Analysis of the Challenges and Opportunities of E-Learning for Rural and Remote Schools in Zambia: Case of Mumbwa District

(Paper ID: CFP/997/2018)

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Abstract

The incorporation of Information Communication Technology (ICT) into educational practice continues to be applauded as having the potential to dramatically transform the teaching and learning process. In this modern era, teaching with technology has now become a norm and here in Zambia ICT is now a compulsory subject at all levels of education.

This research which was both quantitative and qualitative sought to explore the challenges and opportunities that E-Learning has on schools that are in rural and remote areas of Mumbwa District in Mumbwa. To obtain data, fifty (50) questionnaires were given to the respondents among them, twenty (20) administrators who include the District Education Board Secretary (DEBS), and the Head Teachers from the selected schools. The rest of the questionnaires were given to pupils and the data collected was complemented by the interviews.

The views expressed by the respondents were summarized and discussed in chapter five. The results showed that E- Learning has both opportunities and challenges in rural and remote areas. The results obtained from the respondents further showed that teachers generally perceive the incorporation of ICT as having a positive effect on the delivery of Modern Studies. This is because ICT use was associated with enhanced learner's interest and motivation and increased their attention. The respondents further revealed that using ICT in the delivery of their lessons increased their confidence as it added dynamism to their teaching and aroused greater enthusiasm and excitement.

However, some issues were raised concerning the difficulties that they face when it comes to E-Learning. Among the challenges pointed out includes; lack of proper infrastructure; lack of electricity, non-availability of computers as well as lack of trained teachers in that subject. These, they said makes it difficult to effectively incorporate ICT and, in many cases, does not help in improving the quality of education.

For more effective use of ICT in the classroom, it was recommended that teacher training be oriented towards developing skills in pedagogy related to ICT use. In addition, teachers could capitalize on the expertise that exists amongst the digital natives in their classrooms when attempting to integrate technology into their teaching. It was further suggested that the government should provide materials needed for e-learning such as computers as well as internet connectivity and all schools to be connected to the national electricity grid so that they effectively implement ICT subjects.

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Acknowledgements

CHAPTER ONE
INTRODUCTION

1.0 Introduction

This chapter focused on the introduction. It started by explaining the background to the study, and then shifted the attention to the objectives that the researcher sought to find. Before concluding, the researcher looked at the significance of the study.

1.1 Background Information

The arrival of the digital age has brought a lot of changes to every aspect of our life. It has changed the way we toil, the way we play, the way we live and in a special way the way we learn (UNESCO 2006). The use of ICT tools in education is rapidly expanding in many countries, Zambia inclusive and this endeavor is now perceived as both a necessity and an opportunity for improving and enhancing the education offered across the globe (UNESCO, 2006). E- Learning, as defined by *WeboPedia* (an Online Dictionary), is "learning using electronic applications and processes". This type of learning to a large extent has been said to ease work and enhance the delivery of lessons.

The Dakar Framework for Action (2000) identified the use of ICT tools as one of the main strategies for achieving the "World Declaration of Education for All of which was adopted in 1990 and called on all nations to harness new information and communication technologies to help achieve these goals. This is further supported by the G8 Heads of States Conference which acknowledged the role that ICTs play in supporting educational improvement globally.

Zambian President Edgar Chagwa Lungu during his address to Parliament on 18th March 2017 said that ICT can not only be used to expand the learner's horizons but could be a powerful aid to learning and stressed that harnessing the power of ICT goes beyond simply investing in infrastructure but in achieving meaningful integration of ICT into education practices.

Moreover, the International Conference on Teaching and Learning with Technology (March 2010) also stressed the fundamental role that ICT play in transforming teaching and learning. Balanskat (2006) goes on to say that the use of ICT has the potential to enable both teachers and learners to construct rich, multi-sensory, interactive environments with an almost unlimited teaching and learning potential.

To meet the Millennium Development Goals adopted at Jomtein and Dakar, all countries, Zambia included have attempted to implement reforms aimed at embedding ICTs in educational practice. However, this is not an easy task and it has come with its own challenges. In Zambia, the official view of ICT as potentially transformative of education has placed it at the center of the National agenda for School Reform (Curriculum Framework 2013).

Finally, as a signatory of the Dakar Framework, Zambia has made concerted efforts to establish policies to meet and execute its mandate of Education for All by 2015 (which has already passed). Although some private schools have been using ICT in the delivery of their curriculum, it was not until 2013 that this policy was made compulsory and in June 2017 after attending the Smart Concert in Rwanda, Her Excellence the Vice President (Mrs. Inonge Wina) after consultation, together with both the Ministry of General Education as well as the Ministry of High Education made computer studies as a compulsory subject. However, while in most schools, ICT as a subject has been introduced, it has not been fully assimilated into the curriculum especially in rural areas and remote areas due to several reasons. This research therefore, was premised on finding the challenges and opportunities that rural and remote schools face when it comes to the implementation of e- learning using ICT tools.

1.2 Statement of a Problem

From the preliminary studies conducted during the time the researcher was a resident in Mumbwa District, he discovered that the schools under investigation (Nalusanga, Kabulwebulwe, Nambala, and Namwala) have made incredible efforts in ensuring that they adhere to government directives of incorporating ICTs in their curriculum. The researcher further discovered that these schools made a lot of investments in terms of time, energy, training and finances to ensure that they provide a conducive environment for their learners. However, despite all these efforts, it was discovered that these schools face a lot of challenges in the implementation of the new curriculum where usage of ICTs in concerned. This has made it difficult to determine if that investment will yield the expected returns in developing teaching and learning experiences. However, since it is a government directive that ICT be implemented in all schools regardless of their location, the schools under investigation have also tried to adhere to that. The problem that this study therefore aims to address are the difficulties and opportunities that e-leaning brings to such schools.

1.3 Purpose of the Study

The purpose of the study was to explore the Opportunities and Challenges that E-leaning has on rural and remote schools of Mumbwa District in Central Province.

1.3.1 Specific Objectives

The research objectives were narrowed down to the following specific objectives:

   i.   To establish the opportunities of E-learning to rural and remote schools.
  ii.   To analyze the challenges that rural and remote schools face in embracing e-leaning.
 iii.   To investigate the effect of e-learning on teaching and learning.

1.4 Research Questions

The study utilized the following research questions that acted as a guide

  i.   What are the opportunities of e-learning to rural and remote schools?
  ii.   What challenges are faced by rural and remote schools in implementing e-learning?
  iii. What are the effects of e-learning on teaching and learning?

1.5 Research Variables

The research utilized two variables; E-Learning as an independent variable and rural and remote areas where the research was done as dependent variables.

1.6 Significance of the Study

E- Learning using ICTs tools is beneficial to most schools in a few ways. It has improved the way lessons are delivered and understanding on the part of pupils. The study therefore, is significant because the findings would offer vital information to the Government through both the Ministry of General Education and Higher Education, Curriculum setters as well as other Policy makers in Education on the challenges and opportunities that e- learning has on schools that are in the remote and rural areas. It will also provide them with the knowledge of the nature of the contribution of ICT to the teaching-learning process. In addition, it is also hoped that this study will contribute to the growing knowledge-base regarding the use of e-learning in education in rural and remote areas.

1.7 Theoretical Framework

The study was informed by the Social-Cultural Theory of Learning postulated by Vygotsky (1997). In his theory, Vygotsky postulated that all human action is mediated by tools and that effective learning takes place when we interact with the tools and artifacts of our culture. In this age, technology has come, and it is one of the tools that is in use at the moment therefore, the researcher had a belief that greater interaction with Information and Communication Technology in the classroom environment will enhance the learning experiences of students

1.8 Operational Definitions of Terms

E- Learning – is leaning utilizing electronic technologies to access educational curriculum outside of a traditional classroom

Information and Communication Technology (ICT) – this refers to teaching and learning using technological tools. It also refers to technologies that provide access to information through telecommunications.

Technology- refers to devices that are used to communicate

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CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

In this chapter, literature on Information Communication Technologies and E-learning was reviewed. The findings of different authors and scholars on the same was discussed and analyzed. Among the documents reviewed include, books written both in Africa and Europe, journals and various reports on the integration of ICTs.

2.1 Global Perspective

It is generally believed according (Trucano2005) that the use of e-learning in the education cycles can empower both teachers and learners, promote change and foster development of 21st century skills. Hegoes on to argue that the use of e-learning through Information and Communication Tools has the potential to transform teaching and learning processes from a more teacher centered to a more student-centered approach and that this transformation results in increased learning gains for students.

Over the past years, several studies were conducted, and the aim was to examine the effect of e-learning on teaching and learning and how it contributes to national development (Bates2006). According to Bates (2005), these studies revealed that the use of ICT tools has assisted pupils to learn more effectively by providing teachers with access to a wide range of new pedagogies. Besides that, the studies also revealed that ICT tools have enabled teachers to do administrative tasks more efficiently. Hall (2001) went further to say that the studies revealed that ICT tools promotes learning by doing approach thus making it more interesting for learners.

Furthermore, according to Liu (2010), the use of ICT tools provides access to a wide range of up to day learning material as well as enriching learning with multimedia elements. However, the current literature on the contribution of e-learning on education and society was reviewed and discussed under the following themes: effects on learning and learners; effects of e-learning on schools that are in rural and remote areas; benefits and challenges associated with technology use in rural and remote areas.

2.1.1 Effects of E-leaning on Learning and Learners

In recent years, several impact studies were conducted with the expressed aim of assessing the return on investment in e-learning in education. Between 2002 and 2006, Balanskat (2006) conducted a review of some of the impacts that e- learning has on learning. Balanskat's study was done in Europe with the aim of determining the benefits and impacts of e-learning in schools focusing on two major areas: learning outcomes and learners and teaching methodologies and teachers. Some of the studies he reviewed were quantitative in nature while others followed a qualitative orientation.

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The quantitative studies attempted to establish causal links between the use of ICT tools and learning outcomes. Though the studies revealed some evidence that Information and Communication Technologies impacts on learner performance, the general conclusion was that it was difficult to establish a causal relational between computers and educational outcomes (Machin as Cited by Balanskat 2006). The findings of these studies led to the conclusion that the use of ICT in schools impacts on educational standards most when there is fertile ground in schools for making efficient use of it.

The qualitative studies on the other hand revealed that teachers, students, and significantly, parents believe that e- learning has a positive impact on students' learning and that students' subject-related performance improves with the use of technology (Balanskat2006). According to him, the findings also indicated that teachers believed that the educational achievements of pupils improved through ICT use and that both strong and weak pupils benefit from electronic means of learning. In addition to that teachers also observed that e-learning enables the learners to blend with their own learning styles in a more favorable way and that this resulted in a more favorable impact on both academically strong and weak learners.

Furthermore, Patel (2011), concluded that pupils assume greater responsibility for their own learning working more independently and effectively when using electronic tools. In general, these studies concluded that E- leaning had the greatest impact in the affective domain. It was further revealed that more than 86% of teachers in Europe reported that pupils are more motivated, engaged and attentive when computers and the internet are used in the classroom and this result in positive effects on behavior, communication and process skills (Oblinger 2010).

The findings of the above writers were corroborated by the findings of a three-year study of New Zealand's e-learning initiative conducted by Lai and Pratt between 2001and 2004. The aim of this study was to investigate teachers' perception of the teaching and learning effects of ICT use in 26 secondary schools. In this study, both quantitative and qualitative data was collected. Lai and Pratt (2007) concluded that the integration of ICT in educational practice has several positive social and motivational effects on the learners including increased interest and engagement.

Sutherland (2004) reported on the findings of the Inter Active Education Project conducted in the United Kingdom in which teachers and researchers worked together to develop and evaluate initiatives focused on using e-learning in curriculum areas that pupils would normally find difficult. The study was conducted over a two-year period and involved teachers from both primary and secondary schools. The project was predicated on the view that e-learning in and of itself does not enhance learning but rather how it is incorporated into learning activities is what makes the difference.

The findings of the data collected revealed that different subject cultures impact differently on how e-learning is used in learning. Sunderland (2004) found that for some subject areas and for some teachers, e- learning was seen as Trojan horse or a virus that secretly brings in new approaches to learning that

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conflicted with the deep grammar of the subject. However, despite this obvious aversion to technology use in the classroom, the history teachers who participated in the project reported several positive outcomes with regards to ICT integration in the projects implemented. Teachers reported marked improvements in the writing skills of lower ability students, increased levels of interaction among students, greater student's enthusiasm and engagement and an increase in confidence for both the teacher and the students.

A similar longitudinal study was conducted in British Schools by Deaney, Ruthven and Hennessy (2006) who attempted to examine the contribution of e-learning within various subject areas through the execution of ten small projects. These small projects aimed at assisting teacher-researchers in developing strategies involving the use of computer- based ICTs within several subject areas. In the initial stages of the project, teachers were asked to articulate their ideas about the pedagogical use of ICT in their specific subject areas and to identify ways in which these ideas could be translated into strategies for incorporating ICT into classroom practice, what the researchers referred to as "practical theory."

From the initial responses of the teachers, the researchers were able to gather five interconnected themes related to their perception of the possible contribution of e-learning to teaching and learning namely; broadening classroom resources and reference; enhancing working processes and products; meditating subject thinking and learning; fostering more independent pupil activity and improving pupil motivation towards learning (Opone 2007).

These initial theories were for the most part corroborated by the results of the study. The teachers reported that the integration of ICTs in their lessons had exposed pupils to not only a wider range of resources but to resources of greater currency. Furthermore, teachers also indicated that the use of computer tools had enabled pupils to produce work of a much higher standard and that using technology allowed pupils to comprehend what was being taught in class at home properly (Deaney 2006). E- Learning also makes pupils to be active in class and not passive.

On the other hand, though e- leaning is helpful to the learners, the study found that internet use had to be carefully structured and monitored by teachers as it was easy for pupils to become distracted or get lost during web searching resulting in time wasting and more frequent teacher intervention. It was concluded that while more directive strategies were required to maximize the benefits of Internet research for student learning it was also critically important for teachers to find a balance between providing guidance and stifling creativity (Galbreath 2000).

2.1.2 Effects of E- learning on Teachers and Teaching

Several researchers argued that teacher beliefs about teaching and how pupils acquire knowledge play a critical role in determining not only the degree to which technology is used in the classroom but how technology is used to support teaching and learning. Teachers often view the technology integration as

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an additional imposition on their already demanding time schedule when they simply want to get on with the business of teaching (Moursund 2005). In addition to the fact they do not believe that they have the technical competence to effectively use technology in the classroom, they fail to see its utility or relevance for their subject. Research further showed that teachers' perceived usefulness of an innovation plays a pivotal role in determining the extent to which that innovation will be adopted for use in the classroom (Hall & Hord 2001).

Becker's (2000) nationwide survey of teachers in the United States revealed that, while ICT use enabled a minority of teachers to put into practice a teaching that is more constructivist and more in tune with their teaching philosophy, it has not transformed the teaching practices of most teachers, particularly teachers of secondary academic subjects. However, teachers did acknowledge that under the right conditions e learning is a valuable instructional tool and has impact not only on students' performance in the classroom but on their academic effort outside that classroom as well.

In a similar case, a survey of 170 Secondary school teachers in New Zealand according to (Lai and Pratt 2004) was conducted. The findings of this survey revealed that 82% of teachers concluded that ICT is beneficial to their teaching but not in the methods of delivery and classroom practice. Significantly, the most obvious effect identified by the teachers was not a change of philosophy or pedagogy but improved efficiency in the administration and management of teaching, including lesson preparation and presentation.

Similar findings were reported by Balanskat (2006) in his review of the ICT impact studies conducted in Europe. He found that ICT use enabled teachers to save time and to increase productivity in such activities as preparing and updating daily lessons and maintaining records. In addition, ICT use fosters greater collaboration between teachers with increased sharing of resources and ideas. However, with respect to pedagogical practice teachers continued to use a more traditional approach to teaching simply viewing ICT as a tool to support their didactic approach. As such, they concluded that teachers do not yet exploit the creative potential of ICT and engage pupils more actively in the production of knowledge (Balanskat 2006).

2.1.3 Factors Impeding Greater Integration of E- learning

On this aspect, several studies that were conducted revealed that even teachers who hold constructivists pedagogical beliefs may not necessarily teach actively because of other contextual factors such as teacher technology competence, time constraints and demands of high stakes examinations (Becker 2000). Liu (2010) postulates that current technology use in teaching typically supports the traditional didactic modes, such as lecturing using technology. Liu further argued that the fact that teachers have an insufficient understanding of pedagogy associated with technology use, it makes the implementation of e-learning difficult.

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Liu (2010) goes on to say that a lack of knowledge about how to use technology effectively is a likely barrier to the effective implementation of e-learning. Tella, Toyoba (2007) in their study of Nigerian Secondary Schools also found that teachers' lack of expertise in using ICT was a prominent factor hindering their readiness and confidence in using e-learning. In addition, many teachers reported that attempting to incorporate technology into the milieu of classroom activities presents a host of additional problems such as classroom relocation when the required technology is in specialist rooms, access to equipment, system unreliability and a lack of technical support (Deaney 2006). As a result, many teachers continue to use lecture based or demonstrative teaching activities when using technology and teaching modes remain primarily teacher-centered.

2.2 Zambian Perspective

On the Zambian perspective, not much was reviewed due to lack of material on the integration of ICT in education. This is because ICT was recently introduced in the curriculum and a lot of people are in a panic mode trying to find ways of using it effectively (Joyce 2011). The only material that the researcher looked at were the synopses that pupils have written on ICT basing their work on other researchers. Besides, no one has taken interest in investigating the impacts of ICT in rural and remote areas.

Nonetheless, the literature reviewed in Zambia was based on the help that the use of ICT tools has brought to teachers and to learners. Some went as far as analyzing the difficulties that most schools face when it comes to the implementation of ICT. Among the difficulties highlighted includes non-availability of ICT trained teacher's countrywide and lack of proper infrastructure. A practical example was given that in 2016, government failed to conduct Grade 9 ICT exams successfully as in most schools the exams went beyond the stipulated time.

In addition to that, a lot of books that was found on the market had nothing to do with its implementation; most of them just focused on ICT or computer studies in general and nothing to do with challenges and opportunities. It was further revealed that at the time of the research, there was only one book in ICT written by Dr. Hasting Maboshe from the Copperbelt University that focused on data analysis besides those used in secondary schools.

2.3 Comparative Studies

Looking at both the Global and Zambian perspective the conclusion is that there is rich material globally than it is on the local scene. The studies conducted in Europe and New Zealand have given us so much thought on the usefulness of integrating ICT in education. While a lot has been said, there is little on the challenges and opportunities that e-learning has on remote and rural areas. Sunderland (2004) focused only on the benefits that ICT has on subjects and how it affects learning and teaching. He went on to talk about its implications. On the other hand, other scholars just focused on its effects on learning. Deaney and Hennessy (2006) did the same but the local material has nothing to say on any of that. In addition to

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that, what is available on the global perspective has nothing to say on rural areas simply because what may be described as rural from Europe's perspective may not the case with Zambia.

2.4 Personal Critique

From the literature shown above, not much is available on the challenges of e-learning on rural and remote areas. Deaney (2006) did well to point out the benefits of ICT in education but he didn't do anything on the challenges it has on rural and remote areas. His focus was on the impacts it has on learning. Besides that, Hennessey (2006) also focused on how it helps teachers and by this he meant those who are in town and not in rural areas. Other studies focused on funding and not so much on its opportunities and impacts while others seem to discard the whole study together as useless. Thus, current research indicates that there are a lot of benefits that e-leaning has brought to the educational practice for both teachers and pupils in the education sector.

2.5 Establishment of the Gap

However, despite the benefits and challenges that e- leaning has in general, none of the literature reviewed focused on rural areas especially here in Zambia. Most of them focused on the methodology and how it should be delivered. Since no one ventured on its impacts in rural and remote areas, the researcher therefore, thought it wise to take upon this task so as to establish the challenges and opportunities of e learning in rural and remote areas.

2.6 Summary

In this chapter, the focus was on literature review about the integration of ICT in education. The researcher looked at what other authors have said, and then shifted the attention on the local perspective though not much was written due to the lack of the materials. The researcher went on to compare the studies done both globally and locally and then gave a personal critique before mentioning the gap he researched on

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CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter describes the research methodology that was used in this study. Research projects require the use of the right techniques and methods to ensure accuracy of the results. The way the study is conducted facilitates and generates information, ensuring a high degree of accuracy and usefulness of the information. This chapter therefore presents the research design, study site, study population, sampling procedure, data sources and data collection methods and analysis procedure.

3.1 Research Design

The study adopted a descriptive survey design. According to Hopkins (2000) descriptive studies aim to determine the relationship between one thing (an independent variable) and another (a dependent variable or outcome variable) in a population, establishing the associations between variables and the causality. This study sought to find the challenges and opportunities of E-learning with emphasis on rural and remote areas of Mumbwa District.

The study combined the use of both quantitative and qualitative research methods to allow deep understanding of the research problem. It also served to ensure that possible inherent bias data source, investigator and method would be neutralized by combining both research methods. Quantitative research method was used to collect and analyze hard data while qualitative data was used to analyze non-numeric data which gave more information on the study objectives and in the process strengthened the quantitative data that was collected.

3.2 Target Population

The study targeted leaners, school administration such as head teachers and the Debs of Mumbwa District. Regarding this study the sample population was made up of District Education Board Secretary, Head Teachers and pupils from the four schools mentioned. The challenges and opportunities of-Leaning regarding remote and rural areas were analyzed. The sample population included that part of the population that was observed was representative of the entire study population (Stevens, 2000).

3.3 Sample Size
In selecting the sample size, the researcher picked respondents who formed part of the study from the schools that were targeted. A sample can be defined as a determinate part of an arithmetical population. This population's characteristic is subjected to further review in a bid to bring out details that are like the entire group (Webster, 1985). The People being dealt with are defined as a set of respondents who are chosen from a large group and will act as representatives of that group for the study in question.

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3.4 Instruments for Data Collection

The research utilized two different types of questionnaires, one for the pupils and the other one for administration as well as the head teachers. This was complimented by the interview guide which the researcher designed. Qualitative data was obtained using interview guide, and through the questionnaires, quantitative data was obtained.

3.5Procedure for Data Collection

As mentioned in the research design above, the study collected data of two types; namely quantitative and qualitative data. Data was collected over a two-week period during the month of June 2018.

3.5.1 Qualitative Data

Qualitative data was collected from secondary and primary sources of information. The researcher conducted literature review involving the analysis of materials concerning e-learning and ICT in general. Interviews were conducted utilizing key questions in the interview guide

3.5.2 Quantitative Data

Quantitative data was collected using questionnaires

3.6 Data Analysis Technique

The techniques of the grounded theory methodology, as proposed by Strauss and Corbin (1990), was employed to analyze the data as it allows for analysis and emerging data. After the interviews were transcribed, the data was color-coded by the researcher, segmented and re-grouped by questions. Initial coding was done by examining the data sentence by sentence and defining the actions, events or ideas explicit within the data. This allowed the researcher to build ideas inductively while deterring him from imposing extant theories or his own beliefs on the data.

3.7. Triangulation

Since the trustworthiness of qualitative research is often questioned by positivist researchers, several strategies were adopted to ensure credibility and dependability of the findings (Shenton: 2004). The data that was collected was tested against the existing literature to see if they agree. The researcher also looked at other literatures to see if there was similarity between what was collected and what was there.

In addition, iterative questioning as proposed by Shenton (2004) was employed as a means of verifying the data which was given by the participants. For the most part, the researcher relied on the actual words of the participants when analyzing and coding the data to ensure that the meanings derived remain true

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to the voice of the participants. Also, member checking of interview transcripts, emergent codes and preliminary findings was employed as a means of ensuring the credibility of the findings.

3.8. Ethical Consideration

To ensure the credibility of the study, permission was sought from ICU and the DEBS in Kitwe including the administration of the schools and initial contact was made with the possible participants to apprise them of the nature of the study. Dates for the conduct of the interviews were agreed upon and all interviews and answering of questionnaires was done over a two-week period. No data from the questionnaire was tempered with and only what the participants presented was considered. Finally, the names of respondents were kept confidential so as not to expose them.

3.9 Scope of the Study

This study was conducted in the rural and remotes areas of Mumbwa district. The schools targeted included Nalusanga Primary, Koswe, Namwala and Nambala Secondary Schools. Fifty participants were targeted of which ten (10) were the Head Teachers and the District Education Secretary Office. The remaining forty (40) questionnaires were distributed to teachers and pupils from the mentioned schools.

3.10 Limitation of the Study

The study limited itself to four schools out of 20 schools in Mumbwa District that are found in rural and remote areas. The non-inclusion of those schools was due to time and logistical constraints. On the part of teachers, only those who have dealt with ICT related subjected were targeted as they are computer literate.

On the part of pupils, the researcher concentrated on those between the ages of 14 to 18. This is because they are mature and able to articulate issues accordingly and so did not include other pupils who may have given us valuable information.

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CHAPTER FOUR

DATA PRESANTATION

4.0 Introduction

This chapter analyses the data that was collected in the field. It starts by looking at the background of the respondents and then outlines the procedure that was followed during the analysis of both qualitative and quantitative data before concluding.

4.1 Respondent's Background Information

The characteristics of the respondents studied included; on the part of administrators, age of the respondents, level of education attained, frequency of interaction with ICT related subjects. On the part of learners, it included age, class or grade and as learners in ICT related subjects. The total number of respondents used for this study was 50 (N=50)

4.1.1 Respondents Age

The table below indicates the age distribution of the respondents

Table 1. Age of the Respondents

| Age Group	Frequency	Percentage
15-18 years	30	60
24-35 years	12	24
36 and above	8	16
Total	**50**	**100**

Source: Survey Data (2018)

As indicated in the table above, many respondents that is learners (60%) were aged between 15-18 years. Those aged above 36 year and above were least (16%). This indicates that those who are most affected when it comes to E-Learning are the pupils or the learners. Administrators are not directly affected in that they can find alternatives where need arise. The effect on their part comes in on performance of their learners. However, learners are at the mercy of the government and school administration for whatever they need. If the government comes through for them, then the opportunities will be huge and will be highly appreciated and this will trickle down to the administrators but if these people do nothing, then implementing E-Learning will come with a price.

4.1.2 Level of Education

The study established that majority (60%) of the respondents had the lowest level of education as most of them just obtained Junior Leaving School Examination Certificate. This was followed by (24%) that is teachers whose qualifications range from Diploma to Degree at either secondary or primary level. Less than 4% reached the level of master's Degree as the highest level of qualification. The figure below demonstrates the distribution of the respondents along various categories of education level.

Figure 1. Respondent's Level of Education
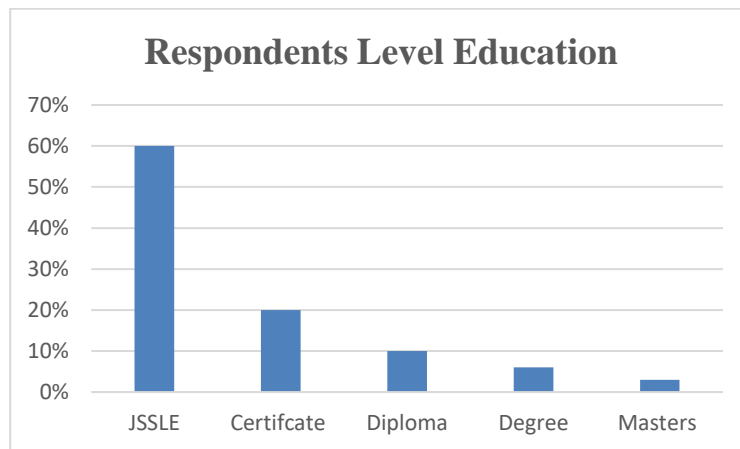
Source: Survey Data (2018)

4.2 Presentation of Findings

As indicated in the World Bank Report on ICT in Education, it is difficult to measure the actual impact of ICT on teaching and learning and more specially to measure the opportunities and challenges that it has on remote and rural areas (Trucano, 2006). Teaching is a complex and ill-structured problem to which there is no single, perfect solution. This is according to Koehler (2007). He points out that fruitful integration of E-learning into the curriculum takes place in environments that are fluid and ever-evolving. As such, this study did not just intend to assess the impact of E-Learning on teaching and learning but also on investigating the opportunities and challenges that comes with it in rural and remote areas. The analysis of the interview data and that collected from questionnaires, therefore focused on what the respondents had to say. The responses emerging from that data was grouped into the following three major categories:

- Challenges of E-Learning in Rural and Remote areas
- Opportunities of E-Leaning in Rural and Remote areas
- And the impact of E-Learning on teaching and learning

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4.2.1 Challenges of E-Learning in Rural and Remote areas

To start with, it is important to note that the challenges facing schools in urban areas will not be the same as those facing schools in rural and remote area. Nonetheless, even in rural and remote areas, the challenges will not be the same for all the schools but what is presented below is the general overview of the findings since these schools are under-served.

Lack of infrastructure

The respondents pointed out that lack of infrastructure to use is one of the major problems that they face. The findings revealed that in all the targeted schools the number of available computers as compared to the pupil ration was in adequate. For instance, at Nalusanga Secondary School, the whole school does not have desktop computers but relies on 4 laptops from the teachers if they are not using them. But four or even ten laptops against a population of 500 pupils are nothing and cannot do anything. This is because computer studies are a practical subject and pupils need hands on techniques for them to understand what they are being taught.

Besides the challenges in terms of gadgets, the findings further revealed that these schools are not connected to the national electricity grid. This simply means that when they want to learn such subjects, then they must use generators that are powered by petrol. The cost of running a generator is expensive in that the cost of fuel here in Zambia is high and that school officials travel for about 50 kilometers to purchase the commodity. On top of that, at times the funding from the government rarely comes and so these schools rely on user fees from pupils which are not much as they have few pupils and not all of them pay in full.

Teacher hiring

In many urban areas, there is a surplus of talented teachers in most subject areas but not enough jobs available to employ them. However, when it comes to ICT Teachers, here in Zambia we do not have enough trained teachers. If that is the situation in town, one wonders how it is in rural areas. The findings revealed that in most cases, some teachers step in to offer ICT even though they are not well qualified to handle such subjects. For instance, at Kabulwebulwe, a Science Teacher is the one who has stepped in to offer E-learning as the school do not have a qualified ICT Teacher. The same teacher is also the one they have hired at Nalusanga to do the same. This simply entails extra expense on the part of the hiring schools and at the same time altering of school time table to accommodate the hired teacher.

Even when the funds are available, schools such as Koswe that are far revealed that it is difficult for them even to hire one to offer ICT. In short, some people claim that rural life isn't for everyone, and a life that's simpler can seem to some people like a life that's "less than". Many services such as health care

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can be harder to obtain and in terms of distance and the bad roads, some people are not willing to go to such places so in the end, it's difficult to hire one.

Spotty Internet access

People in big cities and towns take broadband Internet access for granted. Not only is it easy to sign up for fast access, people in cities are frequently spoiled for choice. Today, we have companies that are providing 4Gs internet connectivity such as Airtel, MTN, Vodafone and Zamtel. However rural and remote areas are still experiencing a digital divide, with, by some measures, more than a third of rural residents lacking access to broadband Internet. Even those who have access, its slow connectivity as in most cases it is 2G not Edge.

The above scenario according to respondents drastically affects education. E-learning involves the use of internet for it to be fully implemented. However, its slowness or absence in the rural and remote areas brings a lot of challenges. Not only does it make it hard for many teachers to employ digital resources such as YouTube in the classroom but employing learning management systems (LMSs) such as Moodle can sometimes be impossible. Even accepting digital submissions of homework and assignments can be hard. Also rendered unavailable by slow Internet access are the vast opportunities for digital learning, eBooks, and the ability to collaborate online. Even basic software like Google Docs can be a struggle. So, ninety percent (90%) of the respondents pointed out that lack of internet or its availability in a slow state is challenge.

Poverty

Nowhere is free of poverty, but rates of unemployment, malnutrition and poverty are markedly higher in rural and remote areas than in urban areas. Unlike cities, though, where high population density tends to make poverty more visible, it can be much harder to see in rural areas, which makes it harder to cope with. In this study, poverty was proven to affect educational outcomes especially where ICT is concerned. For instance, pupils confirmed that it is difficult for them to do homework of ICT in nature due to the lack of gadget to use at home. Besides, most of them come from poor parents who can't even afford to buy internet bundles for their children to have access to the internet and do their research thus making E-Learning impossible to be fully implemented. The chart below shows the summary of these findings

Figure 2- The Challenges of E-Learning

Challenges of E-Learning
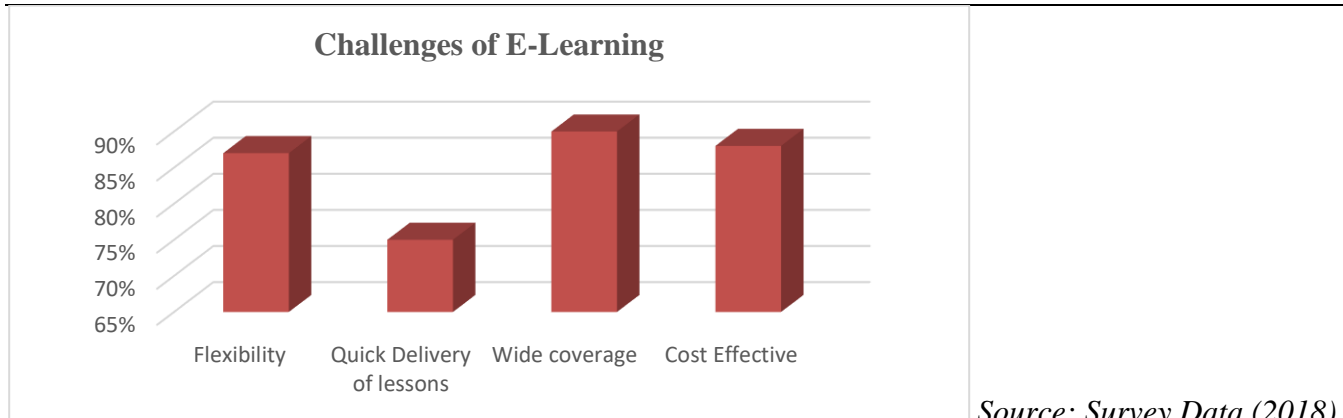
Source: Survey Data (2018)

4.1.2 Opportunities of E-Leaning in Rural and Remote Areas

Today's learners want relevant, mobile, self-paced, and personalized content. This need is fulfilled with the online mode of learning were learners can learn at their own comfort and requirement (Beck, 2009). In this study, the respondents revealed the following as opportunities associated with E-Learning.

In the first place, 80 percent of the respondents revealed that E-Learning is one of the best methods of teaching that is best suited for everyone as it combines multi-media elements. The use of E-Learning has led to remarkable changes in how the content is accessed, consumed, discussed, and shared. They pointed out that online educational courses can be taken up by those who are not in school such as the sick and even those on maternity leave and house wives too, at the time that suits them. Depending on their availability and comfort, many respondents even suggested that lessons can even be extended at home when the leaners at their own places and at times also in the evening.

Respondents also pointed out that where E-learning offers pupils as well as teachers a lot benefit. They said that unlike classroom teaching, with online learning one can access the content an unlimited number of times. This is especially required at the time of revision when preparing for an exam. In traditional form of learning, if you cannot attend lesson due to unforeseen events, then that person will find it difficult to understand unless one prepares for that topic on his or her own; but in eLearning, one can attend lessons whenever one wants with ease provided one has all the necessary requirements. The use of E-learning also ensures that both learners and teachers are in tune with modern times since learners can access updated content whenever they want it.

Furthermore, the respondents also submitted that E-Learning provides quick delivery of lessons as compared to the traditional classroom teaching methods. They said this mode of teaching as quick delivery cycles in that if it is programmed, it will carry on till the end without those delays that are sometimes associated with traditional classroom methods. In short, it accommodates less disturbances. They also pointed out that E-Learning helps in creating and communication of new training, policies, concepts and ideals.

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About 90 % of the respondents also pointed out that it enables teachers to get more coverage to communicate the message in a consistent way for their target audience. This ensures that all learners receive the same type of training with this learning mode. Despite being in these areas, majority of the respondents concluded that it is a cost-effective method as compared to traditional forms of learning. For instance, they said most of the CPDs meeting that are held at the district level can be accessed online. The reason for this price reduction is because learning through this mode happens quickly and easily. This cost effectiveness also helps these schools to save money for other projects than paying for expenses such as travelling and accommodation when the trainings are happening in another town or district.

E-learning was further observed to be effective when it comes to lesson delivery in that it makes it easy to grasp the content and digest it. It enhances the ability to learn and implement the new processes or knowledge in most schools and it helps in retaining information for a longer time. Finally, the respondents being conscious of their environment also praised e-leaning as one of the methods of preserving the environment as it is a paperless way of learning. This collaborates the findings done by Joan (2014) who found that distance-based learning programs consumed around 90% less power and generated 85% less amount of CO_2 emissions as compared to traditional campus-based educational courses. With eLearning, there is no need to cut trees for obtaining paper. Thus, eLearning is a highly eco-friendly way of learning. The chart below summarizes the findings on the opportunities of E-Learning

Figure 3 Opportunities of E-Learning
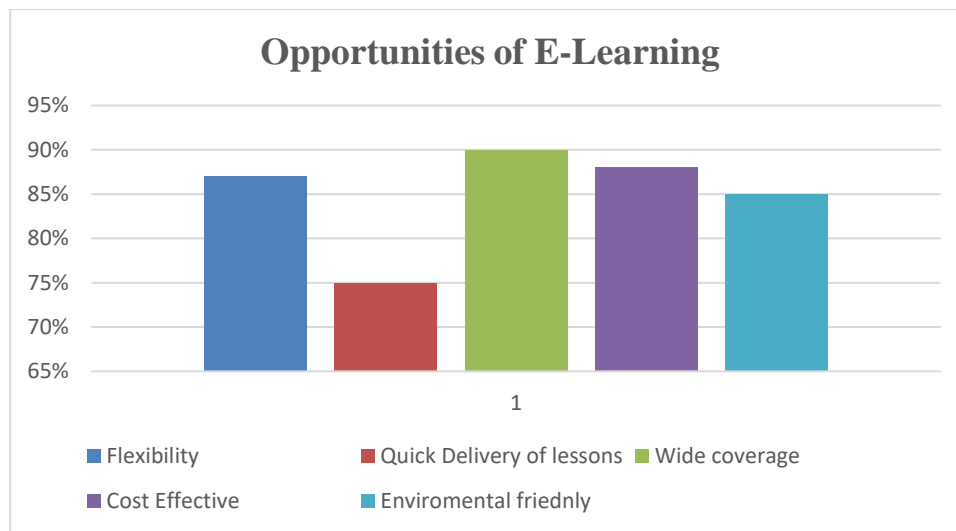
Source: Survey Data (2018)

4.4.3 Impacts of E-Learning on Teaching and Learning

This theme sought to examine teachers" perceptions of the contribution of E-Learning use to the learning experiences of the pupils in these areas. Teachers' responses were grouped into four sub-categories

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namely facilitates concept building, improves recall and understanding, provides more meaningful learning experiences and negative consequences for student learning.

Facilitates concept building.

Teachers reported that the use of ICT in their teaching makes it easier for pupils to visual and understand concepts. They also expressed the belief that E-Learning not only brings subject content to life for the pupils but also allows them to see the practical, every day application of concepts and helps them to put things into context.

Improves Recall and Comprehension.

All teachers believed the use of ICT facilitates better student understanding of concepts being taught as it makes it easier for pupils to follow what is being delivered. In addition, ICT makes possible the use of concrete, real world examples which facilitates better recall of content taught. Teachers also expressed the view that the use of ICTs fosters a spirit of enquiry in pupils as it gets them thinking and encourages them to ask questions. As a result, pupils are more motivated to explore and do independent research.

More Meaningful Learning Experiences.

Teachers and administrators felt that the use of ICT affords experiences that make learning more relevant and real for the students. One teacher went further to say that subjects come alive as pupils are exposed to real world examples to which they can relate. ICT use also helps to bring sensitive issues to life for the pupil. Instead of simply hearing the teacher talk about issues they can see visual representations of what is being discussed. Teachers also report that with the use of ICT pupils take responsibility for their learning and that there is greater ownership of learning. As such, learning is no longer seen as something that is done only in the classroom.

Negative consequences for students' learning.

Though teachers and administrators believe that for the most part the integration of ICT had positive outcomes for pupils learning, they also expressed the concern that ICT use could have several negative consequences for pupils learning. Because of pervasive use of ICT in the school, pupils are developing a growing dependency on ICT. The expectation is that all lessons will be delivered with it and when it is not present pupils lose focus and interest.

Furthermore, ICT use can be a source of distraction for some pupils. Unless carefully monitored they can get caught up in the technology and lose sight of the purpose of the exercise. Pupils become too excited and unsettled when technology is used. One teacher expressed the view that using ICT to enhance

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learning does not necessarily work for all students. Some pupils still indicate a lack of understanding even when technology is used.

Teachers also noted with concern a tendency by pupils to view only what is presented to them on the screen as important. Though they participate in class discussion, they tend to dismiss this as unimportant and, therefore, there is little recall of what was discussed after class. They just pay attention to the PowerPoint. They don't take notes in class, but they are focused on what's happening in the PowerPoint and what's being discussed in class. But after class if you go to question them on something that was said in class that wasn't in the PowerPoint they're not going to remember.

Furthermore, all teachers and administrators expressed the concern that ICT use was resulting in a loss of interest in reading. Pupils generally express the desire to look at the DVD rather than read a book. In addition, critical skills that are required in higher education, such as research skills, formal writing skills and skills of analysis and synthesis are being lost. The issue of plagiarism was also identified by teachers as an area of concern especially with respect to internet use. Teachers commented that pupils were beginning to develop a "cut and paste mentality" The problem, however, was more common with the secondary schools.

4.4 Conclusion

This chapter focused on the background of the respondents and analysis of data. Data was analyzed according to the objectives set in chapter one.

CHAPTER FIVE

DISCUSSION AND INTERPRETATIONS OF RESEARCH FINDINGS

5.0 Introduction

This chapter presents and discusses findings of data collected on the challenges and opportunities of E-Learning to Rural and Remote areas of Mumbwa District. The findings are presented about the study objectives outlined in chapter one. Among the themes discussed include the opportunities of E-Learning; the challenges of E-Learning and the effects of E-Learning to rural and remote schools.

5.1 Opportunities of E-Learning to Rural and Remote Schools

From the research, it is obvious that e-learning is growing fast, and it is one of things that has come to stay in this age. E-learning platforms provides opportunities for a lot of people to gain knowledge regardless of their location provided they have all the gadgets needed. It is one of the platforms that is "insensitive to time" in that no matter where one lives or what time of the day or week that best suits the calendar, one can join.

E-learning in addition gives students the opportunities to study at their own pace and a chance for teachers and educational institutions to reach a much wider audience. In saying this, the respondents were of the view that with e-learning, even those pupils or leaners who are sick or are unable to attend lessons for one reason or another, they can still do it in the absence of the teacher, thus moving at the same pace with others.

However, all this can only be achieved if students or pupils have computers, good internet and the willingness to learn. Furthermore, from the findings obtained above, it was observed that E-learning gives different leaners who are unlikely or unable to join traditional classroom the opportunity to access quality education. This is echoed by Vainiopaa (2006) who claimed that by expanding the basic infrastructure including computer and internet service from schools to convenient location accessible, all sorts of people have seen education as easier. E-learning also promotes equality. For socially reserved (i.e. shy people), it may be easier to communicate with teacher and students in e-learning context than it would be in face-to-face learning.

Still on the same, e-learning environment provides learners' the ability to regulate the amount of social contacts and the quality of interaction. This includes its ability to provide learners with a wide range of possibilities for mutual communication with different kinds of tools for both written and oral communication (Vuopala, 2013). Therefore, there is no doubt that with effective and interesting communication tools, e-learning can promote students' community skills.

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Besides, E-learning gives students with families a chance to go forward with their studies as planned. They may study when children are sleeping or early in the morning, literally whatever suits them best. One of the best opportunities of e-learning is the flexibility with time. It gives learners a chance to study at what time of the day or week they want and when best suits them. This also improves the organizing skills of learners because they have more responsibility of their timing and studies as well. In other words, E-learning, at its best, promotes the equality of education.

So, e-learning gives a chance to offer supervision online, outside the classroom as well as the ability to reuse the content and material of the course. This means that it is easier to go back to the material and documents studied during the course. In the past, people used to move from big cities to study, this is no longer the case today with the coming of e-learning. To some extent, it even reduces over population in cities, hence, avoiding many communicable diseases.

5.2 Potential Challenges of e-learning in Rural and Remote areas

If e-learning is to be implemented successfully, then it is obvious that it involves the use of computers or a mobile device and good, reliable internet connection. Without the availability of these things, studying online becomes difficult and a burden. In a developing country like Zambia, many areas lack the said amenities. For example, in town or urban areas, not all learning institutions have access to these. First, the cost of these devices is high such that poor learning institutions cannot afford to buy them.

Besides the price of internet being high, in rural and remote areas internet is slow thus making it difficult for people even to open a page or browse. This is worse when it comes to downloading and uploading. This indeed is a challenge especially for those who cannot afford to have their own computers and with poor internet connection because research, studying at home with a quality internet connection brings meaningful and positive experience on learning.

In this age, young people who are raised around mobile devices often feel very comfortable using them. However, not every child has that chance of owning one. For them, the challenge of e-learning is the computer skills as they must depend on those that belong to institutions. This makes it difficult even to settle when they go to areas where the use of such devices is rife such as cities. Therefore, it is essential for successful e-learning, that leaners are not hindered by a lack of e-skills and computer skills.

Another challenge like mentioned in the findings has to do with competent teachers. Since in Zambia we do not have many qualified teachers in this subject area, a lot of teachers as facilitators find it difficult and time consuming to set up. It is difficult for one to transfer the knowledge that one doesn't possess to the audience. If they face challenges in many areas, one wonders how they will teach others. In addition to that, e-learning environment gives opportunities for automating guidance which should ease the workload of the teacher a little bit. For some leaners, lack of the availability of the contact person is another challenge they face.

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In brief, both learners and teacher pointed out that lack of infrastructure, teacher hiring, and the high prices of internet coupled with poverty are some of the major challenges that remote and rural areas face when it comes to implementing e-learning in such areas.

5.3 Impacts of E-Learning on Teaching and Learning

Despite the challenges outlined above, the research findings revealed that e-learning has many benefits to teaching and learning and so the government and other stakeholders should ensure that it is implemented and that all the necessary requirements are provided. For instance, some respondents revealed that e-learning facilitates concept building among teachers. It brings change in the way lessons are conducted and it improves understanding on the part of teachers. For instance, with e-learning, some abstract concepts can be simplified by using examples that are visible and comprehensible to all. If facilitate lesson delivery on the part of teachers and at the same time helps leaners to understand. However, care should be taken as at times it may lead to distractions especially among leaners.

E-learning also bring recall and comprehension. With the use of various multi-media elements in e-learning, learning becomes easier for the leaners. It also caters for all groups of people such as the deaf and blind and even the slow learners as learning is not just confined to the traditional classroom environment. Leaners have the capacity to revisit the lesson several times at their own time and pace, thus making them understand even the parts they might have missed during the normal learning period. With the use of videos, some concepts are better explained thus ensuring that leaners understand the content of what is taught.

5.4 Conclusion

This chapter discussed and interpreted the research findings based on the objectives raised in chapter one. Despite the many positives that e-learning bring on the table, the chapter mentioned that care should be taken when utilizing it as it may be a source of distraction to some sections of learning and teaching.

CHAPTER SIX

CONCLUSION AND RECCOMENDATIONS

6.0 Introduction

The study sought to investigate the opportunities and challenges of E-Learning in remote and rural areas of Mumbwa district. The specific objectives of this study were to find the; (i) challenges of E-learning, (ii) opportunities of E-learning to remote and rural areas and finally to find the effects of E-leaning to learning and teaching. This chapter gives a synopsis of the main study findings and draws conclusion and recommendation based on the research findings

6.1 Summary of the Findings

The integration of ICT into educational practice continues to be viewed as having the potential to transform teaching and learning. Several studies have shown that when utilized effectively ICT enhances the teaching-learning process in several ways. This study sought to investigate the Challenges and Opportunities of E-Learning to Remote and Rural schools of Mumbwa District. As a result, qualitative research design was adopted in the form a descriptive case study and data was collected using guided interviews and structured questionnaires. The ground theory methodology as proposed by Strauss and Corbin (1990) was used to analyze the data.

The findings of the study revealed that the use of E-Learning has a lot of benefits when all the necessary requirements are present for both teachers and learners and in the end also for the whole district in terms of results. Generally, teachers viewed ICT as a "fantastic tool" for engaging learners and capturing their interest. ICT use exposed pupils to richer, less intimidating learning environments and encouraged them to take ownership of their learning. In addition, ICT was also seen as important motivational tool for teachers, engaging and exciting them about their skills and encouraging them to be more creative in their approach to their work.

The study further revealed that E-learning exposes both the teacher and the pupils to a wider range of resources of greater currency and made possible real-world experiences that aroused learners' empathy and made learning more meaningful.

The research further revealed that it is indeed difficult to fully take advantage of the benefits of E-Learning due to the lack of many things such as infrastructure, trained manpower as well as resources. Because of that, these schools did not utilize it fully as implementing it resulted in more costs and further inconveniences on the part of the schools. However, it is undeniable that E-learning has great potential to transform the learning environment and when utilized well can enhance the learning process. But in

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order to realize this Teachers must be competent and confident in technical, pedagogical and content knowledge for technology to be used effectively in the classroom.

It is imperative, therefore, for teachers to be afforded opportunities to develop their skills not only in technology but in pedagogy associated with technology use. That is, they must be assisted in developing technological pedagogical content knowledge (Mishra and Koehler, 2007). Furthermore, it is also important that the educators acquire the skills and competences necessary to fully exploit the potential that E-Learning has to offer for teaching and learning as they prepare their charges to meet the challenges of the 21st century.

6.2 Recommendations

Arising from the findings of the study, the following recommendations were made to the DEBS, Curriculum setters, Policy Makers in the Education Sectors as well as the Ministry of both Higher and General Education together with other stake holders:

 i. When introducing and implementing a policy, they should provide all the necessary materials to ensure that the policy introduced is a success.
 ii. The Ministry of General Education should ensure that they employ teachers who are competent to handle the subject and where they fail, they should exempt schools with such from implementing such policies
 iii. The government should also ensure that all schools in Zambia even those in Rural and Remote areas have access to electricity as E-Learning demands the use of that.
 iv. The government should also address the issue of infrastructure by increasing budgetary allocation to the Ministry of Education which in turn can cater for other necessary items
 v. Internet service providers (ISP), should also migrate from edge to fast connectivity so that leaners and teachers can benefit.

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