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INFORMATION AND TECHNOLOGY (ICT) INTEGRATION IN PRIMARY SCHOOLS IN ZIMBABWE.

BY

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DEDICATION

I dedicate this work to my lovely sister, my wife, my mother and my friends

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Abstract

The integration of Information and Communication Technology (ICT) in primary schools has become a crucial aspect of modern education. ICT has the potential to enhance teaching and learning, improve student outcomes, and prepare students for an increasingly digital world. However, the effective integration of ICT in primary schools in Zimbabwe faces several challenges. This study aimed to investigate the current state of ICT integration in primary schools in Zimbabwe, identify the challenges and opportunities associated with ICT integration, and explore best practices for effective ICT integration. This study employed a quantitative data collection and analysis method. A survey questionnaire was administered to a sample of 16 in-service teachers enrolled at Bindura University. The study found that while there is a growing recognition of the importance of ICT in primary education in Zimbabwe, the integration of ICT in primary schools faces several challenges, including inadequate ICT infrastructure, limited teacher training and support, and insufficient funding. However, the study also identified several opportunities for effective ICT integration, including the potential for ICT to enhance teaching and learning, improve student outcomes, and promote digital literacy. This study provides valuable insights into the challenges and opportunities associated with ICT integration in primary schools in Zimbabwe. The findings of this study suggest that effective ICT integration in primary schools requires a multifaceted approach that addresses the technical, pedagogical, and organizational challenges associated with ICT integration. The study recommends that policymakers, school administrators, and teachers work together to develop and implement effective ICT integration strategies that promote digital literacy, enhance teaching and learning, and improve student outcomes. Based on the findings of this study, the following recommendations are made: The government and other stakeholders should invest in the development of ICT infrastructure in primary schools, teachers should receive regular training and support to develop their ICT skills and integrate ICT into their teaching practices, school administrators should develop and implement effective ICT integration strategies that promote digital literacy, enhance teaching

and learning, and improve student outcomes and policymakers should develop and implement policies that support the effective integration of ICT in schools.

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1.0 CHAPTER ONE

1.1 INTRODUCTION

This part provides an overview of the study's history, a problem description, research objectives, and questions that were considered before the investigation was started. The importance of the study, its boundaries, and its limits are also covered, as are the reasons for conducting this research using the chosen research questions. After then, the study's structure was examined.

1.2 Background of the Study

One crucial area of attention is the use of information and communication technology (ICT) into Zimbabwe's educational system, especially in primary schools. The use of ICT as a tool for improving teaching and learning is emphasized in the Zimbabwean curriculum. The curriculum seeks to give students the fundamental ICT skills they need to function in the modern world, according to the Ministry of Primary and Secondary Education (MoPSE, 2019). This endeavor is further supported by the Zimbabwe ICT Policy (2016), which outlines measures for the successful integration of technology in education and emphasizes the necessity of a strong ICT curriculum that complies with international standards.

The goal of the Zimbabwe ICT syllabus is to give teachers a framework for teaching ICT in a variety of disciplines so that students can acquire technical skills and know how to use them in practical situations. This curriculum promotes a comprehensive approach to education by encouraging the integration of ICT with other topics. ICT teaching resource people have underlined the value of this integration, pointing out that it improves students' engagement and comprehension of difficult ideas. Using software for simulations or visualizations that give abstract concepts a more concrete form is one example of how integrating ICT with courses like mathematics can support interactive learning experiences (ZICTA, 2020).

The use of instructional software to enhance conventional teaching techniques is one instance of effective ICT integration in Zimbabwean schools. For example, educators have created blended learning environments where students can access resources and work together on projects outside of the classroom by using platforms such as Moodle. In addition to encouraging self-directed learning, this method equips students for the demands of the workforce in the twenty-first century (Roblyer, 2013).

This study is significant because it has the potential to influence practice and policy around ICT integration in rural elementary schools. Stakeholders can create focused initiatives that fill in training and resource shortages by comprehending the state of ICT in education today. Effective ICT integration can also greatly improve educational outcomes, especially in rural areas where access to traditional educational resources may be limited,

1.3 Statement of the Problem

There are several obstacles that prevent Zimbabwe's elementary schools from effectively integrating technology. Many primary schools suffer from poor infrastructure, restricted access to resources, and inadequate teacher training, despite the government's commitment to improving ICT in education through policies like the Zimbabwe ICT Policy (2016) and the curriculum framework established by the Ministry of Primary and Secondary Education (MoPSE, 2019). Students' learning outcomes and readiness for a technologically advanced environment are ultimately impacted by these issues, which lead to a digital divide that worsens educational disparities between urban and rural regions (Mazurura, 2020).

1.4 Research Objectives

1. To evaluate the current state of ICT integration in primary schools in Zimbabwe by December 2025.
2. To determine actionable strategies for enhancing ICT integration in primary schools in Zimbabwe by March 2026.
3. To identify the specific challenges faced by teachers in integration ICT into their teaching practices by June 2025.

1.4 Research Questions

1. What is the current level of ICT integration in schools in Zimbabwe, and how does it vary across different regions?
2. What are the primary challenges that teachers encounter when attempting to integrate ICT into their teaching practices in schools?
3. What strategies can be implemented to improve ICT integration in schools, and how can these strategies be effectively evaluated?

1.5 Significance of the Study

The study on the challenges and solutions of technology integration in Zimbabwe's schools holds significant implications for various stakeholders, including policymakers, curriculum developers, mathematics teachers, learners, researchers, and Bindura University.

1. Policymakers

This study gives policymakers important information about the obstacles to successful ICT integration in rural education. In order to improve educational outcomes nationwide, targeted policies that support fair access to resources and technology can be developed with an understanding of these issues (MOPSE, 2019). The results can be used by policymakers to better efficiently distribute funds and resources, guaranteeing that rural schools get the assistance they need to properly integrate technology.

2. Curriculum Development

Curriculum developers can utilize the findings to design curricula that incorporate ICT in meaningful ways. By addressing the specific needs and challenges identified in the study, they can create relevant and engaging learning experiences that prepare students for a technology-driven future (ZIMSEC, 2020). This alignment with modern educational practices can enhance the overall quality of education in rural areas.

3. Mathematics Teachers

The report emphasizes how crucial it is for maths teachers to incorporate technology into their lesson plans. Teachers might look for professional development opportunities that give them the tools they need to use ICT in the classroom by being aware of the difficulties they encounter (Chagwiza, 2020). Learning results may be improved as a result of this integration if students are more engaged and comprehend mathematical ideas.

4. Learners

The findings of this study are crucial for learners, as effective technology integration can significantly enhance their educational experiences. Access to ICT tools can facilitate

interactive learning, improve problem-solving skills, and prepare students for future academic and career opportunities (Mazurura, 2020). Addressing the challenges of ICT integration can help ensure that all learners, regardless of their geographical location, have equal opportunities to succeed.

5. Researchers

For researchers, this study contributes to the existing body of knowledge on ICT integration in education, particularly in the context of primary schools in Zimbabwe. It opens avenues for further research into effective strategies for overcoming barriers to technology use in schools, as well as the long-term impacts of such integration on educational outcomes.

6. Bindura University

For Bindura University, the study can inform its in-service teacher training programs by highlighting the importance of ICT in education. The university can use the findings to enhance its curriculum, ensuring that future educators are well-prepared to integrate technology into their teaching practices effectively (ZOU, 2021). This alignment with current educational needs can strengthen the university's role in improving education in Zimbabwe.

Delimitations of the Study

The study on the challenges and solutions of technology integration in Zimbabwe's schools will be delimited in the following ways:

1. **Geographical Scope:** The research will focus specifically on schools within Zimbabwe. This focus allows for a detailed examination of the unique challenges faced by educators and students in integrating technology.
2. **Target Population:** The study will target school in-service teachers, school administrators, and curriculum designers in Zimbabwe. This selection is intended to gather insights from those directly involved in the educational process and affected by technology integration.
3. **Time Frame:** The research will be conducted over a specified period, from January 2025 to December 2025. This timeframe will allow for the collection of relevant data and the analysis of current practices and challenges.
4. **Technological Focus:** The study will primarily examine the integration of ICT tools and resources, such as computers, tablets, and educational software, rather than broader technological advancements or infrastructure issues unrelated to education.
5. **Curricular Context:** The research will specifically explore the integration of technology within the context of the Zimbabwean school curriculum, as outlined by the Ministry of Primary and Secondary Education (MoPSE, 2019) and the Zimbabwe ICT Policy (2016). This focus will help identify how technology can enhance teaching and learning in line with national educational goals.

6. Exclusion of Higher Education. The study will not address technology integration in secondary schools or higher education institutions, focusing solely on education to provide a concentrated analysis of the challenges and solutions relevant to that level.

7. Methodological Approach. The research will employ quantitative methods, including questionnaires to gather in-depth insights. Quantitative data collection methods, such as surveys, will not be included in this study.

By establishing these delimitations, the study aims to provide a focused and comprehensive analysis of the challenges and solutions related to technology integration in primary schools in Zimbabwe.

Limitations of the Study

The study on the challenges and solutions of technology integration in Zimbabwe's schools will face several limitations that may affect the outcomes and generalizability of the findings. These limitations include:

1. Sample Size and Selection. The research may be limited by the number of schools and participants included in the study. A small sample size may not adequately represent the diverse experiences of all schools in Zimbabwe, potentially leading to biased conclusions (Chagwiza, 2020).

2. Geographical Constraints. Focusing exclusively on rural areas may overlook the experiences and challenges faced by urban schools, which could provide a more comprehensive understanding of technology integration across different contexts (Mazurura, 2020).

3. Access to Technology. The availability of technology and resources in schools can vary significantly. Some schools may have limited access to ICT tools, which could affect the data collected and the applicability of the findings to other schools with different levels of access (MOPSE, 2019).

4. Time Constraints. The study will be conducted within a specific timeframe, which may limit the depth of data collection and analysis. This constraint could affect the ability to explore the challenges and solutions in detail (ZOU, 2021).

5. Subjectivity in Quantitative Data. The quantitative nature of the research may introduce subjectivity in data interpretation. Participants' responses may be influenced by personal biases or experiences, which could affect the reliability of the findings (Roblyer, 2013).

6. Changing Technological Landscape. The rapid evolution of technology may render some findings obsolete shortly after the study is completed. This limitation highlights the need for ongoing research to keep pace with technological advancements.

7. Policy Changes. Changes in educational policies or government initiatives during the study period may impact the relevance of the findings. The study will need to account for any new policies that could influence technology integration in schools (ZIM ICT Policy, 2016).

8. Language and Communication Barriers. Language differences among participants may pose challenges in data collection and analysis, particularly if some participants are more comfortable communicating in local dialects rather than English (MUTAMBARA, 2020).

By acknowledging these limitations, the study aims to provide a clearer understanding of the challenges and solutions related to technology integration in schools in Zimbabwe while recognizing the constraints that may affect the research outcomes.

1.6 Definition of Key Terms

1. Technology Integration

The efficient use of technological resources in the teaching and learning process is known as technology integration. In order to improve learning outcomes and create better learning experiences, it includes integrating a variety of technological tools and resources into the curriculum. "Successful technology integration involves a seamless connection between technology and pedagogy that transforms teaching and learning," claim Roblyer and Doering (2013). Effective technology integration is essential in Zimbabwean education to give students the skills they need for the modern workforce (ZIM ICT Policy, 2016).

2. ICT (Information and Communication Technology)

ICT includes a broad range of technologies that make data administration, information processing, and communication easier. Computers, the internet, software programs, and telecommunications devices are examples of its tools. ICT is crucial for raising the standard and accessibility of education in Zimbabwean schools, according to the ZIM ICT Policy (2016). Mopse (2019) points out that "the effective use of ICT in education can enhance students' learning experiences and prepare them for a digital society."

3. Curriculum Framework

A curricular framework is an organized plan that describes the learning objectives, subject matter, instructional tactics, and evaluation techniques for a particular educational level. The ZIMSEC curriculum framework (2020) in Zimbabwe outlines how ICT should be integrated into a variety of topics to guarantee that students acquire critical digital skills. Colleagues (2020) assert that "a well-defined curriculum framework is vital for guiding educators in implementing innovative teaching practices that include technology."

Summary

The study's history, the problem description, and the importance of conducting the research were all covered in this chapter. In order to give the study a direction, the reasoning behind the research questions and the study's framework were also discussed. A brief discussion was held regarding the study's limits and delimitations. To help with the comprehension of the research, the definitions of several terminologies were discussed. A review of related literature is the main topic of the following chapter.

CHAPTER TWO:

2.0 REVIEW OF RELATED LITERATURE

2.1 Introduction

What other academics and researchers have to say regarding information and technology integration in primary schools will be the main topic of this chapter. To find the gaps in the literature among many scholars and help the researcher come up with the best solutions for the subject being studied, a large number of texts will be evaluated. The first part of the chapter will define ICT tools and describe their functions in primary schools. There will also be suggestions for other ICT resources that might be utilized in classrooms. The chapter will end by investigating the challenges being experienced by schools in the use and application of ICT tools as well as the measures that can be installed to alleviate those challenges.

ICT integration in schools

2.2 What are ICT tools?

The term "ICT" refers to the use of computer-based communications technology that functions as a network to find information, including computer hardware and software that can be used for teaching and learning as well as information resources (Goay and Wong, 2003). In this review, "ICTs" refers to computers, projectors, mobile phones, digital tools, and other devices that are used to handle and communicate information for learning purposes; however, according to Goay and Wong's (2013) definition, any technology that uses a computer to produce expected learning outcomes qualifies as an ICT tool in the educational system for learning purposes.

2.3 Role of ICT in a school

According to a number of studies, students who use ICT tools and facilities generally demonstrate better learning gains than those who do not; for example, Kulik (1994) found across 75 studies in the United States that students who used computer tutorials in mathematics,

natural science, and social science score significantly higher on tests in these subjects. The use of ICTs in education also leads to changes in teaching and learning approaches. The researcher pushed a number of ICT tools roles that are discussed below. As noted by Bransford, Brown, and Cocking (1999), cited in Volman (2005), there is a widespread belief that the use of ICTs in education contributes to more constructivist learning as well as an increase in activity and greater responsibility of students. This limits the role of the teacher from only instructing to supporting, advising, and coaching students rather than primarily transmitting knowledge. The gradual progress in using computers changes from learning about computers to learning computers, and finally to learning with computers (Volman, 2005).

2.3.1 ICT as a medium of instruction delivery

The use of multimedia technology in teaching and learning simplifies learning material into concrete matter that school students can easily grasp; students' attention and engagement with these resources aid in the processing of the information into working memory; and when students meaningfully interact with the multimedia information, they encode it into their long-term memory. The use of multimedia technology in teaching and learning simplifies learning material into concrete matter that school students can easily grasp; students' attention and engagement with these resources aid in the processing of the information into working memory; and when students meaningfully interact with the multimedia information, they encode it into their long-term memory. Research on multimedia learning has shown that students who learn from resources that effectively combine words and pictures have more positive outcomes than those that include words alone (Mayer, 2008). This meaningful interaction may involve learning activities within the digital resource itself or as a lesson constructed by the teacher.

However, not all multimedia-presented material aids in learning. The resources themselves must be created with good educational ideas in mind, and the instructor must intentionally incorporate them into the learning process for teaching and learning to take place. ICT's primary contribution is that it provides teachers with access to a wealth of data and information that they can use to enhance their instruction and learning in the classroom. ICT tools are becoming a handmaiden for learning activities as theories describing learning processes change. In his description of the main functions, Voogt (2003) made a distinction between ICTs as a subject of study, a component of a field of study or profession, and a teaching tool.

ICTs can be used as a medium of instruction to realize and implement the emerging constructivist pedagogy (Davis, 1997). This means that most schools now understand that the teaching and learning process cannot be completed without ICT tools. In general, when ICT is used as a medium of instruction for teaching and learning, it refers to ICT as a tool for teaching and learning itself, the medium through which teachers can teach and learners can learn. ICT can take many different forms, such as drill and practice exercises, educational networks, and simulations.

2.3.2 ICT as a tool for record keeping

Since ICTs enable teachers to maintain learner profiles, their usage in the daily processing and archiving of students' academic and social records is crucial. According to Edem (2002), accurate documentation of students' academic achievement is essential for making informed academic decisions. The teacher can plan for each individual student and develop options and techniques that will allow for personalized learning thanks to the learner profile. According to Olaboye (2004), information gathered from student enrollment and school facilities records can be utilized for strategic planning. Therefore, it is necessary to refer to previously created profiles in order to conduct ongoing assessments on each and every student and determine

whether or not there have been any good changes. The importance of ICT in the modern learning environment stems from the necessity to save information so that it may be accessed when needed for this process to be completed efficiently.

2.3.3 ICT as a medium of communication

Give students more materials to support resource-based learning. ICTs also include all technologies utilized for information storage and transmission, as well as their application in education. Additionally, ICTs offer more chances for collaboration and communication between students and between teachers. Communication between people from all over the world has greatly increased since the invention of mobile phones, or smart phones. In an attempt to address issues that come up throughout the teaching and learning processes, instructors are now thought to be the ones that use various communication platforms the most. In order to support one another in issues that impact their academic lives, students have also established their own platforms. In order to support one another in issues that impact their academic lives, students have also established their own platforms. Numerous organizations have joined forces by producing websites and programs that facilitate the sharing of learning-related information among students.

2.3.4 ICT as a research tool

According to Moore's (2005) summary, ICT has a favorable effect on students' learning by increasing their incentive to stay on task, behave well, and create high-quality work. Additionally, pupils study more independently and complete more work quickly because to ICT. This means that collecting data and information for educational purposes may be done easily because it can be done anywhere and at any time. Given that one can conduct research

on any issue in a short amount of time, the rate at which knowledge can be obtained is likewise high. Lim (2005) discovered that when ICT was used in teaching and learning, students were able to actively search for material and construct knowledge from it by having the opportunity to connect their subject-matter knowledge without being constrained by time or location.

Teachers have access to fresh information and knowledge sources thanks to ICT tools. Teachers have options for where to find information if other sources don't supply the right information because so many organizations and individuals collect information on a daily basis and make it available on websites and other platforms.

The availability of ICT tools also makes it easier for students at all educational levels to have access to high-quality educational services. The final step in the research or data collection process is for the researcher to qualify the collected data. The quality becomes a problem if the information collected is not up to par, but the advent of ICT tools expands the scope of research and makes a lot of data available, which ultimately results in high-quality information.

2.3.5 Smoothen school management system

ICTs are instruments and methods for enhancing teaching methodology, creating a more organizational framework in primary schools, strengthening ties between primary schools and the community, and empowering students (Chan, 2002). ICT tools increase the effectiveness of educational management and administration strategies at all levels, including the classroom, school library, school, and industry as a whole. Building a more efficient organizational structure that facilitates the efficient flow of information also necessitates the use of ICT tools to make management easier. Meetings can also be done using cyber conference if parties are a distance from each other meaning one can assign duties or delegate authority using ICT tools as a way of managing educational institution, in this case schools. Planning and organizing the

school functions and even class management from teacher perspective requires the use of computer systems so that time can be utilized with minimum effort thereby increasing efficiency in teaching and learning process.

2.4 ICT tools that can be used in a school class

Today's teachers can use ICT tools, like hardware software, in their classrooms to improve teaching and learning. According to Osin (1998), teachers and students can use computer-based tools, like databases, spreadsheets, presentation packages, or text or graphic editors, to help process information. Using text-based computer tools can help students produce high-quality written work using word processors, which can also improve students' grammar and spelling skills. Teachers can also benefit from this because they won't have to carry around heavy stacks of books for marking because they can mark assignments that are returned to the student. Fortunately, a computer model has been developed for many real systems, meaning that the computer provides an output that describes the behavior of the system and changes in this behavior produced by the input of diverse actions (Osin, 1998). For instance, a grade seven lesson on the function of a heart can be easily illustrated by a video showing exactly how the heart functions, instead of using non-projected media like a chart. The learners will better understand how the heart functions because they will be experiencing it through the engagement of multi-senses, i.e. sight and sound.

2.5 Challenges encountered in ICT integration in schools

2.5.1 Lack of ICT maturity

ICT, a contemporary technology that improves and streamlines human endeavors, has many benefits, but it also has drawbacks. Teachers' attitudes and perceptions, administrators' and teachers' incapacity, a lack of policies, and a lack of material and financial resources are the main obstacles to the adoption and use of ICT tools in primary school classrooms. Teachers' use of computers in the classroom is influenced by a number of characteristics, including attitude, motivation, computer anxiety, and computer self-efficacy (Brosnan, 2001). It is necessary to provide educators in Zimbabwe with the skills necessary to use ICT in the classroom on a daily basis. This is corroborated by Tinio (2002), who believes that in order to successfully integrate education into educational institutions, we must fill the skill gap of those putting it into practice by developing the skills of teachers and school administrators. To put it another way, in-service teachers and administrators (heads of schools) must work in tandem with the integration of ICT tools into the educational system. It can be difficult when school administrators don't support you.

2.5.2 Lack of content and/or content resources

The other issue is that there isn't enough material to teach the students; therefore, a carefully designed curriculum that aligns with the nation's goals is required. Language and subject learning present additional difficulties for the use of ICT in the classroom. One crucial element that educators sometimes ignore is content development. The learning content for the target groups must be carefully considered when introducing ICT technologies into the classroom. One of the obstacles to the integration of ICT tools in education is the fact that, although English is the most often used language in educational software, English competence is low in the majority of developing nations (Olson 2000).

2.5.3 Lack of resources

ICTs in education programs require a significant capital investment, and developing nations must estimate the benefits of ICT use to balance the cost in comparison to the available alternatives. Grants, public subsidies, fund-raising events, in-kind volunteer support, community support, revenues from core business, and revenues from ancillary activities are some of the potential sources of funding and resources for ICT use programs that have been proposed (Tinio, 2002). By overcoming these obstacles, education systems may be able to reap the greatest benefits from this technology.

2.5.4 Perceptions of teachers, heads and community towards ICT

Due to international competitiveness and the influence of ICT technologies, civilizations underwent significant change in the new millennium. This development has significant ramifications for the management of schools, the education system, and the establishment of schools that use ICT tools and systems. According to a 2003 study by the Computer Centre at Universiti Kebangsaan Malaysia (UKM), community attitudes determine whether ICT is accepted or rejected. Additionally, according to the same poll, 13% of Malaysians have negative opinions about ICT, 18.6% have good opinions, and 67.7% have indifferent intentions. According to these findings, Malaysian society is unaware of the influence and impact that ICT has on their daily life.

However, it is important to consider the current technology and obligations while analyzing instructors' hesitancy to embrace advances. According to Fullen (1989), referenced in Watson

(2001), if educators are able to comprehend themselves and others, then change or improvement can occur in schools. To support their teaching and learning objectives, for example, many teachers are currently unable to make well-informed decisions about ICT tools. ICT use in the classroom is obviously still problematic for a number of reasons (Watson, 2001). Teachers' attitude and perceptions play a pivotal role in the teaching and learning process that utilizes computers and internet connections. Although teachers' attitude and perceptions towards use of these technologies is vital, many observations show that teachers do not have clarity about how far technology can impact and be beneficial for the facilitation and enhancement of teaching and learning. Bandura (1986) describes self-efficacy as "individual's opinion of capabilities to organize and perform courses of actions to achieve particular types of performances." Moreover, as identified by Brosnan (2001), attitude, motivation, computer anxiety, and computer self-efficacy are factors affecting teachers' use of computers in their lessons.

2.5.5 Lack of infrastructure

The most challenging condition to implement ICT strategy in Zimbabwean primary schools is inadequacy of existing infrastructures. Even though integrating ICT use in the teaching learning process was given due recognition in the implementation strategy, only about 40 percent of schools in the country have computers, and most of which are in urban areas, causing a rural-urban divide to equity and access for quality education. Moreover, those primary schools, which have computers, experience limited or low access to internet connections. The infrastructure challenges that may exist are absence of appropriate buildings and rooms to house the technology, shortage of electric supply and telephone lines, and lack of the different

types of ICTs. Because of this, one need to deal with infrastructure related challenges before the planning of ICTs integration to education systems.

2.5.6 Students' attitudes and perceptions

On the other hand, the other challenge in ICT use in education is related to student behavior. Appropriate use of computer and the internet by students have significant positive effects on students' attitude and their achievement. Nonetheless, it is very common to observe limitations related to student behavior. Students tend to misuse the technology for leisure time activities and have less time to learn and study. Yousef and Dahmani (2008) described online gaming, use of face book, chat rooms, and other communication channels as perceived drawbacks of ICT use in education, because, students easily derail to these sites neglecting their core study. Internet access at home, for instance, may be a distraction because of social media platforms and online games, reducing the time spent in doing assignments and learning (Kulik, 1994). Therefore, the impact of availability of ICT on student learning strongly depends on its specific uses.

2.6 Strategies that can be implemented to improve ICT integration in schools

Different authors advocate for different approaches to ensure the success of ICT integration in school classrooms. One of the main suggestions mentioned by numerous academics is to provide teachers with computer-teaching expertise. According to Bordbar (2010), one of the main predictors of ICT integration in education is teacher competency. He also suggests that a lack of technical skills leads to a negative mindset regarding the use of ICT in teaching and learning. Osin (1998) also suggest that, there is need to introduce computers in teacher's colleges as these teachers can act as catalyst in those primary schools not yet computerized as

they would have been groomed in a highly computerized environment. He further alludes that in servicing the current crop of teacher may be a huge task of unlearning the already learnt teaching habits, and learning to use a tool that is foreign to their culture. This is why probably the penetration of ICT in a primary school classroom has taken so long to be adopted as most of the current administrators were groomed in teacher's colleges where computers were used minimally or never.

Another significant barrier to information and technology integration in primary school classrooms is a lack of infrastructure. According to Mandina (2015), infrastructure, equipment, computer supplies, and correct maintenance of these devices, together with other accessories (hardware and software), are necessary for the successful integration of ICT. To guarantee that there are no needless disruptions to the computer courses, there must be a sufficient supply of ICT-related resources, such as internet, a steady supply of electricity, and a working generator for power backup. According to BECTA (2005), the development of ICT integration is hampered by a lack of internet connectivity and in areas where connectivity is not easily accessible. ICT is becoming more and more essential in many facets of life, including employment, education, and pleasure. According to BECTA (2005), the development of ICT integration is hampered by a lack of internet connectivity and in areas where connectivity is not easily accessible. ICT is becoming more and more essential in many facets of life, including employment, education, and pleasure. ICT should be a basic information management tool at all levels of an educational system, from classrooms to ministries, since schools are knowledge-holding institutions. Early computer use aids in the development of ICT skills in kids, which serve as tools for the educational process (Kok 2007). According to the proverb "catch them young,"

Better teaching and learning are more likely to occur when the introduction of computers is accompanied by national policies and programs pertaining to curriculum, pedagogy,

assessment, and teacher training. These policies should consider how teachers are trained to incorporate the use of ICT tools in the classroom, and teachers should skillfully redesign learning environments so that students can apply their newly acquired ICT skills to other applications to use in an ICT rich environment (Mikre 2011).

In order to achieve this vision of ICT competence in every educational institution, teacher, student and the respective community should be equipped with appropriate ICT

infrastructure, competencies and policies for usage and progress. It calls for the recognition of the fact that ICT provides capabilities and skills needed for a knowledge-based economy. It calls for teaching and learning to include new pedagogies that are appropriate for the 21st century. Therefore, for it to become a possibility, teachers need to be empowered to enable them integrate ICT into their classroom teaching (Hawkins 2002).

The following factors should be carefully considered by policymakers and planners before launching any ICT program, whether there are suitable rooms or buildings to house the technology; whether extensive retrofitting is required to ensure proper electrical wiring, safety, and security; and regarding the nation's power situation and the impact of the power shortage, governments should actively encourage the use of alternative power sources (Hawkins 2010).

According to Hawkins (2010), if ICT is to be used effectively, the community and school administrators must support it; teachers must have adequate access to working computers and technical support; varying pedagogies, redesigning curriculum and assessment tools, and giving local primary schools more autonomy all contribute to maximizing the use of ICT in education; and since teachers are not comfortable using ICT, it is crucial to focus on building their capacity so that they are equipped to use it. To teach teachers how to use computers and the internet, a locally accessible instructor or trainer may be hired.

The term "skills and willingness of teachers" refers to knowledgeable educators who are prepared to employ ICT in the classroom. Teachers must be persuaded of the value and advantages of ICT use in teaching and learning in order to accomplish comprehensive instruction using ICT, claim Osman and Ahmed (2003). It is true that teachers need proper training in order to use ICT technologies successfully and efficiently. The results also indicated that teachers who had taken ICT and English training courses were more motivated to teach science in English, more proficient with computers, and more efficient than teachers who had not. Saamad (2003). According to Becker (2001), a key element in the effective use of ICT in the classroom is the instructors' level of proficiency with it. To aid instructors in their work, the government has, nevertheless, supplied resources and facilities like laptops, reference books, textbooks, activity books, and guidebooks. In order to have a significant impact on the field of education, teachers were therefore urged to utilize ICT in their teaching and learning (Rimai Nor, 2003).

2.7 Chapter Summary

The chapter was pivotal in what other scholars say on the use of ICT tools in primary schools and educational institutions. The definition of ICT was clearly given in context to the research as well as the roles of ICT were discussed and reviewed. The tools that constitute ICT systems were also another area the researcher discussed and in addition the challenges being encountered by educational institutions especially schools in adopting and using ICT tools. The chapter conclude in highlighting the measures that schools and their administration so as to effectively use ICT tools and manage the process of their adoption. The next chapter focus on the research methodology and the gathering of data.

Chapter 3: Research Methodology

3.1 Introduction

This chapter presents the research methodology employed on information and technology integration in primary schools in Zimbabwe focusing on the experiences of in-service teachers enrolled at Bindura University. The chapter is structured to cover various aspects of the research process, including the research paradigm, research design, sampling methods, participant selection, data collection techniques, and data analysis strategies. Additionally, it discusses the integrity and trustworthiness of the study, justifying the chosen methods, including personal interviews and focus group discussions. Lastly, it outlines the data analysis plan and provides an overview of what will be discussed in Chapter 4.

3.2 Research Design

A research design is "a blueprint for conducting a study with maximum control over factors that may interfere with the validity of the findings," according to Burns and Grove (2003:195). A study design, according to Parahoo (1997:142), is "a plan that describes how, when, and where data are to be collected and analysed." A research design is "the researcher's overall for answering the research question or testing the research hypothesis," according to Polit et al. (2001:167).

Because it met the requirements of descriptive research as outlined by Brink and Wood (1998: 283), this study was descriptive. When creating a database for any science, descriptive designs are employed. This study includes a database on how teachers and school administrators use ICT. Additionally, they state that descriptive studies are employed in situations where a population's characteristics are either unknown or only partially understood.

The strategy a researcher uses to address research questions is called a study. The researcher employed descriptive survey since I had to collect data at once from the sampled population of heads of schools and teachers. The use of qualitative method design enabled to check the quality of the database (Creswell, 2014). According to Linda (2002), data from a sample chosen to represent a larger population is gathered at a single point in time for cross-sectional surveys. As a result, the researcher immediately gathered data for this study. Regarding schools in Zimbabwe, the aforementioned design really aided in uncovering the use of ICT in the classroom.

Since it characterized the current features of a sizable group of in-service instructors, the descriptive survey design is the most effective approach for this study. It aided in gathering self-reported data regarding the population's attitudes, beliefs, views, behavior, and other characteristics. To ascertain the population's present state with regard to one or more factors, information was gathered from its members. Survey-based prevalence statistics are helpful in proving that a problem is distributed in a specific way throughout the population, and this design was chosen because it can map a problem by revealing that it is more prevalent than previously believed. Reinharz (1992).

3.3 Research Methods

The researcher collected and analyzed data using a quantitative approach. According to Jenny (1999), quantitative approaches to data collection and analysis are efficient and favored since they provide answers to a wide range of problems. The researcher was able to use data to develop an inductive approach to the study by using quantitative approaches, which allowed them to generate less literature and then incorporate it at the end (Creswell, 2014).

3.4 Population, Sampling Techniques and Procedures

3.4.1 Population

A target population is a collection of people that the researcher can identify and examine because they share certain distinguishing traits. Creswell (2012). According to Polit and Hungler (2001:37), the population is the sum of all items, people, or subjects that meet a set of criteria. Population is defined by Parahoo (2005:218) as "the total number of units from which data can be collected," including people, objects, events, or organizations. The population is defined by Burns and Grove (2003:213) as all the components that satisfy the requirements to be included in a study.

In order to learn about the difficulties and solutions associated with ICT integration in schools, the researcher used in-service primary school teachers who were enrolled at Bindura University. The target audience was chosen due to their expertise in instructing and educating kids. The purpose of ICT integration in schools was of interest to the researcher. In this regard, there are 62 people in the population overall, which in-service teachers enrolled at Bindura University.

3.4.2 Sampling Technique

Stratified Random Sampling

Stratified random sampling is an effective technique that involves dividing the population into distinct subgroups (strata) and then randomly selecting samples from each stratum. This approach ensures that each subgroup is adequately represented in the overall sample. I divided the 62 mathematics in-service teachers at Bindura University into strata based on the 10

different provinces in Zimbabwe. Each province served as a separate stratum. Different number of teachers were sample from each province. Since the total sample size is 16 teachers, I allocated the sample size proportionally based on the number of teachers from each province. The number of teachers were uneven across provinces, so I adjusted the sample size accordingly. The distribution of mathematics teachers across provinces was as follows:Province A: 6 teachers, province B: 8 teachers, province C: 5 teachers, province D: 7 teachers , province E: 4 teachers, province F: 6 teachers, province G: 9 teachers ,province H: 5 teachers , province I: 5 teachers and province J: 7 teachers. The total of 62 teachers.The sample from each province was calculated as follows:Province A: $(6/62) * 30 \approx 3$, province B: $(4/62) * 30 \approx 2$, province : $(2/62) * 30 \approx 1$, province : $(2/62) * 30 \approx 1$, province : $(4/62) * 30 \approx 2$, province : $(4/62) * 30 \approx 2$, province : $(2/62) * 30 \approx 1$, province : $(5/62) * 30 \approx 2$, province : $(2/62) * 30 \approx 1$ and province : $(2/62) * 30 \approx 1$.

Advantages of Stratified Random Sampling are as follows, ensured representation from all provinces, reduced sampling bias, leading to more accurate results.

Allowed for comparisons between different groups (provinces) in the analysis.I followed above steps to effectively select a sample of 16 teachers from the 62 mathematics teachers enrolled at Bindura University, I ensured that I captured a comprehensive view of ICT integration across different regions in Zimbabwe.

4. Random Selection:

I used a random number generator to select the calculated number of teachers from each province. I ensured that each teacher within a province had an equal chance of being selected.

5. Data Collection:

I collected data using questionnaires.In-service teachers answered questions given by the researcher on questionnaires.

3.5 Research Instruments

Measurement tools, such as questionnaires were used in research to gather information from research participants on a particular topic of interest. The researcher employed the questionnaires as research tools for this investigation. The main goal will be to respond to the research being carried out.

3.5.1 Questionnaire

A questionnaire will also be used by the researcher because it is simpler to administer. The questionnaire is simple to administer and highly successful in assessing respondents' understanding of the study (Suzzane and Pricilla M.D, 2004). A questionnaire is a form used in a survey design that study participants fill out and send back to the researcher, according to Creswell (2012). A questionnaire is a type of research tool used to gather data that consists of a set of questions. Questionnaires are defined by DeVaus (2002), as quoted by Saunders et al., as any data gathering method in which participants are asked to answer the same set of questions in a predefined order. It is that type of investigation, according to Chiromo (2006), that includes a methodically produced and structured set of questions that are sent to the population samples. To put it another way, a questionnaire is a tool used to extract the thoughts, feelings, experiences, perceptions, and attitudes of a certain sample of people. Because a questionnaire is simple to administer and, when correctly designed, members may complete it without difficulty, it was given to the sample's enrolled inservice instructors. Additionally, the respondents were allowed to freely express themselves by answering questions without the researcher interfering.

Well-written questionnaires give researchers a guide to follow throughout the entire process and formulate questions that are universally understood. Because they let participants know

what kinds of responses are suitable, they also make it easier to respond to responders. According to Fowler (1993), a question should employ full sentences, present a restricted number of possible replies, and define any language that might be unclear. Data was gathered using questionnaires from the two sample groups teachers and heads and each group's questionnaire was designed to highlight differences in opinions and contributions.

The topic, goals, and advantages of the study were outlined in an introductory letter that the researcher received from Bindura University's Department of Educational Research and gave to the participants. The information that was gathered was examined and talked about. To make sure that ethnicity is taken into account, the researcher asks Bindura University for permission to collect data. The researcher collected data the in-service heads in-service teachers enrolled at Bindura University. This enlightened them on why the researcher was carrying out a research and assured the respondents privacy and confidentiality in carrying out the research.

The researcher sent questionnaires to the in-service school teachers enrolled at Bindura University. This made guaranteed that surveys were issued and received on scheduled days. The timely completion of all duties was secured by the researcher's periodic monitoring of data collection operations. Notwithstanding the researcher's preparations, it was nevertheless clear that some individuals were lying about their computer system experiences. They were allowed to share their experience, and the researcher clarified the significance of the study in advancing their knowledge.

3.7 Data Presentation and Analysis Plan

The researcher worked with the nominal data, which is the lowest level of data measurement. Because of the nature of the data, a combination of tables, pie charts, and column graphs were used to represent quantitative data. In order to derive meaning as discussed and as it relates to

other earlier research investigations, the data was examined and analyzed. Analyzing data entails applying statistical methods, examining patterns, and condensing accumulated data to a workable size. Content analysis was employed by the researcher.

Quantitative data collected through questionnaires from in-service heads and in-service teachers will be analyzed using tables, and the data sets were quantitatively analyzed by computing statistical measures like percentage to reveal patterns in the responses. Data collected using questionnaires were presented on tables and graphs (because tables are easy to handle, interpret, and can communicate maximum information in the most effective way).

Chapter Summary

This chapter played a crucial role in describing the data collection process, including the research strategy and techniques employed. In order to draw reliable conclusions about the population being studied, the population and sample size were determined in a clear and concise manner. Additionally, a justification and explanation of the research instruments' selection as the best suitable for the study were provided. Before the chapter concluded with an initial notification that the data would be presented and analyzed, data collection procedures were also highlighted.

Data presentation, interpretation, analysis, and discussions will be the main topics of the following chapter.

CHAPTER FOUR:

4.0 DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

The presentation of the research findings will be the main focus of this. The analysis and discussion of the research findings are also tabled. The main concerns and important issues will be emphasized in order to provide a foundation for discussion and recommendations regarding the research findings.

4.2 Data collected from respondents

All the data was collected through a questionnaire .

4.2.1 Response rate

Table 4.2.1 Response rate

Respondents	Distributed	Retrieved	Return Rate
Teachers	16	12	75%
Total	16	12	75%

Out of the 16 questionnaires that were distributed to in-service teachers enrolled at Bindura University. 4 were not retrieved, meaning that 81% of them were recovered for the research, which could allow the researcher to make a valid judgment on the study question. All of the in-service heads and teachers were able to complete their questionnaires, and the responses were retrieved for the study. Of the 16 questionnaires that were given to students, none were not returned, meaning that the average response rate was higher than 97%, and the research can be considered valid.

4.2.2 Demographic and Bio Data for respondents

Gender	Males: 6 (50%)		Females:(50%)6		Total: 12 (100%)	
Attributes	Freque ncy	%	Freque ncy	%	Freque ncy	%
Age						
20-25 years	1	17%	1	17%	2	17%
26-30 years	1	17%	1	17%	2	17%
31-35 years	1	17%	1	17%	2	17%
36- 40 years	2	33%	2	33%	4	33%
41+ years	1	17%	1	17%	2	17%
Academic Qualification						
ZJC	0	0%	0	0%	0	0%
O' Level	6	100%	6	100%	12	100%
A' Level	2	33%	1	17%	3	25%
Any other	0	0%	0	0%	0	0%
Professional Qualification						

Nil	0	0%	0	0%	0	0%
Certificate	0	0%	0	0%	0	0%
Diploma	6	47. 7%	6	28. 2%	12	100%
First Degree	0	0%	0	0%	0	0%
Master's Degree	0	0%	0	0%		0%
Experience						
0-1 years	0	0%	1	17%	1	0.8%
2-5 years	1	17%	1	17%	2	17%
6-9 years	2	33%	1	17%	3	25%
10 and above years	3	50%	3	50%	6	50%
ComputerQualification						
Non	6	100%	5	83%	11	92%
Certificate Attendance of	0	0%	1	17%	1	0.8%
Certificate	0	0%	0	0%	0	0%
Diploma	0	0%	0	0%	0	0
Above Certificate	0	0%	0	0%	0	0%

The aforementioned table, which highlights the demographics of all respondents, makes it clear that 50% of in-service teachers were men, with the remaining percentage being women. This Since 17% of those in the teaching profession are 41 years of age or older, the aforementioned results further demonstrate that teaching positions are occupied by older individuals. The age distribution percentages decrease with age, suggesting that there are very few young people who are likely to be more adept at using ICT tools. The fact that there aren't enough computer-literate individuals to influence students' use of ICT tools means that ICT tools are being used less in the majority of schools indicates that the gender ratio in the classroom varies about an even distribution.

More than 90% of the respondents had an O' level or higher in their academic credentials, according to the research findings. However, this posing a better position in literacy in general, it does not give us a conclusion on whether they are also computer literate or be able use other ICT tool. These findings only offer us hope that successful outcomes can be achieved through training or any other ICT skill building program.

Qualified teachers with a diploma or higher are also abundant in the education community. Nevertheless, non of these educators hold a bachelor's or master's degree, and of those, over 50% are women who actively participate in classroom activities. This means that teachers who work closely with students are not proficient in using ICT technologies to provide lessons or support learning.

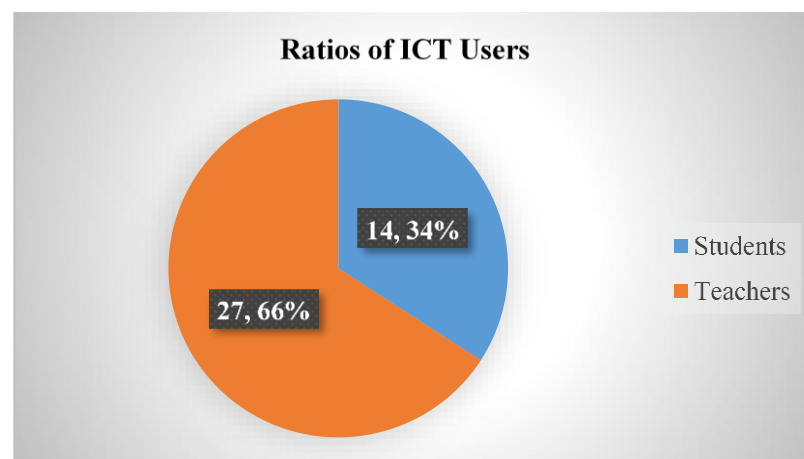
Additionally, it was discovered that the majority of schools lack instructors who are truly qualified to use ICT tools to improve learning. This is demonstrated by the fact that only those with a certificate of attendance are above 17%, while the percentage of people without an ICT qualification is above 0%. Just 20% or fewer of all the schools in the study area have a

certificate or a diploma. This means that there are comparatively few ICT-qualified teachers for every student. Consequently, the use of ICT tools in elementary schools is restricted.

It is clear from the research's findings that over 75% of respondents have five years or more of expertise, with a smaller number having less than a year. However, this demonstrates that the majority of teachers are aware of ICT tools and may even know how to utilize them despite their low usage because of other reasons like their availability in sustainable ratios.

4.3 The role of ICT in a school classroom set up.

To find out on the role of ICT tools in schools the research also had to know who uses these tools in order to dig deep into the roles.



in

Fig 4.3.1: Illustrating the percentage number of user between in-service teachers and school administrators.

The accompanying figure shows that in-service teachers use ICT tools twice as much as administrators do. The availability of ICT resources for schools and the opportunities for instructors to use them may have an impact on this. Given that teachers use ICT at a rate of 66%, despite being fewer in number than students, this means that the purpose of ICT tools is not to improve classroom activities in terms of lesson delivery, but rather to facilitate other tasks for teachers, such as communication and record keeping.

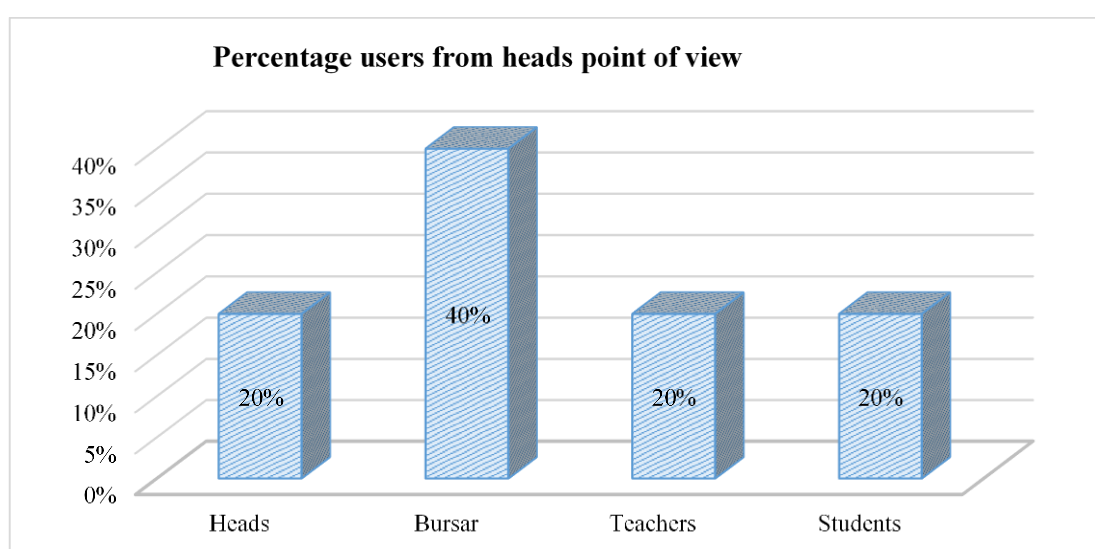


Fig 4.3.2: Showing user distribution of ICT tools in schools

According to the heads' perspective and experience, students utilize ICT tools at school at a rate of 20%, while instructors and the administration, which includes heads and bursars, use them most frequently (80%).

Table 4.3: Uses of ICT tools in schools (In-service perspective)

Use	Record Keeping	Bookkeeping	Lesson delivery	Teacher Supervision
-----	----------------	-------------	-----------------	---------------------

Percentage	20%	40%	20%	20%
Users				

The above table indicates that the administration makes use of the majority of the ICT resources that are accessible in schools. This is demonstrated by the fact that 20% of time is spent on course delivery, whereas 60% is spent on instructor monitoring and bookkeeping. This indicates that ICT plays a role in schools by streamlining the administration and method for conducting daily operations.

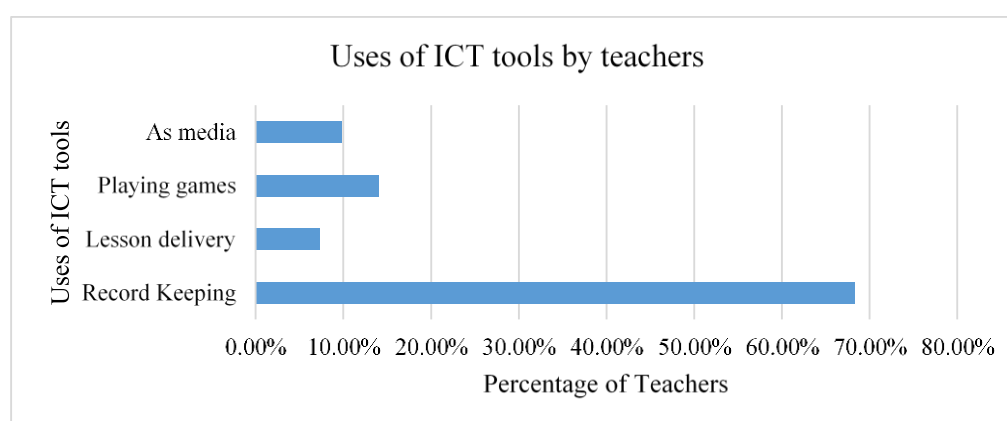


Fig 4.3.3 Uses of ICT tools in schools (In-service teacher perspective)

The following bar graph illustrates how primary school teachers use ICT tools, and it is evident that one of their main applications of these tools is record keeping, which accounts for 68% of all uses. At 7%, lesson delivery is the least popular use. This suggests that they are not always used to improve students' learning.

Even though they have access to a variety of ICT resources, such as computers, projectors, printers, and cellphones, teachers are hesitant to use them while discussing learning-related

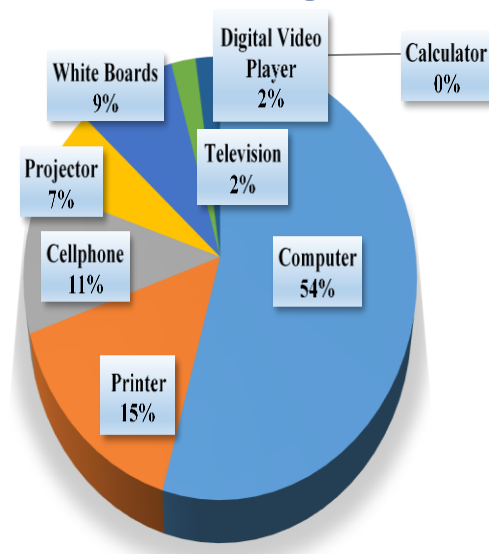
topics. Figure 4.3.3 makes it very evident that a significant portion of educators acknowledge that their purpose is to record, not to conduct lessons or serve as learning aids. The likelihood of having an impact on classroom activities is decreased because 68% of teachers use ICT tools for tasks that do not directly involve the pupils. In contrast to the aforementioned number, just 17% of teachers use ICT tools for both media and class delivery. This means that there is a significant disparity between their perceived and real uses. These findings indicate that ICT is more useful for administration through record keeping than for the actual process of learning. 20% of the heads also concur that one use of ICT tools is for record keeping, and another 40% use them for bookkeeping. This indicates that ICT will continue to be used for administrative tasks like staff management and financial system management, with 20% going toward teacher supervision. Just 20% of heads agreed that ICT tools are used to provide lessons.

According to the high number of teachers who use ICT tools more than pupils in the classroom, 14% of teachers even choose to play games over the other applications listed above, further demonstrating that ICT tools are used to provide amusement.

According to the report, ICT tools also have a communicative purpose. Communication plays a part, as seen by the fact that 11% of teachers acknowledge that cellphones are mostly utilized in the classroom. Information on entertainment and education is also shared in this communication.

With 17% recognizing its use in classroom activities, ICT technologies are also thought to play a role in improving learning. It is evident that using projectors and computers to share information about many subjects in the classroom will make studying more difficult to some degree.

4.4 ICT tools that are being used in schools in Zimbabwe.



ICT Tools used Schools

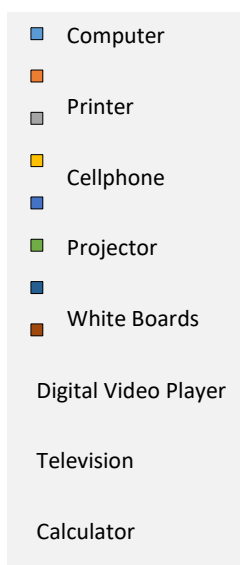


Fig 4.4: Showing the types of ICT tools used in the schools

Numerous ICT tools are being employed in the primary schools in Zimbabwe, according to the results displayed in Fig. 4.4. With 54% of all tools in use, computers are the most frequently used tool. This is mostly because of their importance in the majority of classroom and office settings. Since their curricula discourage their usage, it is clear that calculators are not used in school. Since most information is provided to students in hard copy, printers and cellphones

are also utilized. The 11% who use cellphones may have been motivated by their perception of them as private property and the fact that they are rarely used in class. With only 7% of schools in Zimbabwe using them, projectors are not very prevalent. This is also because only 20% of teachers are stationed in low-density suburbs, and they are only available in group A schools, which are situated in these areas.

4.5 In-service teachers' view on the role of ICTs in teaching and learning

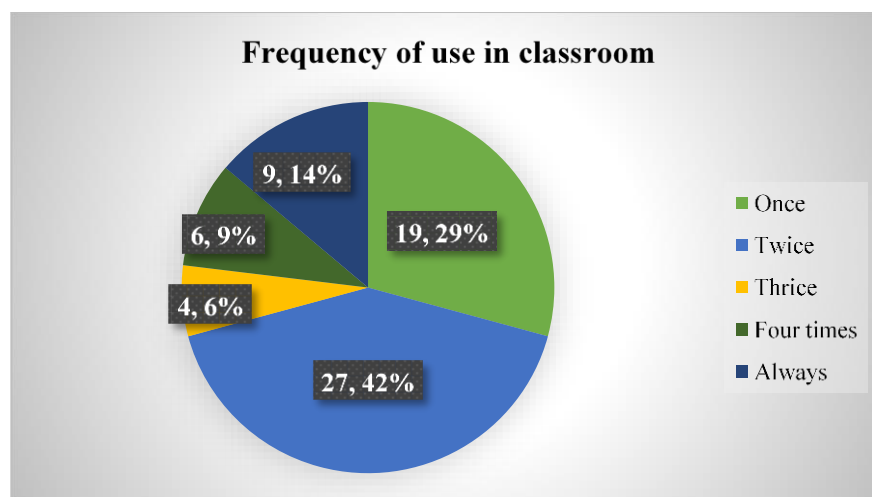


Fig 4.5.1: Showing the frequency in use of ICT tools in primary schools from teachers and heads' perspective

Teachers' input on the frequency of use and application of ICT tools in schools is represented in the diagram above (fig. 4.5.2). The results indicate that teachers are not providing enough time for students to interact with ICT tools during the learning process, and students agree with

their teachers' and heads' input that they do not regularly use ICT tools at school, particularly when it comes to improving their learning or learning ICT itself.

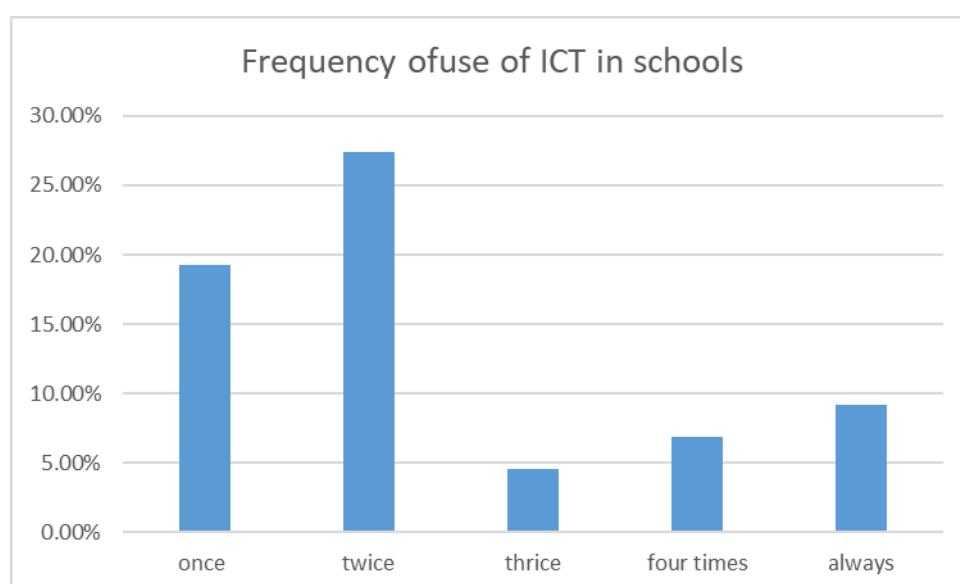


Fig 4.5.2: Showing the frequency of use in ICT tools in schools from students perspective

With a high of 42% using the tools twice a week, it is clear that most schools do not regularly employ ICT tools in the classroom. Due to availability and improved ICT tool-to-pupil ratios, just 14% of students always use these tools. According to the statistics, 29% of teachers and heads of schools use these technologies mostly once a week, which indicates that they do not believe that ICT tools can actually improve learning.

According to the pupils, only 5% use ICT resources for learning at all times, while 50% only use them twice a week. Given only 5% of students acknowledge using computers and other electronic devices for learning only once a week, it is evident that students do not utilize them frequently.

Table 4.5.1 makes it evident that the opinions of teachers and heads of departments diverge from their actual use of ICT tools in regard to students' opinions. Though approximately 60% of respondents agree that ICT tools improve learning, Fig. 4.5.1's data indicate limited usage,

with over 77% using ICT tools less than three times per week for lesson delivery-related purposes. About 10% of school administrators and teachers disagree that ICT tools improve learning because they are rarely used but nevertheless manage to conduct classes as usual.

Table 4.5.1: Showing results on the extent computers and cellphone enhance learning

Opinion	Strongly agree	Agree	Neutral	disagree	Strongly disagree
Percentage of Respondents	37.8%	21.7%	32.6%	6.6%	4.3%

4.6 Users of internet in primary schools

The respondents were asked who uses internet services at their schools and results shown on diagrams below represents their opinions.

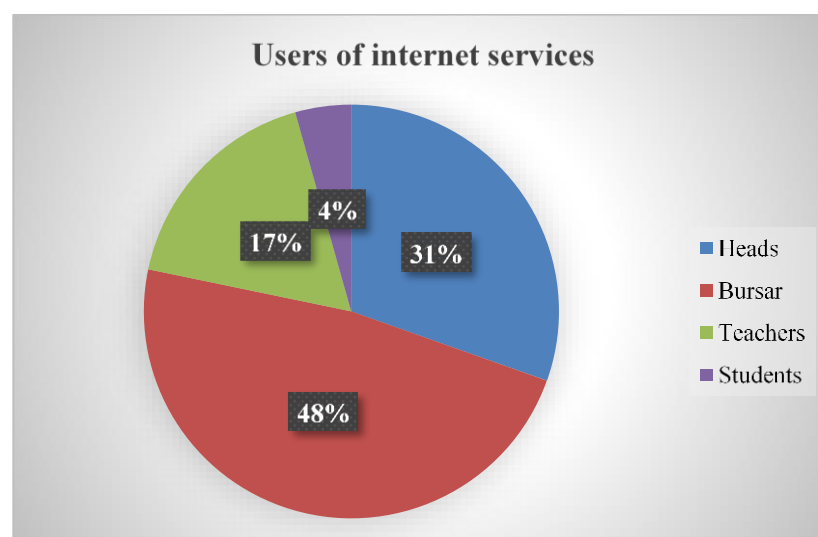


Fig 4.6.1: Illustrating the users of internet services in schools

According to the figure, 79% of users are administrators, including heads and bursars, who use the internet extensively. A total of 17% of respondents indicated that teachers utilize the internet only infrequently and not to improve the learning process. Finally, students, who make up a negligible 4% of the population, are the ones who do not utilize the internet.

The majority of schools use ADSL internet services, which do not support many users, according to the respondents. This reinforces the administration's perception that there aren't many users. Since neither teachers nor students utilize the internet, it cannot be said that it influences or improves the learning process as some may believe. None of the respondents utilized either V-Sat or Optic Fibre, and all (100%) said they used ADSL service.

4.7 Challenges being encountered in using ICT's in schools.

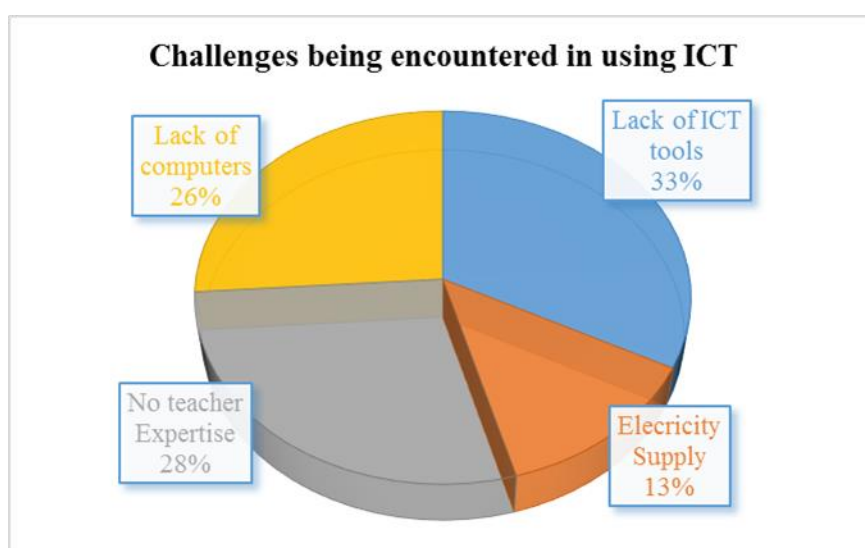


Fig 4.7.1: Illustrating the challenges being encountered in the use of ICT tools in schools.

Figure 4.7.1 demonstrates that there are significant obstacles preventing the usage and use of ICT tools in classrooms. Among these difficulties is the dearth of ICT equipment, such as

digital video players, projectors, and televisions, in addition to computers. 33% is a large proportion that puts it ahead of other difficulties. Severe power outages are another issue that plagues schools and prevents instructors and students from using the ICT resources available to them. Students won't be able to utilize them if there is no electricity available when they are in class, which will restrict their use and use in the classroom.

This challenge was admitted by 13% of all the respondents and mostly stationed in high density areas.

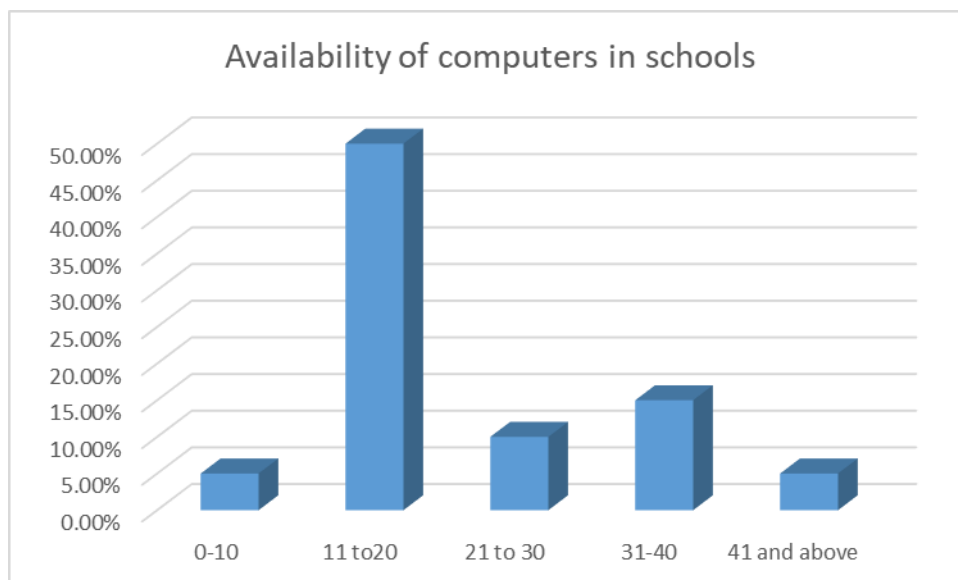


Fig 4.7.2: Illustrating the availability of computers in schools

The aforementioned graphic, Fig. 4.6.2, shows how schools face difficulties in obtaining computers and other ICT instruments for seamless learning implementation. Only 5% of respondents had 40 PCs or more, according to the results, which could be because they are A school in a suburban area with a low population density. 50% of students concur that most schools have between 11 and 20 computers for the entire school. Almost 5% of pupils claim that their institutions have

Another significant issue facing schools in the district under study is the lack of computers in the majority of schools. A total of 28% of respondents pointed out that this is a serious challenge that primarily affects the students, as they are the ones who stand to gain from the use of computers. This means that learning and application of computers cannot be done effectively since each child will not be able to have practical experience. The existence of this challenge is also supported by the results shown on Fig 4.6 where more than 65% of respondents are in schools with high computer to pupil ratio less than one computer as to ten pupils. 13% of the schools have a ratio of one as to ten which is a very small ratio for effective learning to take place whilst 21% are the only with the ratio above one computer per ten students. These ratios prove that students' access to ICT tools in general is very low which in turn have a negative impact on their learning.

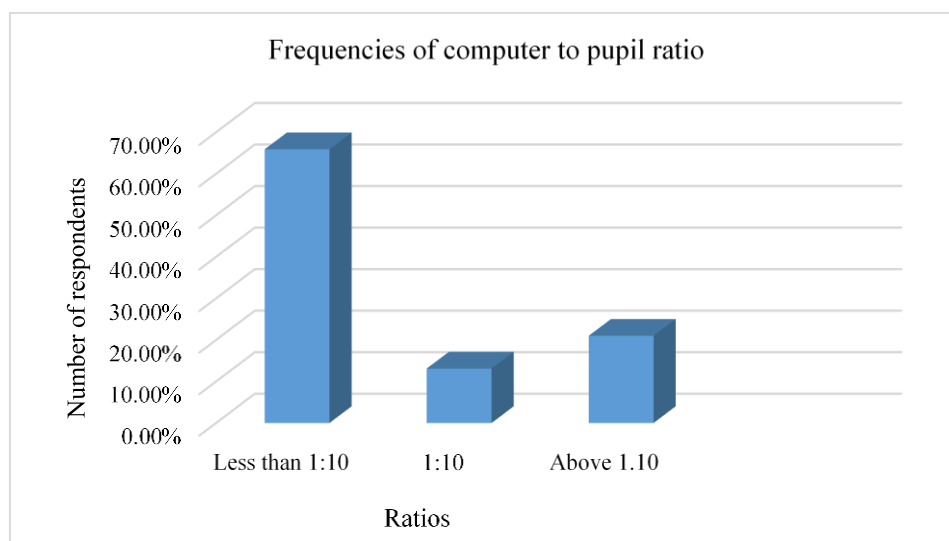


Fig 4.7.3: Illustrating the ratios of computer to pupil prevailing in schools

4.8 Measures that can be taken to improve the application of ICT in schools.

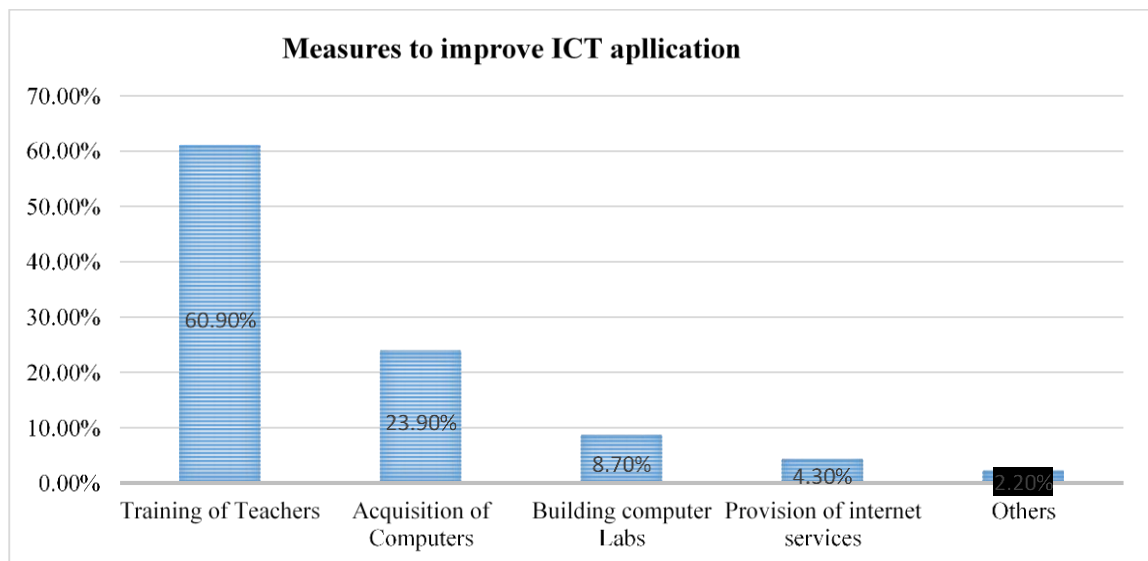


Fig 4.8 Suggestions on how to improve the application of ICT tools.

The respondents offered several recommendations for actions that could be performed to enhance the use of ICT technologies in classrooms. The most recommended was teacher training. This further demonstrates the comparatively low level of teacher maturity in the field of study with regard to ICT instruments. Over 60% of the teachers recommended this action. Purchasing computers or ICT tools in general is another way to enhance the application, as their scarcity has been a hindrance to attempting to employ ICT tools. It is evident from a ratio of over 20% that the majority of schools lack sufficient ICT resources to be used in the classroom for educational purposes.

15% of the respondents all said that building of computer labs, supply of internet among other can result in the improvement of ICT application in primary schools. This also demonstrates that some of the schools do not have computer laboratories where ICT tools can be utilized.

Chapter Summary

The chapter was significant since it provided a diagrammatic representation of the research findings. First, the problems pertaining to the response rate, respondent demographics, and biodata were discussed. The additional data that was provided reflected the functions of ICT tools, the kinds of ICT tools that were employed, and the responsibilities that the school personnel believed these tools played. The chapter had to conclude by presenting and discussing evidence that highlights the difficulties in using and applying ICT tools as well as what may be done to enhance their utilization. The study's summary, conclusions drawn from the data in this chapter, and suggestions made in light of those conclusions will all be covered in the upcoming chapter.

CHAPTER FIVE:

5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter is going to focus on the summary of the research in relation to the findings outlined in the previous chapter. The key topics of concern for this chapter are judgments based on the findings of the investigation. To conclusion the chapter will be recommendations which can be done to remedy the problem of the study and other things may be observed throughout the investigation.

5.2 Research summary

In order to better understand how information and communication technology is used in Zimbabwean elementary schools, a study was conducted. The primary finding is that while most schools are urged to employ ICT resources, the proper use of those tools does not always result in positive outcomes for students, school administration, or financial concerns.

In order to determine their key responsibilities, the research was primarily concerned with how ICT tools were used in schools. the extent of their responsibilities in improving the processes of instruction and learning.

The researcher also reviewed related literature that other scholars had proposed in an attempt to articulate the issues surrounding the use of ICT tools in schools. Goay and Wong (2003) provided a detailed explanation of what ICT tools are in the context of schools, and Volman (2005) was helpful in outlining the major roles of ICT tools in the majority of schools, including those that are neglected by school authorities. Texts such as Tinio (2002) were used in the

review in order to discuss the main obstacles that schools face when attempting to properly implement ICT.

In order to paint a picture of a situation as it naturally occurs, the research was more descriptive. Therefore, pay attention to how instructors and administrators use ICT.

Questionnaires were utilized to gather the data that was used to make generalizations. Questionnaires were distributed to in-service teachers and administrators enrolled at Bindura University to get their thoughts on the functions and applications of ICT in their schools. Since respondents thought questionnaires were straightforward to understand, they were used.

For easy interpretation, all collected data was shown in tables, pie charts, and graphs. Only the data from questionnaires were examined to provide generalizations for a more thorough analysis. To draw conclusions, content analysis was employed.

Following data analysis, the researcher also noted that all of the target respondents had at least a diploma and were qualified to instruct school students. ICT resources to improve primary school learning are generally lacking in all schools. The majority of in-teachers lack the skills necessary to instruct and use ICT knowledge for the benefit of their students.

5.3 Conclusions

On the basis of the findings presented in chapter 4, the study came up with following conclusions:

5.3.1 Roles of ICT tools in schools.

It is evident from the results that the primary functions of ICT tools are not related to classroom setup; rather, they are mostly used for administrative purposes, as students do not use the tools. For the same reasons, schools also employ ICT tools for communication, but even while the information shared may be beneficial to the students, they do not actively involve them in this process. We can also draw the conclusion that, to a lesser degree, students are directly involved in the delivery of lessons using ICT technologies.

5.3.3 Lack of ICT maturity

Due to their inexperience, the majority of instructors are unable to have an impact on the usage of ICT tools in schools. Since many teachers lack the necessary skills to instruct or use the various ICT technologies, there is a good probability that they will be unable to completely comprehend and utilize the tools for their students. The data also demonstrate that instructors utilize ICT tools for non-learning activities, which leads us to the conclusion that since they spend time on non-learning activities, they are not making an effort to influence the usage and application of ICT in the classroom.

5.3.4 Shortage of ICT tools

We can conclude that the use of ICT tools in classroom setup is not feasible because the schools do not have enough ICT tools to furnish each and every classroom. Since schools in high density areas are the ones that are characterized by this problem, it is also evident that the reason is lack of financial capacity, as those in low density represent the percentage highlighting not having shortage of ICT tools. The results and findings show that one of the

major challenges is the lack of ICT tools, such as computers and projectors, in the majority of primary schools in Zimbabwe were under study.

5.3.2 Utilisation and usage of ICT tools.

The results show that there is a low computer-to-pupil ratio, which suggests that students do not use computers frequently. Therefore, we can conclude that the use of ICT tools is not influencing their expected roles of improving learning in a classroom setting. Teachers and other staff members, such as heads and accounts, use ICT tools more than students, which limits their influence in classroom activities.

5.3.5 ICT tools used in the schools

Numerous ICT tools are used in classrooms generally. Nonetheless, the results clearly show that the most often used devices are PCs and printers. In order to influence learning, other devices like projectors, digital video players, and televisions are uncommon in classroom settings. Thus, we can draw such conclusion. As far as types and state-of-the-art tools are concerned, ICT tools are not being employed in classrooms. The most popular ICT tool in schools is the computer.

5.3.6 No use of internet by students and teachers

The research's conclusions indicate that very few teachers and no pupils use the internet for instructional purposes. In primary schools, the only people using internet services are the heads and other administrative staff. Furthermore, the kind of internet services being utilized cannot support as many users as there are kids and professors.

5.3.7 Other factors

Since schools can go almost a day without power, it can be inferred that frequent and severe power outages in densely populated suburbs also have an impact on how ICT equipment are used in classrooms. Due to their ages and the amount of time they spend on the job, teachers in the district being studied are unwilling to adapt to the changing technological demands of the environment, which has a detrimental impact on how they must instruct and inform students.

5.4 Recommendations

On the basis of the conclusions derived from the findings, the following recommendations were also made:

5.4.1 Roles of ICT tools

According to the report, school administrators need to adopt a new perspective on the use of ICT tools in their institutions. They are expected to prioritize students over other activities that do not help them. To improve ICT-based learning, teachers must ensure that no session is conducted without the use of ICT tools and keep an eye on students' usage of those tools.

5.4.2 Usage of ICT tools

Given that students have been using ICT tools at low rates while teachers and administration utilize them at high rates, the study suggests that students be given more time to use these technologies in the classroom. Improving access to ICT tools is necessary to boost utilization, as is offering internet, which encourages the use of devices like computers.

5.4.3 Upgrade of teacher expertise

Additionally, the study suggests that either the government, through the Ministry of Primary and Secondary Education, or the relevant institutions provide ICT training to their teachers so

that they are competent and knowledgeable enough to lead the use of ICT tools in the classroom. Furthermore, the government must make an effort to ensure that schools of teacher training do not turn out educators who are unable to use ICT expertise for learning.

5.4.4 Provision of adequate ICT tools

The study's results demonstrate that primary schools lack enough ICT resources, as seen by the low ICT tool per student ratio. Additionally, it suggests that schools supply enough ICT resources so that every student can utilize a computer in the classroom. It is also advised that minimal requirements be established for classroom layout so that every subject area has some connection to ICT.

5.4.5 The use of state of the art ICT tools

According to the report, in order to improve learning, all schools should have access to ICT resources including projectors, televisions, and digital video players in addition to PCs and printers. This is a result of the high rate of computer use at the expense of other, more or less crucial learning aids. To improve learning, it is also advised that every school have its own televisions and projectors.

5.4.6 Other factors

Since he was concentrating on the use of all ICT tools, the researcher also suggests that future studies concentrate on the best ICT tools that can be utilized to improve learning. Since the greatest techniques and resources may be used to improve the way lessons are taught, this will benefit the students.

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Morgan, D. L. (1997). Focus groups as qualitative research. Sage Publications. a ollection Procedures

APPENDIX A

LETTER FROM THE UNIVERSITY

P Bag 1020
BINDURA
ZIMBABWE

Tel: 0271 - 7531 ext 1038
Fax: 263 - 71 - 7616

SAMED


BINDURA UNIVERSITY OF SCIENCE EDUCATION

Date: 10/10/24

TO WHOM IT MAY CONCERN

B226290B

NAME: MAKWINDI THABANI REGISTRATION NUMBER: B226290B

PROGRAMME: HBScEd Mathematics PART: 2.2

This memo serves to confirm that the above is a bona fide student at Bindura University of Science Education in the Faculty of Science Education.

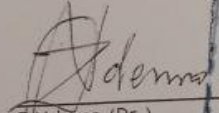
The student has to undertake research and thereafter present a Research Project in partial fulfillment of the HBScEd Mathematics programme. The research topic is:

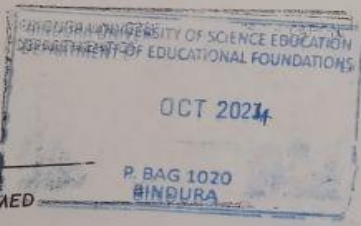
INFORMATION AND TECHNOLOGY (ICT) INTEGRATION IN PRIMARY SCHOOLS IN ZIMBABWE.

In this regard, the department kindly requests your permission to allow the student to carry out his/her research in your institutions.

Your co-operation and assistance is greatly appreciated.

Thank you


Z. Ndemo (Dr.)
CHAIRPERSON - SAMED


OCT 2024
P. BAG 1020
BINDURA

APPENDIX B

Questionnaire Items

What is the current level of ICT integration in schools in Zimbabwe, and how does it vary across different regions?

1. How often do you use ICT tools in your classroom?

- A) Daily
- B) Weekly
- C) Monthly
- D) Rarely/Never

2. What types of ICT tools do you have access to in your school?

- A) Computers
- B) Tablets
- C) Projectors/Smartboards
- D) None

3. How would you rate the overall integration of ICT in your school's curriculum?

- A) Very high
- B) Moderate

C) Low

D) Very low

4. In which subject areas is ICT most commonly integrated?

A) Mathematics

B) Science

C) Language Arts

D) All subjects equally

5. How does the availability of ICT resources in your school compare to schools in urban areas?

A) Much better

B) About the same

C) Worse

D) I don't know

6. How frequently do students engage with ICT in your classroom?

A) Daily

B) Weekly

C) Monthly

D) Rarely/Never

7. What level of training have you received in using ICT for teaching?

- A) Extensive training
- B) Some training
- C) Minimal training
- D) No training

8. How do you perceive the impact of ICT on student learning outcomes?

- A) Very positive
- B) Somewhat positive
- C) Neutral
- D) Negative

2. What are the primary challenges that teachers encounter when attempting to integrate ICT into their teaching practices in schools?

1. What do you consider the biggest barrier to ICT integration in your school?

- A) Lack of resources

- B) Insufficient training
- C) Resistance from colleagues
- D) Lack of administrative support

2. How frequently do you experience technical issues with ICT tools?

- A) Often
- B) Sometimes
- C) Rarely
- D) Never

3. What is your level of confidence in using ICT tools for teaching?

- A) Very confident
- B) Confident
- C) Somewhat confident
- D) Not confident

4. How do you rate the support you receive from your school administration regarding ICT integration?

- A) Excellent
- B) Good

C) Fair

D) Poor

5. Have you encountered any issues with internet connectivity in your school?

A) Yes, frequently

B) Yes, occasionally

C) No, rarely

D) No, never

6. How relevant do you find the existing ICT training programs for your needs?

A) Very relevant

B) Somewhat relevant

C) Not very relevant

D) Not at all relevant

7. How do you perceive student attitudes towards using ICT in learning?

A) Very positive

B) Somewhat positive

C) Neutral

D) Negative

8. What is the level of collaboration among teachers regarding ICT integration?

- A) Very high
- B) Moderate
- C) Low
- D) Very low

3. What strategies can be implemented to improve ICT integration in schools, and how can these strategies be effectively evaluated?

1. What type of professional development would you find most beneficial for improving ICT integration?

- A) Workshops
- B) Online courses
- C) Peer mentoring
- D) None

2. How important is it for schools to have a dedicated ICT coordinator?

- A) Very important
- B) Important
- C) Somewhat important
- D) Not important

3. What method do you believe is most effective for evaluating ICT integration efforts?

- A) Student performance metrics
- B) Teacher feedback
- C) Technology usage statistics
- D) Parental feedback

4. How frequently should professional development programs on ICT be conducted?

- A) Monthly
- B) Quarterly
- C) Bi-annually
- D) Annually

5. What role do you think parents should play in supporting ICT integration?

- A) Very active
- B) Somewhat active

C) Minimal

D) No role

6. How should schools assess the effectiveness of ICT tools used in classrooms?

A) Standardized tests

B) Observations

C) Surveys

D) Combination of methods

7. What additional resources would help you improve ICT integration?

A) More devices

B) Better training materials

C) Access to online resources

D) More administrative support

8. How can collaboration among teachers be enhanced to support ICT integration?

A) Regular team meetings

B) Collaborative projects

C) Shared online platforms

D) All of the above

