Change Management as a requirement in introducing ICT in curriculum delivery – The Gauteng Experience

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Abstract

The main objective of this study is to establish the role that change management plays in introducing ICT in curriculum delivery with special reference to Gauteng Province. A desktop literature review was adopted to gather information on how change management can impact on the effectiveness of ICT integration, not only in the South African context but also on the global and African context. Support for ICT integration in education is overwhelmingly positive; ICT is seen as having made a positive contribution to education; More training is required to improve teachers' competencies in ICT usage and More support needs to be provided to the principals, School Management Teams (SMTs) and School Governing Bodies (SGBs) in terms of training. In order to optimise the results of the change management process in ICT integration into the curriculum, the researcher recommended the following: Establish a change management committee whose sole mandate is to ensure an effective integration of ICT projects; Ensure sufficient and effective continuous training support to the educators, principals, SMTs and SGBs before, during and after launch of the ICT project; Continuous evaluation of the change process to assess if intended objectives are being achieved; Ensure undivided buy-in and support from the district and top management and Ensure funding is made available to increase the provision of ICT equipment in schools and to invest in the ongoing maintenance and upkeep of the infrastructure.

Key words: Change Management, Curriculum Delivery, Information Communication Technology, ICT Adoption and Integration, Gauteng Department of Education

1.1 Introduction

The contemporary organisational and institutional environment has seen the adoption and development of ICT (Information and Communication Technology) –systems and technologies at a faster rate in the face of government and business world where every facet has become highly technical. Institutions, especially large companies have turned to rely heavily on technical solutions in their day-to-day operations and failure to comply with these modern changes will result in them performing poorly in terms of quality and eventually this will degenerate in them losing a good portion of their market share in the face of growing competition globally. In essence, the adoption and development of ICT has also become a source of competitive advantage.

The Education Sector is no different at all. Of late, educational institutions have embraced the importance of adopting and developing ICT systems and technologies in their quest to compete at a higher level where they will be able to achieve the ultimate goal of producing graduates who can easily blend into the business and corporate world with confidence, well equipped with the technological acumen that has become one of the most sought-after attributes in a candidate almost in every industry.

Therefore, the main thrust to this study is the exploration of the important role that the change management process plays in introducing ICT in curriculum delivery. Special reference will be made to the South African education sector in Gauteng Province. According to Hammoud (2008), only 2,5% of projects of such magnitude fully succeed and over 50% fail to meet set objectives completely. He defines a failed project as one that could not meet its objectives in terms of pre-planned performance results, schedule or cost. He pointed out that in 2001 alone, project failures cost businesses more than $450 billion. Legris & Collerette (2006) state that the majority of ICT project failures is caused by poor management in the implementation process.

Most researchers assert that too much focus is laid upon the technical side, overlooking the management side which is the most crucial one. Survey has shown that management and people are the biggest obstacles to a success of any project. Thus, most ICT projects have been chocked either by poor management in general (Legris & Collerette 2006), poor communication and underestimation of required retraining (Price & Chakal 2006), or inability to manage project uncertainty (Asllani & Ettkin 2007). The list is endless as researchers brand the factors in many ways but all this boils down to one common factor - management.

1.2 Background to Study.

Established in the year 2003, Matthew Goniwe School of Leadership and Governance (MGSLG) is an arm or agency of the Gauteng Department of Education (GDE) that was commissioned to serve as the capacity-building portfolio of the GDE in the provision of empirical and research-based quality intervention programs for various stakeholders such as School Governing Bodies, School Management Teams, district officials, educators, learners and parents. MGSLG went on to sub-contract Dual Point Consulting in order to administer change management services that would involve giving on-site support to role players such as school principals, district, and provincial ICT committees in the wake of integrating ICT in teaching, learning administration and communication.

Thus, in order to achieve this objective, Dual Point Consulting administered a robust change management process with a selected 434 schools in the 4 regions of Gauteng in the period spanning October 2016 to October 2017. The consulting company applied an 8-step model in order to address four core areas, (institutional capacity, infrastructure and facility, leadership and management as well as attitudes and perceptions) that were considered by MGSLG as very important in the change process for an increased usage of ICT in Gauteng schools. Therefore, this report sums up approaches, activities, results and challenges of the change management program as well as giving a breakdown of lessons and recommendations for future change management programs focusing on ICT integration in education in the South African context.

1.3 Problem Statement

Effective ICT project management and integration is until today considered as one of the most challenging phenomena that brings uncertainty in the business world. Businesses really do not have a concise and concrete solution to effective and efficient integration of ICT. As a result, many companies have failed to fully exploit the advantages and opportunities that come with this technological upliftment. However, change management, though considered a daunting task by many organisations, is believed to be the blueprint for a successful integration of ICT into an existing system. One of the challenges though, that comes with unsuccessful integration of ICT is the reluctance by many organisations to invest soundly in good change management (Sherer, 2003). Despite various research efforts on change management in recent years, there still is a need for a simplified model of how to integrate ICT projects in practice. This report aims to give insights as to the reason why change management is an important ingredient in the successful integration of the ICT in curriculum delivery. To substantiate on this, a case study of the Gauteng Department of Education’s efforts to improve results of the ICT integration into the curricular is explored.

1.4 Research Objective

The objective of this study is to explore the importance of change management within the context of ICT integration in curriculum delivery. In order to gain this understanding, it is fundamental to first establish the crucial components of change management according to the literature. Thereafter, a comparison is then done between the findings and the empirical data in order to assess how change management is applied in practice in the case study.

1.5 Research questions

The sub-section provides the primary and secondary research questions.

1.5.1 Primary question

The main question the study seeks to address is: What is the importance of change management for ICT project implementation in schools?

1.5.2 Secondary questions

To further structure the researcher trajectory in answering the primary research question, the following secondary questions were formulated:

a. What are the challenges faced by both educators and learners in integrating technology to enhance teaching and learning in the classroom?
b. How can change management be used to effectively integrate ICT in curriculum delivery?

1.6 Significance of the Study

Tonder, (2004) asserts that the fact that very little research has been carried out regarding the importance of administering change management on employees before and during the ICT integration period is a strong indication that management in many organisations have not yet comprehended the relevance of dealing with those affected by the change initiatives.

Therefore, the results of this study should add value to the existing body of knowledge on change management upon which stakeholders such as the research community, South African Institutions including educational institutions could build on and make use of in correcting any past misconceptions regarding the importance of change management.

Iacovini, (1993) argues that such a study will help equip the decision makers, management, employees (and in this case educators, learners, non-academic staff at district and provincial level) to have cognitive, functional, emotional and social skills as well as competencies that will help them deal with the change process.

2. Literature Review

This section of the study zeros in on the review of the existing literature on the subject. The concept of change management has been viewed from different perspectives in order to gain a full understanding of its importance to ensure successful integration of ICT in teaching and learning. Generic issues pertaining to ICT rollout shall also be looked at with the purpose of understanding the challenges that management encounter in trying to get support in introducing technology for teaching and learning. Reference will also be made to the global, African and South African perspectives respectively.

2.1 Theoretical Perspective

2.2.1 The concept of change

Research has shown that in-spite of what brings about the change; its effects on people are similar. There is high probability that employees will always resist change if they perceive that their jobs are in danger (Burns 2008). Organisational change is not a once off event. Rather it is a process that calls for careful planning, motivation, and professional execution. Proper communication and engagement of role players is very crucial if change is to be successfully implemented. Williams & Williams (2007) asserts that people respond to change more positively when they are appraised on the purpose and consequences thereof. Clegg & Walsh (2004) noted that more often than not, social side of change is overlooked and yet many authors have discovered that this is the most crucial aspect that determines the success of change. Clegg and Walsh (2004) also pointed out some reasons why people tend to resist change and these include:

- No clear, unambiguous reasons to change
- Lack of trust in telling people to change
- Unproven replacement tools
- Abandoning current tools seems and feels like a failure

- Everyone else is using the same tools
- People have identified and become so attached to the tools (“our tools are us”)

2.2.2 Reaction to change

Anonymous (2005), asserts that there are four psychological stages under which reaction to changes can be categorised into. These include shock, defensive retreat, acknowledgement, acceptance and adaptation. In the shock phase, employees are very skeptical and feeling unsafe resulting in a decline in productivity. The defensive retreat is characterized by anger on the suggested change as people try to hold on to the past. The acknowledgement phase is when employees realise that the way they used to do things is no longer relevant and acceptable. Finally, in acceptance and adaptation phase, majority of the employees decide to internalise and embrace the change and then move on.

2.2.3 Change management

The main thrust of change management should be the creation of a conducive environment in which change can be implemented (Kemp & Low 2008). Price & Chahal (2006) asserts that an ideal strategy is needed if change is to be carried out successfully. In-spite of the existence of extensive literature on change management, very few of those provide a practical set of tools for it. Milis & Mercken (2002) pointed out that in the field of Technology, change is inevitable thus its management becomes a crucial phenomenon. Change that comes as a result of the outcome of the project can be classified into technological changes and cultural changes where the former refers to a scenario where people are obliged to familiarise themselves with the changes in systems and tools. Effective training and support help to get people adapt easily.

Milis & Mercken (2002), pointed out that in order to reduce resistance, the involvement of the future users of a new system is crucial right from the early phases of a project. This brings about a sense of ownership towards the project causing the people to become more committed to the project as they develop a common feeling of “our project”. They also argued that effective communication helps users to have realistic expectations while at the same time dealing with uncertainty as well as stimulating teamwork.

2.2.4 Change management framework

Price & Chahal (2006) have developed a six-step framework for strategic change management which can be applied in various different situations since it deals with change management on a rather broad scale. As opposed to coming up with specific tools for change management, the

framework gives a good outline for managing the overall process. These steps include are outlined below:

- *Step one: Preparing the organisation:* Organisational preparation is a very important phase of strategic change management. This phase encompasses giving adequate information regarding the change as well as getting people's views regarding the change. People buy-in is a crucial component that plays a big role as the project progresses.

- *Step two: Developing the vision and implementation plan:* A project team is put in place that will then analyse feedback from the previous phase, create a change vision and an implementation plan.

- *Step three: Checking:* This phase involves the reviewing of all plans and feedback from previous phases. It also calls for the support of all managers.

- *Step four: Communications and workforce engagement:* Effective communication ensures that all people really understand the effects the change will bring to the entire organisation and helps remove any suspicion and uncertainty.

- *Step five: Implementation:* Maintaining momentum and ensuring continuous support from top management is important in this phase. Notwithstanding the fact that resistance is inevitable, consistency throughout the implementation phase is very crucial.

- *Step six: Evaluation:* This phase involves a comparison between the actual results and the pre-planned results. However, this phase should not come early to avoid initial teething problems. Middle managers, by virtue of their position are best positioned to do the evaluation process.

2.2 The Global Perspective

Pearson (2001) reports on various government policies on the adoption and integration of computers and pointed out that the American government put in place a computer policy in 1996 entitled: "Getting America's learner ready for the 21st century." This publication included supply of technology and recently the average ratio of microcomputers to students in schools has been 1 computer to each learner. Research findings on the integration of technology in the curriculum

in developed countries have reported the general effectiveness of technology as a method of instruction (McRobbie & Thomas 2000). However, in some other parts of the world, the integration of technology has come with its own challenges. In China, Liu and Pange (2015) discovered that the lack of hardware (laptops, notebooks, and computers), teaching material, pedagogical models, teachers' interest as well as teachers' support have adversely affected the adoption of ICT. Research findings in countries such as Australia (Downes, 2011), Finland (Kankaanranta & Kangalasso, 2013), the UK (O'Hara, 2014), Scotland (Learning and Teaching Scotland, 2003a), and New Zealand (Bain, 2014) have shown that ICT application and integration into the curriculum has been slowed down by many factors and that practitioners are not very sure about the importance of ICT in contributing towards their practice. In-spite of the challenges involved in managing the change that comes with it, the dawn of the 21st century, saw the adoption of ICTs on the whole spectrum of life and the necessity for the establishment of the knowledge society culminated in many countries like the United Kingdom (UK) (Livingstone, 2012:2), Malaysia (Kannan, Sharma and Abdullah, 2012:111), Turkey (Cavas, Cavas, Karaoglan and Kisla, 2009:200) and the Republic of Korea (Hwang, Yang and Kim, 2010:21) introducing and expanding the application of ICTs in their education systems in order to transform education and to establish knowledge societies. However, with proper change management practice, better results and outcomes can be guaranteed.

2.3 African Perspective

(Kamya 2007) is among different researchers who perceived that Uganda was the first of the twenty-seven World Links countries in Africa, Latin America, the Middle East and Asia to pilot the adoption and usage of the Very Small Aperture Terminal (VSAT) technology for school connectivity. This was indeed a major milestone toward achieving relevancy of ICT in education. This breakthrough led Uganda to become the first country in Africa to make usage of Microsoft Partners in the process of teaching and learning, to develop localised digital content that maps directly to the national curriculum. Kotter (2017), asserts that Uganda developed its initial ICT policy in 2003 and this document affirmed that for a successful integration of ICT, Uganda would need to embrace the goal of lifelong education for all with strategies that include:

- The administration of ICT centers of excellence in a way that will provide basic and advanced ICT training.

- Establishing mechanisms to facilitate collaboration between industry and training institutions in order to build appropriate human resources capacity.

- Enhancing the networking of training institutions in Uganda with those elsewhere to promote skills transfer.

Different researchers (Kotter 2017), refer to the Kenyan Information and Communication Technology (ICT) policies and implementation. The Kenyan Ministry of Education launched the National ICT Strategy for Education and Training in June 2006, (Kotter, 2017).

2.4 The South African Perspective – Gauteng Province

In-spite of the challenges that the South African education system is facing regarding the integration of ICT in curriculum delivery, frantic efforts have been put in place to try and manage the transition through engaging a sound change management process. It is in this ambit that the Gauteng Department of Education, through the Matthew Goniwe School of Leadership and Governance (MGSLG) sub-contracted Dual Point Consulting to administer the change management process in order to yield best results as far as ICT integration into the system is concerned. Evidence on the ground shows that Dual Point Consulting managed to a large extent, to unearth the fundamental role that change management plays in the quest for an effective integration of ICT. Below is a summary of the major activities that were carried out to implement the change management project as well as the results, conclusions and recommendations.

2.4.1 Introductory Visits

The main objectives of convening introductory meetings with schools were to:

- Appraise the identified schools to receive Change Management interventions, on the purpose of the project.
- Introduce the designated Change Agent to the school's management and stakeholder team.
- Familiarise and establish a relationship with the school authorities before the commencement of the project.
- Manage own and school's expectations as far as the execution of the project is concerned.

- Get an understanding of the school in order to bring about a tailor-made Change Management intervention.

2.4.2 The Change Readiness Assessments

The Change Readiness Assessments (CRA's) were carried out on the sampled schools with the aim to evaluate the status of the school regarding ICT Infrastructure, Institutional Capacity, Leadership & Management, and Attitudes & Perceptions. The results thereof will be used as a tool in the Change Management interventions in line with the Dual Point 8 Step Change Management Model.

The CRAs were administered using the Qualitative approach where interviews were carried out to gather information on whether the school was ready or not.

2.4.3 Change Management Training

ICT Change Management Training had its objective to promote an ambience favorable for the transformation of sampled Gauteng schools from traditional or conventional teaching schools into ICT schools. This could be achieved by assisting the selected schools in the identification of barriers to change and thereafter equip them with ideal tools that would help them to either remove or manage the barriers so that the ICT in Schools vision can be realised, with the following objectives: -

- Training ICT Committees and all Change Agents on the basic theoretical principles that determine a sound change management in the schooling system.
- Assist trainees internalise and grasp the essence of change from an individual perspective to change at schools.
- Help change the mindset of the educators from teaching to a **facilitation role** that is ICT driven.
- Assist schools with a smooth ICT transition in an effective and efficient way.
- Facilitate the transition to the Paperless "less paper" classroom in schools.
- Promote a clear comprehension of the Eight Step change management model.
- Help participants communicate and implement the ICT change management model.

Tabl1: Individual responses to "Did you participate in the ICT Change Management training?", disaggregated per designation.

Designation	Yes	Not Sure	No	Total
MGSLG ICT Programme coordinator	75%	9%	16%	100%
Principal	74%	6%	20%	100%
ICT committee	70%	10%	20%	100%
Educator	68%	9%	23%	100%
SMT	66%	3%	31%	100%
Teacher	58%	16%	27%	100%
SGB	50%	9%	41%	100%
Learner	23%	13%	64%	100%

Source: (Department of Basic Education:2019)

The above responses gave an indication that the training was regarded as most beneficial by principals (74%), followed by MGSLG ICT Programme coordinators (73%) and ICT committee members (70%). However nearly half of the learner respondents, (45%) indicated that they did not benefit anything from the training.

2.5 Lessons learned from the change management project

2.5.1 Careful planning must be done to ensure that change management interventions do not interrupt with schools' day to day activities.

2.5.2 Proper definition and management of all stakeholders and change beneficiaries play an important role in realisation of a change management process.

2.5.3 Change goals and targets must be specific, measurable, achievable, realistic and time bound. Unrealistic goals cause the team to fail achieve them, causes disillusionment and resistance.

2.5.4 Of paramount importance is the total and undivided buy-in and support from the district offices. Any lack of support or delayed communication always resulted in some form of resistance.

2.5.5 In order to help drive the project and maintain contact with the change management service provider, there is need for a district steering committee and a designated focal person to work together closely.

3. Methodology

3.1 Research Method

The study is inclined towards a **mixed methods approach**, leaning upon a pragmatist orientation. ICT by its nature lends itself in the pure sciences and this requires a quantitative approach. However, the implementation of ICT involves people who have a particular orientation, view and experience. It is thus important to solicit the views of those involved in the implementation of ICT programmes. The qualitative study is informed by the interpretivist approach which is discussed below. The study also uses quantitative secondary data, which leans it more towards a mixed method approach. Pragmatist scholars expressed their specific perspective that, separate from human experience, there is an objective reality. This reality, however, is based on the environment and can only be met via human experience (Goles & Hirschheim, 2000; Morgan 2014; Tashakkori & Teddlie. 2008). One of the key principles of pragmatism is that knowledge and reality are dependent on socially created beliefs and habits. Pragmatists generally agree that all knowledge is socially built in this world, although certain versions of such social constructs more resemble individual experiences than others ((Ponelis, 2015).

This philosophy was suitable for the current study as the central purpose of this study was to answer the main question entitled: How integration of technology in pedagogics enhances teaching and learning in Gauteng Public Schools? The link to pragmatism is due to the fact that theory suggests that Pragmatism is suitable for investigating phenomena related to education and ICT (Maddux & Donnett, 2015).

Basically, this is action research with a systematic approach to investigation that allows people to determine lasting effective solutions to challenges they confront in their day to day working lives. Besides, it also endeavors to build a body of knowledge that helps professional practices and works to increase the well-being of the people involved, (Stringer, 2014). The research makes use of the lean start-up model whose principal agenda is do away with the uncertainty by testing, piloting and developing the services or features with the role players or stakeholders. Parantainen, (2012), pointed out that the lean start-up method results into a learning process which guides and directs the solution developers in the right direction.

3.2 Population and sampling

Babbie and Mouton (2001) assert that a study population is the summation of elements from which a sample is selected. Bless and Higson-Smith (2002) describe a population as the set of elements focused on by the researcher to which the obtained results should be generalized. In addition, Polit and Beck (2006) define the population as a totality of individuals composed of similar characteristics or traits.

For this research, the accessible population included curriculum specialists, principals, deputy principals, educators responsible for the technology education and learners in senior secondary schools. Maree (2007) defines sampling as the process used to select a portion of the population for the study.

3.3 Data analysis

Burns and Grove (1997) define data analysis as “a method to reduce, organize, and give meaning to data gathered or construction that emerged and these are constructed into a meaningful whole.” For this study, the recorded interviews and observations were transcribed and analysed in the following order:

- The data collected was coded through a process of classifying responses into categories that bundled together the same ideas, concepts of themes one had discovered.
- Following the completion of data coding, it was then put into categories to facilitate comparison of what different participants said, what themes were discussed and how concepts were understood (Rubin & Rubin 1995:228).

4 Findings

Below are the major findings from the assessment:

- Support for ICT integration in education is overwhelmingly positive.
- ICT is seen as having made a positive contribution in education.
- More training is required to improve teachers' competencies in ICT use.
- Another major challenge to ICT integration is the theft of equipment which has resulted in unprecedented disruptions in learning.
- There is no correlation between the current widespread support for ICT in education and its use thereof.
- More support needs to be provided to the principles, SMTs and SGBs in order for ICT integration to be effective and this could be in terms of training.
- Almost all respondents believe that the ICT integration program is sustainable over time, provided funding and support are available

5. Conclusion and recommendations:

The beginning of this study saw the preliminary assumption pointing to the fact that change management is a fundamental tool that determines the successful implementation of any ICT project. This matter was explored by referring to various sources of information. Literature on the ground was sufficient enough to support the initial assumptions concerning the need for change management. The majority of scholars agree that poor change management is the major cause of ICT integration projects more-so in the education sector.

6. Recommendations

Based on the information gathered during this research, the following is recommended:

- Establish a change management commission whose sole mandate is to ensure an effective integration of ICT projects.
- Ensure sufficient and effective continuous training support to teachers and educators. principals, SMTs and SGBs before, during and after launch of the ICT project.
- Continuous evaluation of the change process to assess if intended objectives are being achieved.
- Ensure undivided buy-in and support from the districts and top management.
- Improve security measures to prevent theft of equipment and reduce threat of crime to learners.
- Ensure funding is made available to increase the provision of ICT equipment in schools and to invest in the ongoing maintenance and upkeep of the infrastructure.

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