

## **Educators' motivation on integration of ICTs into pedagogy: case of disadvantaged areas**

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This paper investigates factors that motivate educators to use Information Communication Technologies (ICTs) in schools in disadvantaged areas. The study employed Herzberg's Motivation-Hygiene theory to guide the process of understanding the factors that motivate or demotivate educators when using the technology for teaching and learning. Qualitative research approach was used to gather and analyse information from educators from randomly sampled schools located in disadvantaged areas in the Western Cape. The study has shown that educators' motivation to use technology for curriculum delivery could be impacted by satisfaction derived from using the ICTs, individual expectations, responsibility and a sense of achievement experienced when using the technologies.

**Keywords:** curriculum delivery, disadvantaged areas, educators, ICT, motivating factors

### **Introduction**

Educators across South Africa and in many other developing countries are encouraged to use technology in innovative ways to enhance the learning experience across the curriculum. The benefits of such innovation can only be realised if educators are actually integrating technologies in their pedagogy. Again, the integration would ensure that learners are exposed to technologies, thus gaining the skills they may require when joining the workforce, hence maximising the return on the investment of the technologies. This is echoed in both local and international literature (Watson, 2001; Mutula & Van Brakel, 2007; United Nations Educational, Scientific, and Cultural Organization (UNESCO), 2008) that shows that the use of new technologies in curriculum delivery has both direct and indirect impact on the social and economic development. The new technologies are perceived as a catalyst for change in teaching and learning styles, and access to information. It is argued that the use of the technologies in the normal subject-based classroom benefits the learner as he/she is able to learn the technological skill with real tasks (Watson, 2001).

However, there are factors that can either motivate or demotivate educators from incorporating new technologies in their pedagogy (Sherman & Howard, 2012; Jung, 2005). Therefore it is imperative to understand the motivation of the users when investing the technologies in schools.

This paper aims at investigating the motivation of educators to use ICTs for teaching in historically disadvantaged areas or communities. Mokoena (2006), citing Nefcorp (2005), explained historically disadvantaged communities as generally comprising the historically disadvantaged individuals, namely Africans, Coloureds and Indians. Mashau, Steyn, Van der Walt & Wolhuter (2008:415) have shown that "these historically disadvantaged areas tend to lag behind the previously more advantaged areas". Nonetheless, the context is of interest because the schools in these disadvantaged communities are under-resourced both in terms of personnel and teaching materials; consequently, the quality of education is perceived to be inferior compared to that to which their counterparts in affluent areas have accessed (Van der Berg, 2008). Herselman and Britton (2002) argue that ICT can mitigate some gaps which exist between the schools in affluent areas and those in disadvantaged areas. Research conducted in Saudi Arabian schools also concluded that "ICT can remove barriers that inhibit educators' and learners' access to information" (Almaghlouth, 2008:32).

Within the Western Cape Education Department, using the Khanya project, schools have been equipped with ICTs and educators have been trained on how to use technology. Nevertheless, research and anecdotal evidence have shown that many educators in the disadvantaged areas within the province are not integrating technology in their pedagogy (Sherman & Howard, 2012; Chigona & Chigona, 2010). It is therefore necessary to understand the factors that motivate educators in the disadvantaged areas, so that school managers are aware of the factors that could keep their educators motivated to use ICT. The advantage of controlling educators' motivation to use technology is twofold. First, the use of the technologies available would help in mitigating some problems the schools are facing. Second, the commodity (ICTs) introduced in the schools will not end up being "a white elephant". For the focus and drive of the investigation, the question posed was: What motivates educators in the disadvantaged areas to integrate ICT in their teaching and learning activities?

Motivation is the characteristic that pushes an individual toward acting, performing actions and achieving. When an individual lacks motivation to perform an action, that person either gets no results, or only mediocre results whereas, when there is motivation, the individual attains good results and achievements (Pinder, 2008). Motivation can either be extrinsic or intrinsic. Extrinsic motivations, also known as hygiene factors, are rewards surrounding a job (e.g. salaries, fringe benefits and job security), while intrinsic motivations are rewards of the job itself (e.g. self-respect, sense of accomplishment and personal growth). According to Herzberg (1987), intrinsic rewards are more satisfying and motivating. Ellis (1984) concluded that educators are primarily motivated by intrinsic rewards such as self-respect, responsibility and a sense of accomplishment.

To answer the question posed above, Herzberg's Motivation-Hygiene theory was embraced. Qualitative research approach was employed to gather and analyse information from educators from simple randomly sampled schools in disadvantaged areas in the Western Cape Province.

#### Significance of ICT in teaching and learning

The importance of introducing ICTs in schools is to enhance teaching and learning practices, as well as preparing students for the workplace where ICTs are becoming more and more important (Kozma, 2005). However, the significance can be realised if educators are motivated to integrate technologies into classrooms. Integration of ICTs in the curriculum delivery encourages constructive learning such that learners' thinking can be developed in a more efficient way than traditional teaching practices (Bester & Brand, 2013). Learners develop skills such as reasoning, understanding and creativity (Keong, Horani & Daniel, 2005). It is argued that capabilities such as comprehension and problem solving are better learnt using interactive media, hence necessitating the integration of ICT into teaching and learning processes (Department of Education, 2004; Bester & Brand, 2013).

ICT provides new possibilities to teaching professions (Bester & Brand, 2013). Research shows that ICT aids in the preparation of learners by developing cognitive skills, critical thinking skills and information accessing, evaluation and synthesising skills (Bester & Brand, 2013). International research on learning has shown that the new paradigm (constructive approach) of teaching as opposed to the traditional teaching-learning paradigm (instructional approach) is the most effective way to help learners to develop the higher order skills (UNESCO, 2002).

Newhouse (2002), writing for the Western Australian Department of Education, argued that ICT-supported learning environments could be good for the constructivist teaching approach. One of the most important components of the constructivism theory of learning is the concept of proximal learning, which purports that the learner constructs his/her own knowledge for which scaffolding is initially required. The scaffolding could be provided by a tutor or computer applications. Thus, the technology is used to help create learning environments and support for learning that are ideal; these were ignored or were impossible in the past (Newhouse, 2002). ICT also provides fast and accurate feedback to learners (Becta, 2003). Furthermore, Lau and Sim (2008) show that the use of ICTs in education could promote deep learning and allow schools to respond better to the needs of different learners. This could only be achieved if educators are really integrating the ICTs in their teaching.

#### Motivation and educators' use of ICT

While practitioners and educators perceive ICT as a tool for improving delivery and administration of education, there are a number of factors impacting educators' use of ICTs and subsequent integration of the technology into their work (Becta, 2003). This paper focuses on factors that motivate educators to use technology in teaching.

Motivation could be extrinsic or intrinsic. The latter occurs when individuals are internally motivated to do something because it either brings them pleasure, or they think it is important. Achievement, recognition, work, responsibility, advancement and possibility of growth take place in that category. Extrinsic motivation occurs when an educator is compelled to do something or act in a certain way because of external factors to him or her. Policy and administration, technical support, working conditions and status are examples of extrinsic factors.

According to Weiner (1990), motivation is determined by what one expects to get and the likelihood of getting it. This is related to self-efficacy i.e. belief that one is capable of performing in a certain manner to attain certain goals (Ormrod, 2006). According to Bandura (1977), self-efficacy is the individual's belief about his/her capabilities to produce designated levels of performance that exercise influence over events that affect one's life. Bandura (1977) has shown that self-efficacy has an impact on an individual's psychological state and motivation. Individuals with low self-efficacy believe difficult tasks are beyond their capabilities; they are also likely to lose confidence in personal abilities (Bandura, 1977). Agreeing with this argument is Ellis (1984), who posits that educators are mostly motivated by intrinsic factors which may include one's self-efficacy. Phoenix (1975:16), in his work on personal, subjective, and intrinsic force that motivate teachers, said,

...as I reflect on my experience as a teacher, what stands out for me personally is not what I or others regard as my success or failures, but the gratitude I feel for the unparalleled privilege of participating in one of the most exhilarating activities of mankind -- the social celebration of the meaning of human existence in all its majesty and mystery.

Research has shown that teachers who do not feel ready and confident to use the technology are unlikely to integrate it in their pedagogy (Lau & Sim, 2008; Chigona & Chigona, 2010). Other intrinsic factors affecting the use include inadequate knowledge to evaluate the role of ICT in teaching and learning, and lack of skills to use the ICTs. It is argued that the ICT training the educators get is implemented in such a way that it hardly equips them with the Technological Pedagogical Content Knowledge (TPCK). This knowledge is required for the teachers to integrate ICTs in their teaching (Mishra & Koehler, 2006).

Some educators do not use ICT in their teaching because they are computer-phobic (Sherman & Howard, 2012). As much as the educators' intrinsic factors towards ICT can affect the use of the technology in the classroom, extrinsic factors, such as the ratio of learners to a computer in the school's laboratory, and ICT policies in the schools, could demotivate educators from using the technology. For Sylvia and Hutchinson (1985), educator motivation is based on the freedom to try new ideas, the achievement of appropriate responsibility levels, and intrinsic work elements. According to the researchers, true job satisfaction among educators is derived from the gratification of higher-order needs – social relations, esteem and actualisation, rather than lower-order needs.

### Theoretical framework

This paper aims at investigating factors that motivate and/or demotivate educators in the disadvantaged areas to use ICT for teaching. Herzberg's Motivation-Hygiene Theory was deemed the most applicable theory to be used to answer the research question. The reason for deciding on Herzberg's Motivation-Hygiene theory was that the theory is grounded in the investigation of worker job satisfaction, with the focus being on identifying those factors present within the job itself and within the environment in which the job is conducted, that lead to satisfaction or lack of satisfaction (Herzberg, Mausner & Snyderman, 1959). According to the theory, hygiene factors (demotivators) need to be limited and motivational factors (motivators) should be increased in order to develop a positive attitude among employees towards work.

According to the theory, motivational factors encourage workers to improve their performance within a particular job. They work to increase job satisfaction. Similarly, workers will not perform optimally within their job as long as the hygiene factors are not satisfied. Hygiene factors work to decrease job dissatisfaction. Herzberg et al. (1959) identified the following as motivational factors: job interest also referred to as work itself (Re'em, 2010); responsibility; achievement; recognition; possibility of growth and opportunity for advancement. In this paper the term work itself and job interest are used interchangeably. The hygiene factors are: company policy and administration; quality of supervision; rate of pay; interpersonal relationships (with supervisor, peers, subordinates); factors affecting personal life; status; job security and working conditions. While Herzberg's theory has been commonly used in disciplines such as Information Sciences, Business and Engineering, it has been noted that in Education, and in particular in teaching, the theory has seldom been used. One of the few examples where the theory was used in an academic setting is in Nigeria where Mawoli and Babandako (2011) used this theory to evaluate staff motivation, dissatisfaction and job performance.

According to Mumford's (1983) review of literature on job satisfaction, there are a number of different schools of thought. The most common one and also the one adopted for this paper is the psychological needs school which includes Maslow, Herzberg and many other psychologists. Mumford (1983) noted that, for the psychologists the most important thing for job satisfaction is motivation development whereby the stimulus leads to the motivation. Such stimuli may include the needs of achievement, recognition and responsibility for the individual employees.

Re'em (2010:33) noted that "some of the motivational factors are intrinsic in nature, whereas others stimulate extrinsic motivation". In the attempt to analyse what motivates educators to integrate ICTs in their work, the argument by Sylvia and Hutchinson (1985), which shows that educator motivation is based in the intrinsic work elements, was taken into consideration. Re'em (2010) outlined Work Itself, Responsibility, and Achievement categories from Herzberg's theory as motivation factors that are intrinsic in nature. Further, citing Robbins & Judge (2008), he shows that "intrinsically motivated" people will be happy even if they do not attain the goals, because they also take pleasure from the process of striving toward them" (Re'em 2010:34). The three categories were therefore deemed more applicable when looking at what exactly motivates educators to integrate ICTs in their work, since "public employees are unique and differ from their private sector counterparts

insofar as they are driven primarily by intrinsic motives rather than extrinsic ones" (Re'em 2010:29).

For Herzberg (1987), to create positive satisfaction and motivation, there is a need to address the motivating factors associated with work. Such an approach, which includes elements that afford employees (educators) a sense of challenge or accomplishment, is referred to as job enrichment. This requires that every job should be examined to determine how it could be made better and more satisfying to the person doing the work (Re'em, 2010; Mindtools, 1996). Things to consider include: opportunities for achievement, recognition of the workers' contributions, ensuring that the skills and abilities of the workers match the work, giving as much responsibility as possible to the workers, and professional development for the workers (Re'em, 2010).

The following discussion is the operationalisation of the selected categories in relation to Re'em's (2010) three categories above.

The **Work Itself** category refers to the actual content of a job, i.e. what the individual is required to do at work (Herzberg, 1987). Educators are responsible for teaching learners, so in this study the **Work Itself** category refers to the teaching activities using ICTs. For educators, **Work Itself** as a motivational device depends on internal motives about the teaching and their self-efficacy concerning what they need to do in their work. It is believed that the teaching job requires personal motivation, self-pride, professional satisfaction and individual expectations (Sylvia & Hutchinson, 1985). By capturing these effects of individual motivations, educators could promote a deeper commitment to their work as well as enhance their career.

The **Responsibility** category refers to the taking of ownership by individuals for the activities of their job (Herzberg, 1987). The **Responsibility** category refers to educators being given responsibility towards the use of the ICT resources in the school. When educators are given the freedom to assume responsibilities required to effectively control the outcome of a situation, they get a sense of control which in its own provides motivation (Sylvia & Hutchinson, 1985). It is believed that it is not easy to be motivated to work smarter if you are not in control of the situation. Therefore, by allowing the educators to have control of the ICTs for teaching and learning, the teachers would work hard to find ways and means to effectively control the expected outcome of the technologies in the institutions.

The **Achievement** category refers to individuals being successful in completing tasks associated with their job; these achievements lead to individuals experiencing *psychological growth* (Herzberg, 1987). Achievement motivation is the tendency to endeavour to succeed and to choose goal-oriented success or failure activities. Individuals oriented towards achievement set moderately difficult but easily achievable goals. They ensure that they undertake targets they are sure to achieve (Bishay, 1996). Individuals who are achievement-motivated are more concerned with their success than its rewards.

### Research design

Qualitative research approach was employed to gather and analyse collected data. According to Rubin and Babbie (1989) the approach is effective when the researcher is trying to get deeper meanings of lived experiences of the people in the study, as well as digging a rich description of phenomena under scrutiny.

The sample for the study included five high schools. Simple

random sampling was used to select the schools from the previously disadvantaged areas in the Western Cape. This means that each of the five schools was selected randomly and entirely by chance, such that an individual school equipped with ICTs within the previously disadvantaged communities had the same probability of being selected during the sampling process (Thompson, 2012). During the process of sampling, the researcher obtained the list of all schools having ICTs within the previously disadvantaged areas in the Western Cape. The names of the schools were separated, put in an empty bucket and five names were picked out after shaking the bucket (Thompson, 2012). The ICTs in these five schools had special computer laboratories installed by the Khanya project; and the project also trained the teachers how to use the technologies.

After the sampling of the five schools, 12 educators from the schools and the project personnel were asked to participate in the study. These respondents were purposely included in the study (Creswell, 1994), as educators who were teaching Maths in the five schools were preferred because the subject of Mathematics was one of the Khanya's preferred subjects for using the facilities installed in the schools. It should be noted that the subject preference for the computer laboratories was dictated by Khanya. Consequently, the choice of Mathematics educators as a sample ensured the inclusion of respondents who had had the opportunity of integrating the new technology into their curriculum delivery. In reality though, it was surprising that not all the Maths teachers used the technology for their teaching. The Khanya project personnel helping the schools in the use of the ICTs was also included purposely in order to understand what exactly the project was expecting from the educators in using the technology installed in the schools.

The sampled educators and the Khanya project personnel participated in one-on-one, in-depth, semi-structured interviews with the researcher in this study. The interviews were used to obtain the rich qualitative information necessary to answer the research question (Boyce & Neale, 2006). All the interviews were audio-recorded and transcribed immediately on completion. On average, each interview lasted 56 minutes. Educators are central to the success of ICT school initiatives and for this reason the focus of the study was predominantly on educators who were using ICT resources in teaching. Some educators were more proactive in their use of ICT resources than others.

At the onset of the data collection, permission was obtained from all participants. Again, interviews were conducted with the full consent of the individual participants to record the conversations. Privacy and confidentiality concerns were given deserved consideration (Cohen, Manion & Morrison, 2011). It was also ensured that information would be protected from unauthorised observation. For anonymity, no names of the participants were used in the reporting on the findings (Cohen et al., 2011).

The analysis of the qualitative data collected followed much of a deductive content analysis (Elo & Kyngäs, 2008). Three of Herzberg's constructs in particular those under motivational factors, were used as predetermined categories: Work Itself, Achievement and Responsibility. The researcher analysed what the educators perceived to be motivating factors for them to use and integrate the technology into their teaching. Deductive analysis in this study was employed simply to use the concepts from Herzberg's theory as sensitizing concepts (Gilgun, 2005). While analysing the data, the researcher specifically looked for themes in relation to the concepts above. However, embracing Creswell's (2007) advice, the researcher

was open to additional codes which could emerge during the process of analysing the collected data. The researcher consciously did not limit findings, thereby allowing the codes to reflect the ideas of the respondents from an emic perspective (Creswell, 2007).

### **Findings and discussion**

The findings related to the motivational factors will be presented under Herzberg's categories of:

- Work Itself as a motivating factor,
- Responsibility levels, and
- Achievement.

#### **Work Itself as a motivating factor**

##### **Professional satisfaction**

The use of the technology for teaching may affect educators' satisfaction with their work. If, for example, the technology makes the teaching easier and more interesting, one would be satisfied and be motivated to work. The analysis shows that some educators did derive professional satisfaction using the technology in their teaching. Some educators found the use of ICT resources in the teaching of Mathematics most rewarding. They indicated that they were using the ICT resources for plotting graphs and charts. Prior to the introduction of computer laboratories in the schools, the educators were plotting graphs and charts by hand; this exercise was time-consuming. With the Khanya laboratories, educators used spreadsheets for the task. Spreadsheets were also useful for teaching the other learning outcomes that dealt with data handling. Another advantage, noted by the educators, of using the computer laboratories, was that the learners used the ICT resources to create neat and professional-looking documents better than they did manually. One educator commented that: "Since we have the lab... we can work with graphs. Learners do their projects on their Master Maths; they can go into the programme and have more exercises and explanations."

Educators noted that learners were doing most of the research for their assignments by using the technology. The educators felt that availability of such resources was valuable for the schools that lacked educational resources. Educators could also use the computer laboratories for research purposes. Due to the fact that they were able to do all these things with the available technology in their schools, they indicated that they felt somehow more satisfied with their profession.

##### **Technical support when teaching with ICTs**

When educators are using the technology for teaching, they expect their lessons to be completed without any disturbance, be it technical or from power failure. Since educators are central to the success of ICT interventions in schools (Jung, 2005), it is essential that the institutions ensure that they meet the educators' expectations when teaching with the technology. This means the institutions should have technical support readily available. Without the required support, educators showed a lack of motivation to teach with technologies in schools. In a similar emerging economy in Saudi Arabia, Almaghlouth (2008) also found that when support to the teachers using technologies for teaching was not readily available, the teachers lacked motivation to integrate the ICTs into class.

From the analysis of data collected, more than half of the educators in the study expressed unhappiness because they did not have ready and efficient technical support, such that a simple technical fault took some time to be rectified. During the

interviews, it was indicated that:

...if you have a hiccup here you contact them [Khanya technicians]; they will decide one day when to come. They give you a little reference just to keep you quiet and whether they are going to come today, tomorrow or next year doesn't matter...you just need to wait...the support isn't that great.

The lack of efficient technical support in the schools demotivates some educators from planning to use the technology for their teaching. The educators do not want to get to the laboratory and experience a simple fault for which there would be no technical support available to rectify the problem. Educators work against time and so would not want to waste time due to technical faults.

#### Availability of ICT resources for teaching

Apart from the lack of technical support, other external factors such as learner-computer ratio when using the computer laboratory also impacted on the educators' decision to use the technology in class or not. A quarter of educators in the study bemoaned the fact that it is not easy to use the technology for teaching, because their schools do not have enough computers for the number of learners they have. One of the educators indicated that:

The computers in the laboratory are not enough for our big classes, so when teaching, a number of learners sit on one computer, which makes it hard to teach them how to use the machines...to make things worse, they don't have computers at home so that they could at least have a chance to get acquainted with computers; our lab is also closed after school. So it is really hard for both the teachers and the learners.

International research has also shown that in cases where learner-to-computer ratios are poor, teachers have difficulties with classroom management (Becta, 2003). In such situations, many educators do not feel motivated to use the technology for teaching.

#### Learners' readiness to learn with ICTs

Learners with challenging academic problems negatively impact the teaching environment. As reported by half of the educators in this study, learners with few or no computer skills in a computer laboratory impact the teaching and learning process negatively. Consequently, a significant investment is needed by educators to improve the computer skills of such learners. Half of the educators in the study expressed concern in this regard. In his own words, one of the educators said:

When some time I plan to take my class to the computer laboratory for a lesson, it is so frustrating because I spend most of the time showing the learner how to use the computer instead of concentrating on the subject content.

Since this means the educators cannot concentrate on the content they have prepared to teach the class, the teachers avoid teaching using technology. They, therefore, say they would rather not use technology for teaching in cases like these, as they are already too occupied to invest their time equipping the learners with computer skills. They are not even willing to go to class and slow down in the content delivery so as to accommodate learners who need assistance in using the technology, as this is perceived to be a waste of time or a disturbance to teaching. Bennell (2004:12) noted that "Increasing hours of work, larger class sizes, and constantly changing curricula are cited as major demotivators in many countries. Large class sizes

and heavy workloads also make teachers resistant to the introduction of new teaching methodologies and other innovations."

A gap that emerged from the discussions held with the educators was the lack of learner preparation for the use of ICT resources, which seemed to have been an oversight when looking at the Khanya implementation process. While the Khanya project prepares teachers to use ICT, it does not do the same with learners. Analysis of the interviews with educators showed that most of the learners in their schools do not have computers and internet access at home, such that they (the learners) are introduced to computers for the first time at school. Consequently, educators are, in most cases due to the ICT illiteracy of the learners, concerned with teaching the technology instead of teaching with it. This makes the educators view ICT as an add-on and not something that enhances curriculum delivery. Jung (2005) also shows that combining new technologies with effective pedagogy has become a daunting task for different institutions.

#### Responsibility levels

One factor that has a significant impact on job satisfaction is responsibility. Bishay (1996) shows that educators with high responsibility levels have more job satisfaction levels compared to their counterparts with fewer or no responsibility levels. "Increased responsibility levels may lead to satisfaction because of greater involvement, challenge and control" (Bishay, 1996: 152).

Analysis of the data in this study shows that educators in disadvantaged schools do not have the freedom to take responsibilities required to effectively control the outcome of a situation. Consequently, the educators do not get a sense of control which in its own provides motivation. For instance, some educators in the study perceived that the control of the computer laboratory is with Khanya and not the school, i.e. Khanya set down the learning subjects which should be accommodated by technology and the periods when the computer laboratory could be in use. On this point one educator narrated:

They [Khanya] prescribe who can use it and who cannot use it and when it can be used and when it cannot be used and all these things. ...the rules attached to Khanya are too strict, there is no freedom whatsoever, if they say the Maths people can use it then only the Maths people can use it.

This may mean that the educators in the study have limited control of the computer laboratories at their own schools. They have limited opportunity to be innovative and express their creativity due to limited time available to them. They do not feel motivated to use the technology. While it may be argued that the Khanya intention was to control the facilities, it should be made aware to the Khanya project that that type of control was discouraging to the end user or implementer of the computer laboratory. The restrictions meant that the educators in the study did not have enough time to benefit from the facility. Again, the novelty of the artefacts in teaching meant that educators would typically progress through a cycle of shifting attitudes with regard to motivation and satisfaction as they came to terms with the new technologies. Therefore, difficulty of access may negatively influence some educators' attitudes towards integrating the technology into their pedagogy, hence giving up on understanding, familiarising and adopting the technology. Even in the developed economies, it was noted that educators need a lot of time to gain initial familiarity with new hardware or software, learning and practising for effective use of the technologies for curriculum delivery (Renyi, 1996).

It is believed that scheduling gives individuals control over the job they are doing. The educators who had the opportunity to use the computer laboratories in the schools felt that the time allocated for their subjects is not enough. They argued that if they were consulted on the scheduling of the time-table regarding the use of the technology, things could be better. One Maths educator said,

When it is the period for my subject, I have to take the class to the computer lab which is about 200m away; when we get there we face issues of logging in and the like so by the time we are settled to start the lesson, half of the period is already gone and you find out that you don't do much.

Because they could not cover much in a lesson, some Maths educators in the study felt discouraged from using the lab for teaching. They had the pressure of finishing the syllabus on time so, in most cases, they just preferred not to use the technology. The analysis of the data collected for this study shows that the educators are not given the responsibility required to effectively control the use of the technology for teaching. Because they don't have the responsibility and control over the commodity, it is hard for the educators to work smarter to achieve the aim of having the ICTs in the schools. This is similar to what Almaghlouth (2008:115) found among secondary school teachers in Saudi Arabia.

#### Sense of achievement

Sense of achievement as a motivation occurs when an individual has a tendency to endeavour for success and to choose goal-oriented success or failure activities. Educators need to have a sense of achievement when using the ICTs. This sense of achievement acts as encouragement to educators to continue using ICT resources in their classroom.

The analysis of the interviews shows that the proactive steps taken by educators toward empowering themselves were critical and that this self-empowerment forms the foundation of future ICT successes in the classroom. Educators who have been enthusiastic to learn how to use and incorporate ICTs in their teaching have this sense of achievement. They see the use of ICTs when teaching as a wonderful way of teaching, because their learners learn more than when they use the traditional ways of teaching. The educators as well as the learners are able to experience the different ways in which the technology could be used within their classroom. On how ICT resources have broadened the horizons of education, the Khanya representative said:

...they do the video links and they do the emailing...so the teacher feels that they imparting far more than just the basic lessons. The technology opens up so many more avenues, so many more horizons...so it is a very empowering tool.

One educator indicated that her progress in using the computer laboratory gave a sense of empowerment to her. This educator had been in education for almost 30 years and considered herself a technophobe, but now was able to use the computer for school administration purposes as well as teaching. ICT resources played a role in providing visual representation to the learners. Access to a wide variety of e-resources and the teaching of learners kept this educator coming back to the computer laboratory. Learners need to use the information to develop their own opinions and appreciate the knowledge gained. The computer laboratory was also used for revision purposes – Cami Maths software was also used by an educator to revise and consolidate the lessons taught in the classroom. The educator said:

...it opens a whole new world for me. One is not governed by a particular textbook. One has access to the latest debates in the world; you can go onto blogs where you discuss a particular poem and you can actually enrich your students even more, because the more you are enlightened, the more they will be enlightened...a simple site like Encarta, I've watched educators using technology and it was amazing for the kids.

While some educators are motivated to master the use of ICTs for teaching in their schools, some are motivated to learn more about the technologies as a ticket out of the disadvantaged schools to the affluent ones. Anecdotal evidence in Cape Town shows that many educators would love to teach in affluent areas because the schools are usually well resourced and the surrounding environment is safe; however, for one to be recruited by the schools, one is required to be computer literate.

#### Conclusions

From the analysis of the data, it is clear how educators are motivated to use ICT for curriculum delivery. Work Itself, responsibility and achievement have been identified as some of the most important motivating factors that affect the use of ICTs for curriculum delivery in the disadvantaged areas. The success of ICT initiatives in the schools depends on educators who are motivated to integrate the technology in their teaching job. While most of the educators in this study believe that the integration of ICT resources in the teaching could be rewarding, they are also bombarded with demotivating factors that influence them not to use the technology in their teaching.

In the cases where educators derived professional satisfaction when using the technology for teaching, they found the work itself a motivating factor for them to use the ICTs in their pedagogy. However, when the use of technology reduced the sense of professional satisfaction and their expectations in their curriculum delivery, the educators were not motivated to use ICTs. For instance, where educators found themselves teaching the technology instead of teaching with it, they felt demotivated to use ICTs for curriculum delivery.

The educators in the study do not have the freedom to take on responsibilities required to effectively control the use of ICTs in their schools. The control of the computer lab is with Khanya and not the school, since Khanya prescribe the learning areas to be accommodated by technology and how and when the computer laboratory could be used. This has resulted in the educators not developing a sense of control over the technologies available in their schools. It is argued that having such a sense of control could motivate the educators to use the technologies in their teaching. Since the educators lack the responsibility and control over the situation, it is hard for them to work harder and smarter to achieve the goal of having ICTs in the schools in order to integrate the technology in the curriculum.

The sense of achievement when using ICTs in teaching is a motivation among educators when they have a tendency to aim for success and to choose goal-oriented success. In this study, educators who have been enthusiastic to learn how to use and incorporate ICTs in their teaching showed a sense of achievement. They see the use of ICTs when teaching as a wonderful way of teaching, because their learners learn more than when they use the traditional ways of teaching. This sense of achievement is a motivating factor to educators to continue using ICT resources in their classroom.

It should, nevertheless, be noted that as educators progress through a cycle of shifting attitudes towards the integration of

ICTs in their teaching, they need a great deal of motivation and satisfaction as they try to familiarise themselves and come to terms with new technologies. It is, therefore, this transition from non-integration to integration that educational managers need to manage so as to ensure positive satisfaction and motivation of the educators regarding teaching with ICTs.

A limitation that this study encountered is the fact that this was a snapshot and not a longitudinal study. Consequently, a discussion of how the work informs the “Dissatisfaction and demotivation”, “Not dissatisfied but not motivated” and “Positive satisfaction and motivation”, as they appear the framework adopted in this paper, may not seem to be explained at length. Therefore, a longitudinal study is necessary in order to be able to make generalisations of the results.

Nonetheless, the results of this study could be beneficial to the school managers to work on those areas that are demotivating the educators from using the ICTs in their schools. In particular, school managers and investors should ensure that educators are given control and responsibility of technologies meant for teaching and learning in schools. As has been argued, benefits of having ICTs in schools can only be realised if the educators are actually using the tools in their curriculum delivery (Higgins, 2003). While the situation of ICT integration into the classroom is similar in most previously disadvantaged communities, a lot could be learnt from the analysis of this study. Educators need to be motivated to use the ICTs in the classroom to enhance teaching and learning.

#### Acknowledgement

This is a revised and extended version of a paper presented at ICIME Conference in 2010. The paper has been extensively revised based on the reviews and comments received during presentation and also reviews from this journal.

#### References

- Almahlouth O 2008. Saudi secondary school science teachers' perceptions of the use of ICT tools to support teaching and learning. Unpublished M.Ed Thesis. New Zealand: University of Waikato.
- Bandura A 1977. Self-efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review*, 84(2):191-215.
- British Educational Communications and Technology Agency (Becta) ICT Research 2003. *What the research says about using ICT in Maths*. UK: British Educational Communications and Technology Agency. Available at <http://webarchive.nationalarchives.gov.uk/20130401151715/http://www.education.gov.uk/publications/eOrderingDownload/15014MIG2799.pdf>. Accessed 10 December 2010.
- Bennell P 2004. *Teacher Motivation and Incentives in Sub-Saharan Africa and Asia*. Brighton: Knowledge and Skills for Development. Available at <http://www.eldis.org/fulltext/dfidtea.pdf>. Accessed 10 December 2010.
- Bester G & Brand L 2013. The effect of technology on learner attention and achievement in the classroom. *South African Journal of Education*, 33(2):1-15.
- Bishay A 1996. Teacher Motivation And Job Satisfaction: A Study Employing the Experience Sampling Method. *Journal of Undergraduate Sciences*, 3:147-154.
- Boyce C & Neale P 2006. *Conducting in-depth interviews: A guide for designing and conducting in depth interviews for evaluation input*. Watertown, MA: Pathfinder
- Chigona A & Chigona W 2010. An Investigation of Factors affecting the Use of ICT for Teaching in the Western Cape Schools. In T Alexander, M Turpin & JP van Deventer (eds). *ECIS 2010 Proceedings*. Pretoria, SA: University of Pretoria.
- Cohen L, Manion L & Morrison K 2011. *Research Methods in Education* (7th ed). London: Routledge Falmer.
- Creswell JW 1994. *Research design: qualitative & quantitative approaches*. London: Sage Publications.
- Creswell JW 2007. *Qualitative inquiry and research design: choosing among five approaches* (2nd ed). Thousand Oaks, CA: Sage Publications.
- Department of Education 2004. White Paper on e-Education. *Government Gazette*, 470(26734).
- Ellis TI 1984. *Motivating Teachers for Excellence*. ERIC Clearinghouse on Educational Management: ERIC Digest, Number 6. ERIC Document Reproduction Service, No: ED259449.
- Elo S & Kyngäs H 2008. The qualitative content analysis process. *Journal of Advanced Nursing*, 62(1):107-115.
- Gilgun JF 2005. Qualitative research and family psychology. *Journal of Family Psychology*, 19(1):40-50.
- Herselman M & Britton KG 2002. Analysing the role of ICT in bridging the digital divide amongst learners. *South African Journal of Education*, 22(4):270-274.
- Herzberg F 1987. One more time: How do you motivate employees? *Harvard Business Review*, 65(5):109-120.
- Herzberg F, Mausner B & Snyderman BB 1959. *The Motivation to Work* (2nd ed). New York: John Wiley & Sons.
- Higgins S 2003. *Does ICT Improve Learning And Teaching In Schools? Professional user review of UK research undertaken for the British Educational Research Association*. Southwell, Notts: BERA.
- Jung I 2005. ICT-Pedagogy Integration in Teacher Training: Application Cases Worldwide. *Educational Technology and Society*, 8(2):94-101.
- Keong CC, Horani S & Daniel J 2005. A Study on the Use of ICT in Mathematics Teaching. *Malaysian Online Journal of Instructional Technology*, 2(3):43-51.
- Kozma R 2005. National Policies that Connect ICT-Based Education Reform to Economic and Social Development. *Human Technology*, 1(2):117-156.
- Lau BT & Sim CH 2008. Exploring the extent of ICT adoption among secondary school teachers in Malaysia. *International Journal of Computing and ICT Research*, 2(2):19-36.
- Mashau S, Steyn E, Van der Walt J & Wolhuter C 2008. Support services perceived necessary for learner relationships by Limpopo educators. *South African Journal of Education*, 28:415-430.
- Mawoli MA & Babandako AY 2011. An evaluation of staff motivation, dissatisfaction and job performance in an academic setting. *Australian Journal of Business and Management Research*, 1(9):1-13.
- Mindtools 1996. *Herzberg's Motivators and Hygiene Factors: Learn How to Motivate Your Team*. Available at [http://www.mindtools.com/pages/article/newTMM\\_74.htm](http://www.mindtools.com/pages/article/newTMM_74.htm). Accessed 17 June 2014.
- Mishra P & Koehler MJ 2006. Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge. *Teachers College Record*, 108(6):1017-1054.
- Mokoena MB 2006. Improving the lifestyles of previously disadvantaged individuals through a personal life planning programme. Unpublished PhD Thesis. Pretoria: University of South Africa.
- Mumford E 1983. *Designing human systems for new technology: the ETHICS method*. Manchester: Manchester Business School. Available at <http://www.enid.u-net.com/C1book1.htm#Job> satisfaction objectives. Accessed 08 September 2013.
- Mutula SM & Van Brakel P 2007. ICT skills readiness for the emerging global digital economy among small businesses in developing countries: Case study of Botswana. *Library Hi Tech*, 25(2):231-245.
- Newhouse PC 2002. *The impact of ICT on learning and teaching: a literature review for the Western Australian Department of Education*.

- Ormrod J 2006. *Educational Psychology: Developing Learners*. New Jersey: Pearson Education, Inc.
- Phoenix PH 1975. Teaching as Celebration. In: TH Buxton & KW Prichard (eds). *Excellence in University Teaching: New Essays*. Columbia: University of South Carolina Press.
- Pinder C 2008. *Work motivation in organizational behavior* (2nd ed). New York: Psychology Press.
- Re'em Y 2010. Motivating Public Sector Employees: An Application-Oriented Analysis of Possibilities and Practical Tools. Unpublished Master of Public Management thesis. Berlin: Hertie School of Governance.
- Renyi J 1996. *Teachers take charge of their learning: Transforming professional development for student success*. Washington, DC: National Foundation for the Improvement of Education.
- Rubin A & Babbie E 1989. *Research Methods for Social Work*. Belmont, CA: Wadsworth Publishing Company.
- Sherman K & Howard SK 2012. *Teachers' Beliefs about First- and Second-Order Barriers to ICT Integration: Preliminary Findings from a South African Study*. 23rd International Conference of Society for Information Technology and Teacher Education. Charlottesville, VA: Association for the Advancement of Computing in Education.
- Sylvia RD & Hutchinson T 1985. "What makes Ms. Johnson teach? A study of teacher motivation." *Human Relations*, 38:841-856.
- Thompson SK 2012. Simple Random Sampling. In SK Thompson (ed). *Sampling* (3rd ed). Hoboken, NJ: John Wiley & Sons, Inc.
- United Nations Educational, Scientific, and Cultural Organization (UNESCO) 2008. *ICT competence standards for teachers*. Paris: UNESCO.
- UNESCO 2002. *Information and Communication Technology in teacher Education. A Planning Guide*. Paris: UNESCO.
- Van der Berg S 2008. "How effective are poor schools? Poverty and educational outcomes in South Africa". Discussion paper for the Center for European, Governance and Economic Development Research. Paper number 69 – January.
- Watson DM 2001. Pedagogy before technology: Re-thinking the relationship between ICT and teaching. *Education and Information Technologies*, 6(4):251-266.
- Weiner B 1990. The History of Motivational Research. *Journal of Educational Psychology*, 82(4):616-627.