

Assessment of the Implementation of the 'Digital Classroom' Initiative in the Gauteng Provincial Department of Basic Education

MB Mosehlana

Independent, South Africa

MP Sebola

University of Limpopo, South Africa

Abstract: The Gauteng Department of Basic Education (GDBE) is currently one of the departments nationwide that actively engage ICT in the execution of their mandate to ensure that Gauteng has effective schools and learning institutions. As the evolution of the forth industrial revolution is upon our horizon, infusion of ICT in the South Africa schools is essential to provides quality education to Gauteng learners which meets the national standard and can be internationally benchmarked. Universal and convenient access to learning and teaching material for learners contribute to improved standard of education in South Africa. Current debates perceive the education system as being in serious need of improvement. To support the implementation of any e-government initiative, an effective e-government policy and its implementation strategy is key. With special interest on the 3rd Generation of implementation research, policy implementers are required to formulate effective implementation strategies in cognisance of the complex, interconnected and multi-sectoral nature of the implementation process. The 7Cs implementation protocol acknowledges and explains the nature of this complexity and, therefore, provides a framework which guides policy and its concomitant implementation strategy to facilitate achievement of policy goals. This paper seeks to assess the application of the 7Cs protocol in the implementation of the GDBE's "Classrooms of the Future" initiative. The goal is achieved through document analysis (relevant legislative frameworks and official government documents and statements) and heavy reliance on reputable newspaper reports due to lack of published literature on the implementation of this programme as a result of the recent nature of the initiative.

Keywords: Gauteng Department of Education, E-learning, Digital classroom, 7Cs implementation protocol

1. Introduction

Policy or programme implementation is one of the significant components of the policy process. Policy intentions requires action if the set goals were to be realised. Policy can be adopted but without dedicated action i.e. policy implementation, efforts inserted in the establishment of policy are deemed futile. Even so, successful policy implementation requires that implementation strategies be put into place to realise policy goals. To date, there is not a single established or globally recognised theory on policy implementation, regardless of an intense Three (3) Generations of scholarship in the policy implementation research as initiated by Pressman & Wildavsky (1973) amongst other researchers (Brynard, 2005:653; deLeon & deLeon, 2002:471). In the absence of a globally recognised policy implementation theory, researchers have developed over time a set of variables that should guide a policy implementation process. One of the most recognised frameworks is the Brynard's (2005) 5Cs

implementation protocol, currently updated to the 7Cs implementation protocol. It is crucial to note that the 7Cs protocol is not a universally acceptable theory, but simply, yet an essential set of variables that can be used for a better understanding and structuring of the implementation process, for the GDBE's Digital Classroom initiative in particular. As heavily influenced by the 3rd Generation of implementation research, policy implementation has come to be seen not just a cog in the administrative machine, rather a complex activity. Modern policy administrators should draw from this foundation to formulate effective implementation strategies in cognisance of the multiplicity of parties involved and their interactions, whose roles are equally important in a policy implementation process. de Coning, Cloete & Burger (2018) developed the 7Cs protocol which explains the complex and synchronised nature of implementation processes through a number of equally important variables including, content, context, commitment, capacity, client and coalition, communication and coordination.

2. Policy Implementation Gap in South Africa

One of the biggest challenges facing South Africa is to translate policy into practice. The South African government is applauded as one of the governments in the world with best policy intentions for its citizens, however delivering on such intentions continues to pose a challenge. The then Department of Water Affairs (2011) made a rather immutable statement that South African government departments have established good and strong policy frameworks, but they are experiencing difficulty in delivering on those policies. This highlights the policy implementation dilemma in the South African Public Service due to lack of strategy generation and sound planning frameworks to put policy into practice. Paudel (2009:37) highlight some of the most common policy implementation failures including; failure in planning, lack of clarity in goals and procedural guidelines, failure to manage specific success indicators, or lack of improvement in the political climate around a program, amongst many others. Electronic delivery of services (e-government) is a good example of the implementation struggle that the South African government currently battles with, in effort to sufficiently and inclusively deliver to its citizens in a digital matter.

Brynard, Cloete and De Coning (2011:156), Paudel (2009:37) and InfoDev (2010:37) argue that policy intentions would be realised if policy makers would closely consider how policies can be realised. In this light, delivery of e-government services requires an effective implementation strategy, which this paper identified as a gap in policy implementation in South Africa. It is therefore important to assess GDBE's Digital Classroom programme as one of e-government initiatives implemented in the country within the education sector. The aim is to assess how the department applies the 7Cs protocol to satisfactorily deliver e-learning services to the learners in Gauteng. By so doing, success areas as well as a probable implementation gap is identified, ultimately serving as a programme evaluation effort, which provides insights and considerations for improved programme implementation.

3. Application of the 7Cs Implementation Protocol for e-Learning

The 7Cs protocol is a group of advisory variables which helps facilitate better understanding of the

concept of implementation. The protocol also helps shape implementation of a policy, its strategy or an action programme. Each policy is unique, and so is its implementation agenda, therefore, Brynard (2005:658) advises that these variables should serve as enablers of a diagnostic process and terms of reference for successful policy implementation. The variables are interlinked and influence each other depending on specific implementation situations.

3.1 Policy Content

According to Angelo State University (2008), a policy is distributive, regulatory or redistributive in nature. It is important to understand that policy content is not only imperative in the means it employs to achieve the results, but both in the purpose of the results themselves and in the way it chooses specific means to reach those results (Brynard, 2005:659). This explanation places emphasis on the criticality of the choice of means and results to be achieved. In simple terms, policy content explains what a policy intends to do, how it intends to do it and how it relates to the issue to be addressed (de Coning, Cloete & Burger, 2018:207). According to infoDev (2010:37), one of the key requirements of a successful policy implementation is the ability of a policy and or an implementation programme/strategy to set specific goals. The ability to set such goals lies in the capability to answer six important questions; what needs to be accomplished? why should it be accomplished? who is involved? where is it going to take place – location? when is it going to take place- time frame? and, which requirements and constraints need to be taken in account? Paudel (2009:37) supports that one of the components contributory to effective policy implementation are clearly specified tasks and objectives that precisely match the intent of a policy.

3.1.1 Assessment of the Policy Content

Content i.e. intentions of the two main policies informing and guiding e-learning environment in South Africa are assessed.

3.1.1.1 National ICT Policy

E-learning refers to utilisation of ICT resources, which promotes flexible learning, allow access to information, production of learning material and learning experiences as well as interaction among teachers and learners in an online environment to facilitate collaborative learning (Department of Basic Education, 2004:15). The South African

National Integrated ICT Policy White Paper, 2016 is a distributive policy. A distributive policy produces public goods or services for the general welfare of the public and is known to be non-zero-sum. The intention of this policy is to position and utilise ICT as a critical tool to strengthen "the development of a dynamic and connected information society and a vibrant knowledge economy that is more inclusive and prosperous" (DTPS, 2016:1). Amongst other efforts, the South African government intends to digitalise the public service to enable the provision of goods and services to citizens in an electronic manner in order to promote the general welfare of the public. In addition, the National E-government Strategy and Roadmap, 2017 is also enacted as a national e-government implementation strategy to explain how the different policy goals are to be realised. To support the vision of the policy, the implementation strategy therefore strives "to guide the digital transformation of public service in South Africa into an inclusive digital society where all citizens can benefit from the opportunities offered by digital technologies to improve their quality of life" (DTPS, 2017:3) The policy ultimately supports the South African National Development Plan, 2030 and to ultimately achieve the directives of the South African Constitution, 1996 for its vision of effective and responsible service delivery to ensure a better life for all South Africans. The ICT policy clearly explains what the policy intends to do and the rationale behind the policy, while its implementation strategy expand on how, by whom, location, timeframe and while acknowledging the requirements and constraints. As such, it is imperative that any e-government initiative implemented at all spheres of government in South Africa is guided by and executed within the confinements of the national ICT policy and its accompanying implementation strategy.

Chapter 10 of the National ICT Policy White Paper (2016:114) positions that, ICTs seek to empower citizens to engage, create and access information and services in a convenient manner through electronic and digital access channels to help curb unequal access to a variety of public services, education included, to enhance opportunities for employment and economic growth. One of the nine key challenges identified in the National Development Plan, 2030 is the poor quality of school education. The policy affirms that "e-learning and innovative use of ICTs in the education sector can assist in addressing inequalities in education in schools across South

Africa, and facilitate ongoing improvement of educator skills" (DTPS, 2016:8).

3.1.1.2 e-Education Policy

The aim of the e-Education policy is to capacitate learners, teachers and management in schools with ICT facilities that will be utilised confidently and creatively to help develop skills and knowledge required for lifelong learning towards realisation of personal goals and to become active participants in the global community (Department of Basic Education, 2004:17; e-education policy, section 2.22).

3.1.1.3 Gauteng Department of Education Strategic Plan

The Gauteng Department of Education plan serves as an implementation plan which aligns and achieves its objectives within the confinements of the national policy, especially all efforts and programmes in relation to electronic delivery of educational services – Revise perhaps. The Gauteng Department of Education (GDE) identified strategic drivers which are made up of ten (10) pillars, of which the sixth (6th) pillar promotes the deployment of ICT in education (See GDE's Strategic Drives document – if available; Lesufi, 2014:38)

3.2 Policy Context

It is commonly understood in the field of implementation research that a theory that has no context, will produce neither powerful explanations nor accurate predictions. However, it is argued that the question of contextuality in implementation studies remain an issue, but researchers, policy makers and policy implementers need to take into account the social, economic, political and legal environments within which policy is carried out. For example, Paudel (2009:37) states that considerable efforts also need to be paid in identifying political responsibility for the initiative since it is important to assess political influence on an initiative in order to ensure that particular responsibility is assumed. Thus, it is important to consider all different settings when planning implementation, although it's not easy to undertake such systematic study. de Coning (2018:208) support that failure to do that will face danger of losing accumulation of learning, and also show weakness to account for contextual impacts on implementation effectiveness. For example, effective working relations within the institutional context require interactions (bargaining or cajoling) among agencies as imperative for successful policy

implementation (Brynard, 2005:659). This emphasises the importance of the larger environment, and how it impacts the implementation process.

E-learning legislative frameworks are technologically orientated. Implementation of the 'Classroom of the Future' takes place in a technologically inclined environment 'digital era', 'information era' in the wake of the "4th industrial revolution". It is of paramount importance that the South African government respond adequately and timely to these environments, not ONLY through policy but through properly planned strategies and programme implementation to harness the benefits brought forward by these modern environments. The programme was introduced under the leadership of Panyasa Lesufi, as an e-government champion, admired by the then Deputy President Cyril Ramaphosa

3.2.1 Implementation Overview of the Digital Classroom Initiative

The GDBE introduced an e-learning project in Gauteng rural and township schools as a step to improve the quality of education in the country. The programme was first introduced towards the end of 2014 in seven (7) such schools. The second group commenced in January 2015 which gave a total of 13 Gauteng public high schools. One of the schools where the pilot project is being implemented is Boitumelong secondary schools in Tembisa. The project offers learners and teachers the opportunity to learn and teach using ICTs such as Tablets and digital screens. It replaces the traditional teaching equipments including Chalk-boards, pens and books amongst others. The tablets have unlimited access to 4G data connectivity for learners to access learning resources. The project came to be known to some as "a paperless classroom" (SA News, 2015; News24, 2015). This GDBE initiative is an action programme that operationalises the South African ICT policy's e-learning vision of addressing inequality amongst schools and the need to improve skills sets of educators in South Africa.

The project thus facilitates flexible learning as learners are able to access learning materials and additional reading materials at any given time at schools and at home, in realisation of the 2nd Output of the MTSF "Improved quality of teaching and learning through provision of adequate, quality infrastructure and Learning and Teaching Support Materials (LTSM)" (GDE, 2014:38) The project is deemed to promise a number of benefits

including monitoring of teachers, learners ability to compete at an international level as a result of access to diverse reading materials, enables effective learning and teaching, efficient distribution of learning material which saves government money, fostering of public-private partnership, provision of necessary computer skills preparing learners with much needed basic ICT skills at corporate level, which speaks to the 3rd Goal, i.e. to enabling young people to make the transition from school to further education (GBE, 2014:57) (9th Pillar: Skills development) by strengthening the capacity of the education system in Gauteng to a system which is capable of producing skills that addressed the skill needs of the economy (GDE, 2014:49).

The current initiative was introduced by Mr. Panyasa Lesufi during his five-year plan for the province towards the end of 2014. As part of assessing adoption rate, Patel (2018) reports that in July 2015 over 1 800 Grade 12 classrooms at 377 no-fee paying township schools were equipped with the necessary ICTs. A year later, the project was reported to have rolled-out ICTs to over 2 300 Grade 11 classrooms in no-fee township schools. An additional 83 alike schools were also connected totalling to 2 383 schools in 2017. In 2018, the department focused on enrolment of the Grade 10 learners targeting 3 100 classrooms.

3.2.2 Classrooms of the Future

298 million contract was awarded to Huawei Technologies to provide 88 000 tablets to 2 200 schools in Gauteng (Patel, 2018; Brainstorming, 2019). Another contract worth R107 Million was given to Cloudseed to provide WiFi and 3G connectivity. Argument: Budget was provided, however the question is, has all these tablets as planned provided across different Gauteng Public School? As an initiative largely aimed for rural and township schools in Gauteng, it was indicated that a township school that achieves 100% in matric automatically formed part of the pilot project which fully covered a school from Grade 8-12. To achieve a 'classroom of the future' requires that the 20th century curriculum delivery methods be replaced with modern teaching methods in order to achieve the NDP objective of e-learning. Initiatives aimed to: provide (1) high-speed broadband connectivity, (2) laptops, (3) interactive smartboards, (4) tablet devices.

Reports states that tablets were provided with pre-loaded lessons and tracking devices and two

armed security guards to ensure safety and security (Brainstorming, 2019). Now the question lingers, that if the department claims to have provided devices with tracking devices and armed surety who are tasked to guard the infrastructure, how come that devices still got stolen? This highlights the need to revise and strengthen security measures around the initiative. Mr Lesufi reported that performance of schools that utilises ICTs for teaching and learning, has improved, demonstrated through improvement in learner's performance (Brainstorming, 2019). His arguments are further supported by teachers and principals who also reported that e-learning has improved learners' confidence in utilising technology, and most importantly, improved results on the learners' performance in Maths and Science. Mr. Lesufi, in his State of the Province Address in 2018, also reported that there has been an improvement in subjects such as Maths, Science, Technology, Economics and Accounting following an introduction of ICTs in schools (Patel, 2018).

The GDE provides ICTs in schools with the aim to empower young people to participate in the digital economy. This initiative is also motivated alongside the idea of providing a competitive learning environment which changes the current undesirable landscape of township education (Brainstorming, 2019). Critical view by the DA – A negative perception should not grow against the programme, on the basis of a number of reported failures, but challenges need to be identified and dealt with accordingly (as it is generally the cases with newly implemented / pilot programmes) as opposed to discouraging implementation (Patel, 2018). Perceived benefits is an adequate motivation for continued implementation and support for the programme, particularly in the current technological environment.

3.2.3 Benefits of the Initiative

Teachers and principals at schools have already witnessed first-hand benefit and impact of the programme. Patel (2018) reports that a principal at one of the school indicated that interaction of ICTs in schools has almost stopped a common problem of late-coming to school, as students are highly appreciative of the facilities cannot wait to get to school to utilise them on daily basis. This provides a clear demonstration that availability of Wi-Fi in schools is a positive reinforcement and motivation to learners, as learners are able to tap into an information hub that helps spark interest and understanding to their learning activities.

Teachers on the other hand use Smart interactive boards which has lesson plans, teaching plans, and teaching videos making teaching interesting and effortless.

Secondary to enhancing teaching and learning, (Patel, 2018) states that Grade 12 learners are also afforded an opportunity to easily and cost effectively apply for tertiary institutions, i.e. paving and facilitating their paths to after-schooling career opportunities. The DA is also in support of the initiative, thereby acknowledging its ability to impart the basic and necessary work place computer skills. For those students who will not be pursuing higher education. The GDE identified three variables upon which the programme's success could be measured; (1) adoption level; (2) utilisation rate and; (3) integration (Brainstorming, 2019). In the current implementation pace, the department has a long way to show substantial measurable outputs in these areas, especially being able to demonstrate the integrated nature of the programme implementation, as this requires a high level of implementation whereby different schools in Gauteng are interconnected in their curriculum delivery approach.

3.3 Implementation Commitment

The success of a policy is not dependent only on how good a policy is, but also strongly on the willingness of the implementers to commit to the attainment of policy objectives (Sabatier & Mazmanian, 1980:547). Paudel (2009:37) also stress that efforts must be directed towards ensuring high levels of commitment to policy initiatives. Brynard (2005:660) states that both the bottom-up and top-down scholars shares the sentiments and agrees that commitment is significant at all levels of policy processes for effective implementation. de Coning (2018:208) adds that commitment influences and is in turn influenced by the other six variables which highlight the interlinked nature of the policy implementation process. InfoDev (2010:37) states that it is important that administrators are both willing and able to work in order for the programme to become realistic. Furthermore, McLaughlin (1987:172) believes that the will, commitment and the motivation of the administrator is shaped by factors far outside the control of policy. He argued that the administrator's willingness is greatly shaped by factors such as "environmental stability, competing centres of authority, contending priorities or pressures and other aspects of the social-political milieu". Thus, the will/motivation or

commitment reveals the administrator's assessment of the value of a policy, as well as the suitability of the implementation strategy. Policy implementation researchers revealed that successful implementation commonly needs a balance of pressure and support from a policy. Pressure is needed in most settings to keep focus on policy objectives while support is required to facilitate policy implementation. The ability of a policy to instil pressure is significant even in situations where administrators willingly respond positively to policy objectives, simply because institutions and individuals are afraid of change. Research in policy implementation highlights that change eventually becomes a problem of the smallest unit, and therefore what is produced in effect to a policy is also dependent on street-level bureaucrats' willingness to change and the policy pressure placed on them to enforce change (McLaughlin, 1987:173; Paudel, 2009:39).

3.4 Implementation Capacity

The public sector capacity is perceived in broad terms as the structural, functional, and cultural ability to execute government policy objectives. This implies availability and access to tangible (e.g. human, material and financial) and intangible (e.g. leadership and commitment) resources. This also requires the economic, political, social, technological, cultural and administrative environments to be conducive for effective implementation. Capacity building entails full government transformation to organise resources in order to realise policy objectives (de Coning, 2018:208). As much as the administrative capacity is necessary, so is the provision of necessary resources, which alone can be a complex process. As far as administrative capacity is concerned, Paudel (2009:37) adds that efforts are required in ensuring that there is a strong project management team that will manage the project successfully. The team is amongst others, expected to establish concrete measurement standards to measure progress made towards the achievement of set goals (InfoDev, 2010:37); a management plan clearly assigning tasks and performance standards to subordinates; an ideal tool of assessing subordinates' performance; and a management controls system and social sanctions satisfactory to keep subordinates answerable for their performance (Paudel, 2009:37). Therefore, capacity required to successfully implement policy objectives lies within the commitment and ability to practically implement the relevant elements of strategic

management within a given context (Brynard, 2005:660). McLaughlin (1987:172) acknowledges that capacity can be difficult; however, it is an issue that can be tackled through provision of training, financial resources or use of consultants in situations where there is lack of expertise.

3.4.1 Gauteng Infrastructure

The South African government's 2014-2019 Medium Term Strategic Framework (MTSF) plan, identified six (6) target outputs to be achieved by the DBE. The second output amongst others speaks to improved quality of teaching and learning by providing sufficient LTSM and quality infrastructure (MTSF, 2014-2019; Lesufi, 2014:38). The output aligns to some of the key challenges identified within the education sector, which involves inter alia; lack of ICT infrastructure and universal access to Learning and Teaching Support Material (LTSM) in schools, as areas of particular interest. Nonetheless, Panyasa Lesufi (2014:20) argues that, if adequately deployed and budgeted for, ICT is capable of facilitating access to LTSM. Opportunities that arise from current infrastructural challenges, especially ICTs in the era of the 4th Industrial revolution, is an inevitable need to build classrooms of the future. These are classrooms that are well equipped with ICT infrastructures such digital screens.

Dedicated efforts and action required to build what is commonly known as digital classrooms include those highlighted by Lesufi (Gauteng Department of Basic Education, 2014:46) which include, but not limited to ensuring connectivity in each classroom and to all learners. E-learning teaching solution as envisioned by the GDE provides an information hub whereby necessary content is made accessible to empower teacher to successfully delivery the set curriculum to learners on the one hand. On the other hand, learners are also provided access to learning material and workbooks, and more importantly support and other subject matter related support material, which will not necessarily be available within the print-based teaching approach. Information hub is beneficial as it provides a variety of teaching material, guidelines, expose teachers to a variety of best teaching approaches and styles that teachers can adopt to enrich their teaching skills from Thutong Portal – South African educational portal accessible on www.thutong.doe.gov.za

One of the priorities of the GDE's e-learning solution is to build smart classrooms which enable

learners to access computers, Ipads or Tablets and broadband internet. GDE began implementation of this vision through a number of township and rural schools. Early adoption of ICT in schools is of great significance in preparation of the future labour force. The calibre of the labour force in the digital age demands ICT skilled and equipped candidates to help strengthen and promote a healthy knowledge economy, a digitally inclusive society, ICT skilled and competitive entrepreneurs to offer highly networked and digitised services of the awakened digital future demands. It is precisely for this reason to accelerate uptake and usage of ICTs in schools. Deployment of mobile devices (tablets) in schools such as Boitumelong and similar case is one of the priorities by the GDBE to distribute learning content.

The second pillar identified in the GDE strategic drivers involved teacher provision and support. Within this pillar of critical importance is strengthening and solidifying of support to teachers (GDE, 2014:42). With regular training and strict recruitment processes being central amongst other actions, what is required is competent teachers who are ICT skilled and capable to implement the e-learning initiative, i.e. to successfully teach learners using various ICT facilities. The 6th pillar of the GDE which emphasise deployment of ICT in education, also emphasise the need to train teachers for effective use of ICT facilities in the curriculum delivery. The department empowers and develop teachers through a number of programmes including: the advocacy and support of Pre-Service Education and Training; Teacher development through In- Service Education and Training; Teacher Development through Communities of Practice (COP); Teacher development through Circuit Support Teams and Teacher Development Centres (GDBE, 2014:55).

It is imperative in the e-learning era that all these training/development programmes incorporates the ICT element by acknowledging and infusing ICT skills as part of training and development for teachers. Change management is also vital, especially with old teachers who are accustomed to traditional methods of teaching. AL-kaabi (2010:652) advises that change management and capacity building inter alia are important factors of consideration for implementation of any e-government initiative. Lack or limited learning material, risk of loss of material, carrying a large volume of books in backpacks or schools bags (MIB Technology, 2019). The DBE has digitised learning material through the Thutong portal.

3.5 Clients and Coalition, Communication and Implementation Coordination

Brynard (2005:661) and de Coning *et al.* (2018:211) states that it is important for the government to partner with unions or interest groups, opinion leaders and other outside actors in favour of a specific government implementation process. Development of local alliance by individuals affected by the policy can critically affect policy implementation. Therefore, it is imperative to focus efforts in carefully identifying relevant principal actors and stakeholders, especially those whose interests are affected and have desire to influence the implementation process. Policy implementation has changed focus from trying to develop a meta-theory, to explaining the significance of collaborative relations across institutional boundaries in producing desired policy outcomes (Conteh, 2011:124). Consequently, this chain of thought sets out a theoretical foundation for this study on the basis that, the combined efforts of public institutions, private and non-governmental organisations together with civil society (a multi-actor approach) are critical to successful policy implementation and ultimately improved public service delivery. Community and stakeholder involvement and partnerships with different organisations including the business community and NGOs explains the 8th pillar of the GDE's strategic drivers which is centred around support for schools in order to strengthen education in Gauteng. Important questions arise; what does the ICT policy say about partnerships? Who are the proposed partners in the national implementation strategy? How can Gauteng involve them in its e-learning initiative?

According to Brynard (2005:662) and de Coning (2018:212), communication is crucial in all aspects of life, and central to all variables discussed above, and is thus considered the 6th C in the implementation protocol. This implies that all variables must be communicated amongst each other and to all parties involved for a synchronised process and to ensure a successful implementation. All five variables can be properly planned and organised, but in the absence of thorough communication, all efforts can be meaningless.

de Coning (2018:212) identify coordination as the 7th C variable in the implementation protocol. This variable speaks to harmonisation and synchronisation of activities within and between (Intra and

inter coordination) organisations as important in policy implementation processes. On the one hand, it is important that departments and institutions within an organisation establish effective working relations, while this working relations and coordination amongst different organisations and NGOs on the other hand, is equally important. Coordination affect and is also affected by the other six variables. Converting policy into practice requires implementers, including all parties involved to cooperate and coordinate individual efforts to ensure successful achievement of policy objectives.

3.5.1 Implementation Gap and Challenges

At Goede Hoop Primary School (First part of a pilot programme, Gauteng Online Schools Projects (GOSP) received 40 tablets – but were taken away due to safety reasons (Similar case to Classrooms of the future. Considerations: e-education policy is required (must be finalised) to strategically determine the issue of safety and security of devices. Currently it still does not have a working phone line – the school principal uses his own cellphone. Through partnership with the Mercantile Bank 20 computer with necessary software and internet connectivity – (1) attempts to address the problem of learner being exposed to a computer ONLY at a tertiary institution; (2) preparation of future workforce (Brainstorming, 2019). It is important that ICT skills are instilled at a basic school level, as learners are granted an opportunity to interact with and embrace technology at early childhood to prevent future resistance, and empower South Africa to become innovators/game changers/drivers as opposed to consumers of ICTs and accompanying benefits.

Tendering processes needs to be ethical and undertaken at a highly professionalised manner, in consideration of the South African tendering processes. It was reported that Cloudseed's performance was found to be ineffective during the GOP, but its contract was renewed in the current programme. Justification of this was the inability to meet the deadline if new suppliers were considered (Brainstorming, 2019). This is not a good enough reason, as contracts are time-bound and therefore effective planning needs to take place to prevent such cases. As a measure performance will be strictly monitored, whereby 95% of network is achieved by end of the contract. In addition, it is alleged that Luidia – a company that provides eBeam smart-maker digital whiteboards and eBeam Edge Plus interactive boards were unfairly disregarded by the

department in the tendering process argued not to have met the tender specifications, while the tender was awarded to a supplier who provided the devices at a much higher price than Luidia. One of the South African tendering process requirement/principles was overlooked, which states that a tender needs to be awarded to the higher bidder who meets the following requirements: offering a service at lowest possible cost with highest possible quality.

3.5.2 Issue Encountered in the Second Phase

In July 2015 further 375 schools were involved the 2nd phase rolled-out. During this phase a total of 17 000 tablets as well as 1 800 3D LED interactive boards were distributed to these schools (Brainstorming, 2019). As of 2015, 64 000 Tablets 8 000 were allocated to Grade 12 students, unfortunate 8 000 were stolen and 4 000 were outstanding to be returned back by the students. Safety of devices remains a concern, even after some safety and security steps are undertaken (Patel, 2018). The first phase roll-out experienced challenges of theft and burglaries. As a result, the department took a very drastic and unfortunate step by withdrawing Tablets from schools. The reasoning behind was the department's intention to install better tracking devices (were devices also withdrawn in the 2nd phase roll-out?) In 2016, 75% of township schools were connected to the internet as part of ensuring 100% connectivity in both rural and township schools in Gauteng.

In some instances, the devices were also reported to be smuggled out of the province high a highlight a possible coordinated criminal activity around the programme. As part of collaborative efforts, community need to speak against theft of school infrastructure. Efforts by the community are required which can involve activities such as community school patrols. Awareness also need to be raised regarding the importance of the use of ICTs in schools and its role in empowering learning in harvesting important ICT skills in preparation for job market and possible entrepreneurial communities that can develop within the community. This is to say, the community should not view the devices which are carried by learners as luxurious tools, which might trigger a criminal element by community members, but as part of important and necessary learning materials. Other problems or challenges are internal, one emanating from reports by Lesufi that not all matric learners returned the school tablets upon completion of their schooling. It was reported that some learners failed to return the tablets as only 81% of

tablets were returned (Brainstorming, 2019). As a result, mainly of theft of Tablets, the department suspended the roll-out of tables to Grade 11 learners. This is an unfortunate implementation set-back. In addition to theft, corruption is reported to be one of the problems affecting effective implementation of the programme.

3.5.3 Lesson from Similar Projects in Gauteng

Sunward Park High School is one of the former model C schools that has fully transformed from physical textbooks to e-books. Learners from grade 8-12 are able to use tablets in their learning activities. This initiative was launched by Mr Enver Surty, the former Deputy Minister of Basic Education, made possible through partnership with MACMILLAN and MASKEW MILLER LONGMAN. Both teachers and learners are able to log into the information portal that provides access to reading material of all subjects in all grades as well as relevant support material. It is reported that some teachers acknowledged the importance of e-learning at a basic schooling level, in preparation of tertiary education. This will address the issues of lack of computer skills learners from rural and township schools, whereby a learner's first encounter with the use of computer is in most instances at tertiary or higher education level, automatically limiting that particular learner's ability to effectively learn.

3.6 Conclusion and Recommendations

Application of the 7Cs in the implementation of the 'Digital Classroom' does take place, although not to a full extent. The challenges reported including cases of theft, accounting irregularities through tendering process, provide evidence to this effect. There are still a number of factors that needs consideration, including strengthened partnership with the community, improved infrastructure, sustainable funding amongst others. An effective and properly designed roll-out strategy is required. One that will in part detail security and safety measures to effectively deal with the rising issue of the criminality element. Training for teachers is identified as another area that requires attention. Teachers need to be empowered and fully capacitated to utilise and maximise the benefits of these tools, to go beyond just teaching learners how to type, simply availing material electronically, to a more advanced and synchronised teacher and learning approaches. All these areas cut across the 7C implementation protocol, requiring dedicated and systematic application

by government and concerned role players. Like any new initiative, there will be problems, however, what is important is continued improvement and re-planning whenever problems arise. Lessons from similar projects should be considered, including the Sunward Park High School practices.

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