THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGY IN IMPLEMENTING THE NEW CURRICULUM FRAMEWORK IN ZIMBABWEAN SECONDARY SCHOOLS: THE CASE OF GLEN VIEW-MUFAKOSE DISTRICT.

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DEDICATION

In memory of my late father, Mikel Tambaoga Gunduza who, though not well educated, always wanted to see the best in me. To my mom, Shupikai Mharapara, thank you for making me the man that I am. This dissertation is exclusively dedicated to you dear parents.

ABSTRACT

In a bid to align the Zimbabwean education and training sub-sectors to the evolving needs of the nation, the Nziramasanga Commission of Inquiry into Education and Training (CIET) put forward several recommendations. One of the recommendations was that secondary education should respond to the needs of the society. Technocrats in the Ministry of Primary and Secondary Education (MOPSE) translated the CIET recommendations into an actionable curriculum policy. Between 2014 and 2016, the MOPSE designed a new curriculum and prepared the relevant teaching-learning inputs. Implementation of the new schools curriculum started in the year 2017 in all the schools that is, primary and secondary including government and private owned schools. This research focused on the implementation of the new curriculum at secondary level. The aim was to analyse the role played by Information and Communication Technologies (ICTs) if properly tapped. Above all, ICT is a key cross-cutting theme in all the new curriculum syllabuses developed for secondary schools. This motivated the researcher to find out if in reality schools are reacting to the demands of the 21st Century that is, teaching and learning using computer-based information systems. In addition, the research was confined in the secondary schools found in Glen View-Mufakose District even though the results can be the same with so many secondary schools around Zimbabwe. Singled out for a greater depth of analysis as an objective here is the criticalness of ICTs in making the new curriculum an achievable dream. The respondents of the research were drawn from the teaching experts which include; the ICT teachers, school heads in Glen View-Mufakose District, and others. The research found that most secondary schools in Glen View-Mufakose District are not effectively tapping ICTs into the new curriculum due to a plethora of challenges which include; lack of adequate financial resources to buy ICT equipment and so on. The research concluded among an array of things that in-service training for teacher development to implement the new curriculum is very key in the adoption of ICTs in most schools. The major recommendation made from the study is that, government through MOPSE should provide in-training service to teachers on the use of ICTs in the teaching practise. Further research is suggested in the area of assessing the effectiveness of teacher capacity development initiatives in the implementation of the new schools' curriculum with the aid of ICTs.

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LIST OF ABBREVIATIONS

2G	:	Second Generation Technology
3G	:	Third Generation Technology
4G	:	Fourth Generation Technology
CDU	:	Curriculum Development Unit
CDTS	:	Curriculum Development and Technical Services
CIET	:	Inquiry into Education and Training
DSI	:	District Schools Inspector
HOD	:	Head of Department
ICT	:	Information and Communication Technology
KSA	:	Kingdom of Saudi Arabia
MOPSE	:	Ministry of Primary and Secondary Education
OECD	:	Organization of for Economic Cooperation and Development
UNESCO	:	United Nations Educational, Scientific and Cultural Organization
ZIMSEC	:	Zimbabwe School Examinations Council

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CHAPTER ONE

INTRODUCTION

1.0 Introduction

The research seeks to assess the role of Information and Communication Technology (ICT) in implementing the new curriculum framework launched by the Ministry of Primary and Secondary Education (MOPSE) in 2017. This chapter discusses the following; background of the problem, statement to the problem, objectives of the study, research questions, justification of the study, delimitations, limitations and structure of the study.

1.1 Background to the problem

Globally, countries have identified the important role of ICTs in improving education through curricula reform and the development of a set of national goals and policies to guide the implementation of ICT in schools (Goodison 2003; Hennessy, Ruthven and Brindley 2005, Kozma, 2003). The issue of ICT in education is a profound idea which improves the quality of learning worldwide. Across the Organization of for Economic Cooperation and Development (OECD) countries, there is a general consensus that lack of ICT infrastructure in the delivery of the curriculum is a barrier to effective education system (OECD, 2001:67).

Despite the prioritisation of the use of ICT in education and training in most African countries, a few have achieved progress in implementing ICTs in schools (OECD, 2001:68). Nevertheless, a small percentage of schools in South Africa, Botswana, Namibia and Zimbabwe achieved some levels of effective use of ICTs to support and change the teaching and learning process in many learning areas (Ball, 2014:93). Tanzania, Zimbabwe and Zambia are still in the early phase of Information and Communication Technologies adoption in education (OECD, 2001:44).

Since early 1990s there were some efforts by the government of Zimbabwe concerning the state of the educational system in the country. However, the shortcomings of the old curriculum to produce individuals who are able to contribute meaningfully to the development of the country economically and socially in light of the emerging socio-economic challenges bedevilling the country and the world at large (Dambudzo, 2016:2). Henceforth, the government in 1998 set up the Presidential Inquiry into Education and Training (CIET) also

known as the Nziramasanga Commission which produced a report in 1999 explaining that since colonial period, the education in Zimbabwe has been largely academic in nature and did not adequately prepare learners on the global work skills (Nziramasanga Commission, 1999:67). In 2013 the Ministry of Primary and Secondary Education conducted feasibility studies on the curriculum needs of the country and proposed that a more comprehensive review of the curriculum be carried out pointing out that recommendations by the Nziramasanga Report had only been fulfilled partly. This culminated with the process of updating the schools' curriculum. Zimbabwe introduced the new curriculum initiated by the Ministry of Primary and Secondary Education in January 2017 which placed importance on incorporating ICT into various learning areas (Ibid).

While ICT policies are becoming common, the integration of an ICT policy for secondary school education to enhance the quality and effectiveness of the learning process is disappointing particularly in secondary schools in the Glen View-Mufakose District, Harare. Inadequate ICT infrastructure and skills coupled with unsatisfactory institutional arrangements, are major impediments to ICT sector growth. This has negative implications to most schools in Zimbabwe. However, in the case of the new curriculum in Zimbabwe, most teachers are currently trying to come to terms with the ICT curriculum driven system, new learning areas, new content, and the implications of calls for "integration", "contextualisation", "relevance" and "learner-centredness" (Dambudzo, 2016:2). In addition, this does not only require that teachers change how and what they teach and assess, but also challenges their underlying belief systems so that they recognise the critical role played by ICTs in implementing the new curriculum (Goodison, 2003:56).

The ICT sector has been faced with a number of challenges which indicates that it is mostly difficult for most Zimbabwean schools to implement the new curriculum framework using ICTs. Some of these include; inadequate communications infrastructure. According to the National ICT Policy of Zimbabwe (2005:13) whilst there has been significant roll out of communications infrastructure with second generation technology (2G) exceeding 75% population coverage (as at 31 December 2014), high speed broadband coverage is still patchy with most rural and remote areas remaining uncovered due to a non-holistic approach to universal service. Broadband coverage in rural and remote areas remains low. Coverage is mainly concentrated in affluent urban areas. This is widening the urban-rural digital divide against the principle of equitable access. Therefore, it is really difficult for most schools

especially the ones in rural areas to achieve the target of implementing the new schools' curriculum framework using ICTs.

Despite the role played by ICTs in assisting the implementation of the new curriculum, the usefulness of this tool is overemphasized in most secondary schools of Glen View-Mufakose District. The electronic learning or teaching materials for the new curricula are not readily available in most schools of Glen View-Mufakose District despite the fact that there are completely new subjects that have been introduced at secondary level such as the Information and Communication Technology (ICT), Computer Studies, Physical Education, Sport and Mass Displays of which some of them are compulsory. The provision of ICT infrastructure and soft skills to schools will make it easy for the school teachers, authorities, learners and other stakeholders to quickly adjust to the demands of the new curriculum.

1.2 Statement of the problem

The thrust of the research is on assessing the role of ICTs in implementing the new curriculum in secondary schools in Zimbabwe. The implementation of the new curriculum framework is being challenged by different stakeholders; parents, school authorities and the academics for inadequate ICT infrastructure. Furthermore, Zimbabwe's state of ICT infrastructure is very poor as articulated in the National ICT Policy (2005:7). Furthermore, the e-readiness survey carried out in 2005 underscored that Zimbabwe is still at the preliminaries of ICT infrastructure (E-readiness Survey Report, 2005). Thus, not much progress has been made since the publication of the report which shows that the state of the art ICT infrastructure in Zimbabwe particularly in secondary schools is missing. Consequently, there is a challenge in using ICTs in implementing the new curriculum framework in secondary schools.

There problem of implementing the new curriculum framework using ICTs in education is also compounded by the digital divide which exists between rural and urban areas. According to the National ICT Policy (2005:28) the Government of Zimbabwe intends to increase ICT usage in primary and secondary schools through enhanced teaching and learning through ICTs. Most schools do not have reliable connectivity due to electricity problems and high Internet costs. This policy aims to provide connectivity in all schools further bridging the urban-rural digital divide, and enhancing teaching and learning through the use of technology tools and promoting universal computer literacy in Zimbabwe's schools. However, up to 2017 not much progress has been made by the Ministry of ICT working with the Ministry of Education in transforming

and bridging the digital divide between rural and urban areas and installing ICT infrastructure in schools.

1.3 Objectives of the study

- To analyse the role of ICT in the implementation of the new curriculum in secondary schools.
- To assess the state of enabling ICT infrastructure in secondary schools in the Glen View-Mufakose District.
- To analyse the teachers' perceptions on ICTs in implementing the new curriculum related learning areas.
- To assess the challenges being faced by secondary schools in implementing the new curriculum framework.
- To examine the strategies being used by secondary schools in Glen View-Mufakose District to improve the use of ICTs in implementing the updated curriculum in Zimbabwe.

1.4 Research Questions

- What is the role of ICT in implementing the new curriculum in secondary schools?
- What is the state of ICT infrastructure in secondary schools in Glen View-Mufakose District?
- What are the teachers perceptions on ICTs in implementing the new curriculum related learning areas?
- What are the challenges being faced by secondary schools of Glen View-Mufakose District in implementing the new curriculum?
- What strategies can be used by secondary schools particularly in Glen View-Mufakose District to improve the use of ICTs in implementing the updated curriculum in Zimbabwe?

1.5 Justification of the study

There is a huge literature gap on the role of ICTs in implementing educational reforms in Zimbabwe. Findings of this research would be useful in improving the implementation of the new curriculum in Zimbabwe. Given the outcry of most parents, guardians, stakeholders and teachers about the contents and demands of the new curriculum being implemented in schools, the research is worthy carrying to assess the role of ICTs in facilitating a smooth transition and

implementing the new curriculum. The study helps policy implementers to consider and rectify the shortfalls that could have been noted. The parents, guardians or education authorities alike may also benefit from the research findings especially on the role played by ICTs in during the implementation of the curriculum framework.

1.6 Delimitations of the study

The study is limited to public schools in Glen View-Mufakose District within the Harare Metropolitan Province.

1.7 Limitations of the study

The research is being carried out at a time when most of the secondary schools' authorities are not yet well versed with the demands of the new curriculum which is likely to impact on the objective findings of the study. The researcher engaged administrators from the Ministry of Primary and Secondary Education who are at the forefront in implementing the new schools' curriculum framework.

1.8 Structure of the study

The research comprises of five chapters outlined below:

Chapter one: The Introduction

This section introduces the research with details of the background to the study. The study objectives, statement of the problem, the research questions, the justification of the study, limitations, delimitations and structure of the study will also be presented.

Chapter two: Literature Review and Analytical Framework

It provides a review of the relevant literature to the study. Included as focus points in the review is the conceptual framework that is defining ICT and its role in supporting education an analysis of the UNESCO Bangkong analytical framework and the country case studies from Saudi Arabia and South Africa. Lastly the lessons learnt and concluding remarks.

Chapter three: The Methodology

The chapter describes the methodology for the study. The section outlines the research design, research approach, research type, sampling, a detailed discussion of the data collection and data analysis processes. Ethical considerations of the study are also outlined.

Chapter four: Data Presentation and Analysis

This chapter contains the presentation and analysis of research findings. Excerpts of participants' comments are included to direct the discussion of findings, along with references to views of different participants.

Chapter five: Conclusions and Recommendations

It provides the research conclusions. The main findings are summarised, recommendations to the study are proffered.

CHAPTER TWO

LITERATURE REVIEW AND ANALYTICAL FRAMEWORK

2.0 Introduction

In an attempt to answer the research objectives stated in chapter one, the section reviews the relevant literature to the study. The inquiry seeks to assess the role of information and communication technologies (ICTs) in the implementation of the new curriculum framework in secondary schools. Therefore, this chapter seeks to analyse the definition of ICT, the concept of curriculum, curriculum implementation, the role of ICT in the curriculum, barriers to integration of ICT into education, conceptual frameworks informing the study as propounded by the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the World Bank (2006). Case studies are drawn from the Kingdom of Saudi Arabia and South Africa.

2.1 Conceptual Framework

2.1.1 Defining ICTs

In the literature of ICTs there seems to be a general lack of an all-encompassing definition of ICT. The discipline of ICTs gained much popularity around the 1990s and it rose to prominence with various scholars all of whom had different perceptions with the emerging trend. This explains why there is no one credited scholar who laid a solid foundation for the discipline. Nevertheless, the paper will draw different definitions from different scholars which brings to light the profound features of the concept.

ICT refers to technologies that provide access to information through telecommunications and includes the internet, wireless networks, cell phones, and other communication mediums (Prebil, 2012:98). According to Hennessy, Ruthven and Brindley (2005:67), ICT includes a range of hardware for example desktop and portable computers, projection technology, calculators, data logging and digital recording equipment, software applications like generic software, multimedia resources, and information systems (Intranet). ICT may also include technologies specific to the school for example interactive whiteboards or those used across educational setting for example education games, as well as both stand alone and online, networked technologies (Livingstone, 2012:133).

ICT is a field of work and study that "includes technologies such as desktop and laptop computers, software, peripherals, and connections to the internet that are intended to fulfil information processing and communications functions" (Bingimlas, 2009:235). ICT is also defined as 'any technology used to support information gathering, processing, distribution and use' (Hennessy, Ruthven and Brindley 2005:98). From these definitions above, it can be noted that, the concept of ICT entails all forms of technologies such as computers, internet, websites as well as mobile phones and other wireless communications devices, networks, broadband and various specialized devices which can be helpfully integrated in working and learning activities.

2.2 Development of ICTs in Education

Education systems have not been immune to the development of ICT since the late 1990s. Grimus (2000:347) argues that ICT is a permanent feature in the landscape of teaching and learning. It is no longer possible nowadays to conceive of education without information and communications technology (ICT). Trends show that education is increasingly being defined by ICT. Globally, much has been achieved in recent years in developing the ICT infrastructure in schools. This infrastructural development has required significant levels of investment, primarily by the State but also by individual schools and institutions (Ibid. 68).

There are three main rationales for promoting the use of ICT in schools, namely the economic, social, and pedagogical reasons (OECD 2001:22). The economic imperative for promoting ICT in schools is well recognised in both developing and developed countries. The expectations and requirements of society and the world of work are undergoing fundamental transformations (Grimus, 2000:367).

The 21st Century has already brought historic changes to the world of work and the education sector. The Knowledge Age demands a steady supply of well-trained workers – workers using brainpower and digital tools to apply well-honed knowledge skills to their daily work (Ibid). Therefore, there is a growing agreement that these transitions in the social world should be the cause for substantial changes in formal education.

2.3 Approaches in ICT Development

Studies of ICT development in both developed and developing countries identify at least four broad approaches through which educational systems and individual schools proceed in their adoption and use of ICT (UNESCO, 2001, Grimus 2000). These four approaches are classified

as the emerging approach, applying approach, infusing approach, and the transforming approach. The approaches represent a continuum depicted as the model as shown in Figure 2.0.

Figure 2.0 Approaches in ICT adoption

Emerging	Applying	Infusing	Transforming

Source: (UNESCO, 2003:15)

2.3.1 The emerging approach

The first stages of ICT development characterise the emerging approach. The emerging approach is an explorative stage. Schools in this stage begin by purchasing, or would have received some donated, computing equipment and software (Grimus, 2000, UNESCO, 2001). Administrators and teachers will begin to explore the possibilities and consequences of using ICT for schools' management and adding ICT to the curriculum. In this phase schools are still firmly grounded in traditional, teacher-centred practice. Generally, there is there is an awareness of the uses of ICT in the curriculum. (UNESCO, 2001:15).

2.3.2 The applying approach

In this secondary phase, administrators and teachers use ICT for tasks already carried out in school management and in the curriculum. According to UNESCO (2001:15) the teachers largely dominate the learning environment. Schools at the applying approach phase adapt the curriculum in order to increase the use of ICT in various subject areas with specific tools and software. This curriculum assists movement to the next approach if so desired (Ibid. 15).

2.3.3 The infusing approach

The infusing approach involves integrating or embedding ICT across the curriculum, and is seen in those schools that employ a range of computer-based technologies in laboratories, classrooms, and administrative offices. Teachers explore new ways in which ICT changes their personal productivity and professional practice. The curriculum begins to merge subject areas to reflect real-world applications (Grimus 2000, UNESCO 2001).

2.3.4 The transforming approach

According to UNESCO (2001:16) schools that use ICT to rethink and renew school organization in creative ways are at the transforming approach. ICT becomes an integral though invisible part of daily personal productivity and professional practice. The focus of the

curriculum is now learner-centred and integrates subject areas in real-world applications (Ibid. 16).

Therefore, in developing a curriculum for ICT, it is useful to have a model for ICT development. Such a framework shows the interrelationship of various components within a system and aids understanding by educational administrators and policymakers.

2.4 Defining Curriculum

Wong et al (2009:126) define curriculum as an instrument that dictates the affairs of every educational system. It is the vehicle through which knowledge and other learning activities are disseminated. This indicates that the curriculum is a road map for learning and as such focuses on knowledge and skills critical for human and societal development. Mkpa (1987) in Mkpa and Izuagba (2009:2) defined curriculum as:

> The planned and guided learning experiences and intended learning outcomes, formulated through the systematic reconstruction of knowledge and experience under the auspices of the school for the learner's continuous and wilful growth and personal social competence.

The definition reflects the changing conceptions of curriculum. A curriculum recognizes the fact that what is learnt reflects new needs, emergent problems, desires of learner; society and new subject matter. The definition went further to make distinction between the roles of the school and other socializing agencies in curriculum planning and development.

Adekole and Ajeyalemi (1994) in Ivowi (2009:47), defined curriculum as a systematic organization of a set of intentions about learning experiences for certain learners in certain justifiable arrangement of sequence and resources fragment sentence. Drawing from this definition, a curriculum can be conceptualised as a blue print on which all the activities of the educational systems are based upon. It also means that curriculum is a framework of action for the educational system. Above all, curriculum is also the vehicle through which educational goals are being achieved.

2.5 Conceptualising curriculum implementation

Curriculum implementation entails putting into practice the officially prescribed courses of study, syllabuses and subjects. The process involves helping the learner acquire knowledge or experience. It involves the dissemination of the structured set of learning experiences, the

provision of resources to effectively execute the plan, and the actual execution of the plan in the classroom setting where teacher-learner interactions take place (Ivowi, 2009:52).

In curriculum implementation, the learner for whom the programme is being planned interacts with the contents and materials in order to acquire the necessary skills, attitudes and abilities (Mkpa and Izuagba 2009:73). Therefore, curriculum implementation is the actual engagement of the learner with the planned learning opportunities. Furthermore, curriculum implementation also entails a stage of the curriculum process where the learner through the guide of a teacher or facilitator interacts with learning activities so as to maximize learning as will be noticed in the learners' new behaviour or new approach to issues.

It is important to note that curriculum implementation cannot take place without the learner. The learner is therefore the central figure in the curriculum implementation process. Implementation takes place as the learner acquires the planned or intended experiences, knowledge, skills, ideas and attitudes that are aimed at enabling the same learner to function effectively in a society.

2.6 The role of ICT in the curriculum

Wong et al. (2006:321) point out that technology can play a part in supporting face-to-face teaching and learning in the classroom. Bingimlas (2009:2) argues that while new technologies can help teachers enhance their pedagogical practice, they can also assist students in their learning by reducing the amount of direct instruction given to them, and giving teachers opportunities to help students with particular needs (Iding, Crosby, and Spcitel, 2002; Shamatha, Peressini, and Mcymaris 2004; Romeo, 2006).

According to Grabe and Grabe (2007:51), technologies can play a role in student skills, motivation, and knowledge. They claim that ICT can be used to present information to students and help them complete learning tasks. According to Gillespie (2006:227), new technologies can be used in education to enable students to collect information and interact with resources, such as images and videos, and to encourage communication and collaboration. Murphy (2006:24) reviewed the impact of ICT on the teaching and learning in schools. She indicated that "the internet is used in education both as a reference source and as a means of communication". New technologies may also help to increase student motivation, facilitate clearer thinking, and develop interpretation skills with data (Osborne and Hennessy 2003:91).

Another benefit from using ICT in education is that it expands the pedagogical resources available to teachers (Al-Alwani, 2005:23). Pickcrsgill (2003:86) explored effective ways of utilising the Internet when teaching. He found that the ease of internet access allows teachers to help students to become experts in searching for information rather than receiving facts. He claimed it could "increase their awareness of the importance of the world around them, of citizenship and of a scientifically literate community.

2.7 Barriers to integration of ICT into education

It is important to note that there are different classifications of barriers to integrating ICT in education. The section will focus on teacher-level barriers and school-level barriers. Teacher-level barriers have been defined by Becta (2004:51) as barriers that relate to an individual such as lack of time, lack of confidence, and resistance to change. School-level barriers are those that are related to the institutional deficiencies. These include; lack of effective training in solving technical problems and lack of access to resources by the users of ICT.

2.7.1 Teacher Level Barriers

There are several challenges facing teachers in the implementation of the new curriculum which include;

2.7.1.1 Lack of teacher confidence

Lack of teacher confidence is a barrier that prevents teachers from using ICT in their teaching. Dawes (2001:48) sees this as a contextual factor which can act as a barrier. Beggs (2000:91) asserts that teachers' "fear of failure" by teachers result in lack of confidence. On the other hand, Balanskat, Blamire, and Kefala (2006:32) argue that limitations in teachers' ICT knowledge makes them feel anxious about using ICT in the classroom and thus not confident to use it in their teaching. Similarly, Becta (2004:7) argues that many teachers who do not consider themselves to be well skilled in using ICT feel anxious about using it in front of a class of children who perhaps know more than they do. Thus, lack of confidence with technology among teachers influence them not to use ICT in the classroom (Cox, Preston and Cox (1999a); Osborne and Hennessy, 2003; Balanskat, Blamire, and Kefala 2006).

2.7.1.2 Resistance to change

Vast literature shows resistance to change as a significant barrier to innovation (Cox, Preston and Cox, 1999a; Watson, 1999; Becta, 2004; Gomes, 2005; Schoepp, 2005). For instance,

Gomes (2005:96) found that science teachers' resistance to change concerning the use of new strategies is an obstacle to ICT integration in science teaching.

2.7.1.3 Lack of teacher competence

Teachers lack knowledge and skills to use computers (Newhouse, 2002:21). Lack of competence is directly related to teacher confidence and integrating ICT into pedagogical practice (Becta, 2004:63). An Australian research found that many teachers lacked the knowledge and skills to use computers and were not enthusiastic about the changes and integration of supplementary learning associated with bringing computers into their teaching practices (Ibid. 64).

2.7.2 School Level Barriers

School level barriers are the challenges facing schools internally to quickly adopt the new curriculum. Some of these barriers include the following;

2.7.2.1 Lack of time

The amount of time teachers uses to incorporate ICT into their lessons preparation, as well as the amount of time students take to engage with the ICT learning materials are both important in maximising the positive effects of the ICT as a learning tool Earle (2002:76) explored the impact of time as a factor and commented that limited time availability to properly process and implement the ICT in curriculum is a significant hindrance to successful outcomes. (Ibid. 76).

Becta's study (2004:69) found that the problem of lack of time exists for teachers in many aspects of their work as it affects their ability to complete tasks. These include the time needed to locate internet advice, prepare lessons, explore and practise using the technology, deal with technical problems, and receive adequate training. Therefore, lack of time is a barrier to the implementation of the curriculum.

2.7.2.2 Lack of effective training

The barrier most frequently referred to in the literature is lack of effective training (Albirini, 2006; Balanskat, Blamire, and Kefala 2006; Beggs, 2000; Ozden, 2007; Schoepp, 2005; Sicilia, 2005; Toprakei, 2006). Therefore, it can be noted that limited teacher training in the use of ICT in schools is an obstacle to curriculum implementation. Failures in using educational technologies among teachers is the weakness of teacher training in the use of computers as well

as the shortage of teachers who are qualified to use the technology confidently (Sager, 2002:84).

Providing pedagogical training for teachers, rather than simply training them to use ICT tools, is an important issue (Becta, 2004:52). Cox, Preston and Cox (1999a:91) argue that if teachers are to be convinced of the value of using ICT in their teaching, their training should focus on the pedagogical issues. Therefore, to encounter the problem pre-service teacher education can also play a significant role in providing opportunities for experimentation with ICT before using it in classroom teaching (Albirini, 2006:162).

2.7.3 Lack of access to ICT resources

Lack of access to ICT resources, including home access, is another complex barrier that discourages teachers from integrating new technologies into education. Sicilia (2005:50) argues that teachers complain that it is difficult to have access to computers. Mostly accessibility is a challenge since computers are to be booked in advance whilst they want to work on several projects with the students (Ibid. 52). In other words, a teacher would have no access to ICT materials because most of the ICT infrastructure is being used with other teachers. According to Becta (2004:61), the inaccessibility of ICT resources is not always merely due to the non-availability of the hardware and software or other ICT materials within the school. It may be the result of a number of factors such as poor organisation of resources, poor quality hardware, inappropriate software, or lack of personal access for teachers (Ibid 61). Therefore, lack of accessibility detracts teachers from effectively incorporate ICT in curricula related activities.

Gomes (2005:53) further argues that a lack of appropriate ICT infrastructure are barriers to accessibility. However, overcoming such hardware barriers does not, in itself, ensure ICT will be used successfully. According to Balanskat, Blamire, and Kefala (2006), the accessibility of ICT resources can also be affected by lack of high quality hardware, suitable educational software, and access to ICT resources.

Newhouse (2002:117) asserts that poor choices of hardware and software and a lack of consideration of what is suitable for classroom teaching are problems facing many teachers. Similarly, Cox, Preston, and Cox (1999a) state that insufficient ICT resources in the school and insufficient time to review software prevent teachers using ICT. According to Osborne and Hennessy (2003:83), the limitations on access to hardware and software resources influence teachers' motivation to use ICT in the classroom.

2.7.4 Lack of technical support

Without both good technical support in the classroom teachers find it difficult to overcome the issues preventing them from using ICT (Lewis, 2003:228). Pelgrum (2001:61) states that one of the top barriers to ICT use in education is lack of technical assistance. Sicilia's (2005:72) states that these technical barriers include; waiting for websites to open, failing to connect to the internet, printers not printing, malfunctioning computers, and teachers having to work on old computers. Technical barriers impede the smooth delivery of the lesson or the natural flow of the classroom activity (Ibid. 43).

Korte and Husing (2007:43) argues that technical support help teachers to use ICT in teaching without losing time through having to fix software and hardware problems. The Becta (2004:16) states that if there is a lack of technical support in a school, then it is likely that technical maintenance will not be carried out regularly, resulting in a higher risk of technical breakdowns. According to Gomes (2005), ICT integration in some of the learning areas like science teaching needs a technician and if one is not available the lack of technical support can be an obstacle. Therefore, technical faults may discourage teachers from using ICTs in their teaching because of the fear of equipment breaking down during a lesson.

2.8 Analytical Framework

2.8.1 ICT development in the curriculum

There are two frames on the incorporation of information technologies and communications in education systems. The first one is presented by the UNESCO Office in Bangkok (2003), and the second one by the World Bank (2006). These frameworks are designed for organizations that address the needs at country level so as to enable the administrators to make better decisions for implementing educational initiatives that make use of information technology and communications.

2.8.2 UNESCO Bangkok of 2003

In 2003, the Office for Asia Pacific of UNESCO proposed a set of indicators for measuring information technology and communications (ICT) in education. According to UNESCO (2003:21) the initiative has 25 indicators divided into five categories:

(a) Policy on ICT in education.
(b) Technological infrastructure and access.

(c) ICT and curriculum.

(d) Education and teaching staff.

(e) Learning processes and learning outcomes.

According to UNESCO (2003:27) although the policy may be clear, direct, specific and have their respective budget, without the infrastructure and training at the school is very likely that the incorporation of information technology and communications become idle effort.

However, it is important to note that this model can detect in any case where the problem is, where the bottleneck is or that is the most critical factor to address in a given context. It is important to note that different contexts are different and a solution successfully implemented in a "A" may fail in a place "B" even if they are in the same country, region or city (Ibid. 36).

2.8.3 World Bank 2006

In 2006 and the International Organizations Conference the World Bank proposed a conceptual model that identifies the variables that come into play when deciding to adopt information technologies and communications in education systems. It is noteworthy that this model aims to increase students' skills through the use of these tools and point all the other variables in the attainment of this task (Wagner et al, 2006: 23).

Importantly, this model takes into consideration the participation of teachers which means allocating financial and logistic resources for training in the use of information technology and communication within the school (Ibid. 24). This aspect is critical in any project of adopting information technologies for one simple reason: the educational system in the world, still rely on teachers to teach students and not conceived a school without teachers (Ibid. 43).

2.9 Country Case Studies

2.9.1 Kingdom of Saudi Arabia

The new curriculum placed importance on incorporating ICT into Science and Mathematics. Transitioning to a knowledge economy is the aim of KSA and to diversify the sources of the economy by improving the educational system and production of knowledge and investment (Ministry of Education, 2015). The new curriculum started in 2010 with a sponsorship of $2.4 billion from government. The government did not adequately raise teacher awareness of the ICT policy which resulted in it not achieving its goals. This is an indication of poor attitude toward ICT use, hence compromising ICT usage (Ibid. 61). A particular concern is the lack of

sufficient support from the Education Departments to implement the ICT policy. These factors contributed to poor attitudes among some teachers toward ICT implementation in the curriculum. Some of the psychological barriers to change among subordinates include anxiety and fear of the change process together with resistance to conform. The teachers perceive the implementation process to be difficult and challenging while stating they did not have the necessary support.

Al-Alwani (2005:78) argues that lack of time is an important factor affecting the application of new technologies in science education in Saudi Arabia. Lack of time is a barrier affecting the application of ICT in Saudi Arabia because of busy schedule because Saudi teachers work from about 7.00 a.m. until 2 p.m. and the average number of class sessions taught by each teacher is 18 per week, both teachers and students have a limited number of hours during the day to work on integrating ICT into education (Ibid).

2.9.2 South Africa

In South Africa the new curriculum implementation started in 2010. The major aim was to match the objectives of learning with societal demands of the 21st Century. In South Africa, private organisations such as School Net SA provide online, mentor-based in-service training to teachers to introduce ICT into the curriculum and for management (DOE, 2004:41). The curriculum implementation in South Africa was successful because the teachers were firstly trained in the use of ICTs in delivering curricula activities. This boosted their confidence in the use of ICTs. The ICT infrastructure of most schools in South Africa is well developed and each of the school is mandated to have an ICT technician who services the ICT gadgets now and again whenever there is a problem (Ibid. 46). In addition, the INTEL Teach to the Future teacher development programme provides teacher training in ICT integration into teaching and learning (Ibid. 2004:43). The success of this program provides a clear testimony of some areas where ICT is smoothly being incorporated into the curriculum.

2.10 Lessons learnt

The incorporation of ICT in education is very fundamental and its success or failure depends with the state of a country's infrastructure and commitment. Where there is good ICT infrastructure in schools, ICT innovations can be easily and smoothly incorporated into the curricula activities and the opposite is true. What is essential in implementing ICT activities in curricula is teacher training which boosts their confidence in using ICT. In addition, the issue of time is important; teachers need to be given enough time if ICT is to be effectively

implemented in curriculum successfully. Their load needs to be reduced so that they are given enough time to prepare ICT lessons. Lastly, every school that wishes to incorporate ICT in curricula activities must have a technician who will be responsible for monitoring and frequently service the ICT infrastructure of the school as a way of making sure that lessons will not be disrupted.

2.11 Conclusion

In a bid to answer some objectives stated in chapter one, this chapter reviewed the relevant literature to the study. The chapter analysed the definition of ICT, the concept of curriculum, curriculum implementation, the role of ICT in the curriculum, barriers to integration of ICT into education, conceptual frameworks informing the study as propounded by UNESCO (2001) and the World Bank (2006). Case studies were drawn from the Kingdom of Saudi Arabia and South Africa.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter explains the research design for this study. It presents a brief explanation of the sampling process used to recruit participants, the data gathering methods, and the instruments used for data analysis. A discussion of the ethical issues related to the study rounds off this chapter.

3.1 Research design

The research used qualitative research design. Wellington (2000:31) writes that methodology aims at describing, evaluating, and justifying the use of a particular research method. The overall purpose for applying a qualitative research design is to determine the distribution of an event/issue/phenomenon within a chosen population (Creswell, 2003; Creswell, 2014). An exploratory qualitative research method was used in this study to link the domains of the Ministry of Primary and Secondary Education, school heads, and teachers in order to establish an overall ICT context in implementing the new schools' curriculum framework in Zimbabwean secondary schools.

Qualitative research involves the collection of data from participants in a natural setting, typically at the site where they experience the issue or problem under study (Creswell, 2003:62). As such, qualitative inquiry is important because it provides a complex understanding of an issue and it engages with the individuals that are most affected by an issue (Creswell, 2003:69). The research used purposive sampling to select the participants.

The research field shows that employing a qualitative method research facilitates the research study by improving the quality of the final results (Creswell, 2009:21). Indeed, according to Gorard and Taylor (2004:51), the results are more powerful using qualitative research method because of ability of the researcher to access personal point of view of the research phenomenon from a number of people. In turn, improved accuracy in this domain will enhance the reliability of the findings being reported.

3.2 Study area

The research drew participants from the teaching field, curriculum development and technical services, and the district officials. Importantly most of the people who partook in the research are teachers and heads in Glen View-Mufakose District. All the secondary schools who take part in the research are found in Glen View-Mufakose District which falls in Harare Province.

3.3 Sampling techniques

According to Amedzo, (2007:29), the term sampling means taking any portion of the population or the universe as a representative of that population or universe. According to Kelly (2003:54), sampling is a technique employed to select a small group (the sample) with a view to determining the characteristics of a larger group (the population). If selected discerningly, the sample will display the same characteristics or properties as the larger group (the population).

A purposive sampling method was used to select participants to satisfy the qualitative research objectives such as interviews with the Head of ICT at the Ministry of Primary and Secondary Education and school heads. Purposive research allows particular participant units to be sought that facilitate specific data collection to answer the research questions (Creswell, 2014:109). As Flick (2006:229) posits, purposive sampling can be of fundamental importance to the success of the research investigation.

3.4 Data collection

Data was collected in a systematic fashion in a bid to answer the research questions raised in chapter one. The research is carried out in the various schools found in Glen View-Mufakose District to collect primary data from the participating teachers and school administrators implementing the new schools' curriculum. Data will be collected from the teachers leading ICT at various schools in Glen View-Mufakose District, the heads of schools, and school administrators. The data shall be collected through formal interviews. Questionnaires will be designed to collect information from the research participants.

3.4.1 Key informant interviews

The key informants of this research were drawn from the implementers of the new schools' curriculum. Some are teaching and others are the administrators from MOPSE. Research

informants constitute of ICT teachers, heads, schools' administrators, curriculum development officials and the MOPSE stuff.

The interviews were conducted in three stages. The first stage was to interview the Head of ICT in the Ministry of Primary and Secondary Education. The second stage was to interview the ICT district manager in the Glen View-Mufakose District. The third stages of interviews were conducted with the Head and an ICT teacher from each of the schools which constitutes the Glen View-Mufakose District. The research interviews are aimed to analyse the role played by ICT in implementing the new curriculum framework in Zimbabwean secondary schools. The questionnaires will be used as instruments to collect data from the interviews to be held with the research informants.

The fundamental reason of an interview is to extract responses from the interviewees by asking them questions. The other reason for interview is mainly to acquire an understanding of how various participants regard the issue, event or situation. Cohen, Manion and Morrison (2000:48) pointed out that interviews provide vital information when investigating a particular issue. Gay, Mills and Airasian (2006:91) affirm that open-ended interviews for instance may be viewed as a little more than a casual chat and thus provide the researcher with an opportunity to ask a substantial question about a change event to learn more about what is taking place in the research environment.

Thus, as mentioned by Burns (2000:108), the interview's direction is always managed to ensure the research focus remains on track despite the relaxed and natural conversational form. The use of open-ended questions also gives a researcher the opportunity to obtain a deep understanding of the answers from a participant (Berg, 1998:42). Interviews make it possible for the researcher to gather a reasonably large amount of information from the interviewee and as well as to clarify the interviewees' points of views (Marshall and Rossman, 1999:84).

3.4.2 Documentary search

Data was collected from various documents which included; government documents, policies, published books, journals, internet websites, newspapers and reports (Flick, 2006:61). To clarify, the targeted authenticated documents were from official Zimbabwean authorities such as the Ministry of Primary and Secondary Education and secondary schools. Collecting and analysing the documents helped to generate important data required to answer the research questions. Creswell (2014:126) suggests that this method may take some time, but it helps to

gain valuable information relating to the research and can be helpful when preparing the interviews.

3.5 Data Analysis

Drawing from the data collection techniques highlighted earlier on, the two techniques to be used are content and thematic analysis. These techniques went a a long way in unpacking, illustrating, condensing and recapping, and evaluating data.

3.5.1 Content analysis

Content used in the research was drawn from newspapers, published books, journals, articles, internet websites and interviews. The data gathered from these sources were analysed in a bid to investigate the role played by ICTs in implementing the new curriculum. Views solicitated from these sources diversified the result outcomes.

3.5.2 Thematic analysis

Data which consists of similar themes is grouped into themes during the data analysis process. These themes vary but data will be organised in such a way that allows more related concepts to be scrutinized together. This helps to classify and draw powerful conclusions and recommendations from the study.

3.6 Ethical Considerations

According to Babbie (2007:118), ethics is a matter associated with morality; in research, certain ethical guidelines serve as the standard which forms the basis for evaluating the conduct of the researcher. The following ethical points of concern were addressed before and during this research:

3.6.1 Permission

An initial step in ensuring the necessary ethical considerations were applied in this study was to obtain approval for the study from the Department of Political and Administrative Studies at the University of Zimbabwe.

3.6.2 Informed consent

Informed consent was obtained from all participants prior to their inclusion in this study. Participants were provided with information about the study and its purposes prior to consenting to participate (Stake, 2000 in Denzin and Lincoln 2005:239). Participants were

given the option to withdraw from the study at any stage of the research. Participants were only required to answer the questions they felt comfortable answering and they were made aware that their participation was completely voluntary.

3.7 Conclusion

This chapter described the research design that was followed in this study. The chapter opened with a description of the research design that was followed in the study. The data collection methods and research tools that were used in this research were then mentioned and explored. This was followed by a description of the method of data analysis. The chapter concluded by providing a concise portrayal of the ethical issues pertaining to the research.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.0 Introduction

The chapter discusses the major findings of the interviews conducted in eight schools located in Glen View-Mufakose District that is Glen View 1, 2, and 3 High School, Mufakose 1, 2, and 4 High School, Mufakose Mhuriimwe and Budiriro High School and other education stakeholders who participated in this study. The main objective of the research was to investigate the role of ICT in implementing the new curriculum. The chapter is also going to analyse the frequent use of ICTs by teachers in teaching and learning of the new schools' curriculum among other issues.

4.1 Challenges Encountered During Data Collection

The researcher encountered a number of challenges during the data collection process. Some of these setbacks include; difficulty in securing clearance from the education officials and time to conduct interviews with the informants.

Clearance from the education officials

Firstly, it was very difficult for the researcher to secure a permission from the parent Ministry of Primary and Secondary Education to conduct research about the new curriculum in secondary schools of Glen View-Mufakose District. It took four weeks of a protracted visits to the ministry by the researcher tracking the application which was made early November and later issued in December. This was a great setback since the research was supposed to be conducted before schools started internal end of year examinations and closed their third term. The researcher was also to get a clearance from Harare Provincial Education before taking it to the District Schools Inspector. The process was quite involving as each of them would be delayed due to bureaucratic pathologies.

Time to conduct research with key informants

The researcher faced a serious challenge of limited time to hold interviews with participants during the field research processes. The teachers and administrators who were crucial to be part of the research were either out of reach or too busy to attend interview sessions with the researcher. In most instances the teachers were invigilating end of year or ZIMSEC

examinations or marking internal examinations. Therefore, booking time for research interview was almost impossible. In some instances, heads end up referring the task to their deputies or senior teachers like what happened at Glen View 2 High School. This would mean the information was not going to be as accurate as possible since some senior teachers could not have massive knowledge about the daily operations of the school administrators.

Table 4.1 Data Collection Schedule: Key Informant Interviews

Name of respondent	**Organization of respondent**	**Designation of respondent**	**Date of interview**
Mrs Mawarire	Glen View-Mufakose District Office	ICT Resource Officer	29 November 2017
Mr T. Machirori	Curriculum Development and Technical Services (CDTS)	Education ICT Coordinator	29 November 2017
Mr Maronga	Glen View 1 High School	Head	04 December 2017
----------	Glen View 1 High	ICT teacher	27 November 2017
Mr Mushonga	Glen View 2 High	Senior teacher	01 December 2017
Mr Chinhava	Glen View 2 High	ICT Head of Department (HOD)	29 November 2017
Ms Kundazima	Glen View 3 High	ICT teacher	04 December 2017
Mr Nhedzi	Glen View 3 High	Deputy Head	04 December 2017
Mr Nyamupa	Mufakose 1 High	ICT HOD	30 November 2017
Mr Chin'ombe	Mufakose 2 High	Deputy Head	30 November 2017
Mr Chikoko	Mufakose 2 High	ICT HOD	30 November 2017
Mr Matambanadzo	Mufakose 4 High	Deputy Head	30 November 2017
Mr Hwamiridza	Mufakose Mhuriimwe	Head	30 November 2017
Mr Khumalo	Budiriro 2 High Sch	Senior teacher	1 December 2017

-------- Participant withdrew identity

4.2 State of ICTs in Secondary Schools of Glen View-Mufakose District

The state of ICT infrastructure in the Glen View-Mufakose District is not common in all the schools. There are disparities that exist on the nature of ICTs available in these schools. Of course, some seem to be advancing while others are dragging behind though they acknowledge the imperativeness of ICTs in education. It seems as if most schools established several decades ago have taken a lead in championing the use of ICTs in the implementation of the new curriculum whereas recently built schools are still trailing behind. The research will unpack all the ICT developments found in each and every school that partook in the study. Finally, the research will analyse the progress made by these schools in terms of adopting ICTs in education using the approaches of ICT development discussed in literature review.

4.2.1 ICT infrastructure at Mufakose 1 High School

The school was established during the colonial era in 1970 and today it stands as one of the pioneers not only for the Mufakose community but the district as a whole. The school has a modern state of ICT infrastructure and currently efforts are underway to upgrade the ICT infrastructure.

The researcher visited the school and came across two, state of the art ICT laboratories. Each lab has got fifty modern desktops computers. The computers respond to the demands of the 21st Century as they are Core i3s which are efficient and effective. Besides, the school has other ICT tools like fifteen projectors. Each department at the school has a projector. The projectors are meant to assist teachers in delivering their lessons. On top of the projectors, each department is allocated a laptop which they use to prepare for lessons especially PowerPoint presentations. The laptops allocated for the departments are taken charge of by the Head of Departments (HODs). The HODs make sure that the ICT resources are accessible to the department's members. It is worthy to note that the laptops are only meant for staff members of the department and not learners.

The school is connected to internet. They use a service provided by Zol Fibroniks. In an interview with the ICT teacher at Mufakose 1 High School, Mr Nyamupa, he highlighted that internet at the school is fast and efficient. He added that internet is accessible 24/7 at the school even though students are not allowed to access the it without permission from the authorities.

“The school subscribes the internet services religiously as a way of making sure that they are connected every time,” as highlighted by Mr Nyamupa.

The computer labs are important in supporting the new curriculum activities from both the facilitators and the learners. During the interview sessions, the researcher encountered students especially Form 3s who were carrying out their new curriculum related tasks using the computer labs at the school.

In addition, the school has printers used to accomplish the day to day business. Each department has a 1100 HP Laser Jet printer. Printers are used to print the learning materials downloaded from the internet and also to print learners’ tasks and projects moderated by the Zimbabwe School Examinations Council (ZIMSEC).

4.2.2 ICT tools at Mufakose 2 High School

The school is striving in adopting the ICTs despite all the challenges faced in making ICT tools available. The school has one computer laboratory which consists of thirty-five desktop computers meant for students. In an interview with Mr Chikoko, an ICT teacher at Mufakose 2 High School, the school has twenty-four laptops meant for teachers. The laptops are distributed to each and every department at the school. The allocation of laptops per each department is done in response to its size and the number of students that it supports. Surprisingly, the ICT department have one laptop despite the fact that it is the backbone of ICT implementation in the new curriculum. ICT role is a cross-cutting theme in all the syllabuses developed under the new curriculum framework in Zimbabwe. At Mufakose 1 High School, the laptops meant for school departments are monitored and accessed by staff members only through the HODs.

More so, the ICT tools at the school include; eight projectors shared by all the departments and they are all housed in the ICT department. Teachers use these projectors to deliver their lessons even though in some cases they are overcrowded. In addition, the school bought fifty good tablets used by learners as a way of aiding the single computer lab. The tablets are used primarily by students to research their tasks and projects. During the interview sessions, the researcher encountered students who were using Android tablets doing their school work. The tablets are still new and have a good capacity to support learning activities. The move to procure tablets is meant to ease congestion at the computer lab as well as empowering learners to quickly adopt and move with the trends of the new curriculum framework.

The school is connected to the internet. Mr Chikoko says there are two internet servers at the school. The first one is for free which is supplied by Zol Fibroniks and the second one comes from TelOne which provides the internet service based on subscriptions. These two servers connect the school 24/7 and students and members of staff greatly rely with their service providers. Internet is subscribed religiously to make sure that the school is well connected.

The ICT department have one heavy duty and two small printers used by learners to print their school work and researches. This is proving viable as learners are accessing information easily mostly in those learning areas where there is scarcity of textbooks. Lastly, the projectors are supported by three whiteboards.

4.2.3 Nature of ICTs at Mufakose 4 Secondary School

Mufakose 4 High School has one computer lab which has sixteen desktop computers. The school is connected to the internet. They subscribe to Zol Fibroniks. Mr Matambanadzo who is the Deputy Head at the school noted that the internet is often overloaded which makes it unreliable at the school and it is not available every time since it is for free. In addition, the internet does not support the whole school which leads to a problem where it is often hiked by learners who wish to access it without limitations or breakdowns.

Furthermore, the school has forty tablets meant to be used by students during the learning process. There are also four laptops used by Head, Deputy Head, Senior teachers and the bursar. Currently the school does not have projectors. All the mentioned devices are supporting the new curriculum activities in different ways.

4.2.4 ICT equipment at Mufakose Mhuriimwe Secondary School

ICT infrastructure at Mufakose Mhuriimwe is still lagging behind. Nothing much has been achieved in modernising the ICT tools at the school. Firstly, the school does not have any computer lab despite the calls being made by the Ministry of Primary and Secondary Education advising schools to go digital. What this means is that, the school does not have computers for learners or members of staff. In an interview with the school head, Mr Hwamiridza, he openly told the researcher that there is no access to computers at the school. Above all, there is no a single department responsible for conducting the ICT business of the school.

However, the school has one computer at the reception used by the secretary only. Mr Hwamiridza says he is new at the school as he took over the leadership role in 2017. The step that he took upon assuming office was to install internet at the school. Now there is a TelOne

subscribed modem at the school which provides internet to the administrators only. Most of the administrators including the head improvise for the ICT tools.

4.2.5 ICT tools at Glen View 1 High School

Glen View 1 High School is well known for having a bigger student carrying capacity. It is on record for enrolling many students not only in Zimbabwe but in the continent of Africa. This famous school happens to be part of the research study. According to the Head Mr Maronga, the school supports over 3 600 students and one wonders if they have enough resources to support these learners.

The school has two computer labs. All the computer labs consist of seventy-three functional computers and thirty-seven that are obsolete. Both functional and unfunctional computers in the computer labs are desktops. The ICT department has four laptops but three of them are functional. This is the only teaching department that have many laptops at the school. Similar to most of the schools visited by the researcher, the school's departments have two laptops each.

The school is also connected to the internet. The internet service is provided by TelOne. However, according to one ICT teacher at the school who withdrew her name, "The internet is not reliable and is always down which compromises on the quality of learning and teaching at the school." There are six projectors at the school but they are not being used due to lack of interactive boards at the school. Interestingly, there are whiteboards at the school pitched in each and every classroom.

4.2.6 ICT resources present at Glen View 2 High School

The school has two computer labs. The second lab was commissioned recently. All the time the school was using one computer lab and decided to upgrade the labs only in 2017. The computer labs consist of sixty desktop computers that are fully functional and fifteen that are obsolete. According to Mr Chinhava who is the Head of ICT Department, each lab has a carrying capacity of thirty students plus fifteen more who would have their personal laptops making them forty-two.

Moreover, there are two projectors at the school. Some of the classrooms at the school have whiteboards. The ICT department possesses a DSTV which they subscribe frequently. In one of the computer labs, the researcher came across an HD big Plasma pitched at the walls of the computer lab screening one of the DSTV educational channels. Mr Chinhava said that the

DSTV is useful in teaching students some of the new learning areas in the new curriculum especially sports. This is one of the innovative ideas taking place at Glen View 2 High School.

The school is also connected to the internet. The computer labs use free WIFI from Zol Fibroniks whereas the administrative block subscribes to TelOne services. According to another teacher from the ICT Department at the school,

> Internet is not efficient because it is often poor or inaccessible. I cannot rely with internet at the school especially when teaching because it is down most of the times. Above all, it is limited to the computer labs only and just a few metres from the labs one cannot access the internet. What is happening here is typical of any free service provision where you cannot call for more due to lack of choice.

When it comes to internet access at Glen View 2 High School, the administrative block is well connected compared to the computer labs which leaves one wondering about the choice of preference. The learning process is compromised.

Unlike in most secondary schools of Glen View-Mufakose District, the school has a standalone department responsible for printing. It has three heavy duty Xerox printers which runs materials from students and members of staff. Each department at the school has a laptop accessed by members of staff only via the HOD.

4.2.7 ICT tools at Glen View 3 Secondary School

The school was established in 2003 and its now fourteen years after it get started. The school has one computer lab with thirty-seven desktop computers. Only ten are functional at the school since most of them are too old to respond to the needs of the new curriculum or unfunctional at all. However, each department at the school has a laptop also accessed through the HOD. There are eight departments at the school.

The school is connected to internet provided by TelOne. According to Ms Kundazima who is an ICT teacher at the department, "the internet is very effective and the whole school is connected. Students can access the internet as well. Currently there are few whiteboards at the school" but Mr Nhedzi who is the Deputy Head at the school says, "other whiteboards were bought and will be pitched in January 2018. The school uses one projector to provide ICT driven lessons." This is the journey travelled by Glen View 3 High School since its inception in 2003.

4.2.8 ICT infrastructure at Budiriro 2 Secondary School

When the researcher visited the school, the school staff was amused about the objectives of the research. It is one of the recently established schools found in Glen View-Mufakose District. It was established in 2014. Currently there is no any single computer lab as the school is still putting up efforts to construct classrooms for students. There is no any computer meant for students. The school is not yet connected to the internet. Above all, there is no electricity at the school. This even makes it difficult for them to go digital as yet.

The only personnel that owns laptops are head, deputy and bursars. The top bureaucrats at the school use internet from a dongle. In addition, the school does not have an ICT department as yet and computer courses are not even available. This is how far that the school has gone in embracing ICT.

4.3 Stages of ICT adoption by secondary schools of Glen View-Mufakose District

The research discussed the ICT adoption approaches propounded by UNESCO (2001) which help to trace the progress being made by schools to go digital. It consists of four approaches classified as the emerging approach, applying approach, infusing approach, and the transforming approach. All the schools discussed above fit into one of these approaches for the reasons that will be stated below.

Budiriro 2 Secondary School and Mufakose Mhuriimwe can be classified into the emerging stage. These schools are still at the early phases of adopting ICTs in teaching and carrying out school tasks. For example, they do not yet have computer labs, and the subject of teaching ICTs is still far to be taught even though they do recognise the importance of ICTs. Therefore, they are still at the emerging approach which is an explorative stage. In addition, the administrators and teachers are beginning to explore the possibilities and consequences of using ICT for schools' management and adding ICT to the curriculum. In this phase schools are still firmly grounded in traditional, teacher-centred practice.

In the applying approach administrators and teachers use ICT for tasks already carried out in school management and in the curriculum. This is exactly what the research discovered in several secondary schools in the Glen View-Mufakose District like Mufakose 1, Mufakose 2, Mufakose 4, Glen View 2 and 3 High School where learners were exploring ICTs especially internet and computers to carry out their tasks allocated by the examination board, ZIMSEC. According to UNESCO (2001:15) the teachers largely dominate the learning environment.

This is exactly what the researcher witnessed as teachers are still at the lead in the implementation or adoption of ICTs in schools.

The third one is the infusing approach which involves integrating or embedding ICT across the curriculum, and is seen in those schools that employ a range of computer-based technologies in laboratories, classrooms, and administrative offices. Even though some striving schools like Glen View 1 and Mufakose 2 and 4 High School have white interactive ICT boards and tablets for students they do not yet qualify to be full members of this phase. Secondly, their teachers do not yet explore new ways in which ICT changes their personal productivity and professional practice.

According to UNESCO (2001:16) schools that use ICT to rethink and renew school organization in creative ways are at the transforming approach. ICT becomes an integral though invisible part of daily personal productivity and professional practice. However, not a single secondary school of Glen View-Mufakose District has yet reached this stage given their current situations just presented above. This information shows that secondary schools in Glen View-Mufakose District are progressing at different levels of ICT development.

4.4 The role of ICTs in the new curriculum

In Chapter Two the researcher gave attention to the role of ICTs in the curriculum. During the field research where ICT and the new curriculum are taking place daily, there are critical pragmatic issues that were raised over the role of ICTs in the curriculum which will be discussed in this section.

Firstly, it seems as if most of the respondents are aware of the role of ICT in implementing the new curriculum. The respondents demonstrated massive knowledge about the importance of merging ICTs and the new curriculum. According to Mrs Kundazima of Glen View 3 High School, ICT plays an important role in providing accurate information during the learning an teaching process, and teachers can quickly supervise students and checking progress of their given tasks and projects identified in the new curriculum as part of the continuous assessments.

ICT has become a major priority in secondary schools since the ushering in of the new curriculum than it was even before. This emanates from what the respondents had to say about the emerging role of ICT in their daily routines. Mr Maronga who is the Head at Glen View 1 High School says that, ICT is now useful in the new curriculum as it allows learners to research their tasks and projects and even on new aspects brought in by the new curriculum in learning

areas like Heritage Studies, Physical Education, Sport and Mass Displays. He further argues that with internet most innovative ideas are harnessed by learners and teachers in the learning and teaching process. ICT Resource Person for Glen View-Mufakose District who is Mrs Mawarire had this to say,

> With ICTs there is ease to scarce resources in the teaching or learning process because both students and teachers can use ICTs mostly internet to buy or access books online despite location. ICTs help schools to close the gap between the student to textbook ratios as they are able to access their learning materials even online or via electronic means.

Since the beginning in the implementation of the new curriculum, ICTs are increasingly gaining momentum in the education profession. Mr Chikoko of Mufakose 2 High School, an ICT teacher said, the internet is now popular at his school as students and teachers visit the computer laboratories more often searching for information to complete their tasks. This has been necessitated with the fact that the new curriculum does not have enough published materials especially in learning areas such as Physical Education, Sport and Mass Displays as yet. Given the scarcity of textbooks, ICT becomes the last resort for both teachers and learners. He also argued that using projectors and other ICT resources like laptops, PowerPoint presentations and so on makes learners understand their learning areas quickly as these methods come with a difference from the traditional ways of teaching. Mufakose 2 High School is using ICT persuasive ways of delivering lessons to draw the attention of learners into the new learning areas introduced by new curriculum framework.

4.5 Teachers of ICT in Glen View-Mufakose District

Most of the schools in Glen View-Mufakose District have ICT teachers who are responsible for facilitating the ICT learning. It is important to note that the number of teachers at any given school is a direct implication to the successful adoption of ICTs. This emanates from the fact that despite the use of ICTs in other subjects, the department is central since it hosts and teaches students the ways of adopting ICTs and tapping them usefully.

Even though Mufakose 2 High has one computer lab, it is supported by three ICT teachers. This explains why all the students at the school are taking computer studies unlike in other schools like Glen View 1 and 2 High School where a few students are selected to study the subject. According to the Deputy Head, Mr Chin'ombe, two of the ICT teachers at Mufakose 2 High School possess Masters Degrees qualifications in ICT while the last one is still pursuing a degree in computer science. The school prides in having the highly qualified teachers.

At Mufakose 1 High School there are three ICT teachers who are currently running the whole department. They are responsible for helping students to carry out their researches in the labs using computers and internet and teaching computer studies. Glen View 1 High School employees many ICT teachers in the district with five teachers. Two of them are employed by the School Development Committee (SDA). These five teachers are expected to teach computer studies not to 3 600 students at the school though. Computer studies are only taken by Ordinary Level students that is Form 3 and 4s. One ICT teacher at the department underscored the fact that they also help other teaching staff at the school to embrace ICT.

Glen View 2 High School has two teachers who are supporting students to embrace ICT at the school. Each of them runs a whole computer lab. At Mufakose 4 High School there is one teacher currently teaching eight computer classes and operating the single computer lab at the school. Glen View 3 High School consists of two female teachers of computers including the student teacher who is on attachment. Mufakose Mhuriimwe constitutes of one teacher who is leading the computer theory lessons since there is no any ITC infrastructure to talk about at the school. Lastly, at Budiriro 2 Secondary School there is no any teacher responsible for ICT as yet.

Surprisingly, the ICT departs in all the schools visited by the researcher remains very small despite the role they are supposed to play given in the new curriculum. The number of teachers in these departments do not match those of other learning areas like Mathematics, Science and Languages which constitute more than six members at most.

4.6 ICT technicians in Glen View-Mufakose District

In each organization which strives to achieve effective ICT services there is need for technicians who help this objective to become a reality. In most instances ICT technicians are responsible for the general management, maintenance and development of all ICT equipment and the provision of technical advice and support for ICT curriculum related activities together with in-house development and support for teaching and learning. Therefore, the research will analyse the available ICT technicians in the district and see how they are enhancing the delivery of ICT driven learning and teaching processes.

In one interview conducted with a student ICT technician at Glen View 1 High School who wants to remain anonymous in this research underscored the importance of ICT technicians and their role in supporting curricula activities. Traditionally, ICT technicians are well known for installing new software and hardware. Obviously if one hears of ICT technicians these roles

come into mind. However, the role played by ICT technicians especially in the 21st Century have evolved and now encompass the setting up of equipment such as laptops, data projectors, interactive whiteboards, sound systems and other specialist ICT equipment, ensuring that systems are ready for use and operating correctly. Deliver hardware and resources to work areas and classrooms as required.

"A lot is done by technicians in supporting ICTs especially in the curricula activities. Chief among them is assisting in creating a structured approach to rolling out new hardware or software, including procurement, testing and assessing the needs of user training. They also have the task of developing a maintenance schedule for all computer hardware, software and networks, and ensure that it is followed. Generally, these are the roles played by ICT technicians in any education organization," says the student technician at Glen View 1 High School. We therefore shift our attention to what is taking place on the ground in Glen View-Mufakose District pertaining to the role of technicians.

The research found out that even though most of the schools in Glen View-Mufakose District are adopting ICTs they have not done much in terms of employing ICT technicians. This has seen poor service delivery and a negative perception of ICTs as a method of teaching and learning. Some schools outsource for technicians outside their organizations who will service the computers at given time frames. Most of the schools still hold on to the perception that teachers are technicians as underscored by Mr Chikoko at Mufakose 2 High School. This explains why the school authorities are at ease employing fulltime ICT technicians.

Glen View 1 High School is the only secondary school among the interviewees which employs three ICT technicians in the district. The rest does not have ICT technicians who are solely responsible for servicing the computers but rather they hire private organizations to service their ICT equipment; some once per term and others like Mufakose 2 High School only service their computers every September. What this means is very simple; if the computer(s) are not functioning or if there is need for hardware support service for the computers to efficiently function the schools wait for the independent ICT technicians to be hired. In a way service delivery and ICT driven lessons are greatly interrupted.

Mr Nyamupa of Mufakose 1 High School says, more often than not they are manipulated by school administrative authorities to play same roles of ICT technicians even though they are purely employed as Computer Studies teachers. As a result, if computers are obsolete the teachers are asked to repair and restore them. This robes them the time to concentrate with the

teaching business as they also divert their attention to repairing computers. In addition, teachers are often perceived as software engineers not only in the teaching discourse but for the whole school which is a role played by technicians.

"The District Schools Inspector (DSI) who is Mr Nyambuya is quite aware of the challenges facing the ICT teachers in his district and he always encourage school authorities to outsource the services outside if they do not have the capacity to recruit people with those skills," says the District ICT Resource Person Mrs Mawarire. However, not much has been done by schools in following the directive from the DSI as many teachers are still serving as technicians and in some schools as typists.

Lastly, Mrs Mawarire added that the district has two technicians who are responsible for servicing computers for schools in the district. "These technicians can be hired at any school both primary and secondary to provide hardware or software assistance," she added. The only challenge that affects schools from hiring these technicians is that they are also teachers in the primary schools within this district which makes it even more difficult for requesting schools to have them in time. It was applaudable if the technicians where solely recruited by the district office to carry out such mandate.

4.7 Policy Implementation

The implementation of the new curriculum framework is not only limited to secondary schools of Glen View-Mufakose District. It is a policy currently applied to all the schools within the borders of Zimbabwe, both primary and secondary as well as rural and urban schools. All the schools are involved in implementing the schools' curriculum framework. The research will briefly unpack the implementation measures at different levels.

The curriculum framework is predicated on the capacity of the MOPSE responding to the challenges of implementing the reforms. At the apex of the structure, seven departments spearhead the reforms and monitor the implementation process. Empowering the districts inspectorate is greatly acknowledged in the Curriculum Framework for Primary and Secondary Education (2015-2022).

Furthermore, at the national level additional personnel with critical skills were enrolled by the Curriculum Development Unit (CDU) now referred to as the Curriculum Development and Technical Services (CDTS) with the ushering in of the new curriculum framework. The effort

is meant to revive the CDTS in two significant areas: to superintend the implementation and monitoring of the new curriculum and to manage the Education Technology Section.

4.7.1 Strategy for implementing the framework

The implementation of the Framework is being implemented in three phases, namely, Inception, Phase 1 and Phase 2. This 2017 Curriculum Framework is now in phase two where the following activities are taking place that is the enhanced and targeted teacher capacity development: ongoing; development and distribution of continuous assessment tools to schools, implementation of continuous and summative assessment across the curriculum and simultaneous introduction of continuous assessment for Ordinary and Advanced Level learning areas.

The foregoing discussion unravelled some efforts taken by MOPSE in implementing the curriculum framework. In response to these developments, the research will unpack some of the developments advanced in Glen View-Mufakose District with the quest to see if such efforts are complementing the objectives set by the ministry.

Firstly, all the schools visited by the researcher confirmed that they are currently implementing the objectives of the New Curriculum Framework. Implementation of the new curriculum as a policy is underway in all the secondary schools of Glen View-Mufakose District. The implementation under spotlight is the delivery of the learning areas provided by the curriculum at secondary level for Form 1 – 4 which include; Heritage Studies (embracing Zimbabwe Constitution); Mathematics: Pure Mathematics, Additional Mathematics and Mechanical Mathematics; Physical Education, Sport and Mass Displays, Sciences: Physics, Chemistry, Biology and General Science; Indigenous Languages and English Language; Agriculture: Agriculture Engineering, Animal Science, Crop Science, Horticulture; Geography; Humanities: History Religious Studies, Sociology, and Economic History; Foreign Languages such as, French, Swahili, Chinese, Portuguese; ICT: Computer Science; Commercials: Accounting, Commerce, Commercial Studies, Economics, Business and Enterprise Skills; Practical subjects: Wood, Metal, Food, Textile Technologies, Home Management and Design.

The first seven learning areas mentioned above are compulsory for each and every learner. On top of those seven, the learner is allowed to choose at least three and not more than five electives from the range of subjects provided. The researcher noted that all the compulsory learning areas are being implemented in the district. However, the core objective of the research is to analyse the role of ICTs in delivering all these learning areas. Honestly, there is not much

done in some learning areas to embrace the pervasiveness of ICTs in the learning and teaching. Such learning areas include; Languages that is the Indigenous languages like Shona, Ndebele and English and Literature. Mr Mushonga who is the Senior teacher at Glen View 2 High School underscored the fact that Languages teachers are reluctant to deliver their lessons using ICTs citing lack of competency as the major challenge.

Generally, all the secondary schools in Glen View-Mufakose District seem to be aware of the importance of ICTs in the new curriculum as they are instituting efforts to tap into the innovativeness of ICTs. The District Office is taking a lead in providing workshops for the teaching staff of the district to embrace ICT. According to Mrs Mawarire who is the District ICT Officer says, they are hosting workshops with teachers as a way to make them cognisant of the role of ICTs in teaching and delivering the new curriculum framework. "The district is encouraging all the school authorities to subscribe to the internet frequently so that the teachers become confident in delivering using digital ways," added Mrs Mawarire.

The District Schools Inspectorate Office is instructing all the school authorities especially school heads to respect the role played by ICT teachers in their professions as teachers and not secretaries. Mrs Mawarire points out that the divergence in the role of ICT teachers as typists or secretaries was derailing the progress of teaching and adopting ICTs in most of the schools in the district.

The district office is encouraging schools to work hand in hand with private institutions in adopting the innovations of ICTs. This has seen many schools in the district engaging with private institutions in delivering the new curriculum with the aid of ICTs. At Mufakose 1 High School, Mr Nyamupa argues that their school at one point in 2016 worked with Ruzivo a private organisation which trained all the teaching staff about the importance of ICTs in teaching. The same happened at Glen View 1 High School where the Head Mr Maronga reiterates that the school organised a workshop for teachers to be trained in using ICTs in delivering their teaching discourse. The workshop was a joint venture with High Life, a private organisation which provided the staff at the school with in-training service. According to Mr Mushonga, teachers at Glen View 2 High School also gained support service from Ruzivo in 2016 where the teachers where trained on the skills to prepare ICT driven lessons using software like PowerPoint and other designing programmes. Therefore, these services are meant to empower teachers to believe in ICTs and tap into their benefits.

Furthermore, the Ministry of Primary and Secondary Education is playing an important role in making sure that the teachers are empowered to embrace ICT in the teaching profession. The ministry has hosted a number of workshops meant to uplift the capacity of teachers in embracing ICTs. Among them are Annual National Conferences for Heads where the top authorities within schools are required to attend the conference and taught on the implementation strategies of adopting various issues including ICTs at their respective schools. Mr Machirori who is the Materials Development Officer for English at the CDTS argues that his organisation was taking a lead in conducting the workshops with teachers not only in Harare but nationwide with the view of empowering teachers to effectively implement the new schools' curriculum. He added that a quarter of the workshops have a bias in ICTs since the 21st century is requiring everyone to go digital.

In 2016, the ministry introduced a new era when they allowed students to bring laptops, phones and other electronic gadgets at school. This was received by education stakeholders with some mixed feelings. Some welcomed the development while others were conservative. However, whatever the case may be, it is a positive development for the ministry to also respond to the demands of the time and to embrace the changing dynamics in the environment.

Most schools in the Glen View-Mufakose District also welcomed the development but there is a selective implementation of the directive. At Mufakose 2 High School, Glen View 2 High School and Mufakose 1 High School, learners are allowed to bring laptops at school and not cell phones. Whereas at Glen View 1 High School students are allowed to carry their electronic gadgets at school without limitations. Glen View 3 High School does not allow learners to bring the gadgets at the school despite the directive from the ministry. The school remains conservative. Reasons for the adoption differ from one school to another but those refusing change are arguing that they do not have enough security if such gadgets are brought at school and they end up in conflict with the parents whose children lose the electronic gadgets within the school premises. On the other hand, those embracing the gadgets are arguing that time is demanding them to follow its pace.

Nevertheless, allowing students to bring their gadgets at the schools is meant to ease overfull of the school resources as learners can improvise whilst using other school ICT infrastructure like the internet, human resources and even electricity. This is an effective way of making sure that e-learning is embraced in its totality as stated in the curriculum framework. Thus, this is

what is taking place in the Glen View-Mufakose District in as much as the implementation of the new curriculum is underway.

4.8 New curriculum implementation prospects

There are several prospects from the MOPSE in as much as the implementation of the new curriculum framework is concerned. Some of these include;

4.8.1 Establishing a centre for education research, innovation and development

The MOPSE is striving to establish the centre of excellence in applied education research and development. The centre will ensure that the curriculum implementation process is also accompanied by a rigorous process of research and innovation. In addition, the centre will ensure that the curriculum is kept abreast with regional and global trends.

4.8.2 Teacher capacity development programme

This training programme launched in 2014 remains a permanent feature in capacitating human resources for curriculum implementation and innovation. The thrust is to encourage and structure progression of teacher status from diploma to a minimum first Degree in Education. Teacher education institutions through their parent ministry are expected to continue to collaborate with MOPSE to achieve this noble goal.

4.8.3 Monitoring and evaluation of the implementation process

This is an important pillar for assuring effective implementation and quality of learning outcomes. For purposes of monitoring and evaluation, this will require especially the Ministry of Primary and Secondary Education visibility in the schools where curriculum implementation takes place. Currently the Provincial Education Offices and DSIs are on the ground overseeing the implementation of the new curriculum frameworks and coordinating tasks and projects before moderated by ZIMSEC.

4.9 Students perceptions on ICT driven learning

In seven out of eight schools which participated in the research, the interviewees stressed that the learners are very happy with ICT learning materials. Mr Chinhava of Glen View 2 High School underscored the fact that with ICT tools in learning process, learners tend to comprehend so much compared to the conventional ways of teaching. The most of the teachers say students enjoy ICT driven lessons like PowerPoint presentations, Videos, Audios and so on in learning because it connects them to their daily life at home. It therefore becomes easy

for learners to grasp new concepts quickly. Nevertheless, Mr Matambanadzo who is the Deputy Head at Mufakose 4 High School says the learners enjoy ICT but hate the new curriculum in general because it has created an overload on their shoulders especially the issue of tasks and projects.

4.10 A digital gap between public and private schools in adopting e-learning

There is a digital gap that exists between private and public schools. The gap between public and private schools is also likely to widen with the demands of the new curriculum vis-à-vis the learning infrastructure. Most public schools are the main target of the curriculum implementers and private schools are often left behind when it comes to teacher capacity training and development even resource allocation by the Ministry itself. Private schools are expected to finance their activities without seeking assistance from the parent ministry of education. This will increase a gap between private and public schools as most of them do not have the prerequisite infrastructure required in the new curriculum. Above all, private schools which sprouted in the capital cities especially in Harare and Bulawayo in the past three years and without official registrations will soon be forced to close since they cannot receive tasks and projects moderated by ZIMSEC to engage learners in continuous assessments. Besides, these private schools especially the urban ones' lack proper ICT infrastructure or do not even have any ICT tools to talk about. This means that ICTs are poorly utilised in private schools than in public or government schools.

4.11 Internet connections in the administrative blocks

Even though internet connection is often poor in most schools, the administrative blocks are well connected. Even at the schools that are recently established like Glen View 3 Secondary School, Mufakose Mhuriimwe, and Budiriro 2 Secondary School, the research discovered that the administrative blocks are well connected to TelOne internet services which they say is more effective and efficient in doing business. All the administrative blocks in the secondary schools of Glen View-Mufakose District are well connected to the internet that is quite effective. Therefore, one can conclude that administrative functionality is preferred than ICT adoption in the learning and teaching discourse.

4.12 Challenges facing secondary schools of Glen View-Mufakose District in adopting ICTs in the new curriculum

There are several challenges bedevilling the efforts of adopting ICTs in delivering the new curriculum in Zimbabwe. These include; lack of financial resources to modernize the ICT infrastructure, lack of time to effectively adopt all the provisions of the new curriculum framework with regard to ICT, shortage of ICT technicians, lack of confidence among the teachers who are the key implementers, lack of knowledge from the teaching community, poor internet connections and too much load on the teacher.

4.12.1 Lack of financial resources

One of the major challenges observed in almost all the schools is lack of adequate financial resources for the schools to go digital in as much as they would want. The school budgets are often overstrained with top priorities of the new curriculum. This makes it difficult for schools to prioritize buying ICT equipment that meets the demands of the students. Mr Matambanadzo who is the Deputy Head at Mufakose 4 Secondary School gave an impressive example about the budget allocation at his school. He noted that firstly parents are not paying school fees on time and this in itself affects the budget planning process, the school needs to buy textbooks for the learners, cater for transport especially for sporting activities, servicing the ICT infrastructure, maintaining the school buildings and so on. This left them at a position where ICT cannot be prioritized and teachers stick to traditional ways of teaching. Through deductive reasoning one will understand why textbooks are prioritized at these schools than say ICT infrastructure.

The maintenance of ICT infrastructure requires financial resources as most schools do not employ internal technicians. This is also becoming difficult as the funds are limited to allow schools to service their ICT tools now and again. For example, some schools like Mufakose 2 High School have scheduled one maintenance session in September and Mufakose 4 and Glen View 2 High School service their ITC equipment per each term. This means that if the computer gets down in January it will remain as such until end of term or September. Therefore, this compromises on the adoption of ICTs in schools.

4.12.2 Lack of adequate time

Lack of time is proving to be a major challenge to all the teachers implementing the new curriculum. At one point, the researcher failed to get hold of the ICT teachers to have an

interview as they kept on postponing the interview dates citing that they were very busy with the demands of the new curriculum. Teachers are more engaged than before. The new curriculum has tasks and projects which are part of the continuous assessment schemes meant to develop researching and participatory learning approaches to learners. The teachers are supposed to moderate these tasks and projects before submitted to ZIMSEC for overall assessment. Continuous assessments have offered a new era for teachers as they are also supposed to research in those areas before guiding learners.

Students are expected to submit five tasks and one project per each level. What this translates to is that, teachers are expected to research five times. Most of the teachers are teaching more than five classes from form one to upper six. The burden becomes even more unbearable as they are supposed to teach and mark internal exams as part of summative assessment which also contributes to the coursework of students per each term. All the teachers interviewed cited tasks and projects as too demanding considering the amount of time that they have and the number of classes that they are taking. Since the government froze posts in the public sector, no more teachers were recruited since 2015 leaving a huge gap between the teacher to student ratio.

Implied by these developments is that, it is difficult for teachers to embrace ICTs in their teaching as it takes them time preparing for ICT lessons especially the PowerPoint presentations. Not only that, the new curriculum offered new learning areas where most of the teachers need to refer back to books and do researches before teaching. This also take part of their time. Therefore, embracing ICT in the teaching becomes a distant dream.

4.12.3 Lack of skills among the policy implementers

Lack of knowledge among the implementers is also a serious challenge facing the schools in a bid to go digital. Mr Chikoko of Mufakose 2 High School well explained why some teachers do not give much attention to ICTs in lesson delivery. He says that most of the BBC generation that is the "Born Before Computers" teachers are adamant to adopt ICTs due to their stubborn resistance to change. "Most of these teachers have over thirty-five years teaching experience and started teaching long before the advent of computers. So, it is really difficult for them to move with the pace of the 21st Century," added Mr Chikoko. Resistance emanates from the fact that the teachers have to go back to school one more time to embrace the ICTs before teaching or using them in teaching.

In addition, it becomes difficult to migrate from the traditional ways of teaching to ICTs because the Computer Generation is often ahead of the teachers in the classroom. This demotivates the teachers from using the ICTs in the teaching as they fear to be the laughing stocks of learners for lacking ICT knowledge and they end up nailing on what they know best, says Mrs Mawarire the District ICT Officer.

The research discovered that most of the teachers who are not computer literate do not have the capacity to use ICT tools like PowerPoint, computers, researching on the internet and so on. According to Mr Nyamupa, the ICT teacher at Mufakose 1 High, most of the teachers at his school often visit his office seeking assistance on how to operate ICT equipment. In turn, this robes the ICT teachers of their time to concentrate with the core business of helping students as they have to attend to the teachers as well. At the end of the day, the quality of learning is compromised and the learner is disadvantaged. Mr Chikoko also shared the same sentiment.

4.12.4 Poor internet connections

Poor internet connections are also another problem experiencing the secondary schools of Glen View-Mufakose District. It is almost impossible for one to talk about ICTs without acknowledging the role of internet in making ICTs a success. Of course, most of the schools in the district are connected to the internet but more often the internet is not reliable. At Glen View 2 High School, internet is there but it is not efficient as it is inaccessible to most of the leaners who are supposed to use it. The same is taking place at Glen View 2 High School. Glen View 1 High School, Mufakose 4 High School, Mufakose Mhuriimwe and Budiriro 2 Secondary School. All these schools do have internet access at their schools but it is not efficient and effective to meet the demands and expectations of the users. It is important to note that half of these schools are using free internet provided by Zol Fibroniks which is not effective enough to meet all the demands of the schools. Lack of internet is compromising the quality of learning as students have to improvise and some of them end up failing to secure the devices despite the need to use such facilities especially in conducting research and projects.

Given the unreliability of the internet, most teachers have no confidence in using ICTs in teaching. Mr Chinhava at Glen View 2 High School states that he does not rely on internet when teaching Computer Studies unless if he is accessing the internet alone without any other device connected at that particular time. The situation solidifies how teachers do not trust their internet services. Mr Chikoko at Mufakose 2 High School cited the same problem saying that

lessons are often interrupted with the breakdown of internet especially during lesson times due to overuse. As a result, they have to conduct make up lessons during the weekends where internet will not be overfull.

4.12.5 Lack of clarity about computers and e-learning

There is a misunderstanding by many people implementing the new curriculum who are holding on to the view that teaching computers is adopting ICTs as a teaching and learning method. This is obviously not correct because the incorporation of ICTs in the teaching and learning goes into every teaching and learning discipline not Computer Studies only. In fact, Computer Studies are very important in perving way for ICT adoption but teaching computer courses is obviously not embracing ICTs as underscored in the curriculum framework. Therefore, the adoption of the ICT tools into the curriculum is still at infancy in the new curriculum. Schools are expected to adopt ICTs into the teaching and learning as much as possible to harness a smooth transition from the old system to a new system of digital teaching and learning.

4.13 Measures in place to encounter the challenges

Each school in the district is responding to the challenges that its facing in a unique fashion. In 2015 the Ministry of Primary and Secondary Education encouraged all the schools to maximize service delivery with their given resources. The call was made when most schools were complaining that they did not have enough resources to support the new curriculum. Thus, each school is dancing according to its tune in solving the problems with less interventions from the ministry. What the ministry wants to see is progress despite the circumstances of achieving the progress.

The stance taken by the parent ministry has seen most schools outsourcing in-service training for their personnel to the private sector organizations, seeking funds from the donor community. Mr Hwamiridza who is the Head at Mufakose Mhuriimwe says that despite all the major challenges facing the school, they cannot turn for assistance from the ministry but rather to improvise. He says the school is seeking donations from the donor community such as the Non-Governmental Organizations (NGOs), banks like ZB Bank and so on. The aim is to find assistance so that the school achieves the state of the art ICT infrastructure before 2022. Private organisations like Ruzivo are also taking a lead in helping the schools with in-service training and Zol Fibroniks is also partnering public schools by providing free access to the internet.

4.14 Conclusion

It emerged from the research findings that ICTs play a major role in the implementation of the new curriculum. All the schools in the Glen View-Mufakose District are aware of the important role played by ICTs in delivering effective and efficient services need in the new curriculum. The chapter further discussed the efforts underway in most schools to embrace ICTs even though they are facing serious challenges in doing so. The next chapter will present on the conclusions and recommendations to the study.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents conclusions and recommendations to the study. One of the key findings to emerge in this research is that the new curriculum is being implemented in all the secondary schools of Glen View-Mufakose District as announced by the Ministry of Primary and Secondary Education. The research has concluded the following; Information and Communication Technologies are key in implementing the curriculum in education, suggestions on further research, challenges facing schools in an effort to incorporate ICTs into curricula activities which include; financial resources, lack of competency among the implementers particularly the teachers, time constraints and so on. The research recommends the Ministry of Primary and Secondary Education to review the issue of tasks and projects, capacitate teachers through in-service training among others.

5.1 Conclusions Drawn

The following conclusions were made from the research;

5.1.1 ICTs are very crucial in the implementation of the new curriculum

ICTs come with a conducive environment in the implementation of the new schools curriculum. The use of ICTs speeds the adoption of the new learning areas in schools due to innovative ways of researching, learning and teaching the new areas.

5.1.2 ICT is not well adopted in the recently established schools of Glen View-Mufakose District

The recently established schools give the impression that ICT learning is not easy to achieve. Budiriro 2 High School which was established in 2014 and it is a true reflection of the fact that, ICT cannot be incorporated into the curriculum overnight. Since the school was established in 2014, it does not have any computer lab, students' computers, electricity and internet connection. Glen View 3 Secondary School was established in 2003 but up to now, there is no much that has been achieved when it comes to ICT infrastructure. The school has ten computers which are estimated working and the computer lab is full of obsolete IBM computer version of 1990s. This demonstrates how the newly established schools are moving with the modern ways

of teaching and learning. The recently set up schools of Glen View-Mufakose District relates very well with most of the schools that were established all over the country in the Post Resettlement Government Programme. The newly formed resettlement schools in the outskirts are most likely to be grappling with the same challenges facing Glen View 3 Secondary School and Budiriro 2 Secondary School.

5.1.3 ICTs are still at infancy in the new curriculum

The role being played by ICTs in delivering the goals of the new curriculum is still at infancy in the Glen View-Mufakose District. Learners are tapping ICTs especially internet provided in their schools to research on the tasks and projects provided by the new curriculum as part of continuous assessment. Internet has helped students a lot in accomplishing the tasks and projects since there are no textbooks helping them in those areas. On the other hand, the real role played by ICTs is not yet achieved in the secondary schools of Glen View-Mufakose District since most of them are facing challenges of ICT infrastructure and so on.

5.1.4 Lack of financial resources to procure state of the art ICT infrastructure

The research discovered that all the secondary schools that participated in the study endeavour to go digital by fully embracing ICTs in the new curriculum framework. However, their conditions and situations are setting them back in achieving this overall objective as most of them are lacking financial resources to procure state of the art ICT infrastructure.

Secondary schools of Glen View-Mufakose District are progressing differently in terms of ICT adoption. There are some schools which are leading in terms of embracing ICTs like Mufakose 1 High School and Mufakose 2 High School whereas others are striving to have ICT infrastructure at their respective schools. The efforts being put by these schools to upgrade the ICT infrastructure differ from one school to the other. As for now, the highest allocation of budget per each school is focussed on other learning resources that are outside ICTs. For example, Mufakose 4 Secondary School and Glen View 1 High School are prioritizing textbooks and other learning materials in their budgets than procuring ICT equipment. These are some of the reasons why ICT adoption in the new curriculum is not the same in all the secondary schools of Glen View-Mufakose District.

5.1.5 There is a digital divide between urban and rural areas in terms of e-learning

The research found out that the use of ICTs in the new curriculum framework is likely to be even far worse in rural schools than it looks in these urban schools. The rural schools are worse

off due to lack of general infrastructure such as electricity, buildings, competent personnel and so on. There is always a digital divide between the urban and the rural schools. Its most likely that rural schools are suffering the same fate thrice than urban schools are doing. Drawing from this comparison, one would note that, there is also a difference between Group A schools and Group B schools, addressed in this research which are located in most locations of the urban, rural and town areas. Group As have the capability to adopt ICTs more than what the Group Bs can do.

5.1.6 There is lack of knowledge among policy implementers

Furthermore, most of the personnel expected to implement the new curriculum framework are teachers. The teachers play a central role in transforming the objectives of the curriculum framework into the ground. However, a number of them are not computer literate enough to adopt e-learning practices specified in the curriculum framework. At one school, the researcher was told by an ICT teacher, Mr Nyamupa at Mufakose 1 High School that the ICT teachers also play an important role in educating the teaching members. This shows lack of competency to deliver among the teachers themselves. Lack of knowledge among teachers have also taken away their confidence in using the medium to teach.

5.1.7 Poor internet connections are a major challenge in most schools to go digital

In addition, the research unravelled that most secondary schools in the Glen View-Mufakose District experience poor internet connections. It is disappointing to note that most schools experience poor internet connections because they rely on free services provided by some service providers like Zol Fibroniks. At Glen View 2 High School, the computer lab is connected to a free server from Zol Fibroniks and students cannot effectively use the internet in doing academic researches or any form of learning as it is always down or inaccessible at all. Just a few miles from the computer lab, one cannot access internet because it becomes too weak. The same story happens at Mufakose 4 Secondary School where internet is very limited since they are connected to a free service provided by Zol Fibroniks. This is the same fate that Glen View 1 High School is suffering. One would find out that the computer lab is connected to free internet service from Zol Fibroniks and its often poor to be effectively engaged in learning. Therefore, most secondary schools of Glen View-Mufakose District heavily depend on free internet services which is more often poor.

5.1.8 A digital gap between government and local council schools

There is a clear disparity between government and local government run schools. Out of the eight schools interviewed; seven are run by government whereas the remaining is a local council run school, that is, Mufakose Mhuriimwe. The latter is administered by council and not much has been done in terms of ICT infrastructure and its general outlook as the modern-day school. The standards of the school in general do not match those of the government secondary schools despite the fact that it was established earlier.

5.1.9 Lack of ICT teachers in most schools

The number of teachers for ICTs in most of the schools are too few. Computer studies are very critical in imparting knowledge to students in order to embrace the use of computers. However, the research found that the teachers who are facilitating the learning of computers are very few and their numbers are far outweighed by those of the other departments like Mathematics, Languages and so on. The most common number of ICT teachers at each school is one or two and do not go beyond five where they are many. Above all, most schools are still practising a system of computer selective classes where the course is offered to first classes at the school. In some schools like Glen View 1 and 2 High School, computer course is only offered to Form 3 and 4 classes only.

5.1.10 Misconceptions of computers and ICT learning

All the secondary schools in the district still hold on to the believe that Computer Studies and digitalising the learning process and teaching practices are the same. The central focus of the new curriculum framework with regard to ICT incorporation is not based on offering Computer Studies as a subject. The curriculum acknowledges ICT tools as the quicker way of moving with current global trends. This explains why ICT happens to be a cross-cutting theme in each and every syllabus developed under the framework.

5.1.11 Lack of time to effectively adopt the new curriculum using ICT means

The new curriculum framework is criticized by many teachers not only the ones interviewed by the researcher but via different medias. It is criticized for being too overambitious and lacks practicality as teachers have to spend a lot of time running around teaching and coordinating tasks and projects. Therefore, this reduces their chances of using ICTs to teach.

5.1.12 The new curriculum threatens the existence of unregistered colleges

The research concludes that unregistered colleges of yester-years are likely to face a serious threat of extinction if they do not formalise their operations. This is attributed to the fact that; the new curriculum came in with course work which is staggered within four years of secondary learning.

5.1.13 The gap between group A and group B schools is likely to continue

The new curriculum has done little to breach the gap between government or private owned group A and group B schools. The group A schools are likely to continue leading the high education quality race than their counterparts the group Bs. This is justified by the fact that the former group category is well resourced and the latter face challenges from finances and often overpopulated with students which compromise on effective service delivery.

5.1.14 Overload for teachers to implement the new curriculum with the aid of ICTs

The issue of tasks and projects proved to be very unpopular within the education sector than anything else. These tasks and projects are part of continuous assessments for students before they have the privilege to set for their final summative exams. However, the tasks and projects are quite involving for the teachers as they are also involved along the lines of helping students. This has robbed teachers most innovative zeal and ego to adopt e-teaching methods.

5.2 Recommendations

The research recommends the following;

5.2.1 Teacher in-training service

It is highly recommended that the Ministry of Primary and Secondary Education should provide in-training service and capacity development training to teachers. An in-service program is a professional training or staff development effort, where professionals are trained and discuss their work with others in their peer group. The most important factor in fulfilling the values of the society expected from education is the teacher. However, it is clear that, from past to present, the criteria introduced and implemented in teacher training are insufficient although the process of teacher training is a key process for the quality of teaching in schools. Teachers did not acquire enough in-service training before starting to implement the new curriculum framework. This has created a serious problem in delivering the goals of the new curriculum as most them argue that it is complicated and they do not understand what they are supposed

to do. Therefore, the government must make sure that teachers are well retooled to meet the expectations of the new schools' curriculum framework. All the teachers should receive a form of training meant to boost their confidence about the new curriculum and its goals. This will renew their energy.

5.2.2 Schools need to religiously subscribe internet

The school authorities need to be reminded now and then about the importance of subscribing to the internet not rely on free services. The development of internet technologies has raised the learning standards in most of the countries like Australia, Cuba, United States of America and so on and it has changed the way students are being taught at schools. That is why it is very important for the present generation that they provide internet education for their young generations.

5.2.3 ICT equipment should be prioritised in schools

Education authorities should provide the infrastructure that teachers and student can use to get benefits of technology in education.

5.2.4 Schools should not over rely on free internet services

The issue of over reliance on free riding internet service is proving to be difficult for most schools as their internet for learners is always down or inaccessible. It is good to sacrifice and subscribe effective services for the betterment of the quality of learning. The traditional ways of teaching that schools are following are not up to standard and they need to use the internet as a tool.

5.2.5 MOPSE is encouraged to review the issue of tasks and projects

Tasks and projects seem to be robing teachers of their quality time to deliver. The ministry should make sure that they send a taskforce on the ground to make inquiries about the issue of tasks and projects assigned to students per each year. The tasks and projects seem not to be feasible as alluded to by most teachers. Above all, the time allocated to students and teachers do not allow them to carry out the number of tasks and projects stipulated by the education top officials.

5.2.6 Close the digital gap between rural and urban schools

MOPSE should work hand in hand with the Ministry of ICTs, Postal and Courier Services to make sure that the digital divide between rural and urban schools is closed. In addition, they can also partner with the other internet and electricity suppliers in both private and public sector as a way of ensuring that their services also stretch to all the corners of the country.

5.2.7 Government should consider recruiting more teachers

Given the backdrop of the teaching personnel to meet the demands of the new curriculum, government should recruit more teachers. This will allow teachers to deliver using ICTs and to have enough time to use ICTs in the teaching practise. It will also help to reduce the effects of time constraints.

5.2.8 Government must support recently established schools

Most newly formed schools are facing serious challenges in adopting ICTs due to lack of financial resources. The government through MOPSE must provide resources and technical support to these schools to adopt ICTs for example by constructing them ICT laboratories and provide ICT equipment.

5.3 Suggestions for further research

In the future, further research is recommended in the following areas; the use and adoption of ICTs in the private schools, most particularly the ones located in urban areas; the impact of capacity development and training of teachers to effectively deliver the goals of the new curriculum framework, and so on. These are some of the areas that are recommendable to be looked at in the further studies on the implementation of the new schools' curriculum framework.

5.4 Conclusion

This study focused on the role of ICTs in implementing the new curriculum framework in the secondary schools of Glen View-Mufakose District. The major objective was to assess the role played by ICTs in making effective implementation of the new curriculum policy. Secondary schools in general are facing intense challenges in implementing the new curriculum using

ICTs and the gap even widens as one moves from urban to rural and resettlement schools. Nevertheless, a plethora of literature reviewed showed that if ICTs are tapped to the maximum they will bring positive results in the education system as is the case in Saudi Arabia. Zimbabwe needs to step up efforts to digitalise the education system so as to move with the global trends of education worldwide.

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Appendix 1: Application for Consent to Conduct Research

2386 35th Crescent
Glen View 1
Harare

10 November 2017

Director of Policy and Development
Ministry of Primary and Secondary Education
Ambassador House
Harare

Dear Sir/Madam

REF: APPLICATION FOR A PERMISSION TO CONDUCT RESEARCH

My name is Munyaradzi Gunduza (R124232X) a postgraduate student for Master of Public Administration (MPA) at the University of Zimbabwe. I am kindly requesting your assistance and permission to conduct data collection for my field research. My research topic is: ***"The Role of Information and Communication Technology in Implementing the New Schools Curriculum in Zimbabwean Secondary Schools: The Case of Glen View-Mufakose District."*** I wish to conduct my field research up to 30 November 2017. I assure you that the information gathered during this exercise will be used for academic purposes only.

Yours faithfully

Munyaradzi Gunduza
(+263772610360/0713445110 munyagunduza@gmail.com)

Appendix 2: Interview Guide for Teachers Responsible for ICTs

In Glen View-Mufakose District

My name is Munyaradzi Gunduza, a postgraduate student of Master of Public Administration (MPA) at the University of Zimbabwe. I am researching on *"The Role of Information and Communication Technology in Implementing the New Schools Curriculum in Zimbabwean Secondary Schools: The Case of Glen View-Mufakose District."* The information gathered shall be used to advance the implementation of the new schools' curriculum. Therefore, this whole exercise is strictly serving an academic purpose. The principles of research ethics shall be upheld during and after the course of this research.

Date of Interview …….....

Name of interviewee…….

Designation……

Organization……

…….

Duration of the interview…….

Interview Questions

1. In your own opinion, what is the role of ICT in teaching new curriculum subjects?
2. What is the nature of the ICTs present at your school?
3. What are the challenges you facing in using ICT related resources in delivering your lessons?
4. What type of ICTs do you use to teach new curriculum subjects?
5. How often do you use ICT in teaching new curriculum learning areas?
6. What is the response of students to ICT driven lessons?

Appendix 3: Interview Guide for District Officer Responsible for ICT In Glen View-Mufakose District

My name is Munyaradzi Gunduza, a postgraduate student of Master of Public Administration (MPA) at the University of Zimbabwe. I am researching on *"The Role of Information and Communication Technology in Implementing the New Schools Curriculum in Zimbabwean Secondary Schools: The Case of Glen View-Mufakose District."* The information gathered shall be used to advance the implementation of the new schools' curriculum. Therefore, this whole exercise is strictly serving an academic purpose. The principles of research ethics shall be upheld during and after the course of this research.

Date of Interview …….....

Name of interviewee……

Designation……...

Organization…….

…….

Duration of the interview……

Interview Questions

1. What is the role of ICT in implementing the new curriculum in secondary schools?
2. What is the nature of the ICTs present in secondary schools of Glen View-Mufakose District which enable them to fully implement the updated curriculum?
3. What are the challenges being faced by secondary schools in implementing the new curriculum framework?
4. What is the state of the available ICT infrastructure in secondary schools in the Glen View-Mufakose District?
5. What is the adoption rate in the use of ICTs by teachers and schools' management in implementing the new curriculum different learning areas?
6. What strategies can be used by secondary schools particularly in Glen View-Mufakose District to improve the use of ICTs in implementing the updated curriculum in Zimbabwe?

Appendix 4: Interview Guide for Heads In Glen View-Mufakose District

My name is Munyaradzi Gunduza, a postgraduate student of Master of Public Administration (MPA) at the University of Zimbabwe. I am researching on *"The Role of Information and Communication Technology in Implementing the New Schools Curriculum in Zimbabwean Secondary Schools: The Case of Glen View-Mufakose District."* The information gathered shall be used to advance the implementation of the new schools' curriculum. Therefore, this whole exercise is strictly serving an academic purpose. The principles of research ethics shall be upheld during and after the course of this research.

Date of Interview …….....

Name of interviewee…….

Designation……

Organization……

…….

Duration of the interview…….

Interview Questions

1. What is the role of ICT in implementing the new curriculum in secondary schools?
2. What is the nature of the ICTs present at your school?
3. What are the challenges that you are facing in using ICT related resources in delivering your lessons?
4. What type of ICTs do you use to teach new curriculum subjects?
5. How often do you use ICT in teaching new curriculum learning areas?
6. What is the response of students to ICT driven lessons?

Appendix 5: Interview Guide for Officers Responsible for ICT Policy Implementation In The Department of Curriculum Development and Technical Services

My name is Munyaradzi Gunduza, a postgraduate student of Master of Public Administration (MPA) at the University of Zimbabwe. I am researching on *"The Role of Information and Communication Technology in Implementing the New Schools Curriculum in Zimbabwean Secondary Schools: The Case of Glen View-Mufakose District."* The information gathered shall be used to advance the implementation of the new schools' curriculum. Therefore, this whole exercise is strictly serving an academic purpose. The principles of research ethics shall be upheld during and after the course of this research.

Date of Interview …….....

Name of interviewee……

Designation……...

Organization…….

……..

Duration of the interview…….

Interview Questions

1. Why are you strongly emphasizing on ICTs in the new curriculum?
2. What measures are being put in place by your organisation to make sure that ICT is successfully incorporated in the new curriculum for secondary schools?
3. What is the policy position of the Ministry of Primary and Secondary Education regarding the role of ICT in delivering the new curriculum?
4. What type of resources do you encourage schools to acquire as a way of embracing ICTs?
5. What is the adoption rate in the use of ICTs by teachers and schools' management in implementing the new curriculum different learning areas?
6. What challenges are you facing in delivering the ICT policy in secondary schools?