectures with a consistent signature and he earned class attendance marks. Lecturers in their response rebuffed the above accusation as student “rumours” and unfounded prejudice but acknowledged the difficult in being fair to award class attendance marks. Nevertheless, class attendance helped in motivating learners to attend and thus learning more issues.

#### **4.8 Taxonomy of Educational Objectives**

In a more critical assessment to ascertain the reliability and validity of results the above assessment techniques produced, the study examined the taxonomy of education objectives. According to the taxonomy of educational objectives developed by Bloom and others in 1956 at the University of Chicago (USA), it means classification of educational objectives based on the intended behaviour of learners. The classification involves objectives that cater for: 1. The Cognitive domain, 2.The Affective domain and 3.The Psychomotor domain.

In detail the Cognitive domain usually associated with the head leads to the acquisition of knowledge at six levels.

1. Knowledge – The ability to know and recall learned material.
2. Comprehension – The ability to grasp the meaning of the material.
3. Application – The ability to use learned materials in new and concrete situations.
4. Analysis – The ability to break down material into its small component parts so that its structure is easily understood.
5. Synthesis- The ability to put small component parts together to form a new whole.
6. Evaluation – The ability to judge the value of material

The Affective domain usually associated with heart leads to the development of attitudes, values or feelings at five levels.

1. Receiving – The ability to listen and get information.
2. Responding – The ability to act and reply to a given situation.
3. Valuing – The ability to gauge and judge given information or situation.
4. Organization – The ability to put information or things in order using the learnt knowledge.
5. Characterization – The ability to sort out and classify information or things according to their form or need. And also develop your character

The Psychomotor domain usually associated with the hands leads to the development and acquisition of skills at five levels.

1. Imitation – The ability to see some things and attempt to reproduce it
2. Manipulation – The ability to do something in your way using the acquired knowledge.
3. Precision – The ability to summarize a given skill in your way and produce results
4. Articulation – The ability to defend what you have learnt and done (your position, theory or practice)
5. Naturalization – The ability to develop the skill acquired naturally (Kline, 1987; Richlin, 2006; Ureubu, 1991; Davis, 2001; Gipps, 1994; Worthen & Sanders, 1987).

In view of the above, out of 200 respondents in terms of rating the cognitive domain; 90 (45%) acquired High, 97 (48.5%) Moderate and 3 (1.5%) Low. This is amazing to discover that despite all the challenges mentioned, the lecturers taught with the available materials and student acquired that. For the affective domain, out of 200 respondents in terms of rating the acquisition, 42 (21%) High, 98 (49%) Moderate, and 60 (30%) Low. This is not a desirable situation. It indicates the limited hidden curriculum, co-curriculum, core curriculum, spiral and the difference between the official and actual curriculum that would have enabled learners to acquire the relevant attitudes, feelings or values. Out of 200 respondents in terms of rating the psychomotor domain acquisition, 32 (16%) rated High, 87 (43.5%) rated Moderate, and 81 (40.5%) low. This is further a worrying situation because of the inadequacy in the pedagogical methods that would have enabled all the learners to acquire the relevant skills for developing Uganda.

Generally the assessment techniques are good at producing results of the cognitive domain, but largely limited in producing results of the affective and psychomotor domain because of being examination oriented in terms of structure and objective. Further, they are limited because of academic plagiarism and unprofessional conduct in terms of assessment that renders them largely unable to produce up-to-date reliable and valid results of learners.

## **5.0 Conclusion/ Recommendations**

### **5.1 Conclusion**

In the last 20 years, Uganda has witnessed unprecedented increase in HE enrolments and institutional growth. But it has been a growth with few positive changes in curricular or response to socio-economic needs. This growth has made little positive contribution to the development of Uganda, as evidenced in poverty levels, socio-economic disparities between the rich and poor that widen each passing year, unemployment, and corruption. Thus HE as delivered in the tertiary institutions today is facing numerable challenges particularly assessment which undermines the quality of HE.

The study concluded that the immediate and long-term implementation of the recommendations made in this study will enhance learning institutions in assessing learners professionally. These recommendations will enable HE to;

1. Produce quality graduates who will earn high incomes and contribute positively to Uganda's development in all development sectors.
2. Produce graduates with academic excellence in addition to strong personality of a just character. Such graduates will combine gifts of academic excellence, professionalism, good governance and entrepreneurship, hence developing a frugal class of educated citizens who will harness Uganda's resources for holistic development.
3. Attract foreigners (learners and investors) who will bring income to the economy and market the education sector of Uganda, in general, and HE in particular.
4. Equip graduates with relevant global skills which will enable them work outside Uganda as expatriates or common people who in turn will bring revenue to the economy and more extra skills that will enhance Uganda's holistic development.

### **5.2 Recommendations**

Regarding the assessment of learners, the study acknowledges the examination orientated education system in which HE is taught. The study does not aim at dismantling the examination orientated system, but improving on it. It recommends that 40% be continuous

assessment and 60% final examinations assessment at undergraduate and 50% continuous assessment and 50% final examinations assessment for post graduates. The continuous assessment and final examinations should be based minimally at 50% pass mark before a candidate is pronounced to have passed.

**Table 1: Recommended Under Graduate and Postgraduate Assessment Score**

Method of Assessment	Total mark for Assessment in percentage	
	Undergraduate	Postgraduate
1. Class attendance and participation	5	10
2. A test (written)	10	10
3. Field work based research paper	10	10
4. Library / Internet based research paper	10	5
5. Presentation in class at least one of the papers researched	5	5
6. Oral examination	-	10
7. Final examination (written)	60	50
Final Total	100	100

*Source: Lubaale, 2011:163*

The above table shows recommended under graduate and postgraduate assessment by Lubaale (2011) which this study concurs and recommends. The study recommends use of various continuous appraisal methods like; individual presentation, debates, essays, paper presentations, book reviews, tests, reports of field work visits or research, class discussions, attendance, oral defence, project work, research seminar/tutorial presentations and discussions be adopted accordingly. This will certainly enhance and greatly improve on the learner's acquisition and retention of the cognitive, affective and psychomotor education domains. All the above is recommended in order to have a more uniform curriculum particularly in the area of assessment which the perennials (Bertrenda, 1961) were advocating amidst varying environments and senate discretion.

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# ICT COMPETENCIES AND PRACTICAL SKILLS POSSESSED BY TECHNICAL TEACHERS IN POLYTECHNICS IN THE NORTH-EAST GEO-POLITICAL ZONE OF NIGERIA

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## Abstract

The study investigated the competencies and practical skills possessed by technical teachers on ICT in polytechnics in the North–East Geo-political Zone of Nigeria. The study answered two research questions and tested two hypotheses. A 24-item structured questionnaire collected data from a population of 214 subjects, made up of 100 certified technical teachers and 114 uncertified technical teachers. As a descriptive survey research, mean and standard deviation answered the research questions, while the Z-test tested the hypothesis at 0.05 level of significance. The study found that majority of technical teachers' ICT competencies fell below expected standards. Similarly, technical teachers' ICT practical skill also fell below expected standards. The study also found that a significant difference did not exist between the mean ratings of certified and un-certified technical teachers on their ICT competencies and practical skills. The study found the basis to draw the conclusion that technical teachers teaching in polytechnics in the North-east Geo-political Zone of Nigeria lacked the competencies and practical skills needed to effectively use ICT in teaching and research. The findings of the study implied that lecturers in polytechnics in the North-east Geo-political Zone were ill-prepared for the application of ICT in teaching and research. The study recommended therefore, that North-East Zone and indeed Nigeria should give serious attention to ICT training for lecturers in polytechnics.

**Keywords:** ICT, Competency, Skill, Teachers, Polytechnics

## Introduction

Information and Communications Technology has become necessary in today's globalized world. The term Information and Communications Technology has been defined by Osuagwu (1999) as the convergence of tools of microelectronics, telecommunications and computers. Imoko and Usman (2006) argued that ICT is concerned with "handling, manipulating and presenting information usually through texts, pictures and sounds using computers, tape recorder, robotic devices". Imoke (2004) conceptualized Information and Communication Technology as a process of receiving, storing, computing, analyzing, transmitting and retrieving information using assorted electronic devices. ICT according to Nwabueze (2005) refers to ICT as all the "communication gadgets, equipment or facilities which improve/enhance the manner in which message are stored, relayed, disseminated, preserved and recalled for meaningful communication purposes."

In its mission statement, the National Policy on Information Technology, the Federal Republic of Nigeria (FRN 2000) stated that Information and Communications Technology would be used for education and global competitiveness. The objectives of the National

Policy on Information Technology, among others, are as follows: 1) To integrate information technology into the mainstream of education and training; 2) To develop human capital with emphasis in creating and supporting a knowledge-based society; and 3) To build a pool of information technology literate manpower using the National Youths Service Corps (NYSC), National Directorate of Employment (NDE) and other platforms as “train the trainer” scheme for capacity building.

To achieve the above objectives, the Nigerian government and professional organizations like the Computer Association of Nigeria and Computer Users Association have been actively involved in a series of campaigns. Souley (2005) stressed that “computer literacy has now been made a pre-requisite qualification for immediate top positions both in government and in academics” adding that computer literacy drive has now become an essential course of study in institutions both for full term and short term courses, workshops and seminars. Going by this development, how prepared then are technical teachers in using ICT facilities for teaching in Nigerian polytechnics?

When ICT facilities are employed in education, the teacher has been found to play a facilitator role. According to Ojowu and Agbo (2006), teachers make use of Information and Communication Technology to communicate ideas, describe projects and other information to their work. Buttressing this point, Ater, Tiough and Nevkar (2006) explained that teachers encourage instructional capabilities by “linking learners to information sources, helping learners visualize problems and solutions, tracking learner progress and linking learner to learning tools.” However, Ajayi (2001) and Haddad and Jurich (2002), asserted that Practical skills are necessary in teaching a practical task. Chapman, Romondt and Smiley (2005), noted that the world of work requires applied knowledge to solve problems and advance creativity and critical thinking. Ogbodoegbulam (2007) commented that for “effective performance of teachers, a good knowledge of the principles and practice of education is essential.” That was why Biggs, Hindon and Duncan (1996), argued that contemporary approaches to education demanded that teachers develop new methods suitable to their roles as collaborators and facilitators of learning.

Since ICT has been recognized to form the bedrock for Nigeria’s survival in this changing global environment and competitiveness, it is very necessary to survey the level of technical teachers’ competencies and practical skills for teaching in polytechnics in the North-East Geo-Political Zone of Nigeria.

### **Purpose of the Study**

1. To ascertain the competencies possessed of polytechnics technical teachers on ICT
2. To ascertain the level of practical skills possessed by technical teachers on ICT in the Polytechnics.

### **Research Questions**

1. What are the competencies of technical teachers in the use of ICT for teaching in polytechnics?
2. What are the ICT practical skills of technical teachers for teaching in polytechnics?

### **Hypotheses**

The following hypotheses were stated and tested at 0.05 level of significance:



H<sub>03</sub>: There is no significant difference between the mean ratings of ICT certified and un-certified technical teachers on ICT competencies for teaching in the polytechnics

H<sub>04</sub>: There is no significant difference between the mean ratings of ICT certified and un-certified technical teachers on the extent of practical skills possessed by technical teachers on ICT.

### **Literature Review**

The study was based on the constructivist perspective of readiness and development theory. The theory of constructivism was advanced by theorists like Jean Piaget, Maria Montessori and Lev Vygotsky who believed that learning and development take place when children interact with the environment and people (Song, 2007). Constructivism, as a readiness theory of learning and development is rooted in the “belief that knowledge is constructed out of personal sets of meanings or conceptual frameworks based on experiences encountered in relevant environments” (Newhouse, 2002:8). Perkins (1992) buttressed this point by stressing that “Central to the vision of constructivism is the notion of the organism as active - not just responding to stimuli... but engaging, grappling and seeking to make sense of things. In other words, Newhouse (2002) explained how individuals interact with their environment and consequently develop and build up conceptual frameworks to try to explain the interactions.

The learning theory of constructivism has serious implications for both teachers and students. First, teachers who are ready and possess pedagogical proficiency are willing to transmit knowledge and support students to construct knowledge approximately (Boakye & Banino, 2008). Tchombe, Maiga, Toure, Mbangivana, Diarram and Karsenti (2008) added that when ICT is appropriately and effectively used in teaching and learning, it will lead to the development of higher cognitive skills and as well deepen learning and contribute to skills essential for lifelong experiences.

When necessary technology skills are given, teachers serve as agents for creating the constructivist environment. In other words, Gidado, (1999) noted that ICT enables teachers to play the role of guides and facilitators by helping students to gain the skills and knowledge they need to function effectively in the society. In this case therefore, Haddad and Jurich (2002) opined that, teachers are now no longer the sole voice of authority; rather, they guide students to ask questions, pose problems and then access information in relation to the problems posed.

Thirdly, in this information age, constructivism as a theory of learning shows that teachers must assume new roles as facilitators. As Arolasafe (2005:9) pointed out, it is “crucial for teachers to encourage critical thinking skills and promote information literacy to prepare children for a new world.” In doing so, Arolasafe held that teachers need to be kept abreast of new technologies for effective classroom instructions. Furthermore, constructivism assists teachers to be innovative especially when using ICT. With constructivism, Ogunsola in Aliyu (2007:216) explained that e-learning in teaching is very effective “because it does not simply transplant traditional learning and classroom to the internet but creates innovative ways to deliver instruction throughout the environment.” Aliyu added that with ICT, students have opportunity to learn at their own pace as they collaborate on projects and communicate via video conferencing. Buttressing this point Sibiya (2003) explained that as students participate or interact with each other and their environment, effective learning takes place. In other words, interaction or participation with one’s environment in the learning process implies

practice or repetition of behavior. Therefore, the more the learner participates in ICT learning, the more the learner is able to retain what has been learnt.

The theory of constructivism also provides greater opportunity for students to be independent in terms of when, where and what they learn (Gregoire, Bracewell & Laferriere, 1996). Cradler and Bridgforth (2002) explained that a student or group of students may consider learning topics independent of the teacher. However, Newhouse (2002) warned that independent students working a chosen task with computer should not be taken away from the 'real' world; rather, they should use the computer to enhance their perception of the 'real' world.

Teacher competencies have been identified to be a vital component of teacher professional development. According to Souley (2005:27) "The focus of professional development will be on developing the competencies of teachers, building upon their previous education in applying ICT to teaching. Souley insisted that generally teacher competencies rest on understanding why, when, where and how ICT tools will contribute to learning objectives. Consequently, the following teacher competencies for ICT use have been listed, among others:

1. Choosing ICT tools and teaching methods that integrate ICT into the whole curriculum
2. Choosing and recommending ICT tools and teaching methods appropriate to students' learning objectives
3. Planning a whole learning programme that allow a range of ICT tool and teaching methods to be used, and when required
4. Choosing ICT tools and teaching methods that allows the teacher and student to manage their own learning
5. Managing learning environments that contribute to the use of different ICT tools and teaching methods.
6. Analyzing the specific contribution of ICT tools to individual student learning.
7. Supporting students in managing, criticizing, synthesizing and presenting learning processes and products using ICT tools (Souley, 2005:27).

Arolasafe (2005:10) explained that, teacher competencies in ICT use have the tendency to "break professional isolation by allowing educators to communicate, exchange information, interact in chat rooms, and hold discussion forums and virtual conferences." When teachers gain computer competencies as Miller (1997) explained, their anxiety decreases as their positive disposition to teaching and learning ICT in schools increase.

Teachers in tertiary institutions have a tripartite role, which include research, teaching and community service (Okebukola, 2006). For many years, teachers have used the verbal method of teaching which has had some limitations, especially in this global age (Maiwada, 2004). Maiwada noted that the limitations deal with the method's effect and short term memory. It has the tendency to create boredom and overstretch the attention span of students. It was against this background that Ojowu and Agbo (2006:75) advocated that in this global age "the teachers and the learners need to make use of the new multimedia technologies to communicate ideas, describe projects and order information in their work." Buttrussing this point, Nyiabula (2006) stressed that ICT needs to be used in teaching and learning so as to improve the quality of teaching and hence enhance the learning ability of students.

## Methodology

Descriptive survey research design was employed for the study. The study covered the North-East Geo-political Zone of Nigeria. The zone, according to a National Commission on Colleges of Education (NCCE, 2003), is located in far Northern part of the former Northern Region of Nigeria. The zone has six States, namely, Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe. Adamawa State lies between latitude  $8^{\circ}\text{N}$  and  $11^{\circ}\text{N}$  and longitude  $11.5^{\circ}\text{E}$  and  $13.5^{\circ}\text{E}$ . Borno State lies between the semi-arid zone of Nigeria. Gombe town and its environs are in the Guinea Savannah. Taraba State lies between latitude  $6^{\circ}30''$  and  $9^{\circ}36''\text{N}$  and longitude  $9^{\circ}10'50''\text{E}$ . Damaturu the capital of Yobe State, lies approximately on latitude  $11^{\circ}14''\text{N}$ , latitude  $11^{\circ}58''\text{N}$  (Abdullahi & Musa, 2004). The study covered all Polytechnics located in the sub- region. Four are Federal Polytechnics while five are State Polytechnics. The population of the study was 214 subjects, made up of 100 certified technical teachers and 114 uncertified technical teachers. No sampling was carried out as the entire population of 214 was manageable.

The instrument for data collection used in this study was a structured questionnaire, developed by the researcher. The questionnaire had two sections, A and B. Section B was concerned with the ICT competence of technical teachers for teaching. Section B sought to know the practical skills possessed by technical teachers on ICT for research and teaching. The researcher administered copies of the questionnaire within a space of six weeks. He was however, assisted by two research assistants. At the end of the exercise, 209 valid copies of the questionnaire were retrieved, upon which analysis of the results was carried. Mean and standard deviation were used to answer the research questions, while the Z-test tested the hypotheses at 0.05 level of significance.

This study employed a five- point rating scale. The responses were weighted as follows:

Strongly Agree (SA)/Very High (VH)	-	5 points
Agree (A)/High (HG)	-	4 points
Undecided (UD)/Moderately High (MH)	-	3 points
Disagree (DA)/Low (LW)	-	2 points
Strongly Disagree (SD)/Vey Low (VL))	-	1 point

## Validation and Reliability of the Instrument

Two experts in ICT and two from educational technology validated the instrument. The experts assessed the appropriateness and adequacy of the content of the instrument. To measure the reliability of the test instrument, a single pilot test was carried out on nine technical teachers. Cronbarch's Alpha co-efficient formula was used obtain the co-efficient of internal consistency i.e. the reliability of the instrument; the trial test gave the reliability coefficient of the instrument as 0.98.

Table 1 shows the true limits of numbers. To effect decision, a mean of 3.50 and above was taken as "Agree/High". A mean score between 2.5 and 3.39 was taken as "Undecided/Moderately High". All mean scores less than 2.5 were taken as "Disagree/Low". For the hypotheses, where the calculate t-test value was less than the critical value, the hypothesis was upheld. Conversely, where the calculated t-test value exceeded the critical value, the hypothesis was rejected.

**Table 1: True Limits of Real Numbers**

Limits	Designation
4.50 – 5.00	Strongly Agree (SA)/Very High (VH)
3.50 – 4.49	Agree (A)/High (HG)
2.50 – 3.49	Undecided (UD)/Moderately High (MH)
1.50 – 2.49	Disagree (DA)/Low (LW)
0.50 – 1.49	Strongly Disagree (SD)/Very (VL)

**Results**

The results of the study were presented based on the research questions and hypotheses.

**Research Question 1**

What are the ICT competencies possessed by technical teachers for teaching in polytechnics?

Data of Table 2 answered this research question.

**Table 2: Mean and Standard Deviation of Respondents on the Competencies possessed by Technical Teachers in using ICT for Teaching in Polytechnics**

S/ No.	ITEMS RMKS	RESPONDENTS					$\bar{X}_G$	
		Certified Tech.Teachers $\bar{X}_c$ $SD_c$		Un-certified Tech. Teachers $\bar{X}_u$ $SD_u$				
1.	Ability to identify ICT facilities	3.52	1.15	3.54	1.06	3.53	HG	
2.	Ability to recognize situations where particular ICT facilities can be used	3.12	1.16	3.28	1.04	3.20	MD	
3.	Ability to explain the use of the ICT facilities in the situations	2.99	1.00	3.09	0.96	3.04	MD	
4.	Ability to choose ICT tools for particular tasks	3.04	1.04	3.14	0.94	3.09	MD	
5.	Ability to solve problems using the ICT facilities	3.07	1.13	3.07	0.91	3.07	MD	
6.	Ability to integrate ICT in research and teaching	2.91	1.11	3.06	1.08	2.99	MD	
7.	Ability to develop informative websites.	2.64	1.24	2.59	1.29	2.62	MD	
8.	Ability to store and retrieve data	3.29	1.19	3.39	1.21	3.34	MD	

9. Ability to manage large class sizes							
using ICT facilities	2.87	1.17	2.96	1.09	2.92	MD	
10. Ability to locate information on the internet.	3.54	1.05	3.66	1.09	3.60	HG	
<b>Grand Means</b>	<b>3.10</b>		<b>3.18</b>				

Table 2; present 10 items on technical teachers' competencies in using ICT for teaching. Items 1 and 10 show that respondents' ICT competence for teaching is high with grand means of 3.54 and 3.60 respectively. Eight (8) items were rated as moderate by the respondents. Their grand means ranged from 2.64 – 3.34. On the whole, the grand mean of the table is 3.14. This shows that technical teacher's competence to use ICT for teaching is moderate

### Research Question 2

What are the practical skills of technical teachers on ICT use for teaching?

Data of Table 3 answered this research question.

**Table 3: Mean and Standard Deviation of Respondents on Practical Skills possessed by Technical Teachers on ICT for Teaching in Polytechnics**

S/ No.	ITEMS	RESPONDENTS				$\bar{X}_G$	RMKS
		Certified Tech. Teachers		Un-certified Tech. Teachers			
		$\bar{X}_c$	SDc	$\bar{X}_u$	SDu		
1.	Word processing	3.45	1.10	3.65	0.94	3.55	HG
2.	Data entry	3.56	1.06	3.65	0.93	3.61	HG
3.	Computing	3.38	1.00	3.41	0.89	3.40	MD
4.	Internet accessing	3.54	1.03	3.57	0.99	3.56	HG
5.	e-mailing	3.47	1.20	3.39	1.09	3.43	MD
6.	Auto-CAD software	2.75	1.10	2.50	1.00	2.63	MD
7.	Work sheets preparation	3.13	1.15	2.71	1.05	2.92	MD
8.	Programming language	2.67	1.22	2.46	1.02	2.57	MD
9.	Spread sheet design for						
	Class assessment	3.02	1.29	2.82	1.16	2.92	MD
10.	Flash drive usage	3.27	1.23	3.47	1.09	3.37	MD
11.	CD – Rom usage	3.27	1.18	3.12	1.14	3.20	MD
12.	Corel draw software	2.98	1.09	2.82	1.00	2.90	MD
13.	File management	3.32	1.28	2.98	1.10	3.15	MD
14.	Data base design	2.81	1.22	2.50	1.12	2.66	MD

<b>Grand Means</b>	<b>3.19</b>	<b>3.08</b>
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Data presented in table 3 have 14 items on technical teachers' practical skills in using ICT for teaching in polytechnics. Three (3) respondents have rated the technical teachers possession of practical as high with their grand means ranging from 3.55–3.61. Eleven (11) respondents rated technical teacher's skills in using ICT for teaching as moderate with their grand means ranging from 2.57–3.43. On the whole, the grand mean of the table is 3.13. This shows that the level of ICT skills possessed by technical teachers for research and teaching in polytechnics is moderate

### Hypothesis 1

There is no significance difference between the mean ratings of ICT certified and un-certified technical teachers on the ICT competencies for teaching.

Data of Table 4 tested this hypothesis.

**Table 4: t- Test of Difference Between the Mean Ratings of Certified and Un-Certified Technical Teachers on ICT Competencies of Technical Teachers for Teaching**

Respondents	Mean $\bar{X}$	Standard deviation	N	df	Standard error	t-cal	t-tab	Decision
Certified Technical teachers	3.10	0.28	10	18	0.04	0.54	2.10	Accept
Un-certified Technical Teachers	3.18	0.38	10					

In table 4, the result that was obtained when hypotheses 3 was tested at degree of freedom (df) 18 and 0.05 level of significance has been presented. From the table, the calculated t value (t-cal) of 0.54 is less than the tabulated value (t-tab) of 2.10. This results shows that there is no significant difference between the mean responses of certified and un-certified technical teachers on the extent of ICT competencies for teaching. Therefore, the null hypotheses,  $H_{03}$ , is accepted

### Hypotheses 2

There is no significant difference between the mean ratings of certified and un-certified technical teachers on the extent of practical skills possessed by technical teachers on ICT.

Table 5 provided data for testing hypothesis 2.

**Table 5: t-Test of Difference Between the Mean Ratings of Certified and Un-Certified Technical Teachers on ICT Practical Skills for Teaching in Polytechnic**

Respondents	Mean $\bar{X}$	Standard deviation	N	df	Standard error	t-cal	t-tab	Decision
Certified Technical teachers	3.19	0.30	14	26	0.50	0.66	2.06	Accept
Un-certified Technical Teachers	3.08	0.55	14					

Table 5 presents the result that was obtained when hypotheses 4 was tested at degree of freedom (df) of 26 and 0.05 level of significance. From the table, the calculated t value (t-cal) of 0.66 is less than the tabulated value (t-tab) of 2.06. This results shows that there is no significant difference between the mean responses of certified and un-certified technical teachers. Therefore, the null hypotheses,  $H_{04}$ , is accepted

The study found that Technical teacher's competencies and practical skills possessed in ICT is moderate. There is no significant difference between the mean ratings of certified and un-certified technical teachers on their ICT competencies and practical skills for teaching in polytechnics:

### Discussion of the Findings

Findings relating to research question 1 and null hypotheses 1 show that technical teachers competencies in using ICT for teaching in polytechnics is moderate. The hypothesis was accepted for the fact that significant difference did not exist between the mean responses of the two respondent groups. The finding of this study is supported by the work of Arosalafe (2005) who found that teachers competence have been identified to be a vital component of teachers professional development. In like manner, the study found that the possession of ICT practical skills by technical teachers in polytechnics for teaching is moderate. No significant difference existed between the mean responses of certified and un-certified technical teachers hence, the hypotheses was accepted. Souley (2005) supported this finding whose work showed that the acquisition of skills and knowledge by technical teachers is expected to generate confidence level by technical teachers to use ICT.

### Conclusion

The study investigated technical teachers' readiness for the use of ICT in teaching in polytechnics in the North-East Geo-political Zone of Nigeria. From the findings, the study concluded that technical teachers teaching in polytechnics in the North-East Geo-political Zone of Nigeria lacked the competencies and the practical skills in the use of ICT for effective teaching in the polytechnics. These findings implied that there was a great challenge for government, educational institutions and all stake holders in the education enterprise. Perhaps one way to deal with these trends was to partner with the private sector in the area of funding and staff development. This is likely to improve the professional development of technical teachers for teaching in polytechnics in Nigeria in general and the North-East in particular. The study recommended, among others, that there should be cooperative

partnership between government and the private sector (industrial sector, national and international donor agencies) in the supply of ICT facilities to polytechnics for teaching and there is need to train and retrain technical teachers on ICT use in order for them to effectively apply the facilities in teaching.

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# PEACE AND SECURITY: CHALLENGES TO EDUCATION AND COMMUNAL EXISTENCE IN NIGERIA

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## **Abstract**

The paper has examined what is peace and holds that lack of peace has created a general atmosphere of insecurity in Nigeria, manifested by the activities of religious and cult groups. The activities of the political class, apparently manifested in cases of election violence, rigging and ballot box snatching have all contributed to creating insecurity in Nigeria. Equally, the proliferation of small arms and ammunitions has led to the rise of religious and ethnic militants who have killed and maimed citizens for economic and religious gains. All these have had adverse effects on citizens in general and education in particular, manifested in displacement of whole families, disruption of school calendar, abduction of school children and closure of schools. To deal with these trends, the paper has recommended measures among which are: respect for the rule of law should be the watch word in the course of governance, no individual or organization should be seen to be above the law, religious leaders need to preach peace, unity and cohesion in a pluralistic society like Nigeria, the youth in the society who are vulnerable to crimes must be conscionable engaged by successive governments, and the possession of small arms and ammunitions by private individuals and organizations must be seriously curtailed and sanctioned.

**Keywords:** Peace, Security, Education

## **Introduction**

Nigeria has experienced a number of upheavals for many decades since independence (Takaya, 1996; Usman, 2002). After a prolonged military adventure in national governance however, Nigeria was able to return to democracy in 1999. The return to the era of politicking for electoral purposes was viewed by Nigerians as an era of peace and freedom. However, political events since that time show that peace and security are an illusion. Numerous cases of violence have been recorded, ranging from political thuggery to religious cult activities that took away innocent lives (Vanguard, 2015, April 13; The Punch, 2015, April 14). There have been apparent instances of election rigging, snatching of ballot boxes and assault on election officials (The Punch, 2015, April 20). The obscene behaviours of the political class and the lurid practices of election officials have raised troubling questions on the integrity of elections in Nigeria. Aside from this, the carnage perpetrated by members of religious groups and secret cults, which has assumed outrageous dimensions in the last six years, has created a heavy security problem for Nigeria (Eyetsemitan, 2003; Aliero, 2008).

In view of the above, the paper looks at peace, security and security challenges, both locally and globally. It considers the factors that fuel insecurity in Nigeria. It also discusses the effect of insecurity on education. Finally, the paper makes recommendations on how to enhance peace and security in Nigeria.

### **Peace, Security and Security Changes**

There are three definitions from Hornby (2010) which are necessary for this paper: 1) A situation or period of time in which there is no war or violence in a country or area; 2) The state of being calm or quiet; and 3) The state of living in friendship with somebody without arguing. Now a cursory look at these definitions quickly reminds one that Nigeria has been at war for the past six years, as evidenced by the activities of insurgents. What started in a tiny enclave in Borno State soon spread to Yobe and Adamawa States and some parts of Gombe and Bauchi States. Surely the insurgency era is a critical period in Nigeria's history, in which whole towns and cities have been sacked by insurgents. In this period, the calmness and tranquil atmosphere experienced in these towns and cities for several decades have become an illusion. Equally, friendship and neighbourliness have also been eroded.

Perhaps it is important to pause here and ask: What peace and whose peace? The microcosmic view of peace held by groups and religious sects has meant peace only for those sects. In other words, where people view peace to mean only as existing for and belonging to groups that hold same creeds or credos, tension and other forms of unrest will be the outcome. In other words, many conflicts in Nigeria's history begin simply as a religious crisis and spreads to the destruction of public infrastructure and declaration of war on a sitting government.

Stringent religious beliefs need to be checked by all and sundry. This simply calls for the need for tolerance among the diverse people of Nigeria who hold diverse religious beliefs. Consequently, the principle of religious tolerance is firmly embedded in the fundamental rights of citizens, as seen in the 1999 Constitution of the Federal Republic of Nigeria, among which are right to life, right to liberty, right to freedom of thought, conscience and religion and right to freedom of movement. In the view of Eduvie (2003), right means that to which a person has a just and valid claim, stressing that it is "the liberty (protected by law) of acting or abstaining from acting in a certain manner". Speaking in this connection, Kazeem and Wakil (2003) argued that "To say that a person has a right of whatever kind, is normally to imply that other persons have a duty not to interfere with his exercise of that right." In other words, the rights of citizens of Nigeria to life, movement and practice of their credos need to be respected by all and sundry.

### **Security and Security Challenges**

A vital source for providing understanding of the word "security", especially for this paper is obtained from Hornby (2010) who defined the word as: 1) The activities involved in protecting a country, building or person against attack, danger, etc; and 2) The state of feeling happy and safe from danger or worry. In other words, citizens and their property need to be protected against the intrusion of an aggressor. The citizens also need to be protected to a level where their joy, peace, happiness and general comfort are well ensured. It is however, unfortunate that this "utopian" condition was not to be realized in the Nigerian nation-state due to the activities of groups and sects in recent years. For instance, the activities of the Niger-Delta militants did not only create a general atmosphere of insecurity but led to the destruction of oil installations on which Nigeria's economy is firmly anchored. The advent of the Boko Haram (BH) insurgency created another dimension to Nigeria's security situation. But then while the Niger-Delta militant youths were fighting for economic independence with an ethnic protrusion, the BH sect used religion mainly for achieving economic independence,

perpetrated through looting of financial institutions and other public places like educational institutions and the homes of private individuals. The BH insurgents left no one in doubt, for they looted and destroyed the homes of the rich and the poor, the high and the low, the businessman and the peasant. The BH criminals, just like the Niger Delta miscreants, abducted wealthy individuals, school children and villagers. For the Niger-Delta militants, a high ransom was demanded in exchange for their captors, otherwise the lives of the captors were at stake. For the BH sect however, a forceful conversion of citizens to the BH religion or the murder of the captors, was demanded.

The BH sect caused a lot of havoc in the last few years of democracy in Nigeria and committed ominous crimes against the humanity of the North-East Geo-political Zone. Now taking a look at the scenario of the operations of the insurgents in the North-Eastern States of Adamawa, Borno and Yobe, before their sacking from the occupied territories during the Jonathan era, one is tempted to conclude that the Nigerian military berated the might of the insurgents at the initial stages of the war. This military “callousness” provided room for the insurgents to take over more territories and bring them under their control. What went wrong that the Nigerian military, known for successful international operations and peacekeeping missions, notably in Liberia, Sierra Leone and the DR Congo, could not deal with the insurgency as way back as 2011, no one has been able to adequately explain to the generality of the Nigerian populace. Consequently, the carnage perpetrated by the insurgents continued on and on for several years, producing a total atmosphere of insecurity.

### **Violence and Insecurity: Global Challenges**

The World Health Organization (WHO) report on crime asserted that “Violence leaves no continent, no country and few communities untouched” (Wake Magazine, 2003). The report has undoubtedly been proven right as global security developments have indicated. For instance, since the beginning of the Arab Spring in 2011, crime has been on the increase. Tunisia kick-started the Arab Spring, which ousted President Ben Ali from power. Egypt got involved soon afterwards and President Hosni Mubarak was ousted from power. Even during the reign of Mohamed Morsi, Egypt witnessed an upsurge in public outcry against his government. A couple of months ago, an Egyptian court jailed Morsi for 20 years in prison in connection with the deaths of protesters during demonstrations against his rule (The Punch, 2015, April 25). It is important to note that after “successfully” ruling his country for several decades, Muammar Gaddafi of Libya could not contain the uprising in his country. He was killed by the opposition.

Many countries the world over are passing through tumultuous times. There is the Ukraine-Russia crisis. There is the crisis in Yemen. There was the Greek economic uprising. There is the Islamic State of Iraq and the Lavent (ISIL) crisis in which scores of people have been massacred and over 400 families displaced in Ramadi (The Punch, 2015, April 19). For over two decades, the crisis in Somalia, due mainly to Alshabab presence, has never waned. At the moment, the war in Syria is on-going as well as the Israeli-Palestinian conflict where 29 Hamas activists were arrested by Israeli security forces in the Northern West Bank (The Punch, 2015, April 15). There is the war in Afghanistan and Pakistan that have left hundreds of thousands homeless, besides the dead. In the Central African Republic, the seemingly religious crisis made thousands of people to flee the country. The electoral violence in Kenya left a great number of people dead. In the post election violence in Cote D’Voire, many people were massacred. Way back in 1994, was the ethnic cleansing in Rwanda and Burundi.

Riots broke out in Gabon following the death of an opposition leader. The rampaging crowd began to set buildings and vehicles on fire (The Punch, 2015, April 14). Currently, there is crisis in Sudan and in South Sudan. Many have people across Africa have been displaced. The United Nations reported that conflicts in the Sahel region of Africa displace 3.5 million people. In 2014, the displaced people were around 1.6 million, scattered in the nine Sahel countries, namely Burkina Faso, Mauritania, Niger, Nigeria and Senegal (News 24, 2015, May 29). Therefore, it is quite safe to state that the world is at war. Peace is no doubt an illusion.

### **The Role of Religion in Dealing with Security Challenges**

Whatever perception we have of religion, it should simply be indicated that religion is expected to show man the way to God. Many years ago, Cicero, Lactantius and Augustine in Ike-Nwagor (2003), used the word “religion” as a term that draws individuals to divine things and as the ground of obligations for which the Creator, the Supreme Deity, would be pleased with man. Consequently, as observed by Galadima (1998), religion ought to be seen as an instrument for cultivating in man morality, social cohesion, self discipline, general well-being and the promotion of accepted behaviours, traditions and culture. Buttressing this position, Ike-Nwagor (2003) argued that a well structured religion is required to produce a well disposed person who is more generous, humble, tolerant and compassionate.

However, in Nigeria it has been difficult to use religion for national cohesion. Consequently, political analysts have been quick to enquire, “Is Nigeria one?” This is because religion has been used frequently as a divisive factor. Coupled with ethnic factors, Eyetsemitan (2003) chronicled the following ethno-religious crises, among others: 1) Ogun (Imosan), November 9, 1999, Hausa/Fulani Muslims vs Oro cult members; 2) Kwara, December 19, 1999, Hausa/Fulani Muslims vs Christians; 3) Kaduna, May 20, 2000, Hausa/Fulani vs others; 4) Kano, July 12, 2000, Hausa/Fulani Muslims vs Yoruba; and 5) Lagos (Alaba Rago), October 16, 2000, Hausa/Fulani Muslims vs Igbo.

There have also been upheavals in various other parts of Nigeria. Beside the BH phenomenon, recent of these upheavals were the ethnic wars in Taraba and Plateau States. In Taraba State, some suspected Fulani mercenaries attacked some villages in Donga Local Government Area and killed 15 people (The Punch, 2015, April 20). In Plateau State, 70 Christians, including a pastor, were murdered by Fulani herdsmen (Vanguard, 2015, May 17). Still in Plateau State, while villagers were preparing to go to bed, gunmen, numbering 500 attacked the village of Shonong in Riyom Local Government Area, burning down about 250 houses in the community (Nai.com, 2015, May 30). In Benue State, about 96 people were reported to have been killed by Fulani herdsmen (The Punch, 2015, May 27). In Ekiti State, an ethnic clash between Hausa-Fulani and commercial drivers left over 2000 people to be internally displaced (The Punch, 2015, May 25). There was the Ombatse cult in Nassarawa State whose activities resulted in the abduction and eventual killing of 74 security operatives. The spiritual leader of the cult, Baba Alakyo, was later feared dead after the security forces launched an early morning raid on his shrine (Daily Trust, 2014, November 17). On May 20, 2015, two women who were President Jonathan’s cousins were kidnapped and taken away on boat by six unidentified gunmen (Sahara Reporters, 2015, May 20).

Hoodlums and political touts have perpetrated various crimes thereby creating an atmosphere of insecurity in various parts of Nigeria. In many instances, there were apparent cases of

breakdown of law and order, occasioned mainly by security agency's inability to act on time. In Lagos State, Nigeria, for instance, suspected hoodlums, numbering about 34, were arrested by the Lagos State Task Force on Environmental and Special Offences (Enforcement) Unit. The hoodlums were accused by residents in the Oshodi area of the State for intimidating and robbing innocent residents (The Punch, 2015, May 22). In a similar incident, the Nigerian Navy, working in conjunction with the Joint Task Force, arrested 84 vessels which were involved in oil theft and other criminal activities within the nation's territorial domain, between January 2014 and May 2015. In Kaduna State, just when he was being inaugurated as the new Kaduna State governor, hoodlums began to pelt stones at El-Rufai and the Emir of Zazzau, Alhaji Shehu Idris (Naij.com, 2015, May 29). This singular act and similar ones were capable of throwing Nigeria into a major ethnic or religious crisis.

Religious leaders have been identified to be responsible for fomenting religious crisis in Nigeria. In the words of Gila and Yaro (2003), the religious leaders make provocative and incisive statements, thereby manipulating religion for their own aggrandizement. The mass media, dwelling on the provocative statements of the religious leaders, begin to broadcast those inciting statements. The consequences of these incitements, as Gila and Yaro, explained, are confusion, division, exploitation and sheer deception. This development creates a general atmosphere of insecurity which eventually leads to loss of lives and property.

### **Fuels of Insecurity and Restiveness**

There may be some cogent reasons why people go into security adventurism. For some, it may be a direct consequence of frustration, the demand here being to take steps to assuage some troubling problems in the polity. Others may be interested in vulgar materialism, arising mainly from covetousness, but using violence as a vehicle to achieve this objective. What boggles the mind is that even if peace initiatives are put in place to address those concrete reasons for the violence, perpetrators may not have the threshold to allow the peace initiatives to address grievances round a table. As a consequence, the violence is continuously perpetrated and in some cases on a larger scale.

The factors that breed insecurity in Nigeria can generally be classified into three, namely, politico-economic factors, ethno-religious factors and the factors related to the proliferation of small arms and ammunitions. Politico-economic factors deal with the activities of the political class and the act of governance. Democracy, we are told, refers to the government of the people, for the people and by the people. This democracy is not achieved by the edge of the sword. So the use of force as with knives, guns, machetes and other similar weapons to achieve a political ambition ought to be out of the question. Democracy is achieved through a norm-based politicking. This entails that the political class needs to play the political game by the rules. Unfortunately however, the general elections in Nigeria in 2011 were marred by electoral irregularities. This led to mass demonstrations and protests that left many dead. Similar cases were experienced in the March and April 2015 general elections where ballot boxes were carted away to undisclosed destinations. There were equally cases of rigging in several polling stations.

Reviewing the above political developments, one is tempted to ask, "Does not politics have a moral component?" If the answer is no, then one should be justified to conclude that politics is a dirty game. If the answer is yes, then one is forced to ask further, "Why are politicians

indifferent to right conduct in the political game?” In other words, are politicians not subject to the moral component of politics such as to play the game by the rules? The Electoral Act spells out clearly how the political class ought to conduct itself so as to have free, fair and credible elections. In spite of that however, cases of political thuggery, ballot box snatching, rigging and terrorization have characterized the electoral process in Nigeria since the return to democracy in 1999. Several cases can be cited here. In Rivers, a post election violence erupted in Eleme and Okrika Local Government Areas which left four people dead. In another place, the Police Command in Rivers State had been probing 10 people over electoral fraud (The Punch, 2015, April 20). The Punch (2015, April 14) reported that the police arrested 13 suspected electoral offenders in Edo State. In Delta State, the coalition of INEC Accredited Election Observers for the 2015 general elections expressed concern over the high level of violence in the electoral process in the State. In Taraba State, post election violence forced the State Government to declare a dusk to dawn curfew (Vanguard, 2015, April 13).

Ethnic-religious factors have been identified by politicians as veritable tools for attaining political power. In other words, the political class confronts the electorate from the perspective of religion and ethnicity while canvassing for votes. In the words of Aliero (2008), politicians use religion to get to the corridors of power. Therefore, the manipulation of religion to achieve some political goal has created a historical nexus. Aliero added that the disturbing side of the trend is that some ethnic peoples are being marginalized and are facing extinction, all due to politicians’ craving for political power. In addition, because politics has been understood by the political class as an instrument for amassing wealth, religious and ethnic biases have been used as vehicles (Ifamase, 1999; Aliero, 1999).

Speaking on ethnic conflict as a political source of insecurity in Nigeria, Dode (2005) said that “The ‘northern’ states have proved to be critical source of ethnic tensions during and after general elections,” adding that “regionalism is regarded as a variant of ethnicity. Because of intricate interweaving of the related cleavages, a regional or religious conflict can easily become ethnic if it serves to sharpen ethnic differences.” Dode concluded that because of this reason, even the government at the centre and other state government institutions have been turned into instruments for pursuing personal ethnic and sectional ambitions and interests “which has made the competition for the control of the centre and consequently, its resources, most volatile.”

Proliferation of small arms constitutes a serious challenge to democracy in Nigeria. These arms have been easily accessed by individuals who form organizations and combatant groups. According to Hughes (2001), at the end of the cold war, many parts of the world had been in possession of dangerous weapons. The United Nations revealed that as many as 500 million small arms and light weapons (SALWs) were in circulation (Alimba, 2008). Small Arms Survey (2003) revealed that these small arms had been in possession by private individuals. Where crisis is ignited, the small arms are brought out and used to kill and maim. In a country like Nigeria, the consequence arising from these small arms used in conflicts is that the trend sets back government’s developmental drive and process by years or decades (Muggah & Batcher, 2002).

### **Effect of Insecurity on Education**

Viewing the adverse effect insecurity has on education, Campbell (2008) and Africa File (2008) argued that where insecurity thrives, it is impossible for education to make any

positive headway, stressing that insecurity threat will constitute a negative reinforcement as teaching and learning cannot take place in an atmosphere that is not conducive. Peace and a secure environment remain key to effective motivation in the teaching and learning process. Therefore, cases of communal clashes, hostage taking or kidnapping are inimical to educational motivation, development and aspirations of students. Buttressing this point, Etebu, James and Coleman (2011) said that restiveness, hostage taking, communal clashes, political violence, among others, are inimical to the educational development of people.

There are several other effects of insecurity on education. Closure of schools, loss of schools materials, loss of learning memory and extension in school calendar are all inimical to education (Pali, Jatau & Wadak, 2003). In some cases, brilliant students whose education is obstructed by insecurity as in the case of insurgency in the North-East, will experience frustration and will be subjected to some form of psychological trauma. A clear-cut example is the over 200 Chibok school girls abducted by the insurgents (The Punch, 2014, October 17). This is aside from the fact that they will be subjected to untold hardship (Gila & Yaro, 2003). Where religion is abused, students who are required to assume the mantle of leadership tomorrow will not be able to do so. This has the propensity to make them, out of frustration, to be lawless and perpetrate all kinds of social vices. Parents will not be able to plan for their children's education. They too will also experience some level of frustration as they see their effort to educate their children waste away. Government will also find it absolutely difficult to deliver the dividends of democracy as they pertain to education. This is beside the fact that the planning and execution of educational programmes and policies will prove very difficult.

It will perhaps avail to ponder here and consider the case of the Chibok school girls further. How come that under the watchful eye of the Nigerian military, the insurgents embarked on an unrestrained programme of truncating the education of over 200 helpless schoolgirls and subjugated them under a system that is alien to their upbringing beats all imaginations. It can be said with all sense of certainty that this singular act did not only baffle parents of these wards but all parents in Nigeria. This act has caused incessant anxiety in parents, leading to unprecedented levels of trauma. At this point, it will be right to assume that some of these school children have been killed (some likely through suicide bombing) and some have been married off to fellow insurgents from neighbouring countries. It will still be right to assume that quite a number of these children will never behold the four corners of their childhood dwellings, less so their biological parents.

Perhaps it can be argued that government's callous attitude in dealing with the insurgency right from 2009 was not only a sign of weakness but a sheer case of impunity which was seen as a governance tool. Take the case of the Australian negotiator, Stephen Davis, who held a report that provided a pathway to further investigation into the BH phenomenon. Davis' report spelt out the dimensions of the activities of the insurgents and their financiers. In fact, the report seemed to indict some key officers of the Nigerian military who appeared to be collaborating with members of the BH cult. Government somewhat snubbed Davis' report and promoted a culture of impunity. It was towards the tail end of the Jonathan administration however, that concrete steps were taken to deal with the insurgency. One is tempted to conclude that perhaps that decision was borne out of election desperation. This could be viewed so because in February 2015, the Presidential and National Assembly elections were due to be held. This was in spite of the fact that there were large camps where the voting



population in the three States of Adamawa, Borno and Yobe were kept as internally displaced persons (IDPs). How were they going to vote no one could immediately say. So this fundamental question and many others perhaps prompted government to shift the elections by six weeks, during which period, it was envisaged, the insurgency would have been dealt with

But although the military recorded substantial gains in its war against insurgency after the shifting of the elections, there were still sporadic attacks on citizens by the insurgents, creating still an atmosphere of insecurity. Even when a new government took over on 29 May 2015, on Saturday 30 May 2015, a bomb blast rocked Maiduguri mosque in which 26 people were reported killed and 28 others injured. This dastardly act was masterminded by a suicide bomber (Naij.com, 2015, May 30 Vanguard, 2015, May 30). This incident was the second on that fateful day, for in mid-morning, Boko Haram attacked Maiduguri, firing rocket-propelled grenade that brought down residential buildings (Naij.com, 2015, May 30). In Yola the Adamawa State capital, in the evening of Thursday 4<sup>th</sup> June 2015, a bomb blast at the main gate of the Jimeta Modern Market, killed over 30 people and over 53 people were wounded (Nai.com, 2015, June 5th). Twenty persons were reported killed when a bomb blast destroyed part of Maiduguri abattoir. Barely five days after this incident, another explosion rocked the same area and 10 persons were killed (The Punch, 2015, June 8<sup>th</sup>).

The inauspicious criminal acts of the insurgents on education were very glaring. For instance, the insurgents destroyed facilities and devices at the Adamawa State University and the Federal Polytechnic, both in Mubi. This was sequel to various forms of havoc caused to the education sector in the States of Borno and Yobe, in which for months and in some cases, years, primary and secondary schools as well as tertiary institutions were closed down indefinitely. In the State of Adamawa, after the recapture of Mubi, Maiha and Madagali from the insurgents, the state government's committee estimated that huge sums of money, running into billions of naira, were required to rebuild schools devastated by the insurgents.

## **Conclusion**

In the last couple of years, peace and security have remained an illusion in Nigeria. Political, ethno-religious factors and the proliferation of small arms have been identified as factors that breed insecurity in Nigeria. The political class appears to be using the ethno-religious factors to achieve its end. In their bid to ultimately control the political sphere, the activities of the political class have led to devastating consequences such as political touting, assault, election rigging and snatching of election materials. The lurid practices of the electorate, fueled mainly by the political class, have unquestionably assumed an unethical political dimension. Again the activities of the BH cult and militants created security challenges for Nigeria.

To deal with cases of insecurity in Nigeria, this paper suggests that there should be respect for the rule of law and that should be the watch word in the course of governance, for nobody should be seen to be above the law. Consequently, a political party or group, needs to respect the rule of law and follow due process for addressing their grievances rather than inciting violence. Religious leaders need to preach peace, unity and cohesion in a pluralistic society like Nigeria. The youth in the society who are vulnerable to crimes must be conscionable engaged by successive governments. A serious enlightenment campaign on peaceful co-existence must be mounted in wards, streets, markets and in mosques and Churches through open air performances and by the use of jingles. The mass media must not be seen as a divisive organ but as an instrument for unity and cohesion in the context of

Nigeria's diversity. Equally, the possession of small arms and ammunitions by private individuals and organizations must be seriously curtailed and sanctioned

Boulding in Alimba (2008) identified habit, professional specialization, web economic interdependence and taboos against the violence as essential for achieving a stable peace system. What this entails is that peace is not achieved without a conscious effort. Peace needs to be cultivated, practised and promoted. Peace takes time to come by. In other words, time is required for peace to take a firm grip on a nation like Nigeria. In very serious security cases like that of the BH insurgency, peace and diplomatic initiatives must be employed in order that there is no further breakdown of law and order and the destruction of public infrastructure. Consequently, Nigeria as a developing nation must employ all means at her disposal to work and promote peace. To view peace and security issues with a careless abandon opens room for security threats to set in. In other words, peace and security need to be the concern of all stakeholders: government, security operatives and citizens. Government needs to put strong measures in place to cope security breaches. Citizens must report to the security agencies any suspicious moves that are likely to breach the peace and cause chaos. Security agencies on their part must demonstrate a high sense of professionalism in dealing with Nigeria's security problems.

When these suggestions are consciously followed, the peace and security of Nigerian students to undertake their education uninterrupted will be ensured. The economy of Nigeria will also rise as foreign investment will improve greatly. Finally, in an atmosphere of peace, the Nigerian state will be a safe place for foreign investment.

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# INTEGRATING AKAN INDIGENOUS KNOWLEDGE IN THE TEACHING OF INTERMEDIATE PHASE MATHEMATICS: PROSPECTS AND CHALLENGES

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## **Abstract**

Indigenous knowledge is the knowledge system that is characterized by a specific cultural or local community. This form of knowledge is usually passed on from one generation to the other and from person to person. Among the Akan of Ghana indigenous knowledge, is expressed through the medium of story-telling, songs, rituals, folklore and games. These activities have characterized the lives of the Akan ethnic group since time immemorial. The objectives of this paper are to identify the prospects and challenges of incorporating selected Akan indigenous knowledge in the teaching of mathematics at the intermediate phase and to advocate the incorporation of Indigenous Knowledge Systems into the school curriculum. The paper is based on relevant existing literature, observations and the researchers' lived experiences. It argues that Akan indigenous knowledge systems such as story-telling and games could be integrated into the teaching of mathematics at the intermediate phase to make the subject easy for learners. The authors believe that the integration of indigenous knowledge into the school curriculum may not only enhance learning, it can also relate the subject to the identity of the learners.

**Key terms:** Story-telling, indigenous games, mathematics, culture, identity, traditional knowledge.

## **INTRODUCTION**

The concept of Indigenous knowledge does not seem to have a single definition. Various terms such as traditional knowledge and local knowledge are used by different scholars and the general public and authors to describe it. Indigenous knowledge is considered to be unique to a particular culture or society and is embedded in community practices, institutions, relationships and rituals. In most parts of Africa this form of knowledge is usually passed on from one generation to the other, from person to person through the word of mouth. It is usually expressed through the medium of story-telling, songs, rituals, folklore and games. These activities have characterised the lives of the African people and for that matter the Akan of Ghana since time immemorial. While in this era of African renaissance indigenous knowledge is very crucial for the continent's development it seems to be fading away in most communities because they are not documented, taught or embedded in the school curriculum. The Akan of Ghana, use story-telling, songs, rituals, folklores and games to transfer indigenous knowledge to its youth. As professional and practising teachers in schools in some sub-Saharan African countries the authors believe that some of the African indigenous or cultural practices such as story-telling and selected games could be integrated into the teaching and learning of mathematics at the intermediate phase (grades 4-6) to make teaching and learning mathematics enjoyable. From their own lived experiences as learners and teachers in many schools in Ghana, Lesotho, Botswana and South Africa the authors have

learnt that mathematics is usually taught in a very abstract manner hence the subject is dreaded by many rural learners. There is therefore a need for a paradigm's shift from the abstract way to a more concrete approach of teaching mathematics at both the foundation and intermediate phases.

The intermediate phase mostly consists of learners aged between 9 and 13 years. According to Piaget's stages of cognitive development, learners within these ages fall under the concrete operational stage (Salkind, 2004). The concrete operational stage is a major turning point in children's cognitive development because it marks the beginning of logical or operational thought. Although at this stage children are considered mature enough to use logical thought or operations, they can only apply logic to physical objects (McLeod, 2010). It is for this reason that the authors of this paper advocate the use of indigenous games in the teaching of mathematics at the intermediate phase to make lessons more concrete and comprehensible.

Piaget posits that during this stage children's thought processes become more rational, or more operational. At this stage they also have the ability to develop logical thought about objects if they are able to touch, feel and manipulate them. For this reason the teaching and learning of mathematics at this crucial stage of learner's lives must be based on concrete examples or things. In fact when a teacher is able to tell an interesting story related to his/her lessons in an interesting and compelling way backed by concrete examples, he/she can catch the attention and interest of the learners. Lessons taught in this way cannot be forgotten by learners because whenever they remember the story and the related examples the information comes to life. The use of indigenous stories in the African classroom should be regarded an effective teaching approach and skill which every teacher teaching skill. In addition to getting learners attention, story-telling could help them to learn important concepts, attitudes and skills in the subject.

Just as indigenous stories, indigenous games also have the didactic potential to excite learners while at the same time expose them to some mathematical concepts as they have fun. Through indigenous games like *nsaama* (measuring short distances with fingers) basic mathematical concepts such as counting, addition, subtraction, multiplication and division, could be effectively taught to make the learning of mathematics real, meaningful and culturally relevant (Owusu-Mensah & Quan-Baffour, 2015). Erika (2012) argues that through games and other mathematics activities with others, learners build a sense of mathematical values and based on that they act by constructing and modifying their thinking.

Although the use of indigenous stories and games can enhance the teaching and learning of mathematics most intermediate teachers are not making use of them to achieve their teaching goals. These authors advocate the integration of indigenous knowledge into the school curriculum because of their didactic value. To make learners understand lessons better teachers must have the courage to be Africans by improvising and utilizing any relevant cultural tool within the local communities as teaching and learning aids during mathematics lessons. It is the view of the authors that the integration of local materials, stories and games into the teaching and learning of mathematics can dispel the wrong perception among some learners, parents, community members and even some teachers that mathematics is a difficult subject which cannot be learnt. As the foundation stone for science and technology, the advancement of nations depend very much on mathematics which is why it's teaching at the initial stages of education should be made simple, lively, attractive and enjoyable.

## **THEORETICAL FRAMEWORK**

Both story-telling and indigenous games are forms of knowledge and skills acquisition in the social context. Learning is a social activity that takes place in a social context and for that matter this paper is grounded in the social constructivist theory. The social constructivist theory is a credit to Vygotsky (1978) who argues that education must engage and expand on the experiences of the individual i.e. the learner. The social constructivist theory postulates that reality is socially constructed through engagement in human activities. Thus the theory places more emphasis on the application of knowledge, skills culture that it can contribute to the child's cognitive development. It discourages spoon-feeding of learners and encourages teachers to lead and guide learner to construct their own meanings through interaction of what they are taught. Citing McMahan (1997) Owusu-Mensah and Quan-Baffour (2015:314) affirm that knowledge is derived from interactions between people and their environment and resides with cultures. The classroom is a social context and the teaching and learning activities should reflect this reality which has much influence on learning among children. As part of African culture children, in their various communities, play games with their peers; they often collaborate in various activities such as jumping, cheering, teasing, laughing, singing, dancing, playing soccer etc. Since children love playing in groups instructional activities should relate to group work where learners can corroborate with their peers and learn together. Children by their very nature love being together with friends and peers. For this reason teachers can seize the opportunity to use collaborative learning approaches in the mathematics classroom where learning can be enhanced through games. As the theory advocates, teachers should guide and support learners to construct their own meanings from what they perceive, see, hear, feel, touch and learn to construct own ideas and meanings. This strategy of collaboration in learning gives learners the opportunity to support one another, improve their communication skills and above all enhances knowledge sharing and critical thinking. Indigenous games and storytelling therefore allow learners to communicate their ideas to one another. The teacher using story telling as a method of teaching can relate classroom activities to the social constructivist theory by encouraging learner participation in group discussions.

## **LITERATURE REVIEW**

The importance of teaching and learning aids in mathematics in the intermediate phase cannot be over emphasised. The use of local teaching aids can create a visual and interactive experience for learners. The learning of mathematics in the early years of schooling needs to be full of fun and enjoyable in order to get children focused and interested in the subject. This does not mean that there should chaos; the teacher should manage and monitor the learning activities so that the enthusiasm of the learners does not go against the achievement of teaching and learning objectives. Games have been known to be able to excite learners when used appropriately in teaching and learning. Erika (2012) affirms that games and other mathematics activities can get learners motivated and develop their interest in mathematics. He however advises teachers to find the right games that will bring abstract concepts closer to the real world.

In addition to games and other activities, storytelling can also be used in teaching. Abrahamson (1998) asserts that although storytelling can be described as an ancient art and

discipline, it continues today as a primary means of communication and entertainment and therefore has a strong presence in all human institutions. Thus when used appropriately stories that relate to specific lessons can have a positive didactic effect on learners. Eck (2006) affirms that storytelling has emerged as one such teaching method that has proven to be an effective pedagogical tool. In fact, it can appropriately be used in the teaching and learning of all disciplines including mathematics. Andrews, Hull and Donahue (2009) give evidence of disciplines where storytelling is heavily used as a method for teaching key principles. These areas include dentistry, military, aviation, general medicine and business and this can also be true in the teaching and learning of mathematics.

Albool (2013) investigated the effect of using storytelling approach in teaching mathematics on fourth grade students' achievement. The results revealed a significant difference on students' achievement on fractions in favour of those who learned the lesson by using the storytelling strategy. This result is consistent with other previous studies by Casey, Erkul, Ceder and Young (2008) and Diaw (2009). The use of relevant stories from the learners' context in teaching may not only make the lesson interesting and decreases boredom but makes learners appreciate the value of indigenous knowledge system. While storytelling provides concrete examples and increases learners' motivation to learn, it also reduces the tension between the learners and their teacher. This makes lessons real, enjoyable, and comfortable to the learners. Since learners are especially predisposed to stories, using storytelling in the classroom maybe a natural and familiar way of learning (Balakrishnan, 2008).

In the same vein Marsha (2002) asserts that narratives and stories in education have been the focus of increasing attention in recent years. However, most of the literature on the use of storytelling in education focus on adult teaching and learning (Eck 2006, & Buffo 2015). For example Buffo (2015) describes how storytelling could be used to grab the attention of students in a college classroom. The authors are of the view that if storytelling has didactic value then it could be used at all levels of teaching and learning of mathematics, particularly at the intermediate phase. In this paper the authors examine the prospects and challenges of using storytelling as a teaching tool in intermediate phase mathematics. The authors argue that although indigenous method of teaching, such as storytelling has not assumed much popularity among teachers it can be used effectively in mathematics classrooms. The cognitive tool of storytelling can play a significant role in shaping learners' emotions to understand the subject content (Balakrishnan, 2008).

### **THE PEDADOGIC VALUE OF AKAN INDIGENOUS GAMES AND STORIES IN INTERMEDIATE PHASE MATHEMATICS TEACHING**

In teaching mathematics, especially in the intermediate phase, it is imperative that teachers consider the cultural and social background of the learners. Teachers need to be aware of some of the cultural practices of the learners that may positively impact on their school and learning activities. This section discusses the integration of the Akan indigenous practices of games and story-telling in teaching mathematics at the intermediate phase. Akan indigenous games, such as *oware*, *nsaama*, *dame*, can be integrated into the teaching of mathematics, at the intermediate phase because of their didactic value.



The art of storytelling is as old as the human race. In fact long before the advent of modern media, storytelling was a common pastime among the Akan of Ghana. Interestingly, the art of storytelling is accessible to all ages and abilities. What is needed in the didactic environment is the imagination and ability of the teacher to explain and relate the particular story to the lesson s/he is presenting. Equally the learners should have the ability to listen and speak in order to create artistic images. Stories have been used by great teachers of all times as instructional tools in the form of parables, legends, myths, fables and real life examples to convey important information (Andrews, Hull & Donahue, 2009). In most traditional communities, a good storyteller was a valuable member of the society and often adored by all members of that community. According to Andrews, Hull and Donahue (2009), storytelling as an information medium is used today in education and training of all types because they are pedagogically sound. What makes this teaching approach useful is that in the context of storytelling, the storyteller and the listeners are in the same place and physically close, usually seated together in a circular way. In using this indigenous method of teaching, the mathematics teacher in the intermediate phase class, could begin a lesson with a short and interesting story to get the attention of the learners. However such stories should in part be relevant to the lesson. They could be personal experiences, myth, historical events or anything that relates to the day's lesson. Learners should be able to link parts of the story to the lesson in order to achieve its objective.

In the educational circles some people might not think of storytelling as something that can be related to the teaching and learning of mathematics, but this is possible where the teacher has the courage to improvise. It is important that the teacher makes his/her lesson comprehensible to learners to enable them apply the knowledge in similar settings. The lack of ingenuity among some teachers, and time factor might pose some hindrance to the use of indigenous teaching aids. These can be overcome where there is will and commitment and the teacher endeavours to make a mark on the minds of the learners. Indeed, a great deal of research and resources exist that support the use of stories with children at both the elementary and middle schools (Balakrishnan, 2008).

The paper has so far argued that the incorporation of Akan indigenous knowledge in general and games and stories into teaching of mathematics at the intermediate phase has both pedagogical and didactic value. For example they have the potential to encourage the foundation and intermediate phase learners to learn and adhere to mathematical principles or rules. The approach also can encourage learners to discover their individual expressiveness and thus increase their ability to communicate thoughts and feelings in an articulate, lucid manner. The *oware*, *nsaama* and *dame* games provide entertainment for learners and the entertainment aspect allows the learners to choose freely to participate in these games. Learning is a social activity and children learn together through games. Thus mathematics teachers can use the games to enhance learning through group activities. Where these games are used as conduit to teach mathematics, learners can develop self-concept and positive attitudes towards the subject. This can, to a very large extent, contribute to demystifying the myth surrounding mathematics learning at school.

The three Akan indigenous games mentioned in this paper can provide an opportunity for children to interact and through the interactions they test intuitive ideas and problem solving strategies (Davies, 1995). It can therefore be argued that learning can be effective when local games are integrated into teaching and learning of mathematics. The potential and possibility

for learners to master some mathematical concepts through indigenous games is very high because they build the sense of mathematical values and based on that they can act by constructing and modifying their thinking (Erika, 2012).

The Akan indigenous games such as *oware*, *nsaama* and *dame* involve strategic thinking and mental calculation. Thus the games as part of mathematics teaching strategy can effectively equip the foundation and intermediate phase learners with arithmetic skills such as addition, subtraction and multiplication. To win any of the games a participant must be able to capture as many points in the form of marbles as possible. This demands good reasoning and critical thinking skills. These skills are no doubt very important in learning mathematics.

Storytelling is an art that has mental, social and educational benefits to children. Despite the fact that people of all ages love stories, children in particular are great fans of stories and love to listen to them which is why mathematic teachers should take advantage of children's interest in such stories to teach the subject to make it easy to learn. Parents use storytelling to impart knowledge and social values to their children. Many parents find very little time to spend with their kids as the hustle and bustle of life demands much of their time. As surrogate parents, teachers can fill in the vacuum not only to entertain but most importantly to use the stories as teaching tool to enhance learning.

Stories carry social and moral values and can assist in moulding children's character. Zazkis and Liljedahl (2009) assert that the value of storytelling in teaching is its power to engage students' emotions and their imaginations in the material of the curriculum. They further affirm that stories may spark interest, assist in memory and reduce anxiety. In fact storytelling can create a comfortable and supportive atmosphere in the classroom and build a rapport between the teacher and the students. Stories can be used as introduction to a lesson in order to catch the attention of learners. In order to achieve its objectives, stories need to be short, precise and relate to the specific lesson. Stories used in a mathematics lesson, should be practical, dramatic and create much excitement among learners.

In spite of the didactic value of indigenous games there might be some challenges to their utilization in mathematics lessons. Time might be a huge challenge because the games might need more time than the school's time table allows. In addition to that the teacher needs to spend some time to prepare and assemble the necessary materials for the games.

Other challenges which the games can pose in lessons include classroom management, space and the teacher's knowledge of the games. When a game excites learners it might be difficult to control the class and this can negatively affect the lesson. The effective use of the indigenous games requires the teacher to know how the games are played. Without that knowledge none of the indigenous games can be effectively used to teach mathematics.

In the same vein teachers need to know stories that can be used in teaching specific lessons in order to communicate information and mathematical ideas. Andrews and Hull (2009) intimate that storytelling is an art and to be able to use story effectively in teaching teachers need the skill.

## CONCLUSION AND RECOMMENDATION

This paper has highlighted the educational value of Akan indigenous stories and games. The best teacher is the one who is able to present a lesson in a manner that learners can understand and remember for application outside the classroom. As William Arthur Ward (1921-1994) attests, 'the mediocre teacher tells, the good teacher explains, the superior teacher demonstrates, the great teacher inspires'. In a nutshell the teacher who uses indigenous games and stories to teach mathematics must be a learning and a better teacher who has the courage to improvise teaching methods for the realisation of teaching and learning outcomes. The paper concludes that in the era of Africa's rebirth teachers as pillars of education, should employ indigenous knowledge in their teaching not only to achieve specific learning outcomes but also the cross-field outcomes- African values and identity. This paper recommends that mathematics teachers, especially in the intermediate phase, should integrate indigenous games and storytelling into their classrooms activities

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# LEADERSHIP IN THE TRAPPED SCHOOLS OF THE NORTH-WEST PROVINCE (SOUTH AFRICA)

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## **Abstract**

Despite numerous transformational changes initiated in education, the North-West Province, especially Dr Ruth Segomotsi Mompati District continues to have a high number of trapped schools. Out of 55 secondary schools in Dr Ruth Segomotsi Mompati District, 40 are trapped. Moreover, there are 74 high schools of which 60 are trapped. This state of affairs emerged as a problematic phenomenon that reflects on the quality of instructional leadership in these schools. The purpose of this paper is to present the outcomes of a research project that was conducted in Dr Ruth Segomotsi Mompati District that investigated the quality of leadership among school principals in the above mentioned categories of schools. The study was quantitative and qualitative in nature. A questionnaire and unstructured interviews were used as data collection instruments. Out of 100 randomly selected schools, 10 principals were randomly selected for the interviews, while the questionnaire was completed by principals, deputy principals and educators who are members of the School Management Teams at the selected schools. The qualitatively derived data was analysed using critical discourse analysis. The quantitative data was analysed using Statistical Programme for Social Science software (SPSS) version 19.0. Findings from both literature review and the empirical research revealed the factors that led to a trap zone situation included, inter alia, lack of School Improved Plan (SIP); isolated Educator Teams; poor instructional leadership styles and related factors. These schools require, inter alia, improved “SIP”, Communication skills, mentoring, monitoring, and support for school leaders to draw school budget.

**Keywords:** Trapped secondary schools, leadership, change, budget, School Improvement Plan (SIP)

## **Introduction**

Leadership and change are the pivotal points of departure in schools as organizations. One cannot talk about effective organization without mentioning leadership and how the organization has managed to achieve such a pedigree of effectiveness. This paper reports on the research findings of a three year research project that focused on school leadership (and change) in certain trapped secondary and high schools of the North-West Province in Dr Ruth Segomotsi Mompati District. This paper discusses the findings of a research project that attempted to determine the roles that school managers should play as change agents in managing a secondary or a high school in the North-West Province.

The importance of this study is to make the leadership of the North-West Province aware of what makes some educators resist change in the education sector. These include the suddenness of the implementation of the National Curriculum Statement (NCS) even before educators become fully acquainted with Outcomes-Based Education (OBE), as well as the challenges they face daily regarding the change of educators in the province. The study will hopefully provide strategies required by principals in managing change effectively.

Secondary and high school learners in the North-West Province are the beneficiaries of the research. It is also the researcher's assumption that the results from the empirical study will show the nature of the best possible ways of improving the standard of teaching and learning within some of the "trapped" schools in the North-West Province.

### **Theoretical framework**

There is no official document that has been drafted for the term "trapped schools" in South Africa. The term "trapped school" in South Africa refers to secondary and high schools that are performing below the expected national average of attaining a sixty percent (60%) pass rate at the end of Further Education and Training (FET) programme. The term 'trapped' refers to the same thing in this paper (Department of Education, 2004). Three hundred and sixty two (362) secondary and high schools in the North-West Province entered Grade 12 students for the final year examinations in 2007. Out of the above mentioned number, twenty one schools obtained 100 percent pass (Department of Education, 2007). Taking into consideration the circumstances of the trapped schools as compared to schools that obtained one hundred (100) percent pass it is clear from the researcher's observation that:

- The majority of the trapped schools do not seem to have any procedure in place to deal with late-coming, period bunking, truancy and absenteeism of educators and learners.
- Some of the schools do not seem to have substitute time-tables for the effective supervision of learners when an educator is absent.
- The current leadership structures do not provide strategic direction to the school.
- The SGB is neither functional nor supportive of the school activities.
- Precious teaching time is often lost when some educators turn up late for classes and leave early for home.
- In some schools, there is no effective system in place to monitor the work of educators and learners.
- Some schools lack relevant resources to support and increase knowledge of learners
- Most educators show little interest in developing themselves.
- Some educators teach subjects that they are not trained for.

In the North-West Department of Education, the application of the term "trapped school" started in 2002 by way of the Department of Education's support strategy for helping schools that were performing below the expected national average (Department of Education (NW), 2002). All the schools that were registering Grade 12 learners for the very first time were also termed to be trapped because they were not sure of their final results status. The same applied to schools that stayed in and out of the trapped zone; they were termed to be the "yoyo schools", whereas all the schools staying in one average percentage for two to three years consecutively were stigmatized to be enjoying the comfort zone of underperformance (Department of Education (NW), 2002).

Effective leadership is necessary for the development and continuing improvement of any educational institution (Foster, Agnes & Rahinet, 2007). It promotes excellence, communicates progress, actualizes the vision, allocates resources properly and supports people. The principals of such schools see their major function as instructional leadership to sustain commitment and set standards for performance. Successful schools have leaders who make decisions based on achieving positive best results for learners, rather than maintaining

an established order of the system, leaders who recognize individual differences in learners and educators to meet their needs, leaders who use a mix of top-down and bottom-up decision making processes, leaders who promote high staff morale, parent participation, continuous learner-educator development supported by improvement plans that are regularly reviewed, updated and discussed openly with the School Governing Body (SGB), leaders who stay abreast of current educational trends, leaders who articulate the school vision and mission; and leaders who remain focused on the possibilities and opportunities instead of barriers (Prew, 2007).

Gusky and Peterson (1996) state how several studies have disclosed that successful schools provide training to an array of school level participants including parents and community members to help them become more capable participants in the schools' efforts to gain a common understanding of where the school is and where it wants to be. Leadership remains the key to all successful efforts in this regard.

Hellgriël, Jackson, Slocum, Staude, Amos, Klopper, Louw and Oosthuizen (2006) regard "Leadership as the ability to persuade others to seek defined objectives enthusiastically. It is the human factor that binds a group together and motivates it towards a goal". It is the ultimate act that brings to success all the potential that is in an organisation and people. Kouzes and Posner (2001) see leadership as the process of directing and influencing the task-related activities of group members. According to them, the concept implies that Leadership involves an equal distribution of power between leaders and group members who are never powerless but can and do shape group activities in a number of ways. Though the leader still has more power, such powers are described as coercive, legitimate, referent and expert power. The greater the number of these power sources available to the manager, the greater his/her potential for effective leadership.

### **Characteristics and qualities of a good leader**

The following characteristics are common attributes of effective leaders (Nel, Gerber, Van Dyk, Haasbroek, Scholtz, Sono & Wener, 2004):

- Leaders have the ability to create a vision and to excite people to try to achieve the impossible;
- Great leaders have an external energy and an inner strength that see them through tough times;
- Leaders have a mental agility that enables them to make effective decisions much faster than other people; and
- Leaders have the ability to tap into people's souls. This ability involves emotional intelligence as well as intellectual skills.

The above characteristics if blended with leadership skills and nurtured through workshops, correspondence with other institutions and in-service training can make a school principal a leader who brings about effective change in his/her school. In this context 'self knowledge' leads to successful leadership. The better you know yourself, the better you will know other people. A leader renders service and makes decisions.

### **Transformational leadership theory**

Since every research project is underpinned by a particular philosophical framework it is therefore important for a study of this nature to adopt a theoretical framework that is

transformational to educational practises (Bogdan, 2003). Its relevance in the research is the fact that it has an essence of educational change that is participatory and collaborative.

Transformational leadership theory is a new kind of leadership that enables the exploration of new and innovative ways to drive values and deliver real results in an ever-changing environment. It allows individuals and organizations to thrive at the edge of chaos, inspiring the innovation and creativity needed to develop new models that can lead to sustainable competitive advantage (Komane, 2007). He further suggested that a transformational leader is:

- **Charismatic** – The charismatic leader creates a special bond with the followers.
- **Inspirational** – The leader creates high expectations and effectively communicates crucial ideas with symbols and simple language.
- **Practicing individual consideration** – The leader coaches, advises, and delegates to the followers, treating them individually.
- **Intellectually stimulating followers** – The leader arouses them to develop new ways to think about problems.

### **Transformation action steps for school leaders**

All the trapped schools seem to face major challenges as organizations. They, therefore, require assistance that can sustain them in their quest for excellence. The actions below can assist them to become more stable and proactive (Nel *et al.*, 2004):

- Accept a mentor outside the organization and an advocate within. Seek and accept help.
- Ensure a customer-driven organization.  
Always ask what employees need and how the organization can meet their needs.
- Set direction through planning.  
Support the board to carry out strategic planning. Ensure staff inputs as well.
- Organize resources to meet goals.  
Develop job descriptions with staff input to ensure mutual understanding of responsibilities.
- Motivate leadership and staff to meet goals.  
Delegate to staff members by helping them understand the purpose of tasks. In regular staff meetings, celebrate successes.
- Guide resources to meet goals. Work from the strategic plan.
- Think transition.  
Help the employees to regularly undertake contingency planning, including thinking about what the organization will do if/when you are gone.

Leithwood and Jantzi, (2000) highlight the following as activities provided by school principals to participate in decision-making processes and school development which are distribution of responsibility and power for leadership widely throughout the school, sharing decision making powers with staff and taking staff opinion into account. Due to the complex environment that principals of today have to deal with, greater emphasis is being placed on the principal to be a good leader (Moloi, 2007). In order to be a good leader, a good principal must be a change agent. According to Ribbins & Burrige (1994), achieving change is much more a matter of implementation of new practices at the school level than it is of simply deciding to adopt them. Change is a process not an event and it is difficult to change education without also changing the school organization.



## Servant-leadership

Servant leadership focuses on increased service to others rather than to oneself. Servant leadership is not a quick-fix approach to leadership. Rather, it is a long-term, transformational approach to life and work (Kreitner, Kinicki & Buelens, 2002). The principals may hardly go wrong if they adopt the ten characteristics listed in Table 1.1 below.

**Table 1: Characteristics of the servant-leader**

Characteristics	Descriptions
Listening	Servant-leaders focus on listening to identify and clarify the needs and desires of a group.
Empathy	Servant-leaders try to empathize with others' feelings and emotions.
Healing	Servant-leaders strive to make themselves and others whole in the face of failure or suffering.
Awareness	Servant-leaders are very self-aware of their strengths and limitations.
Persuasion	Servant-leaders rely more on persuasion than positional authority when making decisions and trying to influence others.
Conceptualization	Servant-leaders take the time and effort to develop broader based conceptual thinking, such as a short-term, day-to-day focus and long-term, conceptual orientation.
Foresight	Servant-leaders have the ability to foresee future outcomes associated with a current course of action or situation.
Stewardship	Servant-leaders assume that they are stewards of the people and resources they manage.
Commitment to the growth of the people	Servant-leaders are committed to people beyond their immediate work role, including personal, professional, and spiritual growth.
Building community	Servant-leaders strive to create a sense of community both within and outside the work organization.

## Statement of the problem

The matric results are dropping year after year and this has given rise to this research especially focusing on the nature and scope of leadership in the trapped secondary and high schools in the North-West Province. The strategies for intervention to move poor schools away from the trapped zone has indicated that strong leadership at a school site is essential and it has been determined that the school principal is the pivotal factor in determining the success of the schools. He/she should set a new direction for the school and have a working knowledge of the operations (Department of Education, 2004).

Grange (2007) argues that new assessment and quality assurance policies and processes have been put in place in an attempt to regulate and monitor the quality of the South African education system. For example, a body, called 'Umalusi', was established with the mandate to ensure quality in General Education and Training as well as Further Education and Training. Over the past two decades marketing of schools has been witnessed, which has widened the gap between affluent and poor schools. Therefore the burning research question

that gave direction to the whole research process is: What are the basic roles and functions that school principals' play or should play as change agents in managing the secondary and high schools in the North-West Province?

### **Research design and methodology**

The quantitative approach according to Maree (2007) requires a large sample than a qualitative approach. The approach used in this research is both quantitative and qualitative. Data were collected quantitatively through questionnaires and qualitatively through interviews and observations and were analysed using statistics and graphs.

### **Population**

Dr Ruth Segomotsi Mompati District consists of 55 secondary schools and out of these, 40 are trapped. In addition, there are 74 high schools of which 60 are trapped. The total number of trapped schools increased from 89 in 2005 to 100 in 2006/2007. That represents approximately seventy-eight percent (77, 5%) of the trapped schools.

The population consists of 129 schools. According to Stoker (in White, 2003), a recommended percentage to be used should be 50 percent of schools sampled. In this case all the schools that are "trapped" formed the sample including both high and secondary from Dr Ruth Segomotsi Mompati District. One hundred (100) principals and 100 deputy principals/HOD's/educators who are members of the School Management Team participated in the study in both the interviews and the questionnaires. To ensure a representative response rate, the researcher sent out 200 copies of the questionnaire, that is, two copies per school to be filled by two members of the SMT.

### **Sampling**

A total number of 200 copies of the questionnaire were sent out to the 52 randomly selected secondary and 48 high schools within Dr Ruth Segomotsi Mompati District, that is, two copies of the questionnaire per school. The researcher obtained lists of all trapped secondary and high schools in each Area Project Office (APO). This resulted in a total number of 100 trapped schools. The researcher used random sampling to select among the cluster of professionals, members of the SMT who render teaching and management services within these schools. The cluster is composed of principals, deputy principals, departmental heads or educators who are members of the SMT.

### **Data collection and analysis**

The techniques used to collect data for this paper include questionnaires and interviews. The quantitative data was analysed using statistical science software (SPSS) version 19.0 and qualitatively derived data was analysed using critical discourse analysis.

### **Findings and critical discussions**

The following are the findings of what leads to a trap zone in many of our schools in South Africa:

**Teachers are allocated subjects that they are not trained for** - They use text book method to impart knowledge to learners. They learn with the learners and they fail with them.

**Poor relationship between the school and the community** - The introduction of the SGBs in schools did not go down well with most principals. There are still principals who do not even orientate them.

**Poor examination results** - No action is taken against teachers who refuse to turn up for vacation lessons as the management is not sure of its role.

**High rate of absenteeism of educators and learners** - Some of the schools do not seem to have substitute time-tables for the effective supervision of learners when an educator is absent.

**Discipline and inappropriate leadership styles** - A good leader should be able to use judgments to sum up the circumstances and situations correctly and to adjust his or her leadership style accordingly. The common styles found in organizations and which can be applicable to schools are those relating to leaders described as transformational and servant leadership styles.

**Mismanagement of funds from section 21 status** - Most of the schools are no fee charging schools. Schools do not have finance monitoring plans as well as finance monitoring instruments. Principals lack capacity in drawing the budget for the allocated funds.

**Lack of capacity in terms of developing a SIP (School Improvement Plan)** - SIP is a daily working document for the Principal. From the section 21 funding, schools must draw the (SIP) which should incorporate the Academic Performance of learners (APIP).

### **Recommendations and discussions**

**Avoid poor relationship between the school and the community** - Parents are partners with educators in the task of educating the children. Successful schools provide training to an array of school level participants including parents and community members to help them become more capable participants in the schools' efforts to gain a common understanding of where the school is and where it wants to be.

**Dealing with poor examination results** - Teachers should be encouraged to register subjects that they teach so as to be specialists in those subjects.

**Have monitoring tools and use them** - The following tools should be able to help school principals to see if their schools are functional and they are monthly in-school monitoring tool, quarterly in-school monitoring tool, moderation tool of formal tasks or activities, quarterly analysis of result instrument, monthly control of written work instrument and class period register template.

**Reassess learners daily** - This can be possible through going an extra mile i.e. starting early and knocking off late, solving the issue of commuting, giving learners class tests every Friday, marking/controlling their work and giving them immediate feedback, having & using homework time-tables, having & using daily lesson preparation, being in class in time & never leave the class before the period ends, keeping learners pre-occupied or busy everyday (let them feel your presence in order to feel the difference), keep records of what they have achieved & share that with an individual learner (win each learner's confidence).

**Enforcing team building in trapped schools** - Any team building exercise often challenges a team to work together to achieve a common goal. Team members learn that having good relationships and experience in working together will help them to be effective. Team building exercises address issues such as: blame distribution, lack of leadership, too much leadership, lack of communication, irrelevant communication and responsibility. The point is whatever happens, the principal as education manager, must aim at building effective teams

that can work towards an effective school not to side against macro-management levels, but to see things from the staff's perspective (Nel *et al.*, 2004).

**Allocate subjects accordingly to qualified and well trained educators** - Since the establishment of the new educational dispensation in 1994 in South Africa, many changes have taken place. The first was Curriculum 2005 with its accompanying National Curriculum Statement (NCS), followed by rightsizing and redeployment of teachers. Accompanying these can be identified a loss of skilled manpower resulting from severance packages and retrenchment of temporary teachers leading to anxiety, uncertainty and feelings of insecurity among educators. It seems that the uncertainty and anxiety from the above mentioned changes which prevail among educators has had a negative influence on their job satisfaction (Nkonka, 1999:1). The redeployment of educators is part of the causes of educators' daily workload. When an educator is redeployed to another school, his or her workload becomes a burden for the remaining educators. The school becomes dysfunctional as a result of such a situation and learning as well becomes seriously handicapped. Good allocation of subjects to educators to teach in grade 12 is very important. Educators, who cannot teach subjects that form the curriculum of the school, should be declared to be in addition. The educator who is not trained to teach a particular subject has a limited knowledge in that subject and will only use the textbook method to impart knowledge to learners. The principal is the CEO of his or her school.

**Use well-disciplined and appropriate leadership styles to minimise high rate of absenteeism of educators and learners** - The common styles found in organizations and which can be applicable to schools are those relating to leaders described as transformational and servant leadership styles.

**Budget for the following nine focus areas to avoid mismanagement of funds from section 21 status** - Basic Functionality; Leadership, Management and Communication; Governance and Relationship; Quality of teaching and learning and educator development; Curriculum provision and resources; Learner achievement; School safety, security and discipline; School infrastructure; Parents and community.

**Action the budget on a SIP (School Improvement Plan) that incorporates APIP (Academic Improvement plan)** - When developing the (APIP), the focus should be on Quality of teaching and learning and educator development; Curriculum provisioning and learner resources and Learner achievement.

## **Conclusion**

In an effort to conduct and organize workshops and training, care should be taken to do an audit to determine the gaps and priorities in the management of the school. The Department of Education could again consider compulsory courses on leadership, change, budget and School Improvement Plan (SIP) for the principals and educators who are members of the School Management Team (SMT), before formal appointment is done. Deputy principals and heads of departments' roles relative to teacher evaluation include: checking teaching standards by references to scheme of work, records of work done, lesson notes, pupils exercise books and actual visits to the classroom to see how the work of individual teachers and the learning process unfold. It is the firm belief of the researcher that, if teachers are

appointed according to the needs of the school and the leadership and management of the school is effective, the performance of learners and the school will improve.

### **Limitations of the research project and recommendations for future research**

According to Creswell (2002), inadequate measures of variables, small sample sizes, errors in measurement, limitations related to data collection and analysis techniques and strategies and other potential biases usually emerge as factors that contribute to the limitations of studies of this nature. Due to the small sample used in the research project, the same study should be conducted with large sample sizes using both qualitative and quantitative research paradigms to determine the extent to which the same research findings will be made. Secondly a similar study should be done to determine the quality of leadership amongst school principals in other district outside the North-West Province in order to establish whether the findings can be over generalised or not.

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# IMPLEMENTATION OF MATHEMATICS EDUCATION RESEARCH FINDINGS IN TEACHING BY SENIOR SECONDARY SCHOOL MATHEMATICS TEACHERS IN RIVERS STATE, NIGERIA

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## Abstract

The essence of research is to improve practice and engender development. However, research findings relating to teaching and learning are not often implemented by teachers in their teaching. One reason for the non-implementation of research finding by teachers is that most teachers are not abreast with research findings in their subjects. This study investigates the awareness and implementation of mathematics education research findings by senior secondary school mathematics teachers in Rivers State, Nigeria. A random sample of 104 teachers took part in the study in which data was collected using a questionnaire. The questionnaire elicited i) whether the teachers were member of professional associations were researching findings on practices are presented during meetings and conferences, ii) whether the teachers attended academic conferences, iii) if the teachers have carried out any research study in relation to their teachings, iv) if there is any research findings in mathematics teaching and learning that they have knowledge of, and v) whether they have implemented any recent research finding in their teachings. The study revealed that most of the teachers are not members of professional association and that they do not attend academic conferences, neither do they conduct research in relation to teaching. The study also revealed that the teachers are not aware of recent research findings in mathematics education and hence do not implement them in their teaching. It was recommended among others that the relevant authorities should make it a mandate for every practising secondary school teacher to belong to and participate in at least one professional association to enable them keep up with research findings in mathematics education.

**Keywords:** Implementation, Mathematics teaching, research outcomes,

## Introduction

Research promotes development in every sphere of human endeavour including education. One major reason researchers embark on educational research is to use its results to improve teaching and learning. Bassey (1995) is of the view that the teaching and learning of mathematics can be improved if research outcomes are implemented by teachers in their teaching. Outcomes of research studies pertaining to teaching and learning often provide teachers with practical guides to effective teaching. This therefore makes it imperative that teachers should have knowledge of scholarly research outcomes so in order to implement relevant outcomes to their teaching. It is believed that research outcomes in education are used to develop, shape and improve classroom practices. According to Sardom (2015) the ties that bind research outcomes and their implementation is the actual practice in the classroom.

Mathematics education research outcomes are often published by scholars in journals and conference proceedings of scholarly societies (professional associations). However, there

seems to be a gap between research outcomes and the actual practices in the mathematics classroom in Nigerian senior secondary schools. According to Uderwvahe (2009) most of the novel research outcomes in mathematics education are known by tertiary institution lecturers but not known by primary and secondary school teachers. The question is, how familiar are the teachers to the research outcome? Are the teachers knowledgeable of scholarly research outcomes in their discipline?

In Nigeria, there are many scholarly societies that teachers, according to their disciplines, can belong to. Teachers' membership of the relevant scholarly societies will in every way improve their teaching. The three scholarly societies which the mathematics teachers are expected to affiliate to are:

1. Mathematical Association of Nigeria (MAN)
2. Curriculum Organization of Nigeria (CON)
3. Science Teachers Association of Nigeria (STAN).

The objectives of the scholarly societies include promoting effective teaching and learning in schools through the application of research outcomes in teaching. One of the objectives of MAN is to appraise and reposition the quality of teaching and learning mathematics in Nigeria (Duru, 2011). CON publishes Nigerian Journal of Curriculum Studies, newsletters, bulletins and monographs series to disseminate information on empirical and theoretical research work and on issues related to teacher education and curriculum development and research (Mkpa & Izuaga, 2006; Duru, 2011; & Awwiri, 2015). One objective of STAN is to create a forum for science teachers to discuss issues of common interest (Mkpa & Izuaga, 2006). Mathematics teachers' membership of MAN, CON and STAN expose them to experiences and skills that are appropriate and adequate for the effective mathematics teaching via research outcomes reported in the society's journals, proceedings, newsletters and bulletins.

Anaseh (2011) opined that secondary school teachers shy away from conferences and workshops. The scholarly societies organize workshops and conferences and publish articles that afford members the opportunity to keep abreast of research outcomes in their subjects. A teacher that does participate in scholarly societies may not be conversant with resent research findings in his/her subject area. Such a teacher may have gap in knowledge and pedagogy that will inhibit his/her teaching effectiveness. This gap is evident as inert or retardation in the teacher's knowledge and skills. Acholonu (2013) posits that the teacher is the promoter, builder and an instrument of the development and transformation of the society.

### **Senior secondary school mathematics students' performance**

There has been an outcry on the poor performance of Nigerian senior secondary school students in mathematics in the West African Senior School Certificate Examination (WASSCE). The problem has lingered for more than a decade. Table 1.0 below shows the statistics of mathematics performance of Nigerian students in WASSCE for twenty two (22) years. The Table reveals that it was only in the years 2004 and 2012 that the percentage of students that had credit grade and above was above 50%. The performance for the other twenty (20) years was below 50% for each year.

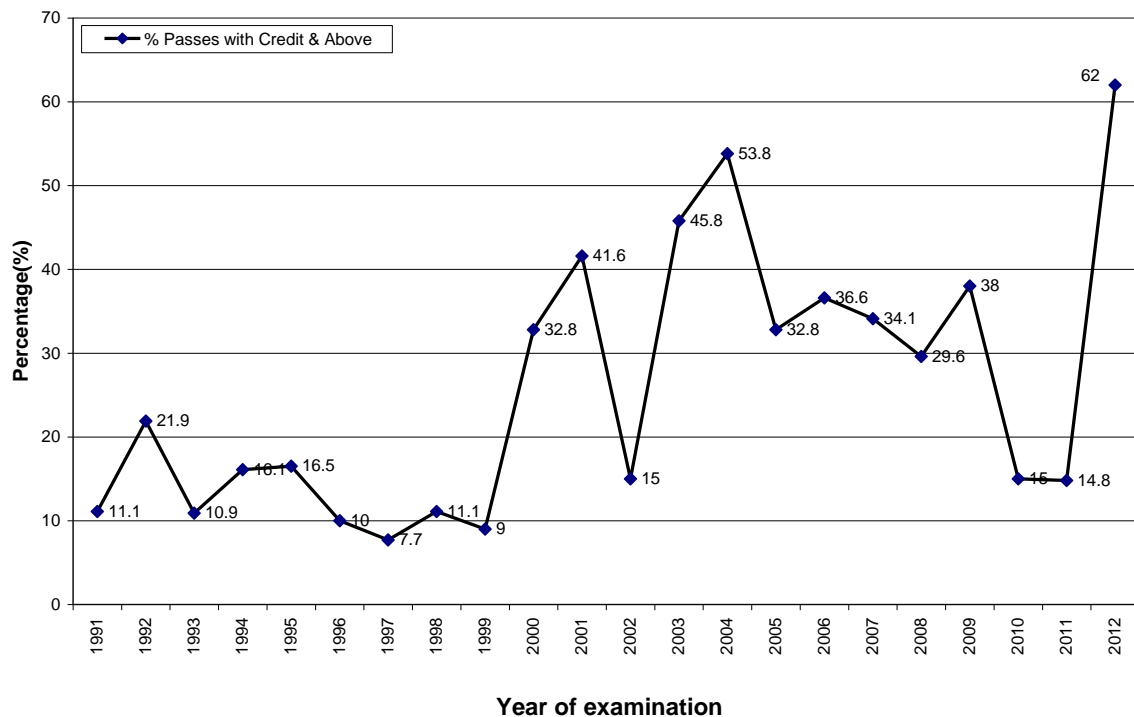


**TABLE 1: Nigeria WASSCE results in May/June general mathematics (1991-2012)**

Year	Total Entries	Total No. who sat	No. of failures	% of failure	No. of Credit & above	% of Credit & above
1991	299,338	294,079	261,352	88.9%	32,727	11.1%
1992	366,196	361,506	282,480	78.1%	79,026	21.9%
1993	498,775	491,755	438,196	89.1%	53,559	10.9%
1994	526,525	518,118	434,926	83.9%	83,192	16.1%
1995	466,971	462,273	386,193	83.5%	76,080	16.5%
1996	519,656	514,342	462,755	90.0%	51,587	10.0%
1997	621,841	616,923	569,671	92.3%	47,252	7.7%
1998	640,624	635,685	565,098	88.9%	70,587	11.1%
1999	648,120	642,819	584,961	91.0%	57,858	9.0%
2000	537,266	530,074	356,258	67.2%	173,816	32.8%
2001	886,909	843,991	493,245	58.4%	350,746	41.6%
2002	1,004,308	949,139	806,550	85.0%	142,589	15.0%
2003	550,029	518,516	281,139	54.2%	237,377	45.8%
2004	309,660	309,531	142,992	46.2%	166,539	53.8%
2005	943,371	634,604	426,460	67.2%	208,244	32.8%
2006	1,040,117	1,023,102	649,147	63.4%	373,955	36.6%
2007	925,288	908,235	598,826	65.9%	309,409	34.1%
2008	968,475	940,200	661,855	70.4%	278,345	29.6%
2009	998,282	902,350	559,692	62.0%	342,658	38.0%
2010	1,004,308	949,139	806,550	85.0%	142,589	15.0%
2011	1,045,317	1,004,102	895,540	89.2%	148,690	14.8%
2012	1,695,878	1,046,722	397,566	37.0%	649,156	62.0%

Source: Test Development Division, West African Examination Council (WAEC) Lagos.

A closer examination of the above Table shows, on average, an alarming high failure rate of over 80% percent annually.



**Fig. 1.1: Performance trend in SSCE May/June in Mathematics (1991-2012)**

Council Committee (2014) also reported that the performance of students in mathematics declined in 2014.

The consistent poor performance in mathematics poses a great threat to the scientific and technological advancement of the nation. This is due to the shortfall in the number of qualified candidates required to fill the quota of sixty percent science and science related disciplines. One of the roles that research play in mathematics education in particular is to seek solutions to mathematics education by implementing the research outcomes in the teaching of the subject. Research in mathematics education has been conducted in Nigeria and students' poor performance in mathematics still persists. The researchers of this study became worried about the persistence poor performance of students in mathematics with the myriad research outcomes in mathematics education. This led to them asking the following questions: and asked, Are the secondary school mathematics teachers who train and prepare students for West African Senior Scholl Certification Examination (WASSCE) close to the countless research outcomes? Do the teachers belong to scholarly societies? It is against this backdrop that this study sought to investigate awareness and implementation of mathematics education research findings by senior secondary school mathematics teachers in Rivers State, Nigeria.

### **Objectives of the Study**

The objectives of this study are to:

1. investigate if mathematics teachers belong to professional associations;
2. find out the extent to which mathematics teachers participate in workshops and conferences;
3. explore whether teachers embark on research;
4. determine if teachers actually have the knowledge of research outcomes in mathematics; and
5. find out whether mathematics teachers implement research outcomes in the classroom.

### **Research Questions**

This study was guided by five research questions.

1. What professional associations do secondary school mathematics teachers belong?
2. To what extent do mathematics teachers participate in workshops and conferences?
3. What research have secondary school mathematics teachers carried out?
4. What research outcome does mathematics teachers have knowledge of?
5. What research outcome have mathematics teachers implemented?

### **Research Design**

The survey research design was employed for this study. This research design was employed because information was elicited from practising senior secondary school mathematics teachers.

### **Population and Sampling**

The population of the study was all the mathematics teachers in all the public co-educational senior secondary schools in the twenty three local government areas of Rivers State, Nigeria.

The sample for this study was made up of 104 mathematics teachers -. A simple random sampling was used to select two schools from each local government area. All the mathematics teachers in the twenty sampled schools made up the sample.

### **Instrument for Data Collection**

The instrument named “Classroom Delivery through Research Outcomes” (CDTRO) questionnaire was used for data collection. was CDTRO had 23 structured items which was researcher constructed with two sections. Section A sought information on teachers personal traits while in section B, item 1 sought information on membership of mathematics teachers’ in scholarly societies, items 2-5 required information on mathematics teachers’ participation in workshops and conferences, items 6-9 required information on research work of mathematics teachers, items 10-16 required information on mathematics teachers’ knowledge of research outcome and items 17-23 was about information on implemented research outcome by mathematics teachers. CDTRO was rated on a 4-point Likert scale of strongly Agree = 4, Agree = 3, Disagree = 2 and Strongly Disagree = 1. The criterion percentage cut off for each item was 50%.

The researchers administered the questionnaire to the mathematics teachers on a face to face mode with the help of two trained research assistants. The completed instruments were collected back immediately to ensure 100% return of the questionnaire. A total of 104 questionnaires were completed and returned.

### **Validity and Reliability of the Instrument**

The face and content validity of the instrument was determined by a mathematics educator and a research expert. The test-retest method was used to establish a reliability index of 0.79. The mathematics teachers that participated in the test-retest did not participate in the main study.

### **Method of Data Analysis**

The descriptive statistics (frequency count and simple percentage) was used to analyse data.

### **Result**

#### **Research Question 1**

What professional associations do secondary school mathematics teachers belong?

**Table 1: Membership of mathematics teachers’ professional associations**

<b>S/N</b>	<b>Membership of no professional association.</b>	<b>Membership of only one professional association.</b>	<b>Membership of only two professional bodies.</b>	<b>Membership of more than two professional associations.</b>	<b>Total</b>
1.	74(71%)	19(18%)	8(8%)	3(3%)	104(100%)

Table 1 showed that out of a sample of 104 senior mathematics teachers, 71% do not belong to any professional association, 18% belong to only one professional association, 8% belong

to only two professional associations while 3% belong to more than two professional associations.

### Research Question 2

To what extent do mathematics teachers participate in workshops and conferences?

**Table 2: Mathematics teachers' participation in workshops and conferences.**

S/N	ITEM	Agree	Disagree	Decision
2	Attendance of the annual workshops and conferences in mathematics.	14(13%)	90(87%)	Disagree
3	Presentation of papers at least once a year in conferences and workshops.	5(5%)	99(95%)	Disagree
4	Purchase of conference and workshop journals and proceedings.	10(10%)	94(90%)	Disagree
5	Publication of research articles in educational journals.	4(4%)	100(96%)	Disagree

### Criterion cut-off =50%

Table 2 showed that 87% of senior mathematics teachers do not attend annual conferences and workshops in mathematics, 95% do not present papers in annual conferences and workshops, 90% do not purchase conference and workshop journals and proceedings while 96% do not publish articles in educational journals.

### Research Question 3

What research have secondary school mathematics teachers carried out?

**Table 3: Research work of mathematics teachers**

S/N	ITEM	Agree	Disagree	Decision
6	Carried out research work during teacher training programmes.	104(100%)	0(0%)	Agree
7	Carried out research to investigate the effect of a variable on students' academic achievement.	7(7%)	97(93%)	Disagree
8	Carried out research for conference proceedings.	5(5%)	99(95%)	Disagree
9	Carried out research for journal publication	4(4%)	100(96%)	Disagree

Criterion cut-off =50%

Table 3 showed that 100% of the sampled mathematics teachers carried out research work during their teacher training programmes, 93% do not carry out research to investigate the effect of a variable on students' academic achievement, 95% do not carry out research for conferences proceedings while 96% do not carry out research for journal publications.

#### Research Question 4

What research outcome does mathematics teachers have knowledge of?

**Table 4: Mathematics teachers' knowledge of research outcome.**

S/N	ITEM	Agree	Disagree	Decision
10	The introduction of mathematics laboratory in schools.	25(24%)	79(76%)	Disagree
11	The use of ethno mathematics to teach mathematics.	18(17%)	86(83%)	Disagree
12	The use of intensive and extensive problem solving approach to teach mathematics	39(37%)	65(63%)	Disagree
13	To teach mathematics for meaningful learning to take place	59(57%)	45(43%)	Agree
14	Teach mathematics for transfer of learning.	56(54%)	48(46%)	Agree
15	Teach mathematics with an iota of history of mathematics.	12(12%)	92(88%)	Disagree
16	Teach mathematics constructively.	36(35%)	68(65%)	Disagree

Criterion cut-off =50%

Table 4 showed that 76% of mathematics teachers do not have knowledge of mathematics laboratory, 83% do not have of ethnomathematics, 65% do not have knowledge of the problem solving teaching approach, 88% are not aware that mathematics can be taught with an iota of history of mathematics while 65% are not aware that mathematics can be taught constructively. The same table 4 showed that 57% and mathematics and 54% of mathematics teachers are aware that mathematics should be taught for meaningful learning and transfer of learning respectively.

#### Research Question 5

What research outcome have mathematics teachers implemented?

**Table 5: Implemented research outcome by mathematics teachers.**

S/N	ITEM	Agree	Disagree	Decision
17	The introduction of mathematics laboratory in schools.	20(19%)	84(81%)	Disagree
18	The use of ethno mathematics to teach mathematics.	0(0%)	104(100%)	Disagree
19	The use of intensive and extensive problem solving skills to teach mathematics	18(17%)	86(83%)	Disagree
20	To teach mathematics for meaningful learning to take place	72(69%)	32(31%)	Agree
21	Teach mathematics for transfer of learning.	85(82%)	19(18%)	Agree
22	Teach mathematics with an iota of history of mathematics.	8(8%)	96(92%)	Disagree
23	Teach mathematics constructively.	34(33%)	70(67%)	Disagree

Criterion cut-off = 50%

Table 5 showed that mathematics have implemented the teaching of mathematics for meaningful learning and transfer of learning in the percentage of 69% and 82% respectively. The same table 5 showed that 81% have not implemented mathematics laboratory, 100%

have not implemented ethno mathematics, 83% have not implemented problem solving teaching approach, 62% have not implemented the teaching of mathematics with an iota of history of mathematics while 67% do not teach mathematics constructively.

### **Discussion of Findings**

The findings of this study showed that the percentage of secondary school mathematics teachers that do not belong to any scholarly society was higher than those that belong to at least one scholarly society. The finding also showed that a high percentage of mathematics secondary school teachers neither attend conferences and workshops, present papers in conferences and workshops, purchase scholarly journals nor publish research articles in educational journals. This is in consonance with the findings of Anaseh (2011) that secondary school teachers shy away from conferences and workshops.

Another finding of the study was revealed in table 3 where a 100% of the teachers agreed that they carried out research study during their teacher training programmes but the reverse was the case after their teacher training programmes where the percentage of teachers who agreed to have carried out research was as low as 7%. The finding of this study also showed that a high percentage of secondary school mathematics teachers are aware that mathematics should be taught for meaningful learning to take place and for transfer of learning but not aware of scholarly innovative research outcomes such as mathematics laboratory, ethno mathematics, intensive and extensive problem-solving teaching strategy, history of mathematics and constructivist teaching strategy. This is in line with the research findings of Uderwvahe (2009) who reported that most of the novel research outcomes in mathematics education are known by tertiary institution lecturers but not known by primary and secondary school teachers.

### **Conclusion**

Based on the findings, this study therefore concludes that secondary school mathematics teachers do not belong to scholarly societies which they are supposed to. This makes them to be far from the forefront of conducting scholarly research and have a sound knowledge of novel research outcomes in mathematics for effective teaching of mathematics.

### **Recommendations**

Based on the findings of this study, the following recommendations were made. The necessary authority should mandate secondary school mathematics teachers to belong to at least one scholarly society. It is crucial that the membership of teachers to any scholarly society should be tied to a string (such as promotion of rank and file). It is important that teachers be closely supervised by supervisors to ensure that they implement the research outcomes. The government should endeavour to sponsor teachers for conferences. The government should also make it a point of duty to provide the needed infrastructure and materials for effective teaching.

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# WE ARE WHAT WE EAT

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## **Abstract**

Most of the time people fail to realise that there is a link between the food they eat and their health. They just regard food as a form of satisfying hunger. Alternatively, they consume food merely for its taste. In this paper, we aim to indicate that food does indeed have a direct impact on an individual's health because it can invigorate or poison a person. In other words, eating properly can keep a person healthy or even cure his or her illnesses. In this paper we argue strongly that: the schools that have feeding schemes which provide learners with food should offer them a balanced diet whose quality does not just satisfy hunger but really nourishes and ensures that learners grow and develop into healthy individuals. For eating wrong foods can lead to illness but eating right foods can make one enjoy good health. What is worth noting is that: basic foods that are not processed are healthier and are mostly in the form of vegetables and fruits. To ascertain whether learners in schools are given balanced and nourishing diet we visited a school that was within reach and also allowed us to conduct our research. With the outcome we aimed to assist the school to determine whether the quality of the food they gave the learners was healthy and nutritious. Our evaluation methods were based on how food was prepared and whether the food was fresh or old because stale food is not good for our health. Lastly, our assessment was also driven by the knowledge that: carbohydrates lower cholesterol; while vegetables prevent cancer; whereas fruits promote digestion and that good food must possess vitamins, liquids, water and minerals. We used the qualitative approach to interview a few members of the selected primary school which is representative of Township schools. Our findings at this school were encouraging; thus we make a few recommendations aimed at improving the skills of the cooking staff and introducing health inspectors to make sure that food served the learners is healthy.

**Keywords:** Balanced diet, Food, Health, Nourishing Diet, Vitamins.

## **Introduction**

According to Middleton, Evans, Keegan, Bishop and Evans (2014:106) "schools have a crucial role for promoting and establishing healthy eating behaviour early in the life-course." Diet and health are intrinsically linked it is vital that schools do not only give learners food without also teaching about what types of foods are healthy. Furthermore, it is also of cardinal importance to teach school children habits of good eating. Food plays a central role in sustaining life because living organisms have within their bodies' essential systems that need food to keep them functioning. However, certain kinds of foods can cause illnesses like: hypertension, ulcers, diabetes, heart disease, obesity and diarrhoea just mention a few. Clearly, staying healthy is not always easy with the hustle and bustle of daily chores. Therefore, there is a need to know what foods are healthy and which are not in order to try and avoid getting ill or sick as a result of eating diet that is not balanced.



Instructively, Ndlovu in Drum (2015) discusses at length about types food that are essential to our health under the title: A to Z-BODY-BOOSTER GUIDE. The guide indicates the different types of vitamins and minerals and from which sources they are found. He states that “the vitamin A family plays an important role in immunity, reproductive system and vision. The sources are: fish, spinach, milk and eggs”. All these different foods are easy for the school to buy or produce. The school system has learners who are young and are in their stages of growth and development and such learners need vitamin A in order to enjoy a strong immune system and to develop a healthy reproductive system. Furthermore, young learners need vitamin A to ensure that their vision is healthy and strong because most of the time they are required to read and to write. Coupled with vitamin A is an important mineral called calcium which is found in dairy products like milk, cheese and butter- its function is to strengthen our teeth and bones plus supporting our blood vessel, muscles, cells and also assisting in strengthening the organs that secrete the essential hormones.

Putting the matter in perspective, Ndlovu (2015:46-47) compellingly argues that “potassium is an important electrolyte, needed to control the electrical activity of the heart. It is also used to build proteins and muscles and it also breaks down carbohydrates into energy”. Its sources are easy for the school to come by and they are: red meat, potatoes, beetroot, tomato, fish and chicken. From these same foods we also get Zinc which is important for promoting the sense of taste and smell. Iron which is mostly found in plant sources such as lentils and beans is good for carrying oxygen to all parts of the body and also plays a vital role in the clotting of blood. These vitamins and minerals play a pivotal role in all the body systems.

Having said the above, for the various systems of the human body to function optimally and effectively, Hubbard (1974:9) points out that “the body needs to do certain things such as to obtain oxygen, food, water etc; to get rid of waste products through its excretory organs; to keep its temperature at the same level at all the time; to keep the blood and lymph circulating continuously; to maintain a good posture; and to react quickly to changes in its surroundings.” However, without food the body will not be able to perform the functions that keep a person healthy or even alive. Therefore, all the above-mentioned types of foods are essential and also cardinal in keeping an individual alive and kicking. Hence, this paper is specifically focusing on the type and quality of the food that schools give to their learners because “man is first of all a nutritive process, he consists of a ceaseless motion of chemical substances” (Yura & Walsh 1982:35). Webster (1975:413) defines nutrition as “the process by which an organism takes in and assimilates food; anything that nourishes.” On a positive note, Hou (2001:vii) interestingly points out that “it has been proven time and again that, regardless of the particular illness involved, when patients take a proactive approach in terms of their dietary intake, their diseases take a favourable turn after only two weeks.’

In summing up, at the school level the food given to learners must at least satisfy the following basic requirements; namely, the food must be of the right type and of good condition and must be prepared well. Lastly, it should be noted that “a diverse diet is important because single foods cannot provide the range of nutrients a human body needs to remain healthy” (Hou 2001:24). The youth are the future and they are the hope of the nation.

### **The purpose of this paper**

This paper aims to determine whether the food given to the learners in the schools through the Department of Education's feeding scheme is balanced and of a healthy standard. The idea is that we eat not only to satisfy hunger but to resist disease sufficiently because our immune system is constantly being weakened by an array of factors. This alone makes it imperative that schools should give the learners a balanced and healthy diet. Therefore, the outcome of this investigation stands to benefit the learners, schools and the department in the sense that schools will be able to assess if the food they give the learners are healthy and of a balanced type. Finally, this information may be of benefit to the Department of Education when making decision in the future pertaining to the feeding of the learners.

### **Conceptual framework**

Various concepts drive and direct the discourse of this paper as for-example, the types of food, preparation of food, storage of food and the food combinations. Stuhmer (2000:83) is instructive when advising that "due to industrial processing, the foodstuffs available today in many cases no longer contain any vitamins or at least not enough to meets the needs of the body... yet our vitamin requirements are significantly greater than in the past because of the demands and challenges we are faced with today, and because of the excessive stress we are under." Again, we needed to know how many meals per day did a learner get and how often is the meals given alternated per week.

All the above questions are important because the different types of foodstuffs contained different vitamins, proteins, fats, carbohydrates, trace elements and minerals and our bodies need all above to function optimally. For example, minerals are important for healthy bones and teeth and we cannot do without them. Carbohydrates give us energy that is a vital source of our ability the function. Proteins repair the worn-out tissues and also produce new cells need for body growth and development.

According to Hou (2001:19) in terms of the school's feeding scheme situation the following should go together, namely:

- Beef should go with pap or rice;
- Lamb with millet, pap or rice;
- Chicken with rice, millet or pap;
- Fish with bread, chips or potatoes; and
- Pork with pap, rice or potatoes.

These are the most common types of foods that are easy to secure, store and prepare. Above all they can be eaten together with vegetables and fruits. These various types food constitute basically the concepts which will drive the discussions in this paper.

### **Method of research**

The study used the qualitative approach because qualitative research, as defined by Creswell (2009: 2), is "an inquiry process of understanding a social or human problem based on building a complex, holistic picture, formed with words, reporting detailed views of information, and conducted in a social setting". The issue to be understood in this study how

authorities in the school handle the food that is meant for the learners. Qualitative researchers are interested in understanding the meaning that people have constructed, that is, how people make sense of their world and the experiences that they have in it (Merriam, 2009: 13). The researcher used the qualitative research method because it rests on the assumption that a valid understanding of the research problem can be gained through accumulated knowledge acquired first-hand by a single researcher (de Vos, Strydom, Fouche, & Delport 2005). Qualitative research is suitable for a study of a relatively unknown terrain and seeks to understand phenomena. In this study, unstructured interviews were conducted with selected participants as the best instrument for achieving the aim and objectives of the study.

Kruger and Welman (1999) state that unstructured interviews are usually employed in explorative research to identify important variables in a particular area; to formulate penetrating questions on them; and to generate hypotheses for further investigation. Through these unstructured interviews, an attempt was made to understand how school authorities handled the food that was given to the learners. The interview questions are listed below.

### **Research design**

The researchers used a case study design because they wanted to explore in depth, the experiences and the perceptions of the people involved with the handling of the food that was given to the learners. Case studies involve gaining an in-depth understanding of a situation and its meaning for those involved (Merriam, 2001: 4). Case studies are appropriate in terms of collecting data during a given period. In this project, an arrangement was made with the selected school as to when the data could be collected.

The interview instrument was used to source information from the target population of the school that was selected as a case study for this project. The school was selected because it was near to us, it was accessible, familiar and this made things to be easily manageable and as well as cost-effective. The authors applied for the necessary permission through Unisa's College of Education and the school authorities. After receiving the necessary permission, the researchers went on to collect data from individuals who had consented.

The participants were purposively selected while the school was conveniently selected because of its proximity, accessibility, availability and also for allowing us to carry out this project. To this end, Davies (2007:55) aptly states that "in convenience sampling (sometimes called 'accidental sampling'); you simply take what can get where you can most easily get it." We interviewed the deputy principal as the person in charge and a few teachers who are also responsible for seeing to it that food is available and well prepared. Finally, a few members of the cooking staff were also interviewed.

The research questions are as follow:

- What types of meat do learners have per week?
- What types of vegetables do learners eat per week?
- What types of carbohydrates do learners get per week?
- What types of fruits do you give learners per week?
- How many times do learners eat per day?
- Where do you store the food?

- How fresh is the food?
- Are the people who prepare the food well qualified to do the work?
- Do you ever give the learners any purgatives to clean the stomach?
- After eating do learners become active or sleepy?
- What are your observations that the questions did not cover?

### **Observations and findings based on literature and the interviewees' responses**

Our observations are as follows:

The kitchen is kept very clean and is always locked and also well protected. To keep food in a clean environment is good because germs are detrimental to our delicate bodies as such schools should be extra careful by making sure that what goes into the learners' stomach is both healthy and nourishing. In schools where food is stored is not always locked and protected we read about it being stolen or interfered with. To place the issue in context, it is worth noting the report alleging that "poisonous free school lunches killed 22 children in India" (<http://www.abc.net.au/News/2013/07/17>) accessed on the 11<sup>th</sup>/09/2014

In South Africa it was also alleged that "Limpopo school children were hospitalised after eating crushed glass" (4<sup>th</sup>/11/2014) (accessed on 11<sup>th</sup>/09/2015). The involved learners were more than 150 in number and were from Kwena Tshwena Primary School in Ridgefontein. Another case is that of Emma Primary school which is situated in Winterveld where three learners are alleged to have died after eating poisoned food. Thus, it is important to keep the food in clean and safe storerooms.

There was a sink for dishwashing and there were also disinfectants like sunlight liquid and cooking utensils were kept clean. It was pleasing to find the dishes were clean and well kept. A dish that has stains of fat or food particles can become easily infected with germs. The fact that many township schools do not have facilities and resources like a clinic or a nurse; it becomes even more imperative for these schools to maintain a high standard of cleanliness in the kitchen.

Two refrigerators in good working condition were used to store perishable food. Rotting food is a sign of virus or bacteria contamination, and such food is unhealthy for consumption. However, food that is kept refrigerated remains fresh and nutritious for longer periods and is good for consumption. Two gas stoves with seven plates were used to cook food for the entire school population of over a thousand learners and their teachers and administration staff members who are expected to pay for the food because they are not learners.

There is also a well-protected storeroom for receiving and storing food from the suppliers. The only problem was that rats had made openings into bags of soup and maize-meal and they left the place smelling due to defecation. This we were all agreed that it may sooner or later cause diseases and needed to be attended to immediately. Food was delivered twice a week and this arrangement was good as it made food to be kept fresh and nutritious.

The menu for the week was as follows:

- Monday = Mince-meat soup, beans and pap;
- Tuesday = Mince-meat soup, beans and samp;
- Wednesday = vegetables, beans and rice;
- Thursday = Mince-meat soup, beans and pap;

- Friday = vegetables, beans and rice;

For learners who do not have breakfast at home the school provides them with brown soft porridge at 6h00 as a special arrangement. This is what is happening in this school. We are not clear is to the amount of food a learner is entitled to, but our guess is that each learner is given enough to satisfied his or her hunger.

Furthermore, we are not aware if there are learners who are allergic to some type of food that is being provided. However, we did ask the question on what was given the learners to clean their digestive system and we were told that they were given nothing.

In the final analysis, Deliens, Clarys, Bourdeauhuij and Deforch are of the opinion that “prevention of overweight and obesity, and its related diseases, has become a worldwide challenge” ([http://www. Biomed central. Com /1471-2458/14/53](http://www.Biomedcentral.Com/1471-2458/14/53) accessed on the 20/02/2014). While on the other hand, Delaney and McCarthy (2013:173) argue that “eating too much of the wrong foods or too much in general has been implicated in increasing levels of obesity and chronic diseases.” In the light of the above (Yura & Walsh, 1982: 37) are of the opinion that “man’s nutritional state will reflect the types of nutrients he takes in, the body’s utilization of those nutrients, the body’s output in terms of growth, energy and waste”. A person who eats good food can be easily determined from the appearance of his or her hair, eyes, lips, skin, face, tongue, teeth, gums, nails and so on.

Stuhmer (2000) convincingly points out that carbohydrates, fat, protein, vitamins, trace elements, and minerals are the body’s petrol. If the supply of these fuels is too one-sided, too scant, or disrupted for whatever reason, then the whole system is put under strain. If this persists over a longer time period, it will result in health disorders and a weakened immune system. With a proper, balanced diet the risk of falling ill can be minimized. This author concludes that health is not given to us. We cannot acquire it by paying health insurance premiums. We have to do something for it ourselves. Responsible and proper diet plays a significant role in this regard. Many physical illnesses and psychic disorders are due to wrong diet or poor conversion of consumed food.

Delaney and McCarthy (2013), Yura and Walsh (1982), Hou (2001) and the Saturday citizen Newspaper of 2014/02/22 are of the view that an individual needs a variety of vegetables and fruits, a variety of carbohydrate foods and different kinds of meats and also a lot of liquids like tea/coffee/juice, milk and water to live a healthy life. In another breath, Stuhmer (2000:79) is of the opinion that “from the early morning when we awake until at least the mid-day meal it is best to eat nothing than raw fruit or drink natural fruit juice. We can consume as muck of this as we like, but need not force ourselves.” Therefore, from the many contributions above one can surmise that an ideal menu for a day should look like this:

- Breakfast which is an important meal of the day should at least be made-up of fruits, or tea/coffee, or milk or juice and bread with margarine or jam and the last item can be soft-porridge.
- Lunch should at least be made-up of pap or rice, or samp with meat, vegetables, and fruits;
- Supper should at least be made-up of bread, pap, rice, samp and meat.

The findings from the interviewees are that:

- The deputy principal is happy with the food and proudly told us that their school garden produced most of the vegetables that learners ate. The garden is taken care of by the learners, teachers and parents.
- The teachers too, said they often enjoy the food with the learners and especially towards the end of the month when the pockets begin to run dry.
- The cooks said they did not have the necessary qualifications but possessed experience they gained while working in hotels or restaurants. They pointed out that they wished to get some empowerment through regular workshops.
- They learners said the food was well prepared and tasted nice.
- The types of vegetables available were beetroot, onion, tomato, carrots, soya beans, cabbage, green pepper, spinach and butternut.
- The fruits the learners enjoyed were apples and bananas and only one fruit was given them per week.
- The learners were not given any purgatives to clean their stomachs.

### **Conclusions and recommendations**

From the above findings it can be concluded that the learners of this school are given food that is nourishing under the prevailing circumstances. In this context, it is worth remembering that a balanced diet must consist of carbohydrates that are mostly in starch, proteins that are mainly in meat, milk and beans, fats that are in meats, milk and nuts, vitamins that are in various sources like vegetables, fruits and meats and lastly minerals that are in different sources like dairy foods, liquids like water, fruit juice and milk. Most of these foods were made available to the learners in a good condition.

The school is in good hands, in the sense that; most of the vegetables are produced from the school garden which is maintained by the parents of the learners. The fact that parents of the learners are involved in maintaining the school garden and also in cooking the food should be applauded because this has created employment opportunities as well.

Allowing parents to cook for their children is good because no normal parent can give his or her child poisonous food. The involvement of parents in the education of their children is a desirable thing that is cherished the world over.

The following recommendations are made:

- those who cook be given regular training in the actual cooking and also in detecting whether the food is still healthy to be consumed;
- health inspectors make regular visits, to check on the general condition of the food, and on those who cook the food with regard to their preparation;
- the rats be eliminated before an epidemic breaks out; and
- more fruits be made available to the learners on a daily basis.

We are what we eat and we are thus advised to eat well and also eat good, balanced and nutritious foods so we can remain healthy and vibrant.

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# BASIC SCHOOL LEVEL EDUCATION REFORMS IN GHANA: STAKEHOLDER PERCEPTION

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## Abstract

This study investigated the perceptions of students, teachers, and parents as key stakeholders about education reforms at the Basic School Level in Ghana. The population for the study involved Junior Secondary School year one and two students, teachers and parents from varied socio economic backgrounds. Data for the study was collected from separate anonymous surveys of 60 teachers, 100 students and 50 parents using questionnaires and by simple random selection. Surveys for the teachers and students were adapted and translated from surveys conducted in a study on teachers' and students' perceptions of Ontario education reform. Five research questions guided the study. A 21 item questionnaire was developed and administered to the parents. Data was analysed using SPSS software and frequencies. The study shows that students preferred a variety of teaching strategies, however, teacher talk was the dominant strategy used by teachers. The study found that the majority of teachers in this study were satisfied with the reforms yet, struggled with transitioning. The findings from the study also revealed that, in general, about two-thirds (2/3) of the parent respondents were satisfied with the reforms but wanted students to have more practical and relevant courses that will develop students' creativity, interest and potential. Thus, the major finding of this study was that stakeholders of Basic Level Education in Ghana were not fully satisfied with the education reforms. The study concluded that students, teachers and parents lack the voice when it comes to policy development and direction in Basic Level Educational Reforms in Ghana. It was, however, recommended that in case of large-scale education reform, the inclusion of the voices of all stakeholders not only teachers are very crucial in the change process.

**Keywords:** stakeholder, Perceptions, Basic School, Reforms

## Introduction

Educational investment is defended for economic and non- economic reasons. In the 1990's, large-scale education reforms initiated by states, or national governments emerged around the world (Fullan, 2000). Whitty, Power, & Halpan (1998) studied reforms in Australia, England, New Zealand, Sweden, and the United States of America. Each country had its own unique history and context, but all the governments introduced policies that sought to reformulate the relationship among government, school, and parents in order to develop closer links among objectives, programmes, teaching, and student's evaluation. Governments in all countries strive to provide education to their citizens with the understanding that education is essential, not only for economic growth, but also stability. A minimum level of education delivery should be imparted to all citizens, since it at least equips an individual with the basic skills required in life (Mbelle, 2008). It is a human right, and it is for this reason that countries invest in education. Globally, many initiatives have been taken to ensure universal access to education coupled with gender parity, quality delivery and completion of a full course in



education. Notable among such initiatives, in Ghana, are the 1987 Educational Reforms. The 1987 Educational Reform is a major Education Reform in Ghana because all policies and initiatives operational at the basic school level currently, are based on this Reform. Though there have been some policy changes in basic school administration and management, there has not been any major education Reforms in Ghana since 1987. On January 17, 2002, the New Patriotic Party (NPP) government of John Agyekum Kufour inaugurated a Presidential Committee on Review of Education Reforms in Ghana. The committee was under the chairmanship of Professor Jophus Anamuah-Mensah, Vice-Chancellor of University of Education, Winneba. The committee presented its report in October 2002. The recommendations in the report have not been implemented yet at the basic school level.

Other Basic School Educational initiatives include the 1995 Free Compulsory Universal Basic Education (FCUBE) programme, the Quality Improvement in Primary Schools (QUIPS) 1997-2002, and the Millennium Development Goals (MDGs).

Increasing access to education is only one aspect of addressing human resources capacity. It is equally important to ensure that the high quality cognitive achievements skills and values are also attained. Quality aspects in educational reforms cover issues such as the adequacy of teaching and learning resources, effectiveness of teachers, relevance of curriculum, efficiency, of teachers in lesson delivery, adequacy of infrastructure. Others are healthy school-community relationship and ensuring community ownership of schools.

Reform in education often demands changes in practice that challenge classroom teachers (Fullan, 2000). Basic School Teachers initially reported feeling overwhelmed and under-supported during reforms (Lasky & Sutherland, 2000; Soucek & Pannu, 1996, Taylor, 1997; Ryan & Joong, 2005). These feelings result because changing the curriculum and its resultant transitioning required teachers to alter the “specific blueprint for teaching and learning that is derived from desired results of content and performance standards” (Wiggins & McTighe, 2006, p.6). Educational change also increases tension among teachers as outcomes are measured and results evaluated against standards. These changes can trigger resistance, debate, and passivity within teachers. Sowell (2005) opined that teachers do not resist change; they simply resist the transitions required to change because transitioning requires letting go of tried and true lesson plans, activities, and assessment modes in order to move into a new reality.

This opinion by Sowell is an important realization since teachers play key roles in educational reform as agents of change who directly interact with students and other stakeholders (Clarke, 1997; Fullan, 2001). Fullan (1996) explains, “We need to first focus on how teachers make sense of the mandates and policies because there will be no educational reform until after teachers interpret the policies and make decisions based on their beliefs about the new demands” (p.12). We must also pay attention to the influence of reforms on students (Earl & Sutherland, 2003). Fullan and Stiegelbauer (1991) posed the question: “What would happen if we treated the student as someone whose opinion mattered in the introduction and the implementation of reform in schools? (p. 170) Levin 2000 claim there must logically be a role for students in shaping the nature of schooling and hence of reform. What about the role of parents, do their opinions matter? Parents and guardians struggle to fund the education of their wards they therefore expect their children and wards to enjoy high quality education so that they (parents, wards and children) can reap the benefits of their toil

in future. The major objective of this study therefore, was to investigate the perceptions of teachers, students, and parents on the implementation of the 1987 education reform in Ghana. This research drew attention to reforms that had direct impact on teachers and, in turn, on students and parents.

Topics studied included curriculum planning, teaching strategies, assessment and evaluation strategies, special education programs, high-stakes examinations, sex and gender attitudes, and parental involvement. Ghana has, for a long time, adopted a centre-periphery curriculum development system. Virtually all schools follow the national curriculum (Ma, Y-P., Lam, C-C., & Wong, N-Y 2006). For many years the curriculum demanded that students study the same material, memorizing texts and writing argumentation within the Confucian tradition (Armstrong, 2003). In 1987, the Ghana Education Service introduced its major ‘quality education’ reform. Similar policy and curriculum changes have been made in England and Ontario, Canada (Mbelle (2008).

This reform required major changes into a variety of assessment modes in the schools. In curriculum content, student understanding and application of concepts were emphasized. In classrooms, special attention was aimed at each teacher’s use of varied teaching and learning methods. There was imminent pressure to cater for individual difference and, to promote generic skill development and high-order thinking instead of rote learning. These changes required extensive transitioning as traditional modes of teaching, predominately lecturing, needed to be replaced by a variety of new modes of instruction which seemed to be the centrepiece of instruction of this educational effort Mbelle (2008).

Research has shown that “in many parts of the world, an enormous gap prevails between the numbers graduating from schools and those among them who can master a minimum set of cognitive skills” Mbelle (2008). The good quality of life and learning that are found in many schools, together with improving standards achieved by pupils, are not matters of accident or chance. In most cases, positive educational outcomes reflect good quality management by governors, head teachers and all staff with key responsibilities. High quality outcomes are established and maintained by affective assessment of progress which leads to sharing of good practices and the successful addressing of shortcomings. Fundamental to these processes is the acceptance that things could be done differently, and possibly better, irrespective of pupils, background and ability. Pupils could achieve more, in schools where there is a self –critical culture. Where members of staff are open with one another about their work; share successes and difficulties, are receptive to new ideas and continually seek more effective ways of working.

The level of development of any country depends to a large extent on the level and quality of education of its citizens. It is against this background that governments invest heavily in education in their annual budgetary allocation. For instance, the government of Ghana invested a total of 6.3 trillion cedis in education in 2005. One of Ghana’s Education policy goals is to improve the quality of teaching and learning for enhanced pupil/student achievement (Ghartey, 2007). It is in the light of this that Ghana has since independence made significant strides in its education system. The education landscape in Ghana today is the result of major policy initiatives in education adopted by past and present governments. Some of the laws, policy documents and reports, which have helped in meeting the educational needs and aspirations of the people are: the Education Act of 1961. The Dzobo

Report of 1973 (Recommended the Junior secondary concept), the New Structure and Content of Education 1987/88, the Free Compulsory Universal Basic Education Programme (FCUBE), 1996, Policy Document and Operations, the Ghana Education Trust (GET) Fund Act 2000 and the Education Reform 1987. Indeed these initiatives are expected, not only, to help in structurally transforming the education system but also to improve considerably access, quality teaching and learning, infrastructure delivery as well as management efficiency. Measurement of the quality of education in Ghana has focused principally on resource inputs and outcomes (PRT, PCTBR and BECE results). The Ministry's broad policies and strategies since 1996 have been effective in promoting positive trends in access and reducing the barriers to access for Ghana's school-going children especially girls, but quality improvement in education is yet to show positive trends. (Ministry of Information Ghana's Education339 System, 2005). There is a general perception in Ghana that educational standards are low in public schools in both rural and urban areas compared to private schools. Since Coleman and his colleagues report on school effectiveness in 1996, debate on education quality has been dominated by two schools of thought, namely, the effective schools management approach and school improvement approach. In Ghana, very limited attempts have been made through Improving Education Quality (IEQ) and Quality Improvements in Primary Schools/Improving Learning through Partnerships (OUIPS/ILP) projects to look at the impact of the numerous educational reforms on class practices.

### **Theoretical Framework**

Havelock and Hubberman (1993) as cited by Wanyama (2013), surveyed the theory and reality of education reforms in the developing countries. They stated that there is a tendency for education reforms to evolve ambitious major system transformations with what they described as "very rapid movement through the problem solving cycle from initial assessment of the need for change to the designed/designate of the solution and the implementation of that solution" (p.124)

The stakeholders that include the political class, education planners, and government administrator of education reform are making mistakes by taking very short time to initiate and implement education reform disregarding careful study and planning for the process of change. This has contributed to the decimal picture of nation bringing in a change process hence creating resistance to education reforms. Havelock and Hubberman (1993) concluded that the practice of innovating or bringing in change requires drastic improvement if it is to succeed. Educational reforms process is a long term process which should not be based on problem solving rather, change must be planned within specific time frame. It is important to note that the way reforms are introduced may have a major determining influence on the success of those changes and attempt has to be made to define some of the main key strategies for change in education to yield innovation.

### **Objectives of the Study**

This study generally looks at the stakeholders -parents, teachers and students perception on basic school level education reforms in Ghana. Specifically to;

- Investigate the views of stakeholders' on how educational reforms have impacted on the provision of quality basic education
- Identify the perceived good practices in reforms that promote quality basic education.
- Identify stakeholders' opinion on areas of weaknesses in classroom practices in reforms that militate against quality delivery of education in basic schools.
- Examine the views of stakeholders' on the extent to which teachers have implemented educational reforms in Ghana that have had a direct impact on students, teachers, and parents.
- Determine the opinion of stakeholders- parents, teachers, and students concerning the changes and possibilities related to the control of education and delimitation of the curriculum.

### **Research Questions**

1. How has educational reforms impacted on the provision of quality basic education in Ghana?
2. What good practice in reforms has promoted quality basic education in Ghana?
3. Which areas of weakness in the classroom practices in reforms has militated against quality delivery of education in basic schools?
4. To what extent have teachers implemented educational reforms in Ghana impacted directly on students, teachers and parents?
5. How do stakeholders –parents, teachers and students –perceive the changes and possibilities in relation to the control of education and delimitation of the curriculum?

### **Educational Significance**

Teachers seldom implement a curriculum exactly as stated by curriculum developers. They adopt a practical stance in deciding what to teach and how to teach it (Doyle & Ponder, 1977). Studying teachers' role in the implementation of education reforms at the basic level can therefore help stakeholders in education understand the change process. Educational transitions involve human, personal, and political factors (Levin, 2000). Human factors include the attitudes and capacities of teachers, students, and parents. Personal factors may include such elements as philosophy, values, and social and ethical orientations. Educational change efforts reflect political pressures such as government `ethos rationalization, flexibility, and budgetary support. Stakeholders of education in Ghana and other jurisdictions who want to implement change will have to pay attention to both human and personal factors that make a difference in successful implementation of school reforms. Findings and recommendations from this study will assist the Ministry of Education and the Ghana Education Service officials, researchers, school administrators, teachers and parents in designing, adapting and implementing exemplary strategies on teaching, assessment, meeting the needs of students with special needs, and addressing issues such as gender equity, post-secondary opportunities and high-stake examinations. This study also gives insight into educational reform experiences in culturally different context. Results will be useful to stakeholders of education in Ghana and global.

### **Research Design**

The survey research design was used for the study. Major sources of data for this study were from separate anonymous surveys for teachers, students, and parents.

## **Population**

The population for the study involved Junior High School teachers, students and parents in the Cape Coast Metropolis in the Central Region of Ghana.

## **Sample and Sampling Techniques**

Ten sample schools were purposively selected representing well endowed, less endowed and varied socio-economic status (SES) backgrounds in the Cape Coast Metropolis. At each sample school, eight randomly selected teachers, 12 students, six parents were given questionnaires.

## **Research Instrument**

The data gathering instrument used was questionnaire. Sample questions for teachers and students surveys involved ranking (5-point Likert scale) of how often a teaching or evaluation strategy is used for a course. The parents' survey contained questions pertaining to the reform. All three surveys contained questions on high-stake examinations, gender attitudes, and parental involvements. Students completed the questionnaire items in class

Since the students and teachers questionnaire were used previously in studies in Canada (Ryan & Joong, 2005) and modified for this study, all questionnaires were field tested, concerns with validity and reliability were addressed. Questionnaires were field tested at two schools with similar characteristics to the sampled schools to ensure that respondents understood and could complete all items as expected. The test-retest method was used for this purpose. Refinements were made to all elements within the survey, especially the questionnaire items, in order to facilitate reading, interpretation, comprehension, and completion. The test-retest reliability coefficient for the main instrument for this study was 0.71

## **Results**

### **Students 'voices**

Coding was performed by the researcher. SPSS software was used to develop percentages for close question responses. The open-ended items were scaled on continuum from "strongly disagree" to "agree". These were also counted, and the frequencies of the responses were then converted to descriptive data such as percentages.

Of the 100 students respondents (a return rate of 100%), 56% were female and 44% were male students, and 57% were in JHS2 and 43% in JHS1. The number of courses sample students took was 10. These were compulsory courses which include English Language, Mathematics, General Science, Social Studies, Ghanaian Language, Religious Moral Education (RME), French, Introduction to Communication Technology (ICT), Basic Design and Technology (which comprise Home Economics and Pre-Technical Skills) and Physical Education which is non-examinable. According to student respondents, in general, teacher talk was the most often used teaching method; individualized work, questioning, and discussions were sometimes used, Teachers rarely used group work, activities, and student presentations. When asked what the preferred teaching method was for each course, student respondents offered a variety of answers depending on the course. Preferred methods were

teacher talk and individualized work in Mathematics, experiments/demonstrations and teacher talk in science, group work and discussions in RME, teacher talk and activities in Physical education, teacher and listening to pronunciations in French. It is clear that students preferred a variety of teaching strategies whereas teacher talk was the dominant strategy used by teachers. As for student evaluation, examination and tests were mentioned by students as the most used teaching method. A further probe, however, revealed that teachers give class-work and homework but were rarely used in evaluating their performance especially for promotion.

**Table 1: Correlation between Course Variables in Student Sample n=100**

	Course Interest	Course Difficulty	Course Quality	Classroom Behaviour
<b>Course Achievement</b>	0.548**	-0.323**	0.288**	-0.269**
<b>Course Interest</b>		-0.273**	0.331**	-0.196*
<b>Course Difficulty</b>			-0.260**	0.275**
<b>Course Quality</b>				-0.013

\*\*Correlation is significant at the 0.01 level (2-tailed)

\* Correlation is significant at the 0.05 level (2-tailed)

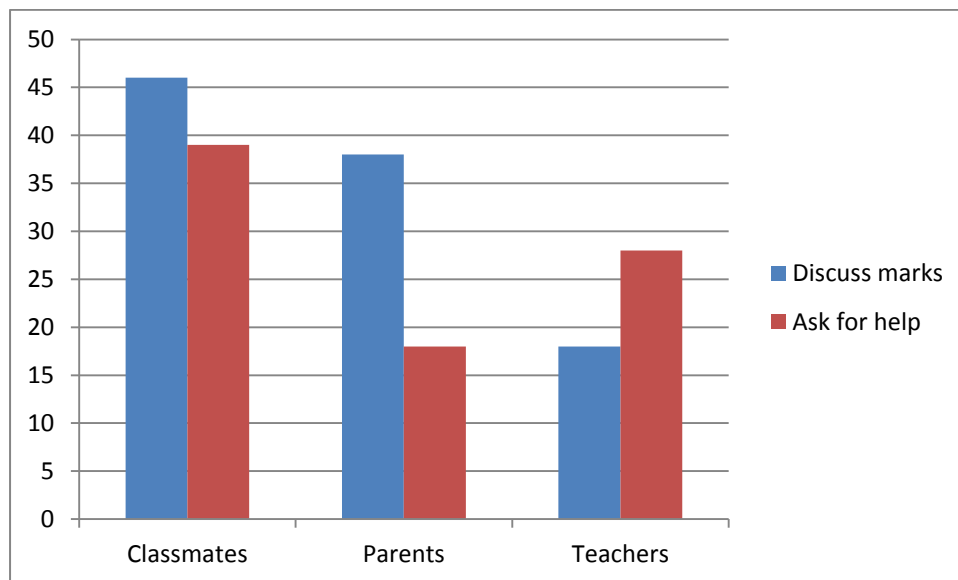
r crit = 0.1946, alpha = 0.05; r crit = 0.2540, alpha = 0.01

Students' perception on course variables like course interest, difficulty, quality, achievement and classroom behaviour in relation to new reforms were sought. This was necessary because educational reforms generally involves the introduction of new courses, programmes and even methods of teaching which normally poses challenge to the teacher. Correlation between students' perceptions of course variables is shown in Table 1. There were significant correlations between course achievement and course interest (.548\*\*), course difficulty (-.323\*\*), course quality (.288\*\*) and classroom behaviour (-.269\*\*). This means that course performance was influenced by student behaviours, and the quality, interest, and easiness of the courses as perceived by students. There was a positive significant (.275\*\*) correlation between course difficulty and classroom behaviour. More difficult courses meant worse behaviours because if students do not understand, they tend to act or start chatting.

The mean numbers of hours spent on homework and studying were 1.96 hours and 1.62 respectively, giving a total of almost 3.5 hours per day. Tao (2003) had similar finding that in order to achieve good results, students were often overloaded with homework and had no time to develop their own interests.

When asked to whom they would go to discuss school marks, most would always/often go to friends/classmates or parents than teachers as in Figure 1. Similar results were obtained when asked to whom they would ask for help when having difficulties. In fact, two-thirds of the sample students would try to solve the problems themselves. On gender issues, three-quarters of the respondents claimed that there is no relationship between gender and ability and

achievement. Over 85% of the student respondents claimed that their families would want them to go to university if they had the ability. However, about half of student respondents claimed that their families would have difficulties in sending them to universities for financial reasons. When asked in an open-ended question for their opinions on the examination system in the schools, about half of the respondents did not reply. Of those who responded, 41% said it's not good.



**Figure 1: Whom do students go to for help?**

### Parents' Voices

Out of the 50 parents who responded to the questionnaire items, (return rate of 83.3%), 60% were males and 40% were females. Their occupations were fishermen and fish mongers (40%), small business owners (12%), professionals (11%), government employees (6%), teachers (4%), and unemployed/ retired (5%). The self-ranked Socio Economic Status of parents included high (2%), medium (41%), and low (57%). Educational backgrounds included no education 5%, primary (15%), Middle school/junior secondary (40%), senior secondary/technical school (32%), initial teacher training college (7%), and university (5.6%).

### Satisfaction with Curriculum and Teaching

Of the parent respondents, 49% were satisfied with the curriculum and teaching, 8% were not, and 43% had no opinion. When parents were asked in an open-ended question what areas need improvement, their top responses were: more practical and relevant courses (90% respondents); development of students' creativity, interest, and potential (43%); more optional courses (40%); reduction of the course load (35%); improvement of teaching strategies (32%); use of new resources/ computer technology (30%); and more disciplines (14%). Of those who wouldn't support the use of resources especially computer technology, 90% complained of the numerous computer frauds (commonly called "SAKAWA" in Ghana)

and the use of computers for games, and watching of films which take greater part of students' time.

### **Curriculum Reforms**

Parent respondents were given a list of reform initiatives in the schools and asked to rate their level of agreement on a 5- point Likert scale, "disagree" meant they chose 1. In general, about two-thirds of the parent respondents were satisfied with the reforms. It is clear that parental involvement was high in the sample schools.

**Table 2: Parents' Perceptions of Reform Initiatives (n = 50)**

Curriculum Reforms	Agree	Disagree
Parents and teachers support and encourage each other	69%	7%
School encourages parents to make suggestions for Improvements	67%	8%
School administrators and parents support each other	65%	9%
School has enough resources to undergo new Educational reforms	32%	9%
School goals are designed to improve curriculum and Teaching	61%	6%
Schools educate parents about the details/aspects of educational reforms	41%	13%
School has inculcated the sense of ownership among parents	35%	25%
School encourages parents to visit wards regularly	60%	10%

### **Gender, Education and the Examination System**

Over 62% of the parent respondents claimed that they would want girls to continue their studies as they have the abilities. However, almost 60% of parent respondents claimed that their families would have financial difficulties. When asked for their opinions on the examination and mode of selecting students to the Senior High School system, 84% said examinations should be kept, 44% suggested modifications to the computer placement and selection system, 4% suggested abandonment of the examination system, 10% suggested abandonment of the computer selection system and 16% had no opinion to any of the above issues.

### **Teachers' Voices**

The 60 teacher respondents (return rate of 75%) from ten sample schools completed the teacher questionnaires. Of these, 53% were female and 47% were male teachers, 62% teach both JHS 2, 18% teach only JHS 2. The mean teaching experience was 12.5 years. Sixty-five per cent (65%) Colleges of Education and 25% completed university studies with education background or have pursue a post graduate diploma in education programme after a first degree from a university, 5% completed university studies (without education background) and 10% completed other institutions, without teacher training background, like the Polytechnics Institute of professional studies among others.. Teachers respondents were well distributed across subject areas with the top four being Mathematics, English language, social



studies and science. Mean class size was 52, but teachers preferred smaller classes, with a mean of 35. Each teacher gave an estimate of the performance standard for his or her own school. The results were low (61%), middle (23%), and high (4.4%). These numbers are comparable to those of parents' own estimate above.

### **Education Reforms and Changes**

The following were reform initiatives in the sample schools as perceived by the teacher respondents: school administration and management systems (65%); curriculum, teaching, and evaluation strategies (47%); and teacher professional development (37%).

### **Curriculum Planning, Teaching Strategies and Student Evaluation**

On average teacher respondents spent 26 hours each week preparing classes/marking. A few, 30% of the teacher respondents, used the teaching/learning materials that were prepared at INSETS organised for teachers during the introduction of the reforms. Most (64%) claimed that the curriculum was good while 4% claimed otherwise. Most claimed that they did not receive sufficient resources (85%) and professional development (80%). Ma, Lam, and Wong (2006) had similar findings in their study. Teacher respondents would like to receive more professional development in teaching methods (90%), classroom management (85%), and curriculum development (76%), use of computers in the classroom (75%), and assessment strategies (66%). Teaching methods used most often included teacher talk (90% replied always or often), questioning (60%), discussions (50%), activities (35%), and individualized learning (45%). Teachers sometimes used group work (25%), experiment/demonstration (15%), and student presentations (17%). As for student evaluations, teachers often used end of term examinations (100%). They also used class exercise (74%), homework (56%), and performance/essay (10%). When compared with students' responses to similar questions, it seems that teachers claimed that they used more varieties of strategies than the students claimed. About one-third (37%) of the teacher respondents claimed there was little to no management problems and about twenty per cent of the teacher respondents often experienced problems. They said that concentration time on task was between average (40%) and good (49%). Top reasons given for lost time included: lack of self-discipline by students who always overstay their break period, boredom with school, and lack of textbooks and basic needs like pen/pencils, exercise books, mathematical sets, as well as the lack of and /or interests on the part of students. In general, 41% of teacher respondents were satisfied (versus 4% unsatisfied with 55% in-between) with their courses. Areas that needed improvement included curriculum and teaching strategies using student-centred learning, student-teacher relationships, student motivation, provision of teaching/learning materials and use of technology.

### **Teachers' Personal Opinions of Changes in Education and Students**

Major changes in the reform involves changes in curriculum, textbooks, teaching strategies that included activity-based learning and group work, meeting the needs of both the slow learning student and the gifted in class, the use of information technology and building a strong school-community relations. Negative effects of the reform as perceived by sample teachers included teachers reported feeling overwhelmed with increased workload without any compensation even though the extra time requirement interfere with necessary economic activities, content of reforms not matching the professional training acquired at the teacher education institutions, and the lack of time to do their job effectively, management issues,

and deterioration of teacher-student relationships as a result of the numerous class assignments/exercises and tests in some cases these discomfort led to teachers leaving before the implementing period of the reforms was over, thus upsetting the original plans to ensure that reform experimenting schools would have the full complement of teachers. Most teacher respondents offered positive comments about 'quality education reform' as changes reflected on societal changes. Sample teachers made several anecdotal comments, a few of such comments quoted include the following. One teacher said, "The government put more money in education, students pay less, and we have better classrooms." Another said, "Schools have more facilities. More students have the chance to do experiments. "However, a few claimed, "We don't have enough facilities, teaching reform is just all talk and no action." This is especially true in most of the schools that were not selected as partnership schools during the introduction of the reforms. One teacher described the change as, "in the past, students begged teachers for education, but now teachers are begging students to accept education." When compared with previous students, most teachers who responded felt that current students have weaker backgrounds, are less motivated, and have poorer attitudes. One teacher said, "Influenced by society, many students' study attitudes are getting worse". Another said, "Most students in JHS 1 and 2 don't know how to study by themselves. Students don't have active attitudes towards studying. Their abilities are getting weaker." Yet another said, "Great change happened. Students don't have enough motivation and active attitude. Their abilities are worse. Some of them even make progress in cheating." One teacher explained, "The "Free Compulsory University Basic Education (FCUBE)" changed students' attitudes to negative". Another major reason is the thought that, "education is useless" in our society, as job opportunities for the educated are few. This is especially true in rural areas. On the other hand, some students were more active and independent and were better at problem solving and critical thinking skills. One teacher said, "Students' study attitudes don't change. But their abilities change. They think faster and deeper". Quite a few respondents expressed the frustration mentioned by Tao (2003), that the exam-oriented teaching and learning had greatly restrained the creativity and potential of students. One teacher said, "There are few changes in education for all-round development, our teaching is still test-oriented teaching is still very common. But teaching methods and teaching concepts have obviously changed." Quite a few teachers felt that the traditional exam system is in conflict with "quality education". However, as one teacher summed up, "the idea of 'Quality Education for All' has already been carried out".

## **Discussion**

Observations from the literature review on the initial stages of the reform and results of this study indicate that majority of the teachers in Ghana have dedicated themselves to the education of students and have made the necessary changes in the curriculum, teaching strategies, student evaluation methods, community ownership of schools and cordial school community relations to adopt most of the reforms. A majority of teachers in this study were satisfied with reforms yet struggled with transitioning. Teacher respondents had difficulty changing from their current teaching mode (predominantly teacher talk without the use of teaching/learning materials) and student evaluation modes (predominantly one-shot tests and examinations without the use of continuous assessment). Teachers' perspectives differed from students' perspectives; teachers claimed they were using more activity-based teaching and supporting a greater variety of learning modes than before yet students indicated teachers continued to employ predominately teacher talk and individualized work methods. Teachers also claimed they use students' class exercises, homework and essays in arriving at students'

end of term score but students indicated they used only examination scores. Teachers requested more in-service training and resource. Classroom management needs increased as new modes of teaching and transitioning created new situations for students to deviate from expected behaviours. Revision in teacher training would have an impact on the implementation of new modes of teaching and classroom management and the absence of these is noted herein as a reform flaw. Most of the teacher respondents indicated the need for more training in teaching methods (activity-based, group learning as well as the preparation, use and storage of teaching/learning materials) and curriculum development, classroom management and the use of computers in the classroom. Change in education requires stakeholder involvement, precise timing, and large amounts of support for in-service training (Ryan & Joong, 2005; Earl et al., 2002). Without resources and in-service training, teachers have struggled to bring about a portion of the planned governmental changes in pedagogy and practices as outlined in the reforms. Some incremental change has been possible, yet teacher respondents in this study reported feeling overwhelmed and under-supported as the large-scale reforms took hold. Ryan & Joong (2005) had similar findings in their study of reforms in Ontario. With the current examination system, teacher respondents claimed that there was little room for introducing activity-based learning and other experimentation. In fact they maintained there is still strong emphasis on examination results irrespective of whether the teacher taught well, was regular in class or not.

Huang (2004) was correct in saying examinations still guide teaching and learning in schools, and that China should reform the examination system to improve the quality of education. However, only 4% of the parent respondents suggested that the exam system should be abandoned and 44% suggested that it should be modified. Tao (2003) suggested that reforms involve not only the entire education system but also society. Parents and other citizens need to place less emphasis on examination achievements. Zhang (2004) agreed with Tao (2003) that the solid tradition of examination-oriented education has affected the curriculum, teaching methods, teacher-student relationships, and the system of evaluation and selection. Ghanaian teachers, educators, and educational leaders should decide whether the quality movement is what students and society need at this time. Educational leaders in both Ghana and other jurisdictions with high-stakes examination systems who want to implement change will have to make similar decisions.

## **Conclusion**

This study drew attention to stakeholder perception of the many educational reforms that have had direct impact on teachers, students and their parents in Ghana. The reforms include curriculum planning, teaching strategies, student evaluation, monitoring and evaluation. Generally, about half of the teacher respondents and parents were satisfied with the reforms. Teachers however, have problem with transitioning, inadequate resources and professional development especially in teaching and curriculum development.

Student respondents indicated that their teachers used lecture and individualised learning methods predominately. As for student evaluations, both sample teachers and students claimed that traditional test and examination were most often used. In addition, findings from this study suggest that teachers, parents and students lack the voice when it comes to policy development and direction. Results suggested that reforms had a direct impact on both students and teachers.

Finally, findings from this study suggest that problems with Basic School Education Reforms in Ghana persist because teachers are operating within a structure. This is consistent with other large-scale reform context, such as those in Britain, Ghana, and the US.

### **Recommendations**

It is recommended that the Ministry of Education, the Ghana Education Service, Head teachers and other stakeholders like the School Management Committees and Parent Teacher Associations provide more funding for resources and in-service training, in particular, in schools where resources are less abundant and teachers are not as well trained. Second, it is recommended that all teachers adopt, or continue to use, a variety of teaching methods, and reduce the amount of lecture time.

Teachers play key roles in reform as the agents of change who work directly with students. In fact education reform depends on how teachers make sense of the mandates and policies. Reform needs widespread input, acceptance, and implementation if it is to have the desired effect.

In the case of large-scale reform, the inclusion of the voices not only of teachers, but also of students and parents is crucial in the change process. Implementers of educational reforms have to pay attention to the voices of stakeholders in deciding what to study as well as what to change.

The school level factors that make a difference in the successful implementation of school reforms are the creation and attainment of a shared vision, the provision of necessary resources and professional development, and the establishment of a climate supportive of change.

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