

Making Teaching through Technology Possible Amidst the Challenges of Rural Impoverishment: A Case Study

Maura Mbunyuza- De Heer Menlah

Department of Curriculum, University of South Africa, UNISA 0003
Email: mbunynmm@unisa.ac.za

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Abstract

Globalization has taken the central place in all the activities of the world. Education and schooling as the most prominent areas in the definition of nations are under pressure to compete favorably in the whole world. Technology is the way to go in teaching and learning, an expectation placed upon all irrespective of where the school is and where education should take place. Most schools that are in poor areas experience a dire shortage of facilities. The absence of basic teaching and learning facilities like the chalk board, and even classrooms makes the thought about computers and other technological services impossible to imagine. Teachers have to learn to make do with what is available to make teaching and learning possible. In spite of the levels of abject poverty, 99% of the learners possess cell phones and that also goes for all the teachers in the school where the research was conducted. A case study was suitable because of the proposition that cell phones are underutilized in under sourced schools. The sample was chosen conveniently through purposive sampling. The study draws from the cognitive approach theory using qualitative approach. Semi instructed interviews were used as the main instrument for data collection. Follow up telephonic contact was made where it became necessary. Observations of lesson presentations and analysis of some documents were undertaken. Results show that the learners participated more and teachers reported that they look forward to going to class. Cell phones present new and refreshing experience to both secondary learners and teachers.

Keywords: Teaching and Learning, technological gadgets.

1. Introduction

Educational technology can be seen either as a process which view is compatible with the emancipatory paradigm which idea targets the empowerment of individuals, teachers in this instance. It can also be seen as technical, a view that is held by the technicist empirical paradigm. The latter view aims to control and domesticate (Educational Technology Research and Development 2012). This study acknowledges the place of technological artifacts in education and classroom teaching. The author emphasizes the inescapable global dictates on the importance of gadgets in the classroom. The latter part of the study advances the argument that schooling and education as such is a process of meaning making and cannot be captured adequately in purely empiricist technical terms Mbaza(2011). This view is supported by Preble (2011) and Murray (2011) who aver that teaching is a step to education and as a human exercise it could be folly to model it after the industrial assembly line which Freire(1973) argues, shapes humans to behave mechanically. The foregoing view affirms the teacher as the authority and should therefore be in charge of technology which stand can be achieved within the paradigm of technology as a process. The article concludes that a teacher who is well equipped in handling technology as a process is well placed to fuse both paradigms for the benefit of successful teaching

2. Background to the Study

Use of technology is compulsory in today's world, and significantly the future will be in the hands of technology. With globalization upon us, learners have to be on par, in all parts of the world. Teachers have a task to prepare the learners to participate and compete well with their counterparts. Learners in rural areas are not in the fortunate position to have various forms of technology within easy access. In spite of the difficulties, learners have to be able to construe knowledge that is relevant to the day and age of their lives. In Murray (2011) there are three fundamental human interests which influence knowledge construction and these are technical, practical and emancipator interest. This purports that technical interest leads to the ability of human to control their environment. This manifests in the ability to maneuver and use technological gadgets to respond to the needs of human and to benefit humans. Technology in education is therefore

interpreted as the ability to use the latest electronic communication inventions in teaching and learning Ritz (2011). Mobile phones are for the deep rural schools the most easily accessible device in technology. These devices have the sites that are needed to make the ideal classroom. These serve the purpose of educational technology as well as technology in education Mbaza (2011) argued that:

‘Educational technology does not have an existence outside and prior to the phenomenon, of education, but arises to serve the interest of education and those who make decision about education.’

One of the points that clearly stand out in the policy document on conduct of the issue where this study was undertaken is that learners should not bring cell phones to the school. This goes on to emphasize that those caught with cell phones in the school premises will be suspended for a period that will be decided by the school governing body on the basis of the extent of the offence in the circumstances. This brings about the constant conflict between learners and teachers because learners are often caught with their cell phones, thus transgressing the rules.

De Heer Menlah (2010) believes that there should be over and above that teacher's abstract presentation and developing learners, mechanical help that is offered in the classroom. The argument goes on to relate classroom to the kitchen with all its technological gadgets like stoves, washing machines, driers, automatic garage disposers to count but a few without learning the said instruments would go to waste. For learners to be able to function in the technology driven world, they need to start at school and teachers have a duty to inculcate the ability and kindle what may be latent interest in the use of what is readily available. Teachers have to be in the fore front in manipulating the cell phone sites so that they can give direction to learners.

3. Theoretical Framework

The study is based on the constructivist theory. The approach favors learner centered teaching and the core of the study relates to making learning a reality. Teaching opens opportunities for learners to partake in the process and thus to gain knowledge. This is in line with the view that held by constructivists that are active in constructing their own knowledge. This follows on Woolfolk (2007) whose view is that teaching bears fruit when students' own understanding of educational is placed in the centre of all educational activities. Students' interests and understanding occupy the centre stage of educational events. Windschitl (2002) argues that in constructivism learners are afforded opportunities to engage in complex, meaningful, problem-based activities and they gain a sense of achievement a boon to their integrity.

Learning occurs within a group that of people who share a common vision and share the same interest. Learners share opportunities to argue, disagree and finally reach negotiated decisions. It remains important for teachers to give topics that will help unveil the innate potential of learners. This is achievable through use of well prepared lesson plans, learning and teaching support materials as well as activities that provoke the curiosity of learners. Constructivism allows learners to reflect on their progress and value what they have achieved. This works well and it is easily applicable in the use of cell phones where a learner goes through practical stages which allow tangible step by step development.

4. Literature Content

This research placed emphasis on personal construction of knowledge, with both teachers and learners assisted on the path to explore better use of cell phones that they already possess. Through the use of cell phones, teachers and learners alike learn to deal with complex real life situations, du Plessis, Marais, van Schalkwyk and Weeks (2010:326) endorse this view as they argue that students need ample opportunities to engage in meaningful, problem-based activities. Wang, Shen, Tong and Hen 2005 foresaw that the use of mobile gadgets, in cell phones and other forms would enhance teaching by allowing teachers to monitor every day's learning activities. Using technological devices in assessment, teachers can move easily to measure student growth in conceptual understanding and ability through the use of tangible resource objects. Swanepoel and Maleke Gebrekal(2010:403) aver that technology impacts on what is taught and how it is taught, what learners learn and how they learn ...” They further argue that technology is increasingly believed to bring about transformation and has introduced new possibilities in assessing student work” .

According to Shen, Wang and Pan 2008, mobile learning systems allow students to customize content-reception, ask questions and make suggestions which the teacher can respond to immediately. Immediate feedback is one of the traditional and tested attributes ways of effective teaching. Learners and teachers engage in developmental dialogues. Dialogue sets the scene for integrated inquiry and it is in such an environment that knowledge is constructed through interaction with other in the socio-cultural environment (Murdrach: 2010)

Education and education providers must accept that a developing revision of educational practices is inevitable and fortunately possible. This study lays its foundation on the foregoing statement and takes the argument further detailing that the question of aligning teaching with the technology can no longer be postponed. Teachers are exposed to various forms of professional development for example at the time of the National Curriculum Statement (The NCS), with the introduction of Outcome Based Education (OBE) and even at the invent of the Curriculum and Assessment Policy Statement (CAPS). Perusal of documents of all the mentioned curriculum changes does not make any serious consideration of teaching through technology.

From a total of twenty three schools in the district nineteen of the twenty three school policy documents categorically state that learners should not bring cellphones to the school premises. Bringing a cell phone to school is an offence that is taken in serious light. In some of the schools where the research was conducted there is a computer per school but this can only be used by the school clerk as the only person who is trained in the use of the gadget that the principal calls sophisticated and delicate. Such an attitude thwarts all attempts to participate in technology and discourages attempts to use the few artifacts that are available in the environment. Schools are well placed to improve societies through the contributions they make on the learners' lives.

Figure 1: The fundamental relationships of teaching and learning



Adapted from Rwodzi 2010

In this process teachers draw on multiple domains of knowledge as they plan, design organize and implement lessons. Driscoll in Smaldon, Lowther and Russell (2008) describe learning as, " a persisting change in capability resulting from the learners' experiences and interaction with the world." The environment as a fundamental setting of the learning process should provide a comprehensible input to match the needs of the learner. Learning and the learning environment are inextricably bound up in four macro- factors. These factors oscillate and continue to guide the teacher in the action of planning as illustrated in the diagram above.

4.1 Teaching and Learning

Teaching and learning cannot be defined outside the basic acts of planning, designing, organization and control of learning programme. Learning process involves the teacher and the learner playing different roles. Niess and Kajder (2008) contend that,

*"Teaching includes the implementation of the learning plans using methods and strategies
For applying technology in effort to maximize student learning"*

It should be pointed out that the four factors provide axioms upon which the teacher planning, execution and assessment is predicated. Schools in rural areas also lack fundamental infrastructure such as classrooms. The planning process as primary function of teaching should bring the awareness those teachers should understand that learners have interest, attitudes and beliefs. Selection of content consequently needs to incorporate their interests while technology

motivates them to develop appropriate responses to environmental demands.

One would ask what technological gadgets will do to learners. The global village has brought in the need to use technology to communicate knowledge and information. Norton and Wiburg (2009)

"In the last 20 years various alternative descriptors of educators' role have emerged. A teacher is a facilitator, a teacher is a cognitive mentor. These descriptors of an educator's role reflect the notion that students not the teacher are the focus of learning act"

Teachers have to organize learning by way of choosing the appropriate material in time and space for effective learning. Choosing and selecting the relevant technology makes learning through it possible.

O' Connell and Groom (2010) point out that,

" Learning and teaching in the 21st century involves a kaleidoscope of opportunities and experiences, driven as much by the maturation of Internet as by the integration in schools."

Learning is no longer tethered to school networks, proprietary software or application solely delivered by the information structures and services within a school. Interactive new media technologies create learning opportunities that are flexible, responsive and adaptive to personal or group interest, providing interaction and information on demand quickly and easily in multimodal formats. Schools can harness this capacity to drive learning through creativity, self-expression and innovation in new global information ecology, where friend and interest-driven participation connects students with people, information, experiences and expertise best suited to their learning."

In this technological dispensation, educators are challenged to identify the common trends that will enable them to shape learning environments to meet the needs of their students who are the future leaders of the world. It therefore calls for them to select a set of digital tools within a learning framework that can be consistently supported, maintained and applied to the pedagogy of teaching. What are the rural teachers doing when they do not have access to electricity and other electronic gadgets? While cellphones have been shunned and painted as evil in the school, they remain the only potential tool to make teaching through technology possible. Bringing resources like electricity and high level technology devices like computers is not within the arm bit of educators and cell phones can bridge the gap and provide the service that is associated with the main gadgets. It is important for teachers to improvise and cell phones can be of value within the given circumstances.

In the light of the literature that has been perused it is that the shift from traditional ways of conducting classroom activities to the use of technological devices is inevitable. Even schools in the deep rural areas have to rise to the call to prepare the learners to participate in the global market during and beyond their schooling.

During the period of training on the use of mobile phones, the teachers did not only gain knowledge about the functions of cell phones but they also gained confidence. The proximity of the researcher removed the need for a study guide and a textbook, but enhanced practical participation. Teachers first practiced conducted lessons among themselves before they presented lessons in their formal classrooms.

4.2 Research question

The study is based on the following question:

Has everything been done to make teaching through technology possible in poorly resourced areas?

5. Research Methodology

5.1 Sampling

Purposive selection has been used in choosing the participants. They were chosen on the basis of their knowledge in connection with the phenomenon under investigation. According to Leedy and Onrod (2001: 219) in purposive sampling people should be chosen for a particular purpose and should be chosen on how familiar they are with the matter at hand. The sampling frame is made up of teachers and learners and schools in the deep rural area of Nqamakhwe in the Eastern Cape. This type of sampling allows the author to bring in participants who are information –rich, in this instance the grade seven teachers and learners in the Nqamakwe district were chosen because they are involved in the situation as they are function in the poorly resourced classrooms.

5.2 Data Collection

Semi structured interviews were conducted in the teachers' mother tongue, IsiXhosa to find out what technological devices they have and use at schools. Open-ended questions were chosen in a bid to understand and hence appreciate the status quo as seen by the respondents. Responses to open-ended questions were gathered by the researcher so as to understand and capture the points of view of the participants. Students spoke freely between one another about what they already knew about the use of cell phones. There was a lot of interaction between the teachers and learners.

5.3 Observations

Marion and Morrison (2007:396) contend that the distinctive feature of observation as a research data collection technique is that it offers researchers opportunities to gather 'live' data from naturally occurring social situations. The researcher visited the classrooms and observed the teachers before and after they undergone training. Learners were also observed in different classrooms. The researcher observed curious similarities in the different classrooms that were visited. In this study gathering information in this matter afforded the researcher real-life experiences in the real world. The researcher interacted with both the learners and teachers in their mother tongue. English words and sentences were used in situations where there is no translation or where the English word is the more widely used even though there is a word in the mother tongue. These are words like cell phones, airtime, electricity.

6. Research Design

According to De Vos, Strydom, Fouche and Delport (2007), a research design is a flexible and unique instrument that evolves throughout the research process. Punch (2009: 112) views a research design as a sum total of issues that are involved in planning and executing a research exercise right from the identification of a problem to the end of the study.

This is a case study because it looks at in one district. The aim is to do an in depth study of the phenomenon at hand namely, the use of cell phones as a means to introduce technology in teaching in one school district. The case study was conducted through qualitative research methodology and this was considered apt and thus opted for in line with Mc Millan and Schumacher(2010) who aver that qualitative approach extends the understanding of a phenomenon and contributes to educational practice. The researcher seeks to understand the participants in their natural setting. Research was conducted in schools where the chosen teachers are permanently employed. The situation was relaxed with the teachers being in their social reality and in control of their classrooms. Teachers were using the methodology and activities that they had been using for years. There was not much consideration of whether the learning and teaching materials as well as the methods were helping learners especially in the use of technology. All efforts were made to capture participants where they were comfortable in their interacting with the environment. Lee (1960:35) as cited by Lemmer (1989:126) says:

*"You can never really understand a person until you consider things
From his point of view...until you climb into his skin and walk around in it."*

In this research, particular attention is paid to cause and effect relations as noted by positivists and that is the reason qualitative approach is chosen. It also has the potential to allow the researcher to go closer and extract deeper feelings and draw views of the participants.

7. Findings and Discussion

The United Nations concern on the global divide along the lines of inequality is well illustrated in the shortage of technological devices. This shortage is well pronounced in the rural areas where access to computer technology is not within easy reach, with schools depending largely on outdated donated gadgets. Most rural schools receive donation of old equipment from companies and in some cases very it is difficult to upgrade the donated computers. In most cases they are no longer suitable for teaching and repair or better still to be discarded. Niess, Lee and Kajder(2008) contend that use of technology will make students appreciate the impact of use of various scientific methods of the world. Consequently students will acquire confidence in using technology to study people, places and their surrounding environments. Technology has to be relevant to the environments of operation. Technology should help learners understand the socio-economic and political context. One technology that is being underutilized for teaching and learning

is the cell phone. In fact, some schools have criminalized the existence of cell phones in their premises thereby eliminating their transformative role in education. Cell phones are the most easily accessible and learners spend most of the time using cellphones

Developments in education date back to the times of chalk, slide rulers and language reading cards. One would be interested to ask how many have used these gadgets in classes and to what extent they benefitted learners. Although there are constant inventions like power point, internet, and e-mail many schools in rural settings do not benefit from these developments. The main excuse is that of no access to technology while they have cell phones at their disposal. Sigsfoos and Green (2007) aver that perceived threats of technology taking over jobs, negative attitude and lack of skills have remained number one enemy against the introduction of technology in many schools in rural South Africa.

The role of computers in schools as teaching and learning aids cannot be underestimated. These objects have potential to motivate learners and challenge the learner to actively participate in constructing knowledge about themselves and their environments in which they live. Technology engages the five senses of the learner thereby expanding opportunities for learning through interaction between the learner and the technological object. Use of technology attracts the use of eclectic teaching and learning approaches. The invitation by the school management and staff that learners should bring the cellphones to school has rippled to other areas of school governance. Teachers reported that learners would dodge classes and hide in dongas about a kilometer south of the school. They would use the cell phones, calling others out of the classroom and smoking in groups. Homework, Mathematics and English periods were the most depressing for teachers because it would be lucky to find half full class. Even those who remained in class would be apathetic class. Teachers and the principal report a remarkable turn out, where learners are in class for all the periods. Attendance is good and the classrooms buzz with activity. Disciplinary cases have dropped remarkably.

The teachers' confidence is restored. One teacher reported that as some learners will be experiencing problems and asking questions, other learners will raise their hands eager to help and finding and explaining to others. The relationship between the teachers and learners and amongst the learners themselves has improved. One teacher reported that she looks forward to the next day and to her period of teaching because she has something to share. The principal reported that teachers show eagerness to go to the classroom as against the time where they would remain in the staff room during teaching time

8. Recommendations and Conclusion

Government planning on rural education needs to focus on provision of infrastructure development. This entails rural electrification programmes so as to provide access to the use of technological equipment. It makes incredible sense for schools to consider how internet spaces and new media software can be used to leverage connection skills for learning. The shift towards learning outside of classroom is evident in student's use of networks. Teachers should never lose sight of the fact that some learners of modern schools shun classrooms for different reasons. Among other factors include the hoarse teacher's voice, teachers spitting to learners unintentionally when shouting, teacher's annoying dress code as well as human mannerisms. Use of technology, cell phones in this instance creates opportunities for less teacher talk.

I therefore argue that in line with developments in theories of learning, educational technology also referred to as a process will support the qualities of meaningful learning. Learning is active constructive, collaborative, intentional, conversational, contextualized and reflective. The author argues for understanding and use of cellphones to ameliorate the effect of paucity of resources in poverty stricken rural areas. With good use cellphones learners and teachers in rural and poverty stricken areas stand to benefit from the advents of technology and thus progress on par with the developed world.

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