SECONDARY SCHOOL TEACHERS' AND LEARNERS' ATTITUDES TOWARDS INFORMATION AND COMMUNICATIONS TECHNOLOGY INSTRUCTIONAL USE IN SIBASA CIRCUIT, VHEMBE DISTRICT, LIMPOPO

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DECLARATION

I, **MULAUDZI THANYANI LUCKY** hereby declare that the dissertation "**Secondary school teachers' and learners' attitudes towards information and communications technology instructional use in Sibasa circuit, Vhembe district, Limpopo"** is my own work and has not been previously submitted to this University or other institution for examination purposes .All the sources that I have consulted or quoted have been clearly indicated and acknowledged by means of references.

SIGNATURE **DATE**

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DEDICATION

This study project is dedicated to my family, more specifically to my wife Khumbudzo Sheron Ramasunzi and my four daughters, Mutondi, Maduvha, Vhutshilo and Mukhethwa for their special support and encouragement.

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Contents

Abstract

The main goal of this quantitative, descriptive, explorative survey was to explore and describe secondary school teachers' and learners' attitudes towards ICT (information and communication technology) instructional use in Sibasa circuit, Vhembe district, Limpopo province, South Africa, using the Technology Acceptance Model 2 (TAM 2) framework. ICT use in education continued to be a contentious topic globally following the COVID-19 pandemic. The reason for bringing this issue on board was the recognition that the use of ICTs for teaching and learning can improve the overall standard of teaching and learning. In this study, four hundred (400) participants from the four Proof of Concept (PoC) secondary schools with ICT connectivity for teaching and learning in the Sibasa Circuit of Vhembe-East District were purposively sampled to complete a self-administered

questionnaire. The study revealed that both teachers and learners understand what ICT is and both teachers and learners had a favourable attitude towards utilising ICTs to assist teaching and learning as they are using them on a daily basis for lesson preparations, accessing digital libraries as well as online learning resources. However, the quality and the quantity of ICT equipment in schools are hindering the obstructing factors in the adoption of ICTs for instructional purposes. The Department of Basic Education should increase the provision of ICT tools such as data projectors, whiteboards, and laptops and strong internet connection to schools to support effective teaching and learning .It is also recommended that the provincial Department of Basic Education should increase the extent of training for teachers and learners on how to use ICTs to support teaching and learning.

Key Words: Attitudes; Information Communication Technology (ITC); Teaching; Learning; Instruction; Proof of concept (PoC) schools

CHAPTER 1

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 INTRODUCTION

The sudden outbreak of the new coronavirus SARS-CoV-2, also known as COVID-19, brought an unpredictable change to the traditional way of teaching and learning globally. During the outbreak of COVID-19, the crucial role of Information Communication Technology (ICT) solutions in education became more evident than ever before (Dhawan, 2020:4).

Like most countries around the world, South Africa has experienced school disruptions of unprecedented proportions with several education stakeholders advocating for the acquisition of low-cost ITC solutions in teaching and learning environments (Van der Berg & Spaull, 2020:4). According to Shelly et al., (2008:327) the use of ICTs in education incorporates every aspect of technology—hardware, including radios, TVs, and cellphones—as well as software, like Facebook, Twitter, and WhatsApp—with every topic-related area of the curriculum to improve teaching and learning in schools.

Tshink (2019:13) concludes that the tendency and the probability that teachers and learners come to accept and start using technology in teaching and learning environments strongly depends on personal factors such as teachers and learners' beliefs and attitudes. Sang et al. (2010:4) maintain that learners' and teachers' positive attitudes and constructivist beliefs towards ICT are major determinant of ICT integration in education. Thus, the successful integration of ITCs in teaching and learning is directly linked to teachers' and learners' internal factors such as beliefs and attitudes. Therefore, this study aimed to assess teachers' and learners' attitudes towards the use of ICTs to support teaching and learning in secondary schools within the Sibasa circuit of Vhembe-East district, Limpopo province.

This chapter provides an introduction to the study by providing a background and context to the study, followed by the problem statement, the research questions, the study aim,

significance of the study, the research methodology, ethical considerations, definitions of terms, an overview of the study and finally the conclusion.

1.2 BACKGROUND TO THE STUDY

The integration of ICTs in the South African education system began in 2004 to address educational deficiencies by fostering 21st-century skills such as critical thinking, problem-solving, inclusivity, lifelong learning, global engagement, teamwork, and cooperative learning (Mukhari, 2016:2).

However, the closure of schools in 2020 due to the COVID-19 pandemic resulted in a significant loss of academic days for 1.5 billion students globally, including around 14 million learners in South Africa, highlighting the urgent need for government, education donors, and civil society to respond promptly to mitigate the impact of the closures on education (Shakya et al., 2020:2). As a result, there was an urgent need for the South African government, education donors and civil society to respond with urgency and put measures in place to mitigate the impact of school closures on teaching and learning.

Therefore, the outbreak of COVID-19 in South Africa and subsequent lockdown measures prompted the adoption of virtual learning, zero-rated educational applications, and platforms like the STEM digital school to facilitate e-learning and minimize disruptions to teaching and learning (South African Press Association, 2020:6). This was an attempt by Basic Education (DBE) in South Africa to reduce teaching and learning losses in schools. However, challenges remain in ensuring equitable access to ICT resources, particularly for households with limited economic means (Mhlanga & Moloi, 2020:11).

In a country where households differ in terms of economic capital, the use of ICTs comes with challenges. As noted by Mhlanga and Moloi (2020:11), only a small percentage of South Africa's households have the technology and connectivity to enable them to make use of the most common and seemingly viable solution promoted in the education sector, namely, e-learning. Mooketsi (2015:6) notes that for the year 2020 only, the three major network providers in South Africa, namely, Vodacom, MTN, and Cell-C made significant progress concerning the internet connections and allocation of devices in schools for

teaching and learning as part of their obligations by the amended Universal Service and Access Obligations (USAO) of 2014, enforced by the Independent Communication Authority of South Africa (ICASA), As a result, a total of 1650 schools were connected for teaching and learning purposes nationwide through the Proof of Concept (PoC) educational network funded by the 2010 FIFA World Cup Legacy project, Telkom Foundation project Vodacom Foundation project, and the CSIR-Meraka Institute projects. However, out of the total of 1650 Proof of Concept (PoC) schools, 195 schools were in Limpopo province and 70 out of these schools were in the Vhembe-East district. In addition, 11 out of the 70 Proof of Concept (PoC) schools in the Vhembe-East district were in Sibasa Circuit. The provision of functional ICT infrastructure in schools was very important because the impact and effectiveness of ICTs on teaching and learning rest on the extent to which end-users such as learners, teachers, managers, and administrators have access to hardware, software, and connectivity and use them appropriately.

1.3 STATEMENT OF THE PROBLEM

Although people were already adopting the use ICTs during this century, the outbreak of Coronavirus disease significantly accelerated the adoption rate of ICTs in education worldwide as people are now relying more on technology in support of remote learning (Allam & Jones, 2020:6). According to Akram et al. (2020:5) the adoption of ICT in education has helped more learners around the world to cope with the challenge of COVID-19 and continue their study activities online.

However, in a country like South Africa which is classified as one of the most unequal societies in the world, the closure of schools to reduce the spread of Coronavirus disease meant that only a few learners could continue learning at home, while the majority lacked resources, be it printed materials, technology-driven or connectivity-related, to undertake any form of learning at home (Mhlanga & Moloi, 2020:12). According to Maphalala and Adigun (2021:4) about 23% of ordinary schools in South Africa still do not have functional and adequate ICT infrastructure. For many teachers and learners in South Africa, the closure of schools to contain the spread of the COVID-19 virus meant that teaching and learning had stopped. Motala and Menon (2020:83) note that there was an urgent demand

for the South African government, donors, and civil society to respond with urgency and put measures in place to mitigate the impact of school closures on teaching and learning otherwise learners would not gain the necessary skills needed for South Africa's future. Bas (2016:23) argues that the extent of ICT integration in education is directly influenced by personal factors such as teachers' and learner's beliefs and attitudes toward the use of technologies for teaching and learning.

This study sought to fill this knowledge gap by assessing teachers' and learners' attitudes toward the use of ICTs in supporting teaching and learning in secondary schools within the Sibasa circuit of Vhembe-east district, Limpopo province. Despite Bas's (2016:23) prior mention of this challenge, there remains a need to delve deeper into the specific context of secondary schools within the Sibasa circuit of Vhembe-east district, Limpopo province. This research aims to address the existing gap by providing a detailed assessment of how ICTs are perceived and utilized in educational settings within the Sibasa circuit of Vhembe-east district, Limpopo province. This province is of interest because it is mostly rural, with most learners coming from impoverished home backgrounds. This is evidenced by the number of no-fee paying schools where learners do not pay fees because of the low economic status of their families. Uptake of ICT might be perceived with scepticism and a challenge for such learners it is therefore important to establish how the attitudes of teachers and learners affect uptake of ICTs

1.3 AIM AND OBJECTIVES OF THE STUDY

1.3.1 Aim of the Study

The primary aim of this study is to assess Secondary school teachers' and learners' attitudes towards information and communications technology instructional use in Sibasa circuit, Vhembe district, Limpopo, South Africa.

1.3.2 Objectives

The following were the objectives of the study:

- To explore the extent to which teachers and learners use ICTs;
- To investigate how teachers and learners are using ICTs to support the teaching and learning process;
- To assess the extent to which secondary school learners understand ICTs;
- To assess teachers' attitudes toward the use of ICTs in the teaching process; and
- To investigate learners' attitudes toward the use of ICTs in the learning process
- To assess external factors that affect teachers' and learners' attitudes toward ICT in instructional use.
- To identify opportunities that can be created for teachers and learners when using ICTs to support teaching and learning.

1.4 RESEARCH QUESTIONS

The central question in this study was: What attitudes do secondary school teachers and learners in Sibasa Circuit, Vhembe district, Limpopo have towards the instructional use of information and communication technology?

In seeking to respond to this main question the study asked the following sub-questions:

- To what extent do teachers and learners use ICTs?
- To what extent do secondary school learners understand ICT?
- How are teachers and learners using ICTs to support the teaching and learning process?
- What are the teachers' attitudes towards the use of ICTs in the teaching process?
- What are the learners' attitudes towards the use of ICTs in the learning process?
- What are the external factors that affect teachers' and learners' attitudes toward ICT in instructional use?

- What are the opportunities that can be created for teachers and learners when using ICTs to support teaching and learning?

1.4 PRELIMINARY LITERATURE REVIEW

1.4.1 Introduction

This section provides a preliminary review of the literature concerning teachers' and learners' attitudes towards the use of ICTs in supporting teaching and learning. The preliminary review included the theoretical framework of the study, internal factors that influence the probability that teachers and learners come to accept and start using new ICTs in teaching and learning, opportunities that can be created for teachers and learners when using ICTs to support teaching and the extent at which teachers and learners use ICTS for teaching and learning in South Africa.

1.4.2 Theoretical Framework of the Study

Babbie and Mouton (2012:565) assert that research should be placed in the wide body of scientific knowledge to indicate how it fits into the picture. Nordbakke and Schwanen (2014:26) indicated that a theoretical framework refers to a set of concepts or understanding regarding the functioning of the world in the field of research or empirical work.

This study sought to assess teachers' and learners' beliefs and attitudes towards the use of ITCs to support teaching and learning in secondary schools within Sibasa circuit. The study is informed by the Technology Acceptance Model 2 (TAM 2) (Venkatesh & Davis, 2000). According to this model, when users, in this case, teachers and learners, are presented with a new technology, the Perceived usefulness (PU) and Perceived ease-of-use (PEOU) will influence their decision from the external variables around them about how and when they will use it. Perceived Usefulness (PU) refers to an individual's belief that using a system such as ICT will enhance job performance while Perceived Ease of Use

(PEOU) refers to an individual's belief that using an ICT system will be free of effort (Susanto and Aljoza, 2015:30). TAM 2 has been applied in different disciplines to investigate the reasons some people use computers and as well as their attitudes towards them and it is considered a "key model" or "gold standard" in understanding predictors for IT acceptance (Venkatesh & Davis, 2000).

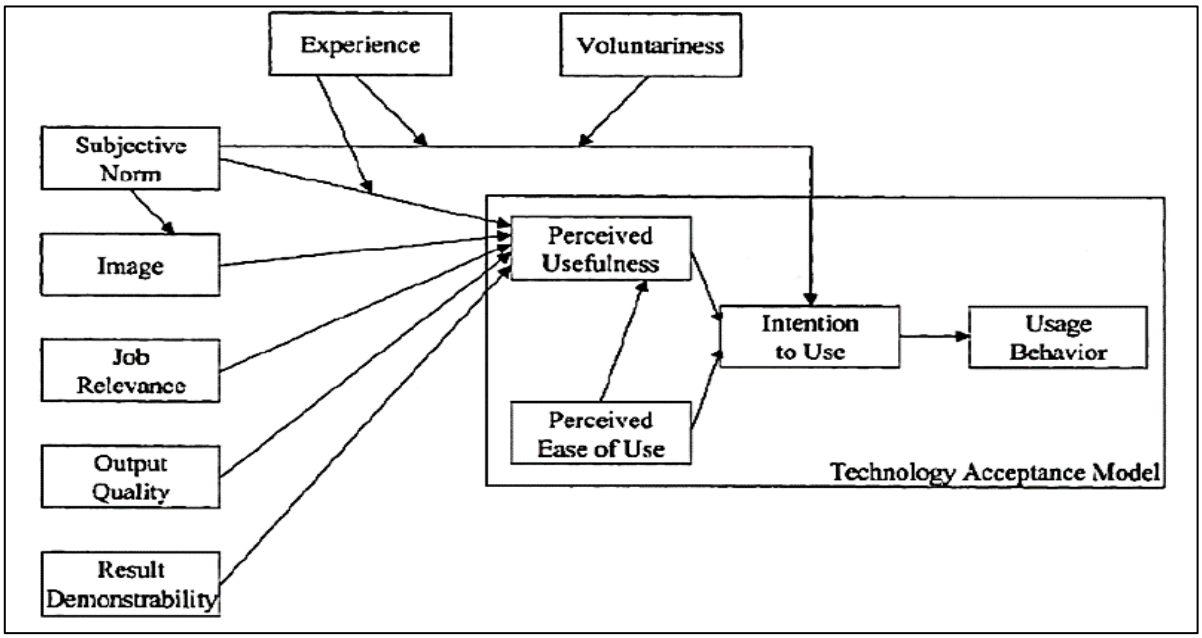

Fig1:TAM2 by Venkatesh & Davis (2000)

Kowalczyk-Anioł and Nowacki (2020:46) indicate that TAM2 was developed due to the limitations in terms of the explanatory power of the Technology Acceptance Model (previously known asTAM) by Davis, Bagozzi, and Warshaw (1989) They maintained that TAM2 by Venkatesh & Davis (2000) extends TAM with variables that were seen as influencing perceived usefulness (PU) or user acceptance, such as subjective norm, image, voluntariness of use, job relevance, output quality and result demonstrability.

From the model above, Ghavifekr et al. (2016:42-43) assert that external variables represent challenges such as limited network connection, limited accessibility, schools with limited ICT facilities, limited time, lack of effective training, and lack of competency among teachers and learners that come from outside their sphere of control when incorporating a new technological tool in their teaching and learning process.

In his recent study Fu (2013:36) concluded that factors form outside such as accessibility of ICT equipment, technology availability, time to plan for instruction, accessibility of ICT equipment, technical and administrative support, school curriculum, faculty teaching load, school climate and culture, influence the progression or effectiveness of technology integration in schools. He also suggested that among these external factors, the most common are insufficient time for course planning, lack of access to computers and software, and inadequate technical and administrative support. This suggested that the higher the technology availability and support structure, the higher the technology integration efforts are made by teachers and learners.

1.4.2.1 Teachers and learners use ICTs

Although TAM2 primarily focuses on explaining users' acceptance and adoption of technology, the model can indirectly be used in predicting the extent of their actual usage (Zaineldeen et al., 2020: 5066).

According to Tahar et al. (2020), in terms of Perceived Ease of Use (PEOU) the TAM2 suggests that perceived ease of use influences users' behavioral intention to use technology. Therefore, If teachers and learners find ICTs easy to use and integrate into their educational practices, they are more likely to have a positive intention to use ICTs, which in turn increases the likelihood of actual usage.

This suggests that while TAM2 provides insights into the factors influencing teachers' and learners' intention to use ICTs, the extent of their actual usage is determined by how these factors translate into concrete actions. Therefore, teachers and learners are more likely to use ICTs extensively if they perceive them as useful, easy to use, and if external factors support their adoption and integration into educational practices.

1.4.2.2 How are teachers and learners using ICTs to support the teaching and learning process

In his study, Kaur, M. (2020:75) suggests thaTAM2 concepts may also relate to how teachers and learners use ICTs to support the teaching and learning process. Therefore, In

terms of Perceived Usefulness (PU) of ICTs, teachers might relate to their ability to create engaging lesson materials, access up-to-date resources, facilitate collaboration among students, or provide personalized learning experiences.

Based on these findings, it can be concluded that while TAM2 provides a theoretical framework for understanding technology adoption, the actual ways in which teachers and learners use ICTs to support teaching and learning are diverse and depend on specific educational contexts, goals, and available resources.

1.4.2.4 Secondary school learners' understanding of ICTs

According to TAM2, perceived usefulness is a critical factor influencing users' acceptance of technology. In the context of secondary school learners Pinto and Leite (2020:348) learner's perceived usefulness of ICTs would relate to how they perceive ICTs as beneficial for their learning. If learners understand that ICTs can help them access information, improve their study habits, enhance collaboration with peers, or facilitate interactive learning experiences, they are more likely to value and use ICTs effectively.

In summary, while TAM2 does not directly address secondary school learners' understanding of ICTs, its concepts of perceived usefulness, perceived ease of use, behavioral intention, and external variables can provide insights into how learners perceive and engage with ICTs in educational settings. Understanding these factors can help educators and policymakers create supportive environments that foster secondary school learners' effective use and comprehension of ICTs for learning purposes.

1.4.2.5 Teachers' attitudes toward the use of ICTs in the teaching process

TAM2 also provides a framework to understand how teachers' attitudes toward ICTs in the teaching process are formed and influence their acceptance and use of technology (Hong et al., 2022:1829). In his study, Ruto (2022:2) state that for teachers, perceived usefulness (PU) of ICTs in the teaching process refers to the extent to which they believe that using ICTs will enhance their teaching effectiveness, improve student learning outcomes, or make

teaching tasks easier and more efficient. Therefore, teachers who perceive ICTs as beneficial and supportive of their teaching goals are more likely to have positive attitudes toward integrating ICTs into their teaching practices.

In summary, TAM 2 helps explain how teachers' attitudes toward ICTs in the teaching process are formed based on their perceptions of usefulness and ease of use, as well as external factors that support or impede their adoption of technology. Positive attitudes toward ICTs are crucial for fostering their effective integration into teaching practices, ultimately leading to enhanced learning experiences for students.

1.4.2.6 Learners' attitudes toward the use of ICTs in the learning process

TAM2 can also provide insights into learners' attitudes toward the use of ICTs in the learning process ().Therefore, for learners, perceived usefulness of ICTs in the learning process refers to how they perceive ICTs as beneficial for their education. This includes whether they believe ICTs can help them access information, facilitate learning, improve their academic performance, or enhance their overall learning experience. Learners who perceive ICTs as useful are more likely to have positive attitudes toward using them in their studies.

In addition, Taat and Francis (2020:135) suggest that for learners, perceived ease of use (PEOU) relates to how easy or intuitive they find it to use ICT tools and platforms in their learning activities. Therefore, User-friendly interfaces, clear instructions, and technical support can enhance perceived ease of use, contributing to more positive attitudes toward ICT integration in learning.

Moreover, Learners who have positive attitudes toward ICTs are more likely to intend to use them in their learning activities. This intention predicts their actual usage behavior, as learners actively seek opportunities to incorporate ICTs into their studies when they perceive them as beneficial and easy to use.

In summary, Technology Acceptance Model 2 can also explain how learners' attitudes toward ICTs in the learning process are shaped by their perceptions of usefulness, ease of use, and external factors. Therefore, positive attitudes toward ICTs can lead to greater

acceptance and integration of technology into learning activities, potentially enhancing engagement, motivation, and learning outcomes for students.

1.4.3 Availability and Connectivity of ICTs for Teaching and Learning in South Africa

In South Africa, the use of technology in teaching and learning was introduced in line with the White Paper on e-Education 2004 (Vandeyar, 2015:350). Bansilal et.al (2015:6) point out that one of the main objectives of the theWhite Paper on e-Education 2004 was to transform teaching and learning through the use ICTswhile ensuring that every South African learner in(GET) (general education and training) and FET (further education and training) bands are ICT capable by the end of the year 2013.

In their study on Africa education review, van Niekerk and Blignaut (2014:240) indicated that in the year 2013, the new e-Education Strategy was guided and informed by the White Paper on e-Education 2004. The South Africa National Development Plan (NDP) and the Action Plan 2019 towards the Realisation of Schooling 2030 were introduced in South Africa to speed up the provision of internet connectivity, and ICT equipment for teaching and learning in schools.

Mhlanga and Moloi (2020:13) note that between 2014 and 2021 the three major network operators in South Africa, namely, Vodacom, MTN, and Cell-C made significant progress with respect to the internet connections and allocation of devices in schools under the amended Universal Service and Access Obligations (USAO) of 2014 with the help of other government ICT initiatives. Consequently, 4 697 data projectors, 4 697 servers, 9 394 laptops, and 112 728 tablets were deployed to 12635 schools for teaching and learning across all the nine provinces in South Africa. The table below shows the status of ICT connectivity for teaching and learning in South African Schools by province between 2014 and 2021.

Table 1: Status of ICT Connectivity for teaching and learning in South African Schools province by province (2014 – 2021)

Province	Connection through other initiatives	Connected through USAO	Total connected
Eastern Cape	2421	278	**2699**
Free State	742	260	**1012**
Gauteng	2134	0	**2134**
Kwazulu Natal	1460	209	**1669**
Limpopo	965	141	**1106**
Mpumalanga	718	2	**720**
North West	1029	67	**1096**
North Cape	438	99	**537**
Western Cape	1611	51	**1662**
Total	**11528**	**1107**	**12635**

Source: DBE, 2021, pp., 16

The table above shows that the majority of schools with ICT connectivity for teaching and learning were in the Eastern Cape followed by Gauteng and Western Cape Province. This shows that a lot still needs to be done in terms of ICT connectivity for teaching and learning in other provinces such as Northern Cape, Mpumalanga, and Limpopo province.

1.4.4 The Use of ICTs for Teaching and Learning in South Africa

As noted by various studies many schools in South Africa still use ICTs for administrative purposes while relying heavily on outdated textbooks as their primary teaching and learning materials. In a snapshot survey of ICT integration in South African schools, Padayachee (2017:16) noted that about 48, 5% of teachers reported that learners used ICTs during lessons once per month. This was a very influential finding given the various ICT constraints in South African schools.

Chisango et al. (2020:23) found out that about 33% of school teachers have never integrated ICTs into their lessons even though they had more than 21 computers in their computer laboratories. This indicates that increased access to computers does not necessarily mean increased integration of ICTs during lessons. Low uptake of ICTs could be because of a lack of ICT proficiency, reluctance on the part of the teachers for one reason or another, or negative attitudes towards ICT uptake for teaching.

1.4.5 Status of Teachers' ICT Proficiency in South Africa

One of the major challenges of ICT integration in education is the lack of teacher ITC skills and competency. As stated by Chilenga-Butao and Pakade (2020), between 2014 and 2016 a total of 298 620 out 410 000 teachers in South Africa were trained to use ICT for teaching and learning with about 26% of teachers having basic skills in ICT, while only 7% possessed intermediate skills in the use of ICT for teaching and learning. Aluko (2017:45) in her study concluded that the majority of teachers with ICT skills for teaching and learning in South Africa were in the Western Cape Province, followed by Gauteng then Free State provinces. This indicates that a lot needs to be done in terms of teacher ICT skills development in other provinces such as Northern Cape, Mpumalanga, and Limpopo province.

From the background above, it is clear that external factors significantly affect teachers' and learners' use of ICTs in teaching and learning. This indicates that teachers and learners possibly face many challenges that come from outside their sphere of control when integrating a new technology into their teaching and learning process.

The following sections discuss internal or personal factors that influence the uptake of ICTs among teachers and learners.

1.5.6 Factors that Influence uptake of ICTs among teachers and learners

As noted from the literature reviewed, personal factors such as confidence, competence, and accessibility are the critical components of technology integration in teaching and

learning environments. In his study, Agbo (2015; 26) found that personal factors such as incompatibility with learning styles, lack of understanding of web-based courses, and lack of personal motivation exist as barriers to the use of technology in learning. The main strength of this study was the mixed methods research design wherein data were drawn from both qualitative and quantitative methods.

In another study, Makgato (2014:27) observed that intrinsic factors such as teachers' lack of experience with ICT instruction and shortage of time required to successfully integrate technology into the curriculum inhibits the use of technology for teaching. Makgato also indicated that personal attributes of the teachers such as gender, subject specialty, and teaching experience could play a significant role in influencing their attitudes about ICTs in education.

Chisango et al. (2020:2) found that teachers have positive beliefs and attitudes toward the adoption of technologies in education but personal factors such as subject matter knowledge, teaching experience, and gender, are strongly associated with the beliefs and attitudes they hold. However, the main drawback of this study was that it relied on a small sample size drawn solely from secondary schools in South Africa. The study could have been enriched by including samples from secondary schools in Sibasa circuit, Vhembe district, Limpopo.

Yunus and Suliman (2014:12) argue that although teachers have positive attitudes toward ICTs, their attitudes toward ICTs do not differ based on gender. They suggested that teachers' attitudes vary according to computer ownership at home, age, and computer experience. More importantly, this suggested that teachers' and learners' attitudes and beliefs towards the use of ITCs in teaching and learning are influenced more by personal factors such as age, computer ownership, subject matter, and teaching experience rather than gender. However, the attitudes as well as beliefs in the efficacy of ICTs tend to determine their uptake and use in teaching and learning.

1.5.7 Opportunities for Teachers and Learners

It is important to note that the value of using ICTs in education has been demonstrated in many studies globally, mainly illustrating how ICTs could be of great significance in terms of improving the quality of teaching and learning. As noted by Alsied and Pathan (2013:46)

the use of technology in teaching provides a way to visually represent numerous real-world situations and identify patterns in data while enhancing problem-solving skills in the learning process. This demonstrates that teachers can teach the important basic concepts of the lessons and have the learners work with the computers and other technology to expand on it.

Yang and Chang (2013:1) assert that the use of ICTs in learning has resulted in improved inventive thinking skills for learners such as creativity, problem-solving, and higher-order thinking skills and reasoning while enhancing concentration, critical thinking, and academic achievement.

Daud and Khalid (2014:14) contend that ICTs encourage a learning milieu that recognizes that people operate differently, have different learning styles, and have culturally diverse perspectives. They illustrate that the use of ICTs in teaching and learning embraces inclusive education by providing opportunities, alternative methods of instruction, and flexible assessments for learners who experience barriers to learning**.** Aktaruzzaman et al. (2011:28) note that the use of ICTs in schools contributes to socio-economic development in a country and can strengthen participation in a global knowledge economy. However, their study did not include data from developing countries as it only relied on data from developed countries. It could be argued that the use of ICTs presents a huge opportunity that contributes towards strengthening the teaching and learning processes globally, thus ultimately improving the quality of education.

1.5 DEFINITION OF KEY CONCEPTS

This section presents definitions of concepts that are used throughout the study.

1.5.2 Information and Communication Technology (ICT)

Information and Communication Technology (ICT) is defined as a combination of hardware, software, and networks, as well as the means of communication, collaboration, and engagement that enable the management, processing, and exchange of data, information, and knowledge (Nwosu, 2018:3).

In this study, Information Communication Technology (ICT) is understood as the combination of all technology parts, such as software and hardware, together with each subject-related area of the curriculum to enhance teaching and learning in secondary schools.

1.5.3 Attitudes

Attitudes are generally defined as ways of thinking, acting, or feeling (Rickwood, 2012:7). Baker (1992:10) defines attitude as a hypothetical construct used to explain the direction and persistence of human behaviour. In this study attitude refers to people's feelings and shapes of behaviors towards something.

1.5.4 Teaching

Teaching is defined as a set of events, outside the learners that are designed to support the internal process of learning (Kansanen,1999:20). According to English (2009:8) during the process of teaching the teacher builds on the previous experience of the learners while assisting students to learn for themselves. In this study, teaching is defined as a process whereby a teacher facilitates learning.

1.5.5 Learning

Learning is defined as the acquisition of knowledge, understanding, values, skill, competence, or experience (Employment of Educators Act 76 of 1998:6). In this study, learning is defined as the act of obtaining knowledge, developing new behaviours,

understanding values, necessary skills, and competences needed to adapt to life challenges.

1.5.6 Instructional use

Instructional use generally refers to the use of various methods to support teaching methods and learning activities that a teacher uses to deliver the curriculum in the classroom (Kridel 2010:14).In this study, instructional use refers to the use of various ICTs to support the creation and implementation of purposefully developed plans for guiding the process by which learners grasp knowledge and understanding, and develop skills, attitudes, appreciations as well as values.

1.5.7 Proof of concept (PoC) schools

Proof of concept (PoC) schools refers to schools in South Africa that are used for preliminary rollout of a specific educational programs, processes, methods, principles, models, or ideas to demonstrate their feasibility (Makgato, 20:2014; Department of Education, 2010:6). In this study proof of concept (PoC) schools refers to few schools that are involved in the piloting of information and technology materials to teaching and learning for a specific time before adopting them in order to determine whether the materials would be an appropriate match.

1.5.8 Factors

Elder-Vass (2017:10) defines factors as more than one element that influences or contributes causally to a result. In this study factors are defined as personal factors (training), social factors (social institutions, social norms, politics) and environmental factors (infrastructure, resources) which influence the use of ICTs in teaching and learning.

1.6 RESEARCH DESIGN AND METHODOLOGY

This section discusses the research paradigm, research design and methodology that were followed in this study.

1.6.2 Research Paradigm

Research paradigm is a collection of common beliefs and agreements about fundamental aspects of reality which gives rise to a particular world view (Maree, 2007:90). Kivunja and Kuyini (2017:65) state that an individual view on the nature of reality (ontology) and how an individual understands knowledge (epistemology) influence the type of research paradigm to be chosen, which in turn guides the choice of research methodology. According to Tubey et al. (2015:45), ontology plays a crucial role in shaping the methodology of a research process by providing insights into the nature of reality and determining what should be studied. On the other hand, epistemology informs the methodology by guiding researchers on where to seek knowledge and understanding. This highlights the significance of both ontology and epistemology in determining the philosophical research paradigm to be employed.

Researchers have three philosophical research paradigms at their disposal: interpretivism, positivism, and pragmatism. Antwi and Hamza (2015:36) argue that interpretivists reject the notion of a single reality or truth, emphasizing the need for interpretation. Consequently, they are more inclined to utilize qualitative methods to capture the multiple realities that exist. In contrast, pragmatists believe that reality is constantly subject to negotiation, debate, and interpretation. As a result, they are more likely to adopt mixed methods, combining qualitative and quantitative approaches, to gain a comprehensive understanding of reality. Contrary to interpretivists, positivists believe that there is a single reality, that can be measured and known, and therefore they are more likely to use quantitative methods to measure this reality (Scotland, 2012:13).

This study adopted a positivist paradigm. Positivists adopt Comte’s ideas of scientific reasoning where knowledge generation is based on the experience of senses which can be obtained by observations and experiments (Mertens, 2012:24). Positivism sees social science as an organised method for combining deductive logic with empirical observations of individual behaviour to discover and confirm a set of probabilistic causal of laws that can

be used to predict general patterns of human activity (Addae & Quan-Baffour, 2015:155). A positivist paradigm was considered suitable for this study because the researcher seeks to make generalisations and quantitative measurable data on the teachers' and learners' attitudes towards the use of ICTs in supporting teaching and learning in secondary schools through a scientific approach.

1.6.3 Research Design

McMillan and Schumacher (2010:102) define a research design as a plan that describes the conditions and procedures for collecting and analysing data. This study adopted a descriptive, exploratory survey approach to collect data. A quantitative approach is adopted in this study, employing a survey method that involves the use of a self-administered questionnaire. The questionnaire comprises a combination of open and closed-ended questions, and it was personally distributed to the participants by the researcher. A descriptive exploratory survey was used because it provides an accurate display or account of the characteristics, for example behaviour, opinions, abilities, beliefs, and knowledge of a particular individual, situation, or group.

1.6.4 Research Methodology

The research methodology elucidates the underlying principles governing research methods and techniques, offering detailed accounts of the population, sampling procedures, sample characteristics, instrumentation, data collection procedure, and data analysis and interpretation (Selman, Kruger & Mitchell, 2005:86). The following were employed as part of this study's methodology in collecting data for this study.

1.6.4.4 Population

In research, a population represents a group of elements or instances, such as individuals, objects, or events that meet specific criteria and serve as the target for generalizing the research outcomes (McMillan & Schumacher, 2010:129). Therefore, the population for this study comprised of all post-level 1 college and school (CS1) educators and all learners from

four Proof of Concept (PoC) secondary schools in Sibasa Circuit of Vhembe District with ICT connectivity for teaching and learning.

1.6.4.5 Sampling procedure

The sampling procedure, as defined by Orodho and Kombo (2002:16), is the act of selecting a certain number of individuals or objects from a population to ensure that the chosen group accurately represents the characteristics of the entire population. In this study, a simple random sampling procedure was used to select participants. Hence, a list from Sibasa Circuit SA-SAMS (South African School Administration System) database for learners and educators was used to randomly select the required sample from the four Proof of Concept (PoC) secondary schools.

Accordingly, a 'hat method' was executed to select participants for the study. This approach necessitates the act of recording or visually illustrating every member of the population onto individual pieces of paper, which are subsequently inserted into a hat. The hat is then shaken, and a single piece of paper is drawn out with each shake. Once a piece of paper is selected, it is not returned to the hat. This sequence of actions is repeated until a total sample of 400 participants is achieved.

In this way, every case of the population had an equal probability of inclusion in the study. Sharma (2017:750) indicates that for a simple random sample each member of the population has an equal chance of being selected as a subject. The simple random sampling procedure was considered suitable for this study because it is an unbiased random selection and a representative sample is important when drawing conclusions from the results of a study.

1.6.4.6 The sample

In the words of Johnson and Christensen (2008:223), a sample refers to a portion of the population that enables the acquisition of information. The sample for this study comprised of hundred (100) CS1 three hundred (300) learners from four Proof of Concept (PoC) secondary schools with ICT connectivity for teaching and learning in Sibasa Circuit of

Vhembe District who were selected to complete the questionnaire. The researcher determined this sample size because it would provide sufficient information to respond to the research question. The researcher wanted to investigate teachers' and learners' beliefs and attitudes towards the use of ICTs in supporting teaching and learning in secondary schools within the Sibasa circuit of Vhembe-east district, Limpopo province. Table 1 below shows a summary of the envisaged sample size.

Table 1: Summary of the sample size

Participants	Number of participants
CS1 teachers	100
Learners	300
Total	400

1.6.5 Data collection strategy

This section addresses the instruments used to collect data for this study. The researcher distributed questionnaires to the two groups of participants to collect data. Each participant group had its own specific type of questionnaire designed to elicit the data. Each type of questionnaire consisted of 10 closed-ended and 5 open-ended statements. Closed-ended questions allowed participants to choose one or multiple answers from the predetermined categories. These questionnaires consisted of two dimensions or sections which are the biographical information and various statements constructed to elicit opinions from the participants. Open-ended questionnaires enabled participants to share their views openly.

1.6.6 Data analysis

After data was collected quantitatively through questionnaires, it was arranged by separating it into a few workable units before it was analysed. Therefore, quantitative data from these structured questionnaires were analysed using the SPSS (Statistical Package for Social Sciences), version 17.0 for Windows data editor.

1.7 MEASURES OF QUALITY CONTROL

1.7.2 Reliability

Reliability is the degree of consistency with which an instrument measures the attribute it is designed to measure and is critical in facilitating data trustworthiness (Terre Blanche, 2004:78). The study guaranteed reliability by reducing potential sources of measurement error, such as data collector bias. This was achieved by having the researcher exclusively handle the distribution of questionnaires and by standardizing conditions to prevent biases, such as displaying consistent personal characteristics to all participants. Reliability is also defined as the possibility of coming to the same conclusion if a particular instrument is used to measure a specific theory more than once (Bernad, 2011:5). Pilot-testing of the questionnaire was also done to ensure reliability by avoiding ambiguity and possible errors. The questionnaires were pilot-tested on a small sample before being administered to detect their flaws so that they could be corrected beforehand.

1.7.3 Validity

McMillan and Schumacher's (2010:248) validity of an instrument is the degree to which an instrument measures what it is intended to measure and is also critical in facilitating data trustworthiness. Content validity is referred to as the extent to which an instrument represents the factors under study (Terre Blanche, 2004:79). To achieve content validity, the questionnaires included a variety of questions relevant to the teachers' and learners' attitudes towards the use of ICTs in supporting teaching and learning. In this regard, all questions asked were relevant in terms of addressing the research objectives. Therefore, the questions were arranged in a manner that minimised confusion and ambiguity.

Moreover, the content validity of this study was upheld by administering the questionnaires consistently. The researcher personally distributed all questionnaires to the respondents, ensuring uniformity. The questions were formulated straightforwardly to promote clarity and

ease of comprehension. Additionally, clear instructions were given to the study subjects to facilitate accurate and reliable responses.

1.8 SIGNIFICANCE OF THE STUDY

This study assessed teachers' and learners' beliefs and attitudes towards the use of ICTs in supporting teaching and learning. The study added new knowledge that could assist schools, communities, and the Department of Basic Education to understand teachers' and learners' attitudes towards the use of ICTs in teaching and learning. New policies and strategies could be formulated around the use and support of ICT uptake in teaching and learning. Findings from the study provide information that could assist schools in understanding the importance of using ICTs in supporting teaching and learning.

1.9 DELIMITATIONS OF THE STUDY

The study was conducted in the Vhembe-east District in Limpopo Province, Sibasa Circuit in particular. The circuit is situated South-East of Vhembe District.

1.10 ETHICAL CONSIDERATIONS

Monette, Sullivan, and Dejong (2008:112) argue that ethics encompass the obligations researchers have towards research participants, research sponsors, and potential beneficiaries of the research. Whenever human beings are the focus of an investigation, the ethical implications of what is proposed must be looked at closely (Leedy & Ormrod, 2005:45). The following key basic principles about ethical considerations were taken into account during the ethical considerations that were emphasised and addressed were:

1.10.2 Permission to conduct research

Ethical clearance with Ethical clearance number LPREC/109/2022: PG to conduct the study was obtained from the University of Venda (UNIVEN). Formal permission to conduct the study in the Sibasa Circuit was obtained from the Department of Basic Education and the

principals of the schools where the study was conducted. The certificate is shown in Appendix 1.

1.10.3 Confidentiality and anonymity

According to McMillan and Schumacher (2010:122), confidentiality is when only the researcher has access to data and participants' names. Therefore, confidentiality was assured and the participants' names or any form of identification were treated with confidentiality to ensure that the privacy of each respondent is not infringed upon in any way. All the questionnaires were individually coded to ensure anonymity with no names. Anonymity was ensured by not revealing the identity of the participants. Therefore, the names of the participants are not included in this report. Instead, to distinguish the data, pseudonyms (or codes) are used.

1.10.4 Informed consent

Informed consent is the act through which the researcher respects individual autonomy (McMillan and Schumacher, 2010:118). Consequently, all participants were informed about the purpose and methodology of the research.

Participants were notified of their option to either agree or refuse to take part in the study, as well as their right to withdraw at any point without facing any consequences. This ensured voluntary participation and obtained informed consent from all individuals involved. Additionally, respondents were requested to fill out and sign consent forms.

The individuals were made aware of their ability to choose whether or not to participate and were informed of their right to withdraw from the study at any time without facing any repercussions. As a result, voluntary participation was guaranteed and informed consent was obtained from each participant. Furthermore, respondents were required to complete and sign consent forms.

1.11 ORGANISATION OF THE STUDY

The study is divided into five chapters which the researcher adhered to as a plan for the study.

Chapter 1: Overview of the Study

Chapter 1 offers a succinct summary of the research, detailing the research topic, background context of the research problem, problem statement, research objectives, the methodology for sampling, data collection, analysis, and data interpretation, as well as the research framework.

Chapter 2: Literature Review

The chapter offers the theoretical background to the study. A detailed literature review is provided focusing on the description of the use of ICTs, teachers' and learners' attitudes towards the use of ICTs in teaching and learning, and factors affecting the use of ICTs in the teaching and learning environment.

Chapter 3: Research Design and Methodology

The chapter discusses the philosophical research paradigm employed in the study, its influence on the research design and methodology followed in this study. The population, sampling procedure, data collection, and data analysis are also discussed and justified.

Chapter 4: Data Analysis and Interpretations

The chapter presents the procedures for analysing data and the findings. Data interpretation and statistical analysis of the results are presented in this chapter.

Chapter 5: Findings, Conclusions, and Recommendations of the Study

The chapter summarises the research findings about prior research, draws conclusions from the findings, and makes recommendations relating to the study.

1.12 Conclusion

This chapter provided an introduction and overview background of the study by examining the statement of the problem, the main aim and objectives of the study, research questions, research hypothesis, preliminary literature review, definitions of key concepts as well as the research design and methodology. It also assessed opportunities that can be created for teachers and learners when using ICTs to support teaching and learning. The project

attempted to improve teaching and learning by assisting schools to understand the importance of using ICTs in supporting teaching and learning. This would be performed by examining teachers' and learners' attitudes toward information and communications technology instructional use in the Sibasa circuit, which is part of the Vhembe-East District. In the present times, the significance of employing ICTs in education cannot be overstated. Unlike traditional methods of teaching using pen and paper, the integration of ICTs in education fosters inclusivity by providing various opportunities, alternative instructional techniques, and flexible assessments for learners, including those who encounter learning barriers.

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CHAPTER 2

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 INTRODUCTION

This chapter presents a thorough examination of the relevant literature on secondary school teachers' and learners' attitudes toward the use of information and communications technology for instructional purposes. Before the review, the history of ICTs' use in education and the use of ICTs for teaching and learning in South Africa will be discussed. The Technology Acceptance Model (TAM) by Davis (1989) will also be discussed about teachers' and learners' attitudes toward information and communications technology instructional use.

The review also endeavours to describe teachers and learners use ICTs, teachers and learners use of lCTs to support the teaching and learning process, secondary school learners understanding of lCTs, teachers' attitudes toward the use of lCTs in the teaching process, learners' attitudes toward the use of lCTs in the learning process, external factors that affect teachers' and learners' attitudes towards ICT instructional use, opportunities that can be created for teachers and learners when using ICTs to support teaching and learning, as well as the extent to which teachers and learners use ICTs in developed nations like Turkey, Nigeria, and South Africa. Both Turkey and Nigeria were selected for this study because they adopted outcome-based education (OBE) at the same time as South Africa.

1.13 HISTORY OF ICT USE IN EDUCATION

Yildirim et al. (2018:65) argue that the use of ICT in education has a relatively short history. Settersten et al. (2020:45) propose that computers were first introduced in classrooms during the 1960s, leading to significant and enduring reforms that aimed to align educational systems with the demands of the information society. However, due to their high cost and limited accessibility for institutions, computers made only incremental and minor contributions to education (Bozkurt et al., 2020:45). After the 1960s and early 1970s, computers did not establish a stable presence in education (Rensfeldt & Player-Koro, 2020:20). Al-araibi (2019:570) notes that prior to 1978, computers were primarily used in higher education institutions, but later on, they became more widely adopted by various

public and private entities. Suleiman et al. (2020:5) discovered in their study that the use of ICTs in schools began to rapidly increase in developed countries in the mid-1990s, particularly for curriculum support, networking, professional teacher development, and software advancement. Since the early 1990s, schools have been at the forefront of the ICT revolution (Al-Mamary, 2022:16). Furthermore, there was a belief that computers could revolutionize education and learning, similar to their impact on other aspects of human life (Oke & Fernandes, 2020:31).

Since then, ICT has been promoted as the cornerstone of the "information age," a powerful tool for liberation, and a beacon of hope for modern education (McDonald, 2014, 16). Moreover, many countries have embraced the era of new information and communication technologies (ICT). These technologies have become the driving force behind national development initiatives worldwide, with both developed and developing countries seeking ways to enhance their economies and societies through the expansion, adoption, and utilization of ICT (Buabeng-Andoh & Issifu, 2015:1286). According to ur Rahman et al. (2016:702), the advent of new technologies in the digital age has provided educational institutions with various opportunities.

It is worth noting that in March 2020, the arrival of COVID-19 prompted the temporary closure of educational institutions in 166 countries across the globe. As a result, nearly 1.5 billion students at all educational levels (equivalent to 82.8% of the world's total) were no longer able to attend face-to-face classes (Abbas et al., 2021: 1918). This significant shift led to the conversion of traditional classroom settings into digital learning environments (Octaberlina & Muslimin, 2020:6). Nowadays, ICTs have become standard equipment in educational institutions, particularly in developed nations, and are no longer considered a novelty within the education sector (Oyelere et al., 2016:1). This underscores the enduring importance of incorporating ICTs into education, as it fundamentally alters the traditional methods of teaching and learning through the integration of computer technologies. The subsequent section will focus on the utilization of ICTs for teaching and learning in South Africa.

1.14 USE OF ICTS FOR TEACHING AND LEARNING IN SOUTH AFRICA

The implementation of ICTs for teaching and learning in South Africa aligns with a specific policy known as the e-Education White Paper of 2004. This policy, aimed at enhancing the quality of education, emphasizes the benefits of ICT for teachers, learners, managers, and school administrators. Consequently, the South African government has made significant investments in developing ICT in schools, by this policy. According to Chisango and Marongwe (2021:147), by 2005, 23% of public schools in South Africa had computer centers, enabling them to utilize ICT for administrative and instructional purposes. However, only 10% of these schools had fully equipped computer centers with an adequate number of computers and other technologies for effective classroom teaching and learning (Bezuidenhout, 2013:4). In 2006, the Departments of Communication, Health, and Basic Education launched the Mindset Network43 (www.mindset.co.za) to disseminate teaching and learning content to the schooling and health sectors (Chisita & Chizoma, 2021:10). Additionally, the Department of Basic Education developed the Thutong portal (http://www.thutong.doe.gov.za/) to support the provision of teaching and learning content and teacher professional development in the schooling sector (Mabila et al., 2016:4). Furthermore, provincial education departments were encouraged to invest in provincial ICT initiatives for the schooling sector (Masango et al., 2022:340).

The South African Government has taken the initiative to invest in the South African Schools Administration and Management System (SA-SAMS), which is still in use today for administrative purposes (van der Berg et al., 2021:12). However, according to Padayachee's recent survey on ICT integration in South African schools, approximately 48.5% of teachers reported that their students used ICTs within their lessons once a month (2017:16). This is a significant finding considering the various constraints on ICTs in South African schools. Furthermore, Chisango et al. (2020:23) concluded that about 33% of the school teachers have never integrated ICTs into their lessons, despite having more than 21 computers in their computer laboratories. This highlights the ongoing problem of technology acceptance in South African schools, despite the need for teachers to keep up with technological advancements in education.

The lack of development in creativity within South African schools and universities is a major contributing factor to the issue of disability, as it is affected by various circumstances (Omoniyi et al., 2019:152). Jordaan (2022:9) asserts that learners in remote and rural areas of South Africa still face disadvantages, with only 60% of families having a personal computer and just 30% having a home Internet connection. Even within individual schools and universities, the full assimilation of new technology to better understand these conditions has not been achieved (Naidoo, 2020:6). However, this study is driven by the practical need to understand the factors influencing teachers' and learners' attitudes towards the use of ICTs for classroom instruction. The following section will discuss the theoretical framework that underpins this study.

1.15 THEORETICAL FRAMEWORK: TECHNOLOGY ACCEPTANCE MODEL

The current study is informed by the original Technology Acceptance Model (TAM) proposed by Davis (1989). Oriento et al. (2016:26) state that TAM is derived from the Theory of Reasoned Action (TRA) by Ajzen and Fishbein (1975) to explain the behavioural intention and actual behaviour of a person’s computer usage. Many studies have found that the success or failure of any initiative to implement technology in an education program depends upon academic staff attitudes toward the computer, which will influence its use in the classroom.

Because of its ability to gauge users’ acceptance of technology, TAM has been applied in different disciplines to investigate the reasons some people use computers and their attitudes toward them. Ajibade (2018:11). Kim et al. (2021:897) claim that TAM is the most popular model used to predict the acceptance, usefulness, and use of technology because it specifies casual relationships among external variables, belief and attitudinal constructs, and actual user behaviour.

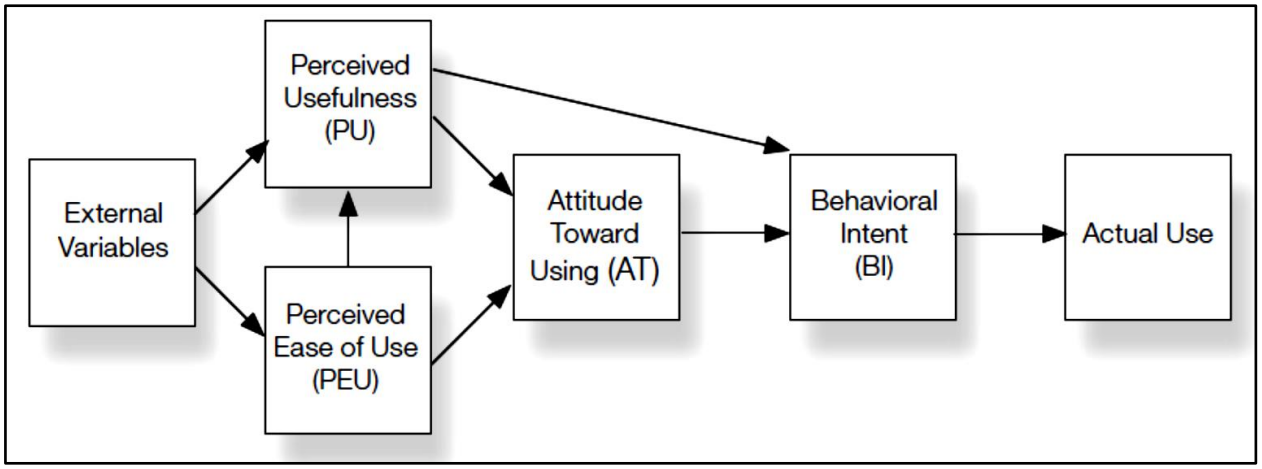

Fig. 1: Technology Acceptance Model (TAM) by Davis et al. (1989), as cited by Shaaban & Rabie (2022:337).

According to Shaaban and Rabie (2022:337), the key components of TAM are as follows (refer to Fig 1):

- **Perceived Ease of Use (PEU)**: the extent to which individuals believe that using a specific system would require minimal effort.
- **Perceived Usefulness (PU):** the extent to which individuals believe that using a specific system would enhance their job performance.
- **Attitude Toward Using (AT):** the degree to which individuals like or dislike the object (in this case, technology).
- **Behavioural Intention (BI):** the extent to which individuals have consciously planned to perform certain actions.

According to Davis (1989:985), when users, in this case, teachers and learners, are presented with new technology, the perceived usefulness (PU) and perceived ease-of-use (PEU) will influence their decision based on the external factors (variables) around them about how and when they will use it. Therefore, the higher the support structure and technology available, the greater the technology integration efforts made by teachers and learners. In their study, Gao & Bai (2014: 27) state that the perceived usefulness and perceived ease of use elements represent users' cognitive responses to using the technology, which then influences users' (learners' and teachers') affective response

(attitude) toward using the technology. This shows that teachers' and learners' attitudes toward using technology ultimately drive the teachers' and learners' behavioural intention to use ICTs for instructional purposes.

As a result, TAM is used in this study to prompt understanding and validate the effects of external variables (factors) on teacher and learner attitudes toward ICT instructional use. In this regard, the following sections discuss the strengths and limitations of the Technology Acceptance Model (TAM) by Davis (1989) before examining teacher's and learners' attitudes toward ICT instructional use as well as external variables that affect teachers' and learners' attitudes towards ICT instructional use. Therefore, the following paragraphs highlight a link between the theoretical framework and the research questions.

1.15.1 Teachers and learners use ICTs

Although TAM2 primarily focuses on explaining users' acceptance and adoption of technology, the model can indirectly be used in predicting the extent of their actual usage (Zaineldeen et al., 2020: 5066).

According to Tahar et al. (2020), in terms of Perceived Ease of Use (PEOU) the TAM2 suggests that perceived ease of use influences users' behavioral intention to use technology. Therefore, If teachers and learners find ICTs easy to use and integrate into their educational practices, they are more likely to have a positive intention to use ICTs, which in turn increases the likelihood of actual usage.

In addition, Unal and Uzun (2021:620) state that While TAM2 focuses more on behavioral intention rather than actual behavior, it also acknowledges that users' intention to use technology predicts their actual usage behavior. Therefore, higher levels of perceived usefulness, ease of use, and supportive external factors are likely to lead to increased actual usage of ICTs by teachers and learners.

This suggests that while TAM2 provides insights into the factors influencing teachers' and learners' intention to use ICTs, the extent of their actual usage is determined by how these factors translate into concrete actions. Therefore, teachers and learners are more likely to

use ICTs extensively if they perceive them as useful, easy to use, and if external factors support their adoption and integration into educational practices.

1.15.2 How are teachers and learners using ICTs to support the teaching and learning process

In his study, Kaur, M. (2020:75) suggests thaTAM2 concepts may also relate to how teachers and learners use ICTs to support the teaching and learning process. Therefore, In terms of Perceived Usefulness (PU) of ICTs, teachers might relate to their ability to create engaging lesson materials, access up-to-date resources, facilitate collaboration among students, or provide personalized learning experiences.

For learners, perceived usefulness could involve using ICTs to access educational content, practice skills through interactive platforms, collaborate with peers, or receive immediate feedback.In addition to this, Al-Dokhny (2021:2992) state that teachers and learners use ICTs in various ways to support the teaching and learning process such as access to Information and resources, communication and Collaboration, enhancing learning experiences as well assessment and feedback.

Based on these findings, it can be concluded that while TAM2 provides a theoretical framework for understanding technology adoption, the actual ways in which teachers and learners use ICTs to support teaching and learning are diverse and depend on specific educational contexts, goals, and available resources.

1.15.3 Secondary school learners' understanding of ICTs

According to TAM2, perceived usefulness is a critical factor influencing users' acceptance of technology. In the context of secondary school learners Pinto and Leite (2020:348) learner’s perceived usefulness of ICTs would relate to how they perceive ICTs as beneficial for their learning. If learners understand that ICTs can help them access information, improve their study habits, enhance collaboration with peers, or facilitate interactive learning experiences, they are more likely to value and use ICTs effectively.

In summary, while TAM2 does not directly address secondary school learners' understanding of ICTs, its concepts of perceived usefulness, perceived ease of use, behavioral intention, and external variables can provide insights into how learners perceive and engage with ICTs in educational settings. Understanding these factors can help educators and policymakers create supportive environments that foster secondary school learners' effective use and comprehension of ICTs for learning purposes.

1.15.4 Teachers' attitudes toward the use of lCTs in the teaching process

TAM2 also provides a framework to understand how teachers' attitudes toward ICTs in the teaching process are formed and influence their acceptance and use of technology (Hong et al., 2022:1829). In his study, Ruto (2022:2) state that for teachers, perceived usefulness (PU) of ICTs in the teaching process refers to the extent to which they believe that using ICTs will enhance their teaching effectiveness, improve student learning outcomes, or make teaching tasks easier and more efficient. Therefore, teachers who perceive ICTs as beneficial and supportive of their teaching goals are more likely to have positive attitudes toward integrating ICTs into their teaching practices.

In addition, Teachers' attitudes toward ICTs are influenced by how easy or difficult they perceive it to be to use ICT tools and platforms in their teaching. Factors such as user-friendly interfaces, clear instructions, and technical support can enhance perceived ease of use and contribute to more positive attitudes toward ICT integration, (Ruto, 2022:2).Therefore, external variables such as institutional support (e.g., training programs, technical assistance), school policies promoting ICT use, availability of ICT resources (e.g., devices, software), and peer influence can also shape teachers' attitudes by either facilitating or hindering their adoption of ICTs in the teaching process.

Moreover, Al-Dokhny (2021:2993) in his study, also highlighted that teachers who have a positive attitude toward ICTs are more likely to intend to use them in their teaching practices. This intention, in turn, predicts their actual usage behavior.

In summary, TAM 2 helps explain how teachers' attitudes toward ICTs in the teaching process are formed based on their perceptions of usefulness and ease of use, as well as

external factors that support or impede their adoption of technology. Positive attitudes toward ICTs are crucial for fostering their effective integration into teaching practices, ultimately leading to enhanced learning experiences for students.

1.15.5 Learners' attitudes toward the use of ICTs in the learning process

TAM2 can also provide insights into learners' attitudes toward the use of ICTs in the learning process ().Therefore, for learners, perceived usefulness of ICTs in the learning process refers to how they perceive ICTs as beneficial for their education. This includes whether they believe ICTs can help them access information, facilitate learning, improve their academic performance, or enhance their overall learning experience. Learners who perceive ICTs as useful are more likely to have positive attitudes toward using them in their studies.

In addition, Taat and Francis (2020:135) suggest that for learners, perceived ease of use (PEOU) relates to how easy or intuitive they find it to use ICT tools and platforms in their learning activities. Therefore, User-friendly interfaces, clear instructions, and technical support can enhance perceived ease of use, contributing to more positive attitudes toward ICT integration in learning.

TAM2 also acknowledges that external factors play a role in users' acceptance of technology. Therefore, in the context of learners, external variables may include school policies promoting ICT use, availability of ICT resources (e.g., access to devices, reliable internet connection), teacher support and guidance, and peer influence. These factors can shape learners' attitudes by providing them with the necessary infrastructure, encouragement, and social norms to embrace ICTs in their learning process.

Moreover, Learners who have positive attitudes toward ICTs are more likely to intend to use them in their learning activities. This intention predicts their actual usage behavior, as learners actively seek opportunities to incorporate ICTs into their studies when they perceive them as beneficial and easy to use.

In summary, Technology Acceptance Model 2 can also explain how learners' attitudes toward ICTs in the learning process are shaped by their perceptions of usefulness, ease of use, and external factors. Therefore, positive attitudes toward ICTs can lead to greater

acceptance and integration of technology into learning activities, potentially enhancing engagement, motivation, and learning outcomes for students.

- **The strength of the Technology Acceptance Model (TAM)**

In their recent study, Liu and Yang (2018:1263) reveal that TAM is a reliable, effective, and economical model for estimating user adoption of ICTs in education. This is because Technology Acceptance (TAM) has been proven to be an excellent model for describing attitudes toward using ITCs in different fields of study. According to Lai (2017:20), TAM does a good job of predicting usage intention and actual usage of ICTs in teaching and learning, and it is less expensive to apply and simpler to utilize. TAM has proven to be of high quality and statistically trustworthy through application in several empirical research studies (Gupta & Yadav 2022:331).

In addition, Lai (2017:19) discovered from her literature review that TAM is a strong model for predicting the acceptance of users' (teachers' and learners') use of ICTs for instructional use as it consistently explains a sizable amount of the variation in usage intentions and behaviours with a variety of information technologies**.**

From the Theory of Reasoned Action (TRA), there have been conflicting results on the direct impact of subjective norms on behavioural intention; however, TAM substituted the objective norm with perceived utility and perceived usability (Gangwar et al., 2015). This suggests that because of its strength, TAM is the most applicable model in terms of predicting the reasons some people use computers and their attitudes toward them.

- **Limitations of the Technology Acceptance Model (TAM)**

A theoretical framework can only be used under certain circumstances, and researchers must be aware of the many limitations that are now in place (Isaac et al., 2018:65). In their study, Malatji et al. (2020:15) revealed that one of the limitations of TAM is the variable that refers to users' behaviour, which must be assessed using subjective measures such as behavioural intention and interpersonal influence.

The other drawback of TAM is its inability to accurately quantify the underpinnings of behaviour in an observed study due to numerous subjective factors, such as societal values and conventions, personal characteristics, and personality traits (Karterud & Kongerslev, 2019:520). Isaac et al. (2018) state that TAM ignores some important theoretical constructs and supplies very general information about ease of usefulness. This indicates that TAM does not reflect the variety of user task environments and constraints.

However, to overcome these shortcomings of TAM one has to extend it to study any external factors with a chosen different application, culture, and work settings. This is to provide a clear explanation of how users accept technology.

1.16 TEACHERS' AND LEARNERS' ATTITUDES TOWARD ICT INSTRUCTIONAL USE

As observed in the literature the success or failure of any efforts to integrate technology into a curriculum depends on the attitudes of the teachers toward computers, which in turn affects how often they are used in the classroom (Breevaart & de Vries, 2021:256). The process that a person goes through when determining whether to adopt or reject technology is based mostly on the generally known notion that attitude influences behaviour either directly or indirectly (Lai, 2017:25). Additionally, Bhutto et al. (2022:16) suggest that the symbiotic relationship between attitude and conduct is supported by Ajzen and Fishbein's (1980) theory. These sentiments, whether favourable or unfavourable, influence how teachers use technologies, which in turn influences how learners view technology use (Al-Fraihat & Inclair, 2020:79).

Kuina Softi (2015) discovered that the attitudes of teachers play a significant enabling or disabling role in the use of technology. The attitudes of the teachers toward computers are one of the most important aspects that determine the successful use of computers in the classroom (Drossel et al., 2017). The views of academic staff members concerning the use of technology in the classroom have a significant impact on how it is used (Kaqinari et al., 2022).

Al-Fraihat and Sinclair (2020:79), who conducted research in Turkey found that teachers' attitudes regarding computers have an impact on both their own and their pupils' computer-related experiences. The likelihood that teachers will benefit from training and their usage of computers in the classroom may both be influenced by their views toward computers, according to some research (Instefjord & Munthe, 2017:39). According to research, having a favorable attitude toward computers may be crucial for teachers to gain computer skills, increase their computer competency, and eventually employ computers in the classroom (Buabeng-Andoh, 2012:6).

According to Kreijns (2013:220), teachers who use computers more regularly tend to adopt attitudes that encourage continued use of the computer in their regular teaching activities. The use of ICTs in the classroom cannot, however, be guaranteed by academic staff members' good attitudes. In some research, academic staff members with remarkably high computer attitudes were shown to have low levels of computer integration (Bozkurt et al., 2020:56). While adopting a positive attitude toward computers is a good first step, it is insufficient to cause modifications to the curriculum.

However, initial research failed to take into account the attitudes of teachers towards the new technology and instead focused on other factors like the significance of ICT in education, infrastructure, and accessibility. As a result, the psychological and contextual factors involved in the process of incorporating educational computerization were overlooked (Ghavifekr & Rosdy, 2015:190). Although these factors continue to be important considerations, it is often the personal and deeply ingrained factors, such as the teacher's attitudes and skills toward computers that significantly influence how teachers incorporate educational technology tools into their teaching practices (Ghavifekr et al., 2016:44). Buabeng-Andoh (2012:4) found that teacher-related issues were crucial in determining the use of ICT in the classroom, based on an examination of various Turkish institutions.

Buabeng-Andoh and Issifu (2015:1285) revealed that learners’ use of ICT to support their learning is low. Ifenthaler and Schweinbenz (2016:310) state that learners mostly use ICT to communicate with peers. Despite some use of ICT for collaborative and inquiry learning, students’ methods of assimilating knowledge were through teacher-centered teaching

(Carvalho and Santos, 2020:3). In comparison to students in private schools, students in public schools thought using ICT was more valuable (Buabeng-Andoh and Yidana, 2014:309).

Ifenthaler and Schweinbenz (2016:316) revealed that students in urban and rural schools differed in their attitudes in terms of the perceived value and cost of ICT use, but no differences in attitudes in terms of expectancy of success were found to exist among students in all locations. They also found that learners have a positive attitude toward technological instructions and that there is no meaningful difference between the attitudes of male and female students toward technological instructions.

1.17 EXTERNAL FACTORS THAT AFFECT TEACHERS' AND LEARNERS' ATTITUDES TOWARD ICT IN INSTRUCTIONAL USE

External factors represent challenges that may shape the PEU and PU of technology that teachers and learners face that come from outside their sphere of control and can have a significant influence on their attitudes toward the use of ICT for classroom instruction. In their study, Yuan et al. (2019) categorised the external factors into two main types according to their characteristics, namely, personal factors and technology factors. The following sub-sections will look into personal and technological factors that affect teachers' and learners' attitudes toward the use of ICTs for classroom instruction.

1.17.1 PERSONAL FACTORS AND LEARNERS' ATTITUDES

Personal factors include factors such as gender, age, and computer experience, which can have effects on teachers' and learners' attitudes toward instructional use. The following sections discuss how each of these personal and technological factors affect teachers' and learners' attitudes toward the use of ICTs for instructional purposes. This is important because teachers' and learners' attitudes are crucial in the way teachers and learners generally integrate educational technology tools into instruction.

It was found that the learners and teachers have positive attitudes toward information and communication technologies, and there are significant correlations between their attitudes

and certain personal variables such as gender, age, computer experience, and computer instruction.

1.17.1.1 Gender Differences

Gender is a significant factor that affects attitudes toward computers. The gender schema theory supports taking "gender" into account as a crucial factor in determining behaviour models that relate to technology adoption or rejection (Anthony et al, 2021). Additionally, Tondeur & Van de Velde et al. (2016:59) suggest that there are gender inequalities in the attitudes and behaviours of teachers toward computers. According to Aguilera-Hermida (2020:1000013), female teachers are more prone to have computer anxiety, lack confidence when using computers, and blame themselves more often when difficulties arise than their male counterparts. Similarly, Alfadda & Mahdi (2021:843) found that woman generally experienced greater computer anxiety than men. Additionally, male teachers are far more likely than female teachers to integrate computers into the classroom due to their greater prior computer knowledge (Unger & Meiran, 2020:250). Consequently, men are significantly more task-oriented and pragmatic than women from the perspective of social psychology (Schlamp, 2020:26).

In their recent study, Al-Debei et al. (2015) discovered that men appeared to have more favourable opinions regarding computers than women. In contrast to their female counterparts, male teachers were found by Kotrlik and Smith (1989:41) to be more assured and less apprehensive about computers. Men were found to be more skilled than women (Scherer & Teo, 2019:99).

An investigation by Van Deursen & Van Dijk (2014:512) revealed that men generally had more favourable sentiments toward computers than women. This indicates that the influence of there is no consensus on the influence of gender on the formation of attitudes regarding computer use.

While a more recent study by Alfadda and Mahdi (2021:890), revealed no direct correlation between gender and computer attitudes, other studies reported the existence of a relationship between the two. Kowalski et al. (2014:1073) and Alfadda & Mahdi (2021:890) revealed that there was no connection between gender and attitudes. In a survey conducted

in Turkey, Dündar & Akçayr (2014:45) found that there were no gender differences in attitudes about computers.

1.17.1.2 The effects of Gender differences on learners' attitudes toward the use of ICTs in the classroom

Learners have more positive attitudes toward computers (Ketchikan, 2015:53). Al-Rahmi et al. (2021:7896) suggest that learners possess a generally high attitude of acceptability toward ICT for learning purposes. In addition, many studies have revealed that gender has a strong effect on the use of computers and ICTs for classroom instruction (Mahdi & Al-Dera, 2013:56). Cheryan et al. (2017:143) suggest that computer attitudes and computer skills are related to gender in favour of males; that is, males have better attitudes towards computers and attain improved computer skills and experiences compared to females.

A survey on gender differences in the ICT profile of university students shows that male students have a more positive attitude towards ICT than female learners (Tondeur, 2016:60). Similar claims have been made by Cox (2013) who indicated that the public generally believes that men are more interested in and therefore proficient in using computers. Similarly, Rohatgi et al. (2016:110) found that men were more positive about ICT than women.

In a study examining the gender gap in computer attitudes, using a sample of 202 college students, Diekman et al. (2017:156) concluded that there were differences in the attitudes and degrees of experience among the students, with female students being less interested in computers and less confident than male students, while male students had greater experience. Overall, male students were more positive than girls regarding their interest and confidence in computers (Cussó-Calabuig et al., 2018:2122).

Furthermore, male students spend more time on computers than female students, do more word processing, use more email, and play more games when the computer is used for something other than studying (Siddiq & Scherer, 2019:210). In their research, Rohatgi et al. (2016:106) found that women use computers less than men on average and have a

more negative view of computers and ICT. The widely held view that "men are more technologically advanced than women" is strongly supported by these data.

Mutambik & Almuqrin (2020:529) suggest that female learners have more positive attitudes toward computers for classroom instruction than their male counterparts. Singh & Hardaker's (2014:16) found that male students believe more strongly that computers will change their way of learning.

In their survey study on the attitudes of learners towards ICT for learning purposes, Guillen-Gamez et al. (2020:6) concluded that there was no major significant difference between male and female displays of attitudes towards ICT for learning purposes. Similarly (Anaza, 2021:20), a similar result showed that no significant difference occurred between boys and girls of EMU IT students regarding their awareness of and attitudes towards ICT for educational purposes. This could be due to the increased use of computers for teaching and learning at schools which might have worked against the cultivation of gender differences as reported in previous research (Cheryan et al., 2017:1). This suggests that there is no consensus on gender issues within the ICT-related literature.

1.17.1.3 Effects of Age differences on teachers' attitudes towards the use of ICTs in the classroom

Several studies have shown that there is a close correlation between age and the acceptance of e-learning as an innovative technology (Ngampornchai & Adams, 2016:9). Different life experiences for young and old people may result in divergent attitudes regarding computers (Harris, 2016:5) because the computer revolution is a recent phenomenon, meaning that many people have little exposure to computers little familiarity and exposure to computers (Crook, 2018:16). Results from earlier research on the connection between computer attitude and age were inconsistent. For instance, a study by Diekman et al. (2017:154), found that there were no age differences in attitudes towards computers. This is contrary to a study by Connolly et al. (2018:8) on teachers' attitudes toward smartphone applications used for teaching and learning which revealed that there were age differences (between young and old educators) in attitudes toward computers.

According to Diekman et al. (2017:155), age did not significantly influence views towards computers. Wood & Fixmer-Oraiz (2018:4) reached a similar conclusion, pointing out that there was no connection between age and computer attitudes. This finding further indicates that teachers' attitudes regarding computers were consistent across all age groups. However, this has also been discovered by Venkatesh and Morris (2000:122) in Tyner, K. (2014:13), who found that young teachers have a more positive attitude towards computers.

In addition to this, Crook (2018:15) states that younger teachers are more enthusiastic about computers than their more experienced counterparts. Interestingly, compared to older teachers, younger teachers were more knowledgeable and willing to use computers in the classroom (Dong et al., 2020:118).

Younger teachers exhibited more favourable attitudes about computers than their more experienced counterparts (Tyner, 2014:12). Msila (2015:1973) had similar findings, noting that if they receive training, older teachers could have positive attitudes regarding computers. According to research by Nouri et al. (2020:13), older teachers tended to be more eager to learn than younger ones. This finding suggests that if teachers receive the necessary training, regardless of age or technological proficiency level, they could be highly engaged and retain a favourable attitude toward ICTs for instructional use.

1.17.1.4 Effects of Age differences on learners' attitudes toward the use of ICTs in the classroom

Age is presented as an important demographic variable that has implications for the adoption, and acceptance of technology, and behavioural intention (McGovern, 2019:2160). According to McGovern (2019:2160), the explanatory power of TAM is increased with age as a moderator. The (UTAUT) model embraces age as an important factor in influencing the level of technology acceptance and behavioural intention (Kaba & Touré, 2014:1668).

The unified theory of acceptance and use of technology (UTAUT) model considers age as a significant factor that impacts the level of technology acceptance and behavioural intention (Kaba & Touré, 2014:1668).

However, in the literature, there are still few empirical studies focusing on learners' age and attitudes toward ICTs for instructional use. When it comes to younger learners, the relationship between behavioural intention (BI) and performance expectancy is stronger (Crook 2018:15). In their survey study, Nouri et al. (2020:13) reported that younger learners have more positive attitudes toward computers than older ones.

In other studies, the findings were contradictory while in some studies it is reported that there is a significant correlation between learners' age and attitudes toward ICT (Connolly et al., 2018:8), in other studies the findings showed just the opposite (Diekman et al., 2017:154). These findings strongly suggest that there is no consensus on the effects of learners' age on ICTs' instructional use within the ICT-related literature.

1.17.1.5 Effects of Computer experience differences on teachers' attitudes toward the use of ICTs in the classroom

The level of user experience that technology teachers have has a lot of influence in determining whether they will adopt ICTs for instructional use. However, teachers' experiences are designed to consider such factors as cognitive orientation constructs in TAM, aesthetics, and emotions and their roles in influencing user selection and their intention to adopt and accept innovative technology (Goh & Karimi, 2014).

According to Hornbk and Hertzum (2017), user experience influences the type of technology they use. In general, if a user spends more time using a given technology, they become attached to it as long as it generates profits. The outlined experience ensures that only the most intuitive and efficient type of technology is chosen by the user. This will help users determine whether to embrace technology or reject it (Irani, 2000).

These findings contradict those made public by Coleman (2016:284), who found that teachers' prior classroom experience had little influence on how they used technology in the classroom. This suggests that there is no discernible connection between computer attitudes and teaching experiences.

These findings also contradict those made by Iftikhar and Shampa (2016:16) following their study conducted in Turkey. They reported that compared to teachers with less experience, those with more years of training had more computer-friendly attitudes and were more likely to recognize the value of using computers in the classroom. Similar findings were made by Rienties et al. (2013), who discovered that teachers who had more teaching experience and those who worked in doctoral and research institutions had more positive attitudes toward the use of ICTs for instructional purposes.

According to the research conducted by Anthony Jnr. (2022:3122), there exists a significant relationship between the experience of academic staff members and their utilization of technology. Sung et al. (2016) found in their study that teachers with extensive teaching experience incorporated computers into their classroom activities more often compared to those with less experience. Furthermore, Anthony Jnr. (2022:3122) observed that senior professors, in contrast to younger and less experienced teachers, held less favourable views towards computers and displayed less enthusiasm in integrating them into their teaching practices.

1.17.1.6 Effects of Computer experience differences on learners' attitudes toward the use of ICTs in the classroom

Lleixa et al. (2016) discovered a strong correlation between the amount of ICT experience learners have and the integration of computers for classroom instruction in their study. Furthermore, years of computer experience may help learners use the computer more easily and learn more effectively. Similar results are shown in a study by Kretschmann (2015:70), which reveals that physical education and sports learners have positive attitudes toward computers and believe the computer is a beneficial learning tool. Hwang et al. (2015) (p. 452) also found that computer ownership reduces stress, improves thinking skills, and encourages students to learn how to fix computers. Similarly, learners who received prior computer training feel comfortable when they use computers as a learning tool, feel less stressed during computer use, and are capable of fixing their computers in the event of a technical problem (Almazova et al., 2020:368).

According to Teräs et al. (2020:870), when it comes to computer experience, the field of human-computer interaction (HCI) has in the recent past launched a new concept of study that embraces the concept of "User Experience" (UX) when it comes to technology selection and acceptance. These findings indicate that students who have used computers for a longer period believe that computers are more conducive to good learning than less experienced students.

1.17.2 TECHNOLOGY FACTORS THAT AFFECT TEACHERS' AND LEARNERS' ATTITUDES TOWARD ICTS' INSTRUCTIONAL USE

In their study, Goh and Sigala (2020: 159) concluded that technological factors such as the availability and accessibility of ICT resources for schools, time to plan for instructions, and inadequate technical and administrative support influence the progression or effectiveness of technology integration for classroom instruction. They also suggest that, among these external factors, the most common are the availability and accessibility of ICT resources for schools and the time to plan for instruction. This indicates that the greater the availability and accessibility of ICT resources for schools, as well as the more time available to plan instruction, the greater the ICT integration efforts made by teachers and students.

The following sections discuss how the availability and accessibility of ICT resources for schools and the time to plan for instructions affect teachers' and learners' attitudes towards ICTs' instructional use.

1.17.2.1 Availability and accessibility of ICT resources for schools

Al-Mamary (2022:22) states that the availability and accessibility of ICT resources for schools, including hardware and software, are essential for effective ICT adoption and incorporation in education. In addition, accessibility to computers, new software, and hardware is essential for the successful adoption and integration of ICTs for instructional use (Almaiah & Al-Khasawneh, 2020: 3100). This means that hardware, software, and network infrastructure must be available to teachers in schools.

AlMamary (2022:22) highlights the importance of effective integration of ICT into classroom instruction, which heavily relies on the availability and usability of ICT resources such as hardware, software, and computer labs. This indicates that if teachers and students do not have access to ICT services, they will not be able to utilize them effectively in their classes. Several studies have demonstrated that the lack of access to resources, including home internet, poses a complex obstacle that hinders the integration of teachers into education, particularly in the field of science education (Abdulrahaman et al. 2020:11). Based on these findings, it can be concluded that teachers' and students' access to hardware and software plays a critical role in the successful adoption and incorporation of ICT into classroom instruction.

2.6.1.2 Time to plan for instructions

According to Ahmed et al. (2020:62), recent studies show that many teachers are competent in using computers in the classroom. However, due to a lack of time, technology is still not widely utilized. Some researchers have found that time restrictions and the inability to secure enough computer time for courses deterred teachers from using ICT in their instruction (Hayat, 2021:9). According to Nuere & De Miguel (2021:938) there was a genuine need for certain teachers to use computers with their kids, but there was no time. A recurrent issue in this regard is the lack of time needed to adequately integrate technology into the curriculum.

Al-Anezi and Alajmi (2021:29) contend that teachers' acceptance and use of ICT in teaching and learning are hampered by a shortage of time. Giovannella et al. (2020) also state that lack of time results in problems with time management and makes it difficult to integrate technology into the curriculum. Many recent studies, according to Decker and Ifenthaler (2021:131), show that teachers wish to employ ICT tools in their classrooms but are unable to do so due to the school schedule. According to a sizable number of researchers, teachers, and learners are faced with the issue of finishing their duties on time. These findings suggest that the use of ICT in instruction by teachers and students is hampered by strict time constraints.

2.7 OPPORTUNITIES THAT CAN BE CREATED FOR TEACHERS AND LEARNERS WHEN USING ICTS TO SUPPORT TEACHING AND LEARNING

Various possibilities for integrating ICT into teaching and learning have been identified in the literature (Andonian et al., 2022: 10). Serhan Alam (2022:340) concluded that ICT empowers teachers to create their content, giving them greater control over course materials compared to traditional classroom settings. In terms of competence, students can enhance their ability to apply and transfer knowledge by using new technology efficiently and effectively, which boosts their confidence in the learning process (Hazaymeh, 2021:2).

The utilization of ICTs in education elevates the quality of instruction and learning (Nikoli et al., 2019:459). According to Rapanta et al. (2021:720), autonomy, capacity, and creativity are the three essential qualities needed to establish high-quality teaching and learning with ICT. When students independently utilize ICT, they take ownership of their education while enhancing their capacity to work both independently and collaboratively. Consequently, teachers can also allow students to work in groups or with their peers to accomplish specific tasks. Meanwhile, learners have additional opportunities for acquiring new knowledge through collaborative learning facilitated by ICT.

The utilization of ICTs in education serves to enhance the accessibility of course content, as mentioned by Das (2019:100). Munyengabe (2019:15) suggests that teachers can act as catalysts for integrating technology into the classroom. To simplify the establishment of an ICT class, schools should provide teachers with the necessary support, resources, and technical assistance, as emphasized by Goh & Sigala (2020:159). The primary responsibilities of these teachers will involve modifying the structure of their courses, designing and explaining new assignments, and setting up the computer lab with the assistance of technology learning specialists or assistants.

Additionally, ICT provides learners with additional time to explore beyond the fundamental aspects of course content, enabling a more comprehensive understanding of concepts, as

noted by Lynch (2021:13). The use of ICT alters the connection between teaching and learning, as stated by Woolner & Stadler-Altmann (2021:306).

This means that ICT alters the conventional teacher-centered approach, and teachers must be more inventive in how they customize and adapt their curriculum.

Various studies have shown that the use of ICT enables learners to quickly and effectively acquire digital material (Barakabitze et al. 2019; 14). According to Szymkowiak (2021:7), ICT serves as a tool for students to identify learning topics, overcome difficulties, and propose solutions to problems during the learning process. This indicates that ICT not only facilitates knowledge acquisition but also enhances understanding of academic subjects by actively involving students in ICT applications.

ICTs promote student-centered and independent learning (Surrendered & Principal, 2021:3). As stated by Castro Ariani (2020: 67), students nowadays are utilizing computers more frequently and purposefully. By accessing, selecting, organizing, and interpreting information and data, they can generate new knowledge (Ritella & Loperfido, 2021: 580). This implies that learners are better equipped to utilize information and data from various sources.

Furthermore, ICTs create an engaging learning environment that enhances learners' understanding of their respective fields of study (Barakabitze et al. 2019; 14). ICT provides innovative solutions to a wide range of learning-related questions (Su & Chen, 2020:1166). For example, e-books are commonly used in reading classes for reading exercises. Learners can easily access different types of texts through computers, laptops, PDAs, or iPads, catering to various proficiency levels. These e-books may include reading software with features such as reading-aloud interfaces, vocabulary-enhancing activities, reading comprehension games, and more. Therefore, ICT encompasses applications specifically designed to address diverse learning needs (Papanastasiou, 2019: 428). The utilization of ICTs in a learning environment promotes collaborative learning, as stated by Hafifah and Sulistyo (2020: 189). According to Castro Ariani (2020: 67), students have the opportunity to collaborate, exchange ideas, and communicate through ICT tools regardless of time and

location. For example, a teleconferencing classroom enables students from different parts of the world to come together for a topical debate. This facilitates the development of new concepts, the examination of ideas, and the evaluation of various issues. Furthermore, learners can explore ICT-based learning options in greater depth. In addition to learning collectively, students also share their diverse learning experiences, express themselves, and reflect on their acquired knowledge.

CONCLUSION

This chapter provides the study's background information. A brief history of ICT in education, the use of ICTs for teaching and learning in South Africa, teachers' and learners' attitudes toward ICT instructional use as well as the technology acceptance model (TAM) by Davis et al. (1989) were discussed in this chapter. The debate above makes it abundantly evident that the attitudes of teachers and learners who ultimately decide how it is utilized in the classroom have a significant role in the successful integration and deployment of ICT.

According to the review, teachers' and learners' attitudes toward ICT instructional use are influenced by several factors, including personal and technological traits that were already covered such as age, gender, computer experience, availability, and access to ICT resources in schools, as well as time. Most of the time, these factors interact with one another to influence how teachers and learners feel about the use of computers for classroom instruction. The next chapter discusses, the research approach employed to conduct this study.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

The preceding chapter highlighted the literature on teachers' and learners' beliefs and attitudes toward information and communications technology instructional use. To develop a deeper understanding of teachers' and learners' beliefs and attitudes toward information and communications technology instructional use in Sibasa Circuit, Vhembe District, Limpopo, this chapter describes, discusses, and justifies the research design and methodology used in the study. It does so by describing the research paradigm, the approach, the design, and the data collection techniques used. To ensure that findings are significant contributions to solving the research problem the issues of credibility and trustworthiness as well as ethical considerations are also discussed in this study. In the previous chapter, the literature supporting the use of ICTs for classroom instruction was also highlighted.

3.2 Research Paradigm

Research paradigm is a set of common beliefs and agreements about fundamental aspects of reality that gives rise to a particular worldview (Maree, 2007:90). Kivunja and Kuyini (2017:65) state that an individual view on the nature of reality (ontology) and how an individual understands knowledge (epistemology) influence the type of research paradigm

to be chosen, which in turn guides the choice of research methodology. In their study, Tubey et al. (2015:45) emphasize that ontology provides insights into the nature of reality and directs the focus of study in research, while epistemology sheds light on the nature of knowledge and its acquisition within the methodology.

This suggests that both ontology and epistemology determine the philosophical research paradigm used in research. The three philosophical research paradigms available to researchers are interpretivism, positivism, and pragmatism. The table below, which was created using data specific to each research paradigm, provides an overview of the three paradigms.

Table 4.1: Summary of the three main research paradigms

Characteristic	Positivism	Interpretivism	Pragmatism
Ontology	There is a single reality or truth (more realistic)	There is no single reality or truth. Reality is created by individuals in groups (less realist)	Reality is constantly renegotiated, debated, and interpreted in light of its usefulness in new unpredictable situations
Epistemology	Reality can be measured and hence the focus is on reliable and valid tools to obtain that	Therefore, reality needs to be interpreted, it is used to discover the underlying meaning of events and activities	The best method is the one that solves problems. Finding out is the means, and change is the underlying aim.
Methodology	Quantitative: Experiments, quasi-experiments, surveys, correlational studies. Hypothesis.	Qualitative: Dialogic and dialectical, systemic procedures.	Mixed methods Design-based research Action research
Beliefs	One truth, objective.	Many truths, and multiple realities, and different people have different experiences.	Truth is constantly changing. People best learn through the application of experiences and thoughts to problems as they arise.

Products	Facts, theories, rigid rules, laws, and predictions.	Narratives, interpretations, reconstructions.	Narratives, interpretations, Facts, theories

Antwi and Hamza (2015) argue that interpretivists emphasize the need to interpret reality as there is no single truth, leading them to prefer qualitative methods. On the other hand, pragmatists believe in the constant renegotiation and interpretation of reality, hence they are more inclined to use mixed methods. Positivists, as highlighted by Scotland (2012:13), hold the view that reality is singular and measurable, thus they tend to use quantitative methods.

This study adopted a positivist paradigm. Positivists adopt Comte's ideas of scientific reasoning where knowledge generation is based on the experience of senses which can be obtained by observations and experiments (Mertens, 2012). Positivism sees social science as an organised method for combining deductive logic with empirical observations of individual behaviour to discover and confirm a set of probabilistic causal laws that can be used to predict general patterns of human activity (Addae & Quan-Baffour, 2015).

In this regard, a positivist paradigm was thought to be appropriate for this study because the researcher sought to generalize and collect quantitative measurable data on the beliefs and attitudes of teachers and learners towards the use of ICTs for classroom instruction in secondary schools using a scientific approach. This is backed up by Nieuwenhuis (2007:55) who contend that positivist researchers favour working with observable social reality and that their findings will resemble those of natural scientists in terms of generalizations.

3.3 Research design

McMillan and Schumacher (2010:102) define a research design as a plan that describes the conditions and procedures for collecting and analysing data. A research design lays forth a plan that enables the researcher to gather empirical data with the aim of answering the research questions (Flick, 2015). Therefore, this study adopted a descriptive exploratory survey approach to collect data. A questionnaire-based descriptive exploratory technique was used to gather data from one or more groups of people on their traits, beliefs, ideas, perceptions, plans, and values (Leedy & Ormrod, 2010:187). A descriptive exploratory

survey was considered appropriate because it provides an accurate display or account of the characteristics, for example, behaviour, opinions, abilities, beliefs, and knowledge of a particular individual, situation, or group. The descriptive exploratory survey approach allowed for the finding of new data and the process of causality while also providing an accurate representation of reality. Compared to other quantitative approaches, the descriptive survey method is fairly straightforward.

This view is supported by Yin (2009:16), who argues that a descriptive exploratory survey enables the researcher to analyse data, aids in the development of a thorough understanding of the research problem and allows the researcher to ascertain how respondents behave in a natural setting. In this descriptive, exploratory survey, data were collected through the quantitative approach. The survey method used a self-administered questionnaires containing open and closed-end questions that were personally distributed to the participants by the researcher. For statistical manipulation, quantitative data were often made up of respondents' replies that have been coded, aggregated, and reduced to numbers (Claydon, 2015:43). In quantitative research, findings from the sampled population can be applied to a larger population (Babbie, 2016: 67).

3.3 Research Methodology

The concept of research methodology encompasses the rationale behind research methods and techniques, providing insights into various aspects such as the population, sample and sampling strategies, instrumentations, data collection procedure, and data analysis and interpretation (Selman, Kruger & Mitchell, 2005:86). According to Kumar (2018:12), research methodology is perceived as a systematic protocol followed by researchers to navigate the entire research process, starting from sample selection, progressing through data collection and analysis, and culminating in the reporting of findings.

The research design chosen for this study is a survey design to evaluate teachers' and learners' attitudes toward the usage of information and communications technology for

classroom instruction. The purpose of the survey methodology used by the researcher was to gather the necessary data on the subject by surveying a sample of the population to learn more about it. Therefore, the following were employed as part of the research's methodology when collecting data for this study:

3.3.1 Population

A population is defined as a set of elements or instances, including individuals, objects, or events, that satisfy particular criteria and are the target for generalizing research outcomes (McMillan & Schumacher, 2010:129). According to Polit and Beck (2017:78), a sample is a small group of people chosen from the entire population being studied. This small group demonstrates traits typical of the population from which they were recruited. The population for this study comprised of 120 post-level 1 college and school (CS1) educators and 600 learners from four Proof of Concept (PoC) secondary schools in Sibasa Circuit of Vhembe District with ICT connectivity for teaching and learning.

3.3.2 Sampling procedure and sample

The sampling procedure, as defined by Orodho and Kombo (2002:16), refers to the process of carefully selecting a certain number of individuals or objects from a population. The objective is to create a group that accurately reflects the characteristics present in the entire population. In this study, a simple random sampling procedure was used to select three hundred (300) learners and hundred (100) educators from teachers from the four Proof of Concept (PoC) secondary schools to complete the survey questionnaires. Hence, a list from Sibasa Circuit SA-SAMS (South African School Administration System) database for learners and educators was used to randomly select the required sample from the four Proof of Concept (PoC) secondary schools.

A 'hat method' was executed to select participants for the study. The technique consists of writing or illustrating each member of the population on individual pieces of paper, which are then placed in a hat. The papers are shuffled, and one is randomly selected each time the hat is shaken. Once a paper is selected, it is not returned to the hat. This process is repeated until a total sample of four hundred (400) participants is obtained.

In this way, every case of the population was having an equal probability of inclusion in the study. Sharma (2017:750) indicates that for a simple random sample, each member of the population has an equal chance of being selected as a subject. A simple random sample sampling procedure was considered suitable because unbiased random selection and a representative sample are important when drawing conclusions from the results of a study. The simple random sampling approaches ensured that none of the sample's constituents shared any traits. The researcher concentrated on choosing the sample in this inquiry based on the homogeneous feature of the study's relevant qualities (Luborsky & Rubinstein, 1995:10).

3.3.3 The study sample

Johnson and Christensen (2008:223) define a sample as a subset of the population from which information can be obtained. Similarly, Kothari (2004:45) defines a sample as a more condensed or limited subset of the population where the views will be representative of the total population. The sample for this study consisted of one hundred (100) CS1 teachers and three hundred (300) learners from four Proof of Concept (PoC) secondary schools with ICT connectivity for teaching and learning in Sibasa Circuit of Vhembe District that were selected to complete the questionnaire. The researcher determined this sample size based on the fact that it would provide sufficient information to respond to the research question. The researcher wanted to investigate teachers' and learners' beliefs and attitudes towards the use of ICTs the use of ICTs in supporting teaching and learning in four secondary schools within the Sibasa circuit of Vhembe-east district. Table 1 below shows a summary of the sample size used for the study.

Table 1: Summary of the sample size

Participants	Number of participants
CS1 teachers	100
Learners	300
Total	400

3.3.4 Development of questionnaires and their validation

The process of questionnaire development is a systematic one, involving the researcher's evaluation of various question formats, consideration of key factors that characterize the survey, careful description of the questions, and organization of the questionnaire's layout (Patel & Joseph, 2016:16) For this study the researcher personally developed the new questionnaires. During the development of the new questionnaires, the number of issues was considered even before writing the questionnaire items. Because some dimensions in the questionnaires are more important than others, the researcher first considered the issue of the dimensionality of the construct. This included examining the results from each dimension separately. Secondly, the format in which the questionnaires will be administered was also determined. In this stage, the researcher determined whether the questionnaire can be self-administered or not.

In addition, the item format was also determined which included determining whether the item should be open-ended or close-ended. Item development was done where the researcher decided to formulate the questionnaire items in a simple and short sentence and in a language familiar to the target respondents. Lastly, pilot testing on the questionnaire was also done on a small sample of respondents. The purpose of this was to provide the researcher with an opportunity to identify any confusion in the items and gather suggestions from respondents regarding potential improvements. Patel and Joseph (2016:20) define questionnaire validity as a process of analysing whether the questionnaire measures what it is intended to measure. When validating questionnaires, two main types of validity are typically considered: content validity and construct validity. Content validity focuses on the degree to which the items in a questionnaire accurately represent the entire theoretical construct that the questionnaire is intended to measure. In this particular study, a panel of experts well-versed in the construct being assessed by the questionnaire was responsible for evaluating its content validity.

3.3.5 Data collection strategy

Gundry and Deterding (2018:304) describe data collection strategy as the process of choosing participants for the research and gathering information from them for analysis. This section discusses the gathering of information and the instruments that were used for

collecting data suitable for the study. Prior to entering the schools and distributing the questionnaires, the researcher first received approval from the principals and the Limpopo provincial Department of Education.

The researcher personally distributed questionnaires to the two groups of participants. Each participant group had its specific type of questionnaire designed to elicit data. Each type of questionnaire had 10 closed-ended and 5 open-ended statements. Closed-ended statements provide quantitative data that is easy to analyse statistically. They also help in identifying patterns, trends, and correlations among responses. Having 10 such statements ensures a robust amount of quantitative data for analysis.

Open-ended statements provide qualitative insights, allowing respondents to express their thoughts, feelings, and opinions in detail. They also strike a balance by not overwhelming respondents while still providing enough depth to understand the nuances behind their quantitative responses. These questionnaires consisted of two dimensions or sections which are the biographical information and various statements constructed to elicit opinions from the participants. Open-ended questionnaires enabled participants to share their views openly. The respondents were given four weeks to respond to the questionnaires. However, they were reminded every week about the date of collection.

3.3.6 Data analysis

Data analysis refers to a systematic approach employed to examine, refine, convert, and uncover valuable insights that aid in the formulation of research judgments and findings (Xia & Gong, 2015:6). Similarly, according to Merrian and Tisdell (2016:20), data analysis is a rational procedure utilized to arrange and amalgamate data gathered during the implementation of an inquiry. The quantitative data collected through questionnaires were arranged by categorising them into a few workable units before being analysed. Therefore, quantitative data from these structured questionnaires were analysed using a Statistical Package for Social Sciences (SPSS), version 17.0. To analyse the data gathered from participants regarding the integration of ICTs in classroom instruction, the researchers employed SPSS, version 17. This software enabled them to effectively summarize the responses by utilizing percentages, frequency counts, and more advanced statistical

indicators. By employing these techniques, the researchers were able to draw conclusions about the broader population of teachers and learners about the use of ICTs in their respective schools. The study conducted by Leedy and Ormrod in 2010 provides further details on page 187. Thus, statistical analysis was used for this study.

3.4 SIGNIFICANCE OF THE STUDY

This research assesses the teachers' and learners' attitudes towards the use of ICTs in supporting teaching and learning. The study adds new knowledge that could assist schools, communities, and the Department of Basic Education in gaining insights into teachers' and learners' attitudes toward the use of ICTs in teaching and learning, so that new policies and strategies may be formulated around the phenomenon of ICT integration in curriculum delivery.

The use of ICTs for classroom instruction could be the subject of a robust platform to help teachers and learners present their ideas. Results from this study could offer data that can help schools better understand the significance of utilizing ICTs to boost teaching and learning. The Department of Basic Education will also use the findings to improve its programs for teachers' ITC training. Subject advisers will be given authority and requisite resources to use in evaluating and keeping track of the integration of ICTs for classroom lessons.

The study's findings could be used by policymakers to assess the growth of computer applications in education and to determine whether any changes to current regulations for their usage would be necessary. In this regard, there may also be opportunities for in-service training and ongoing professional development for teachers. Instead of using input from those outside the walls of the school to make decisions about education, the study would give teachers' and learners' voices priority.

3.5 DELIMITATION OF THE STUDY

The study was conducted in the geographic location of the Vhembe-east District in Limpopo Province, Sibasa Circuit in particular. The circuit is situated South-East of Vhembe District. In the Vhembe-East District of Limpopo Province's Sibasa Circuit, there are nine secondary schools. Only four secondary Proof of Concept (PoC) schools were visited. Primary schools, colleges for continuing education, and higher education institutions including universities excluded from the study. Due to time and cost restrictions, as well as the proximity of the research context to the researcher's place of employment, the researcher decided to perform this study at Sibasa Circuit.

3.6 ETHICAL CONSIDERATIONS

As stated by Monette, Sullivan, and Dejong (2008:112), researchers are obligated to uphold ethical standards towards research participants, research sponsors, and potential beneficiaries of research. Therefore, whenever human beings are the focus of the investigation, the ethical implications of what is proposed must be looked at closely (Leedy & Ormrod, 2005:45). The following key basic principles regarding ethical considerations were taken into account during the study and the ethical considerations that were emphasised and addressed were:

3.6.1 Permission to conduct research

Ethical clearance number: LPREC/109/2022: PG to conduct the study was obtained from the University of Venda (UNIVEN). Formal permission for conducting research was obtained from the Limpopo Department of Basic Education to conduct the study in Sibasa Circuit and the principals of the schools where the study was conducted.

3.6.2 Confidentiality and anonymity

According to McMillan and Schumacher (2010:122), confidentiality is when only the researcher has access to data and participants' names. Therefore, confidentiality was assured and the participants' names or any form of identification were treated with confidentiality to ensure that the privacy of each respondent was not infringed in any way.

All the questionnaires were individually assigned a unique codes (e.g., P001, P002, etc.) to replace participants' names or any identifying information. This code were used throughout the data analysis process to refer to individual responses without revealing their identity coded to ensure anonymity with no names. All collected data were kept secure and secret for a specified amount of time. This implies that the respondents' identities remain concealed and anonymous. Due to the processing of the data being done anonymously, participant identities, workplaces, and residences were kept private.

3.6.3 Informed consent

To respect individual autonomy, researchers obtained informed consent from all participants, providing them with detailed information about the research purpose and methodology. Participants were given the choice to voluntarily consent, decline participation, or withdraw without facing any consequences, thus ensuring voluntary participation and informed consent from all.

3.7 MEASURES OF QUALITY CONTROL

3.7.1 Reliability

Reliability is the extent to which an instrument consistently measures the attribute it is intended to measure, and it plays a critical role in establishing the credibility of data (Terre Blanche, 2004:78). To ensure reliability, it is important to minimize any sources of measurement error, such as bias from data collectors. According to Bernad (2011:5), reliability is defined as the likelihood of reaching the same conclusion when using a specific instrument to measure a specific theory on multiple occasions. In this study, data collector bias was minimized by having only the researcher administer the questionnaires and by standardizing conditions to avoid biases, such as displaying similar personal attributes to all respondents.

Pilot-testing of the questionnaire will also be done to ensure reliability by avoiding ambiguity and possible errors. The questionnaire was pilot-tested on a small sample before being administered to detect its flaws so that they could be corrected beforehand.

3.7.2 Validity

According to McMillan and Schumacher (2010:248), validity is the degree to which an instrument measures what it is intended to measure and is also critical in facilitating data trustworthiness. Content validity refers to the extent to which an instrument represents factors under study (Terre Blanche, 2004:79). To achieve content validity, questionnaires included a variety of questions on the participants relevant to the teachers' and learners' attitudes toward the use of ICTs in supporting teaching and learning. In this regard, all questions asked were relevant in terms of addressing the research objectives. Therefore, the questions were arranged in a manner that minimizes confusion and ambiguity.

Furthermore, content validity for this study was ensured by consistency in administering the questionnaires. All questionnaires were distributed to respondents by the researcher personally. The questions were formulated in simple language for clarity and ease of understanding. Clear instructions were also given to the study subjects.

3.8 CONCLUSION

This chapter discussed the design and data collection methods. The philosophical paradigm on which the study is predicated, which is positivism was discussed. The objective view of reality that underlies the quantitative approach emphasizes observation and description of unidentified phenomena. The chapter also covered the descriptive exploratory survey design, which employed a questionnaire-based approach to data collecting. 120 post-level 1 college and school (CS1) educators and 600 learners from four Proof of Concept (PoC) secondary schools in Sibasa Circuit were listed as the study's population. To choose a representative sample of responders, a random sampling method was used. Version 17.0 of the Statistical Package for the Social Sciences (SPSS) was used to analyse the data. In this chapter, the significance of the study, delimitation of the study, ethical considerations, and measures of quality control were discovered.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATIONS

4.1 INTRODUCTION

This chapter presents the data gathered using survey questionnaires. Data interpretation and statistical analysis of the results are also discussed in this chapter. However, 400 questionnaires were circulated and all 400 were returned. The analysis of findings were thus based on the answers provided by participants to each of the study questions.

4. 2 ANALYSIS OF TEACHER'S BIOGRAPHICAL DATA

Section A

4.2.1 Teacher's Gender distributions

Gender was one of the important factors to consider when profiling teachers as respondents. In this regard, teachers' gender categories were defined and profiles were created.

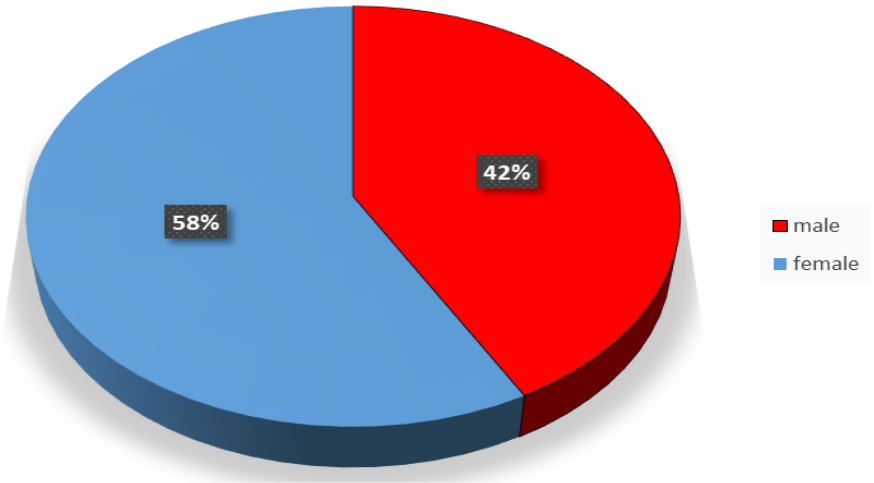

Figure 4.1 Teachers' gender distributions

As shown in graph 4.1 above females outnumbered the males by 58% (n=58) while males only form 42% (n=42). This significantly suggests that the majority of teacher participants in the study were females.

4.2.2 Teacher's age distributions

The study sample size was 100 teachers, divided into five age groups: 20 to 29 years, 30 to 39 years, 40 to 49 years, 50 to 59 years, and 60 to 69 years.

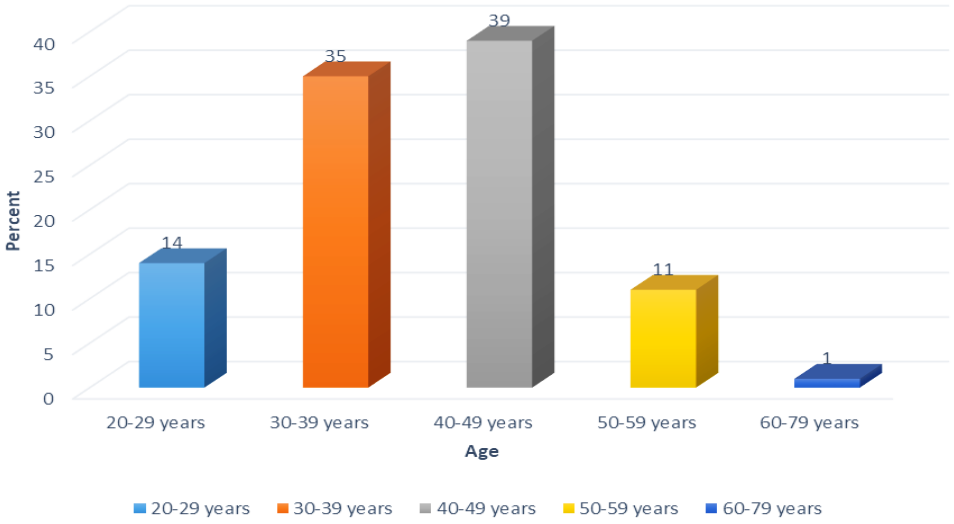

Figure 4.2: teachers' ages

According to the graph above, the majority of the teachers (n=39), or 39%, were between the ages of 40 and 49, and (n=35), or 35% were between the ages 30 and 39, followed by (n=14), or 14% between the ages with approximately 11% falling between the ages of 50 and 59, and the remaining 1% falling between the ages of 60 and 69. Therefore, Understanding the age distribution can help in assessing the adoption of new educational technologies. This is because Younger teachers might be more adept at integrating technology into their teaching, while older teachers might rely more on traditional methods.

4.2.3 Teachers' highest academic levels

Teachers were also asked to indicate their highest academic qualification; the categories – higher certificates, national diploma, bachelor's degree, honours degree, master's degree, and Doctoral degree - were employed, as shown in the graph in Figure 4.3 below.

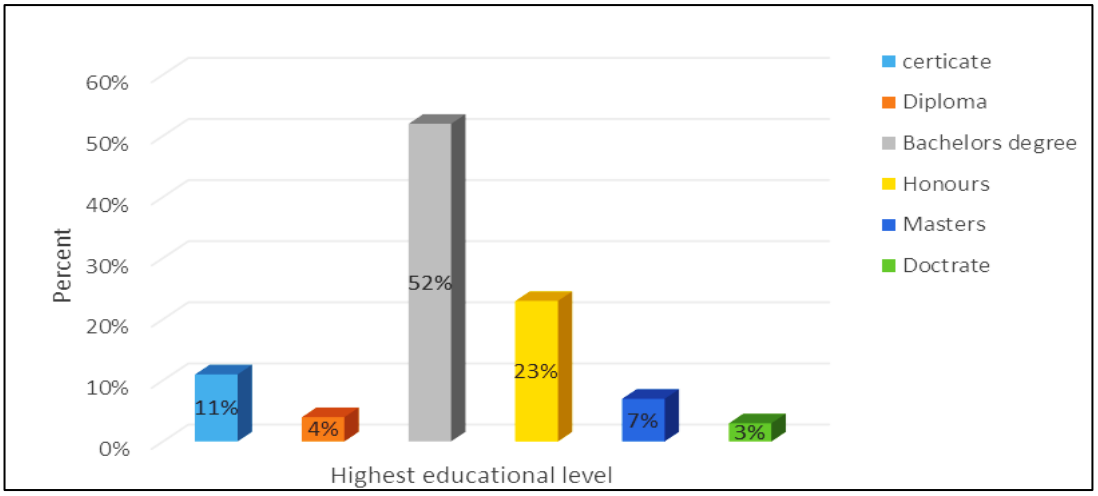

Figure 4.3: Highest academic qualification

From the sampled group of teachers, it has been revealed that 52% of teachers had obtained a bachelor's degree, 23% were honours degree holders, 11% were higher certificate holders, 7% had master's degrees and 4% had national diploma while the remaining 3% had doctoral degrees. Therefore, the academic qualifications of teachers can play a crucial role in shaping their attitudes towards the use of ICTs for instructional purposes. Teachers with higher qualifications are likely to have more positive attitudes due to their greater familiarity, confidence, and understanding of the pedagogical benefits of technology. This insight can help in designing targeted professional development programs and support systems to encourage the effective use of ICTs across all qualification levels.

4.3 ANALYSIS OF TEACHER'S GENERAL UNDERSTANDING ABOUT INFORMATION AND COMMUNICATION

Section B

4.3.1 The extent to which teachers use ICTs

Teachers were asked to indicate the extent to which they used ICTs. The categories – never, rarely, sometimes, often, and always - were employed, as shown in table 4.1 below.

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Never	13	13.0	13.0	13.0
	Rarely	5	5.0	5.0	18.0
	Sometimes	21	21.0	21.0	39.0
	Often	22	22.0	22.0	61.0
	Always	39	39.0	39.0	100.0
	Total	100	100.0	100.0	
Mean	3.66				
Std. Deviation	1.376				

From the sampled group of teachers, the majority (n=39), or 39 % indicated that they always use ICTs, 22% often, 21% sometimes, 5%, and 13% rarely. The mean was 3.66, and the standard deviation was 1.376. This implies that a significant proportion of teachers (39%) always use ICTs, and an additional 22% often use them. This also suggests a strong inclination towards integrating ICTs in their teaching practices. In addition, the mean score of 3.66 on a scale of 1 to 5 also suggests an overall high level of ICT usage among the sampled teachers. These findings are also supported by Tondeur et al. (2023:35) who concluded that teacher confidence significantly influences the extent of ICT use in education. This means that majority of teachers in the sample suggests that many of them feel confident in their ability to use these tools effectively.

4.3.2 Communication tool(s) mostly used.

Teachers were also asked to name the communication tool(s) they mostly use. The categories - Smartphones, Computer, Radio, and Television - were employed, as shown in Figure 4.4 below.

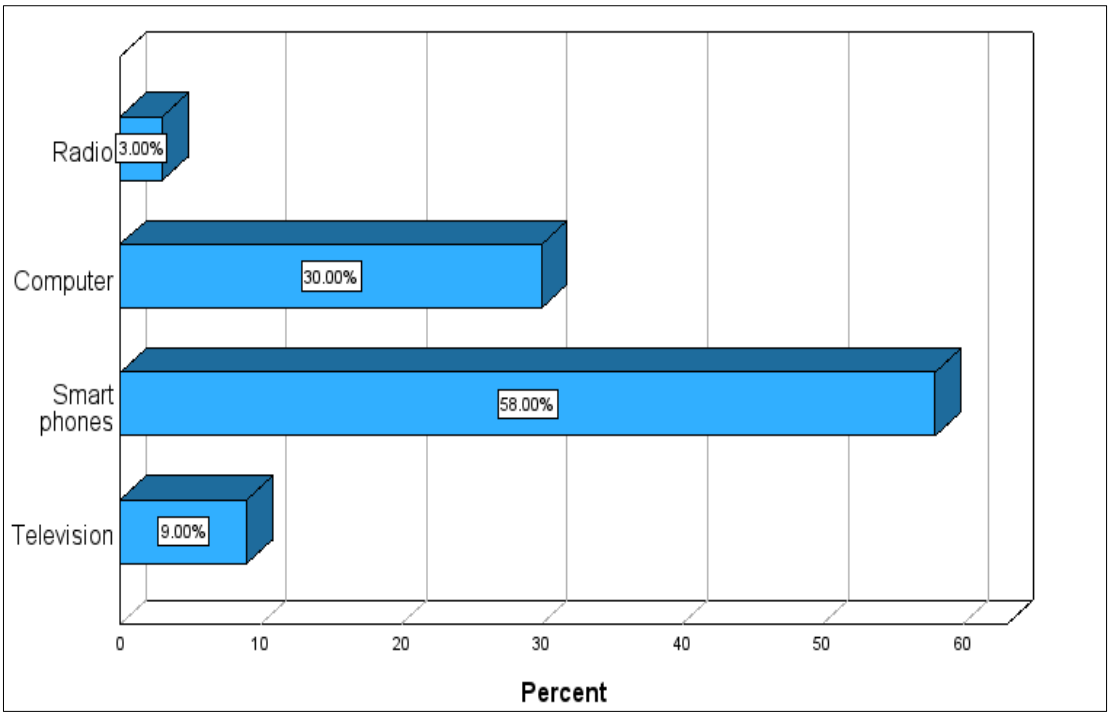

Figure 4.4: Communication tool(s) mostly used.

The majority (n=58) which is 58% of the teachers indicated smart phones as one of the communication tools they mostly use, followed by approximately 30 % indicating computers, followed by 9% indicating television, and lastly 3% indicating radio. Therefore this findings reveal a clear preference for smartphones and computers as the primary communication tools among teachers, reflecting the broader trends in technology adoption in education. In addition the prominence of smartphones among teachers aligns with the broader trend of increasing mobile technology use in education. Smartphones provide a range of functionalities, including internet access, educational apps, and communication platforms, making them indispensable tools for teachers (Mutiaraningrum & Nugroho, 2021:23). By leveraging these insights, educational institutions can better support teachers in their use of technology, ultimately enhancing the educational experience for both teachers and students.

4.3.3 How teachers are using ICTs to support teaching and learning

Teachers were asked to indicate how they use ICTs to support teaching and learning. The categories – Giving learners' feedback after assessments, PowerPoint presentation of subject content, Accessing online teaching and learning resources, Creating classwork, homework, and assignments for teaching and learning- were employed, as shown Table 4.2 below

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Giving learners feedback after assessments	13	13.0	13.0	13.0
	Power Point presentation of subject content	5	5.0	5.0	18.0
	Accessing online teaching and learning resources	21	21.0	21.0	39.0
	Creating classwork, homework, and assignments for teaching and learning	22	22.0	22.0	61.0
	Lesson preparations	39	39.0	39.0	100.0
	Total	100	100.0	100.0	
	Mean	3.06			
	Std. Deviation	1.376			

The majority of the sampled teachers (n=39), or 39%, indicated that they use the technology for lesson preparations, (n=22), or 22.0% for creating classwork, homework, and assignments,(n=21),or 21.0 % for accessing online teaching and learning resources,(n=13), or 13.0% to give learners feedback after assessments, and (n=5), or 5.0% use ICTs for Power Point presentation of subject content. This strongly suggests that the majority of teachers are using ICT and they are using it mostly for lesson preparations. In their study Nurtanto et al. (2021:348) also concluded that teachers often use ICT tools for lesson preparation because these tools help them organize and plan their lessons more efficiently.

In addition, ICT provides access to a vast array of online resources, including educational websites, online libraries, and teaching materials, which can enrich lesson content (Mishra et al., 2022:12508). Moreover, technology also enables collaborative lesson planning among teachers, allowing them to share resources and ideas through platforms like Google Docs, educational forums, and professional learning communities (Koehler & Mishra, 2022:16).

4.4 ANALYSIS OF TEACHERS' ATTITUDES ON THE USE OF ICTS FOR INSTRUCTIONAL USE

Section C

This section addresses factors that deal directly with teacher's attitudes toward the use of ICTs for instructional use. As stated in Table 4.3 below, ten (10) factors were found and applied.

Item statements	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Mean	Std. Dev
1. The use of ICT saves teaching time as it requires a short time to present more information.	4(4.0%)	7(7.0%)	12(12.0%)	48(48.0%)	29(29.0%)	3.91	1.026
2. The use of technology in teaching and learning enables teachers to decrease their paperwork.	2 (2.0%)	14(14.0%)	10(10.0%)	43(43.0%)	31(31.0%)	3.87	1.070
3. Using ICTs, learning content can be carefully	15(15.0%)	6(6.0%)	46(46.0%)	24(24.0%)	9(9.0%)	3.06	1.127

	selected and organized							
4.	The use of ICTs in teaching and learning promotes teacher-student interaction.	29(29.0%)	26(26.0%)	0(0.0%)	15(16.0)	30(4.0%)	3.46	1.201
5.	Educational apps enable collaboration between students.	14(14.0%)	5(5.0%)	16(16.0%)	40(40.0%)	25(25.0%)	3.57	1.305
6.	The use of technology in teaching and learning can improve knowledge retention.	29(29.0%)	26(29.0%)	0(0.0%)	15(15.0%)	30(30.0%)	3.46	1.201
7.	The use of technology in the classroom prepares learners for their future workplaces.	26 (26.0%)	33 (33.0%)	13 (13.0%)	13 (13.0%)	15 (15.0%)	2,58	1.394
8.	The use of technology in school can be used to keep teachers and learners alike, updated and connected.	8(8.0%)	6(6.0%)	14(14.0%)	52(52.0%)	20(20.0%)	3.70	1.106
9.	The use of Classroom apps can accommodate children with special needs or disabilities	27(27.0%)	11(11.0%)	42(42.0%)	12(12.0%)	8(8.0%)	2.63	1.228

10. Technology offers new learning techniques which prepare learners for the real world.	2(2.0%)	18(18.0%)	31(31.0%)	13(13.0%)	36(36.0%)	3.63	1.203

Please, note: N =100; Missing =0; Total Mean =25.6; Weighted average mean=2, 56. Therefore, for any item statement with a mean less than<2.56, the attitude is negative while for any item statement with a mean greater than>2.56, the attitude is positive.

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On the item statement " the use of ICT saves teaching time, and it requires a short time to present more information", around 74% of teachers agreed, while 16% disagreed. This item has a mean of 3.91 and a standard deviation of 1.026, implying a positive attitude towards the use of ICTs for instructional use. This aligns with findings by Jaiswal (2020:146) who highlighted that ICT can streamline teaching processes and facilitate faster information dissemination.

However, on the item statement " the use of technology in teaching and learning enables teachers to decrease their paperwork", around 77% of teachers agreed, while 11% disagreed. This item has a mean of 3.87 and a standard deviation of 1.070, implying a positive attitude towards the use of ICTs for instructional use .Selwyn (2023:89) supports this, indicating that ICT reduces administrative burdens and allows teachers to focus more on instructional tasks

Furthermore, on the subject of "using ICTs, learning content can be carefully selected and organized", around 33% of teachers agreed, while 21% disagreed. This item has a mean of 3.06 and a standard deviation of 1.127, implying a positive attitude towards the use of ICTs for instructional use. This is consistent with Mishra and Koehler's (2002:3) Technological Pedagogical Content Knowledge (TPACK) framework, which emphasizes the need for effective integration of technology in curriculum design.

Interestingly, for the item "The use of ICTs in teaching and learning promotes teacher-student interaction", around 33% of teachers agreed, while 21% disagreed. This item has a mean of 3.06 and a standard deviation of 1.127, suggesting a positive attitude towards

the use of ICTs for instructional use. According to Jonassen and Carr (2020:166) technology can foster interactive learning environments, although the actual impact may vary based on implementation.

Moreover, on the item "educational apps enable collaboration between students", around 65% of teachers agreed, while 19% disagreed. This item has a mean of 3.57 and a standard deviation of 1.305, implying a positive attitude towards the use of ICTs for instructional use. This finding is in line with Jonassen and Carr (2020:167) who argues that educational technologies can enhance collaborative learning experiences.

In addition, for the item statement "the use of technology in teaching and learning can improve knowledge retention", around 45% of teachers disagreed, while 18% agreed. This item has a mean of 2.38 and a standard deviation of 1.394, implying a positive attitude towards the use of ICTs for instructional use. This skepticism is supported by studies such as those by Alamin et al (2023:23) which question the direct impact of technology on learning outcomes without effective pedagogical strategies.

Surprisingly, for the item "The use of technology in the classroom prepares learners for their future workplaces", around 59% of teachers disagreed, while 28% agreed. This item has a mean of 2.58 and a standard deviation of 1.394, implying a positive attitude towards the use of ICTs for instructional use.

For the item statement "the use technology in school can be used to keep teachers and learners alike, updated and connected", around 72 % of teachers agreed, while 14% disagreed. This item has a mean of 3.70 and a standard deviation of 1.106, implying that teachers have positive attitudes towards the use of ICTs for instructional use.

The analysis further revealed that for the item statement "the use of Classroom apps can accommodate children with special needs or disabilities", around 20% of teachers agreed, while 38% disagreed. This item has a mean of 2.63 and a standard deviation of 1.228, implying a negative attitude towards the use of ICTs for instructional use.

Finally, for the item statement "the use of technology in the classroom prepares learners for their future workplaces", around 20% of teachers disagreed, while 49% agreed. This item

has a mean of 3.63 and a standard deviation of 1.203, implying a positive attitude towards the use of ICTs for instructional use.

In conclusion, the analysis indicates a generally positive attitude towards the use of ICT in instructional contexts among teachers, with some reservations. These findings align with the TAM framework and various studies in the literature, highlighting the multifaceted impact of ICT in education. Further research could explore the specific conditions and supports needed to maximize the benefits of ICT in teaching and learning.

4.3 ANALYSIS OF LEARNER'S BIOGRAPHICAL DATA

Section A

4.3.1 Learner's Gender distributions

Gender was one of the important factors to consider when collecting data from learners. In this regard, leaner's gender categories were defined and profiles were created as indicated in the graph below.

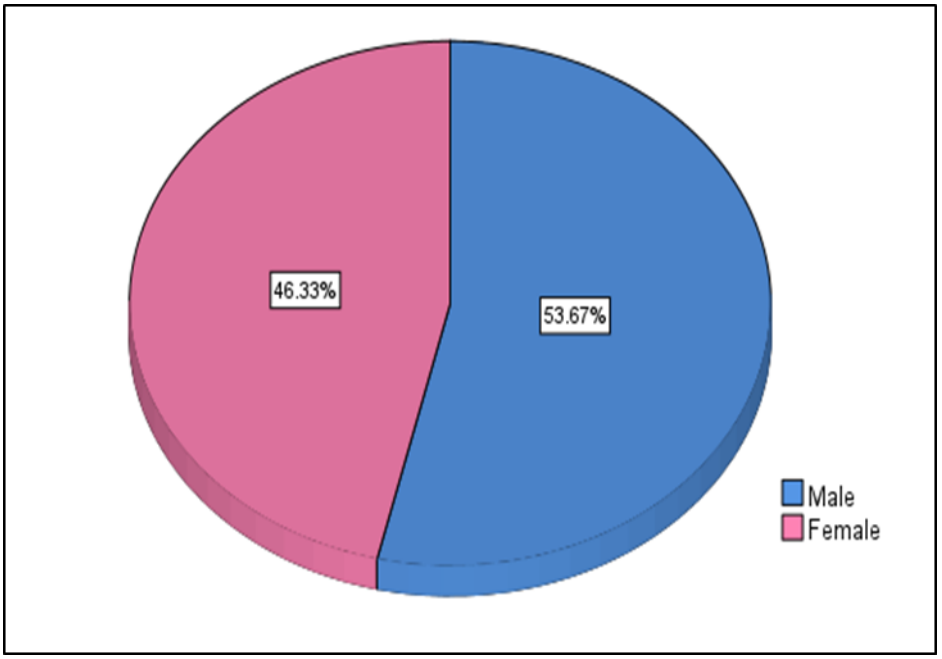

Figure 4.5 Learners' gender distribution

As shown in Figure 4. Graph 4.3.1 above males outnumbered females by 53% (n=159) while females only form 46% (n=141). This significantly suggests that the majority of learner's participating in the study were males. Therefore, by recognizing the distinct attitudes and preferences towards ICT among different genders can help in creating more inclusive and effective educational environments. Similarly, understanding the impact of age on learners' attitudes towards ICT use can guide the development of age-appropriate and engaging technological interventions.

4.3.2 Learner's age distributions

The study sample size was 300 learners, divided into four age groups: 13 to 14 years, 15 to 16 years, 17 to 18 years, and 18 years and above.

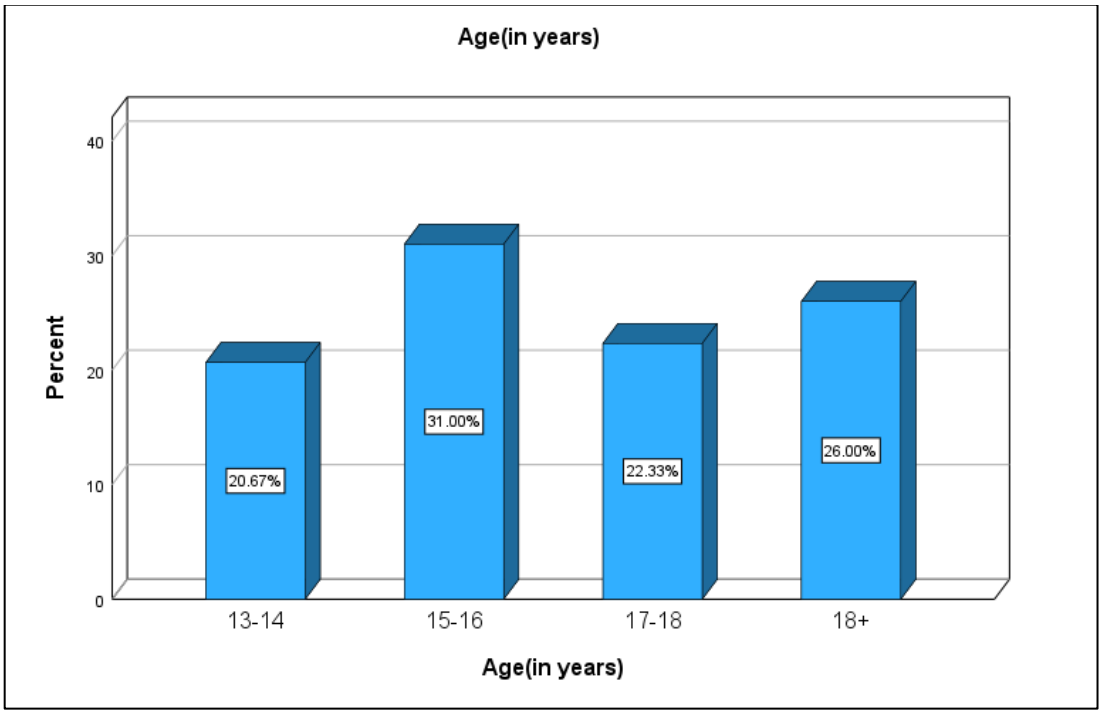

Figure 4.6 Learners' age distributions

According to the graph above, the majority of learners (n=93), or 31%, were between the ages of 15 and 16, (n=78), or 26% were at the ages 18 and above, followed by (n=67), or 22.3% between the ages 17 and 18, and the remaining (n=62) or 20, 6% falling between the ages of 13 and 14.

4.5 ANALYSIS OF LEARNERS' GENERAL UNDERSTANDING ABOUT INFORMATION AND COMMUNICATION TECHNOLOGY

Section B

4.5.1 The extent to which teachers use ICTs

Learners were asked to indicate the extent to which they use ICTs. The categories – never, rarely, sometimes, often, and always - were employed, as shown in Table 4.4 below.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	18	6.0	6.0	6.0
	Rarely	58	19.3	19.3	25.3
	Sometimes	53	17.7	17.7	43.0
	Often	48	16.0	16.0	59.0
	Always	123	41.0	41.0	100.0
	Total	300	100.0	100.0	
	Mean	3.66			
	Std. Deviation	1.340			

Table 4.4

From the sampled group of learners, the majority (n=123), or 41,0% indicated that they always use ICTs, 19.3% rarely,17.7% sometimes,16% often, and 6.0% never. The mean was 3.66, and the standard deviation was 1.340. This suggests that learners understand what ICTs are and they use them on daily basis for different purposes. Similarly, Livingstone (2023:1178) also noted that digital literacy among young people is high and that they integrate ICT into their daily lives seamlessly. In addition, Warr and Mishra (2023:20507) in their work on Technological Pedagogical Content Knowledge (TPACK), also indicated that learners today are digital natives who are adept at using technology and they use ICT for

communication, information retrieval, and learning which indicate a comprehensive understanding and regular use of these tools.

Communication tool(s) available in schools

Learners were also asked to name the communication tool(s) available in their schools. The categories -Television, Smartphones, computer, Radio, and Data projector - were employed, as shown in Figure 4.7

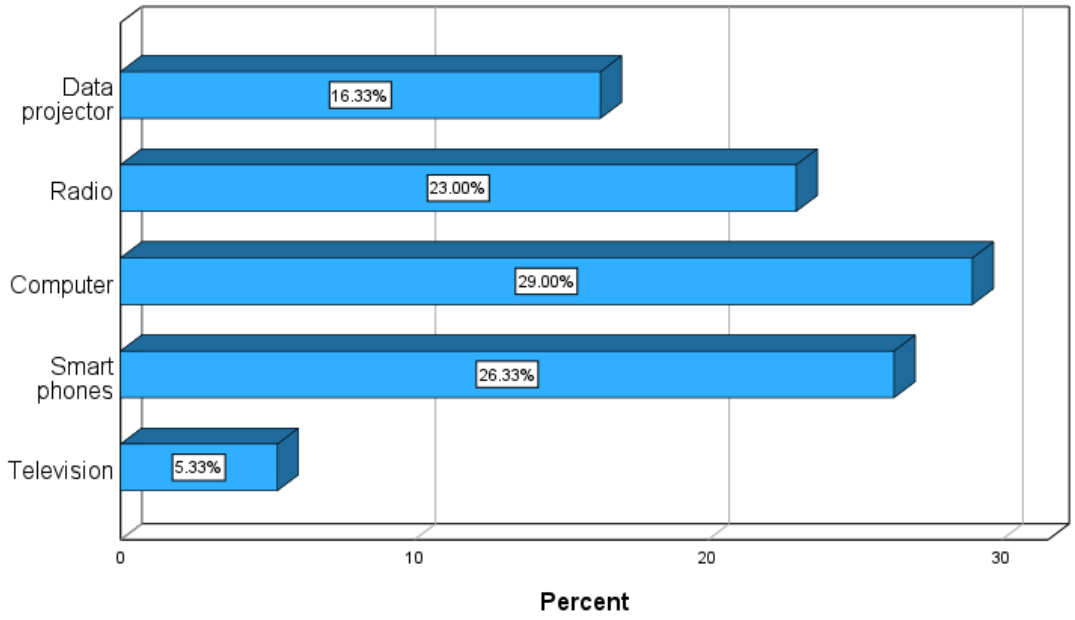

Figure 4.7 **Communication tool(s) available in your school**

The majority (n=87) which is 29% of the learners indicated computers as one of the communication tools available in their school, followed by approximately 26 % indicating smartphones, followed by 23% of radios and 16% of data projectors, and lastly, 5% indicating television.

4.5.2 How learners are using ICTs to support learning

Learners were asked to indicate how they use ICTs to support learning. The categories – accessing online learning resources, collaborating with peers from other schools, completing worksheets/exercises and homework, completing online learning quizzes,

accessing digital libraries, and receiving feedback after assignments- were employed, as shown Table 4.5 below.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Accessing online learning resources	56	18.7	18.7	18.7
	Collaboration with peers from other schools	46	15.3	15.3	34.0
	Completing worksheets/exercises and homework	37	12.3	12.3	46.3
	Completing online learning quiz	30	10.0	10.0	56.3
	Accessing digital libraries	112	37.3	37.3	93.7
	Receiving feedback after assignments	19	6.3	6.3	100.0
	Total	300	100.0	100.0	

The majority of the sampled learners (n=122), or 37.3%, indicated that they use the technology for accessing digital libraries, (n=56), or 18.7 % for accessing online learning resources, (n=46), or 15.3 % for collaboration with peers from other schools, (n=37), or 12.3% for completing worksheets/exercises and homework, and (n=30), or 10.0% use ICTs Completing online learning quiz. This indicates that the majority of learners are using ICTs and they are using them mostly for accessing digital libraries. Research by Trust et al (2023:356) also suggests that digital libraries enhance learning by providing students with access to a variety of academic texts, journals, and multimedia resources which supports deeper engagement with content and promotes independent learning. In addition, Jaiswal (2020:149) also suggest that majority of learners use ICT primarily for accessing online

learning resources, collaborating with peers, completing worksheets, and taking online quizzes which is associated with enhanced learning opportunities, increased engagement, and improved educational outcomes.

4.6 ANALYSIS OF LEARNERS' ATTITUDES ON THE USE OF ICTs FOR INSTRUCTIONAL USE

Section C

This section addresses factors that deal directly with learner's attitudes toward the use of ICTs for instructional use. As stated in Table 4.6 below, ten (10) factors were found and applied.

Item statements	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Mean	Std. Dev
1. The use of ICTs in teaching and learning is important	44(14.7%)	65(21.7%)	50(16.7%)	89(29.7%)	52(17.3%)	3.13	1.335
2. More learners have access to ICT tools at home	11(3.7%)	23(7.7%)	75(25.0%)	103(34.3%)	88(29.3%)	3.78	1.066
3. More learners are using ICT tools for learning purposes	37(12.3%)	22(7.3%)	98(32.7%)	76(25.3)	67(22.3%)	3.38	1.255
4. The use of technology in Classrooms encourages learner's creativity.	33(11.3%)	72(24.0%)	69(23.0%)	52(17.3%)	74(24.7%)	3.00	1.420

5. Through technology knowledge can be easily retained.	77(25.7%)	51(30.7%)	52(1.0%)	80(17.0%)	40(39.3%)	2.84	1.404
6. The use of ICTs in teaching and learning promotes teacher-student interaction.	21(7.0%)	92(32.0%)	49(16.3%)	37(12.3%)	101(33.7%)	2,09	1.075
7. The use of technology in the classroom prepares learners for their future workplaces.	21(7.0%)	102(34.0%)	33(11.0%)	24(8.0%)	120(40.0%)	3.22	1.442
8. The use of technology in school can be used to keep teachers and learners alike, updated and connected.	72(24.0%)	27(9.0%)	64(21.3%)	82(27.3%)	55(18.3%)	2,78	1.250
9. The use of classroom apps can accommodate children with special needs or disabilities	44(14.7%)	58(19.3%)	79(26.3%)	73(24.3%)	46(15.3%)	3.06	1.280
10. Technology offers new learning techniques which prepare learners for the real world.	44(14.7%)	82(27.3%)	31(10.3%)	53(17.7%)	90(30.0%)	3.21	1.483

Please, note: N =300; Missing =0; Total Mean =22.93; Weighted average mean=2.293. Therefore, for any item statement with a mean less than<2.293 the attitude is negative while for any item statement with a mean greater than>2.293, the attitude is positive.

On the item statement "the use of ICTs in teaching and learning is important", 47% of learners agreed, while 36% disagreed. This item has a mean of 3.13 and a standard deviation of 1.335, implying a positive attitude towards the use of ICTs for instructional use. This aligns with findings from Harris and Thompson (2017:65), who reported a similar trend where a majority of students viewed ICT tools as beneficial for learning despite a notable minority's reservations.

However, on the item statement, "more learners have access to ICT tools at home", 63.6% of teachers agreed, while 11.4% disagreed. This item has a mean of 3.78 and a standard deviation of 1.066, suggesting a positive attitude towards the use of ICTs for instructional use. This finding is consistent with Brown (2017:45), who found that home access to ICT significantly enhances students' engagement and performance in school.

Furthermore, on the item statement, "more learners are using ICT tools for learning purposes", around 47.6% of learners agreed, while 19.6% disagreed. This item has a mean of 3.06 and a standard deviation of 1.127, implying a positive attitude towards the use of ICTs for instructional use. This is supported by Davis (2019:123), who emphasized the growing reliance on digital tools among students for educational purposes

On the item statement, "the use of technology in classrooms encourages learner's creativity", around 37% of learners agreed, while 19.6% disagreed. This item has a mean of 3.00 and a standard deviation of 1.420, suggesting a positive attitude towards the use of ICTs for instructional use. This reflects the findings of Harris and Thompson (2017:65), who demonstrated that technology fosters creativity by providing diverse tools and resources.

On the item statement "through technology knowledge can be easily retained", 56% of teachers agreed, while 42.7% disagreed. This item has a mean of 2.84 and a standard deviation of 1.404, implying a positive attitude towards the use of ICTs for instructional use. This mixed response might be explained by Anderson (2015:30), who found that while

technology can aid retention, its effectiveness heavily depends on how it is integrated into the curriculum.

On the item statement, "the use of ICTs in teaching and learning promotes teacher-student interaction", 69.3% of teachers disagreed, while 13.3% agreed. This item has a mean of 2.09 and a standard deviation of 1.075, implying a negative attitude toward the use of ICTs for instructional use. This negative attitude contrasts with Anderson (2015:30), who argued that ICT can enhance interaction if used to complement rather than replace traditional methods.

On the item statement "the use of technology in the classroom prepares learners for their future workplaces", 34% of learners disagreed, while 48% agreed. This item has a mean of 3.22 and a standard deviation of 1.442, implying positive attitudes towards the use of ICTs for instructional use. This supports the view of Johnson (2018:66), who highlighted the role of technology in equipping students with necessary skills for modern workplaces.

On the item statement, "the use technology in school can be used to keep teachers and learners alike, updated and connected", 45.6% of learners agreed, while 33% disagreed. This item has a mean of 2.78 and a standard deviation of 1.250, implying a positive attitude towards the use of ICTs for instructional use. Lee (2016:104) found that ICT facilitates real-time communication and resource sharing, enhancing connectivity within educational environments.

On the item statement, "the use of Classroom apps can accommodate children with special needs or disabilities", 39.6% of learners agreed, while 34% disagreed. This item has a mean of 3.06% and a standard deviation of 1.280, implying a positive attitude towards the use of ICTs for instructional use. Anderson (2015:30), who discussed the potential of adaptive technologies to support diverse learning needs.

On the item statement, "the use of technology in the classroom prepares learners for their future workplaces", 42% of learners disagreed, while 47.7% agreed. This item has a mean of 3.21 and a standard deviation of 1.483, implying a positive attitude toward the use of ICTs for instructional use. This underlines the importance of technology in aligning educational outcomes with future job market demands, as suggested by Lee (2016:104).

CHAPTER 5

SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter summarizes findings from the survey questionnaire on teachers' and learners' attitudes toward information and communications technology instructional use in the Sibasa circuit. The chapter also provides conclusions based on study findings as well as recommendations for improving the condition under investigation. The chapter also makes recommendations on possible ways of enhancing the use of ICTs for teaching and learning.

5.2 SUMMARY OF THE FINDINGS

5.2.1 The extent to which teachers and learners use ICTs

The study found that the majority of the sampled group of teachers always used ICTs, as indicated by the mean of 3.66. In addition, the majority of learners always use ICTs as indicated by the mean of 3.66. However, teachers also identified smart phones as one of the communication tools they mostly use while learners identified computers as one of the communication tools available in their school. This indicates that both teachers and learners understand what ICTs is and they use it on a daily basis for different purposes. These findings are consistent with those in a study by Kopinska (2020:8) which revealed that both learners and teachers are always using ICTs for different purposes but they seem disappointed with the quality and the quantity of the school's ICT equipment.

5.2.2 How teachers and learners are using ICTs to assist teaching and learning

The study also indicated that the majority of the sampled teachers used technology for lesson preparations. In addition, the majority of the sampled learners indicated that they use the technology for accessing digital libraries as well as online learning resources. This indicates that the majority of teachers are using ICTs mostly for lesson preparations, accessing digital libraries as well as online learning resources.

5.2.3 Teacher's and learner's attitudes on the use of ICTs for instructional use

The study revealed that the majority of teachers as indicated by a mean greater than 2.56 felt that using ICTs instructional teaching and learning saved them teaching time as it required a short time to present more information and learning content can be carefully selected and organized. In addition, they felt that the use of technology in schools can be used to keep teachers and learners alike, updated and connected. They also noticed that the use of classroom apps could accommodate children with special needs or disabilities while enabling collaboration between learners themselves.

The study also shows that the majority of teachers felt that the use of technology in the classroom prepared learners for their future workplaces and promoted teacher-student interaction as well as knowledge retention. Teachers also felt that technology offers new learning techniques that prepare learners for the real world. This indicates that the majority of teachers had a positive attitude towards the use of ICTs for classroom instructions and most of them were eager to continue studying computer tools for use in the classroom because they believed that these could help to hold students' attention, particularly those students who were struggling. and is. These findings are consistent with observations by Ndibalema (2014:8) who found that teachers believe that ICT may be used as a pedagogical tool to improve their teaching when suitable resources and infrastructure are available.

Furthermore, the majority of learners, as indicated by the mean greater than 2.293 felt that the use of ICTs in teaching and learning was important because through technology, knowledge could be easily retained. More learners also agreed that they had access to ICT tools at home ICT and were using them for learning. They also believed that the use of classroom apps could accommodate children with special needs or disabilities hence technology offers new learning techniques that prepare learners for the real world. This indicates that the majority had a positive attitude towards the use of ICTs for classroom instruction. These findings are consistent with those in a study by Ryder and Machajewski (2017) which found t that students have positive attitudes towards using ICT and have adequate levels of digital literacy.

5.3 CONCLUSION OF THE STUDY

This section summarizes findings from the study on secondary school teachers' and learners' attitudes toward information and communications technology instructional use.

5.3.1 The extent to which teachers and learners use ICTs

From the findings, it can be concluded that the majority of teachers and learners are always using ICTs. The most commonly used type of ICT tools by teachers and learners were smart phones while computers were the most common communication tools available in schools. This shows that both teachers and learners understand what ICT is and they use it on a daily basis for different purposes. However, they are disappointed with the quality and quantity of the school's ICT equipment.

5.3.2 How teachers and learners are using ICTs in teaching and learning

The study found that the majority of the sampled teachers used technology for lesson preparations. The study also found that most of the sampled learners used the technology for accessing digital libraries as well as online learning resources. This indicates that the majority of teachers and learners have positive attitudes towards the use of ICTs to support teaching and learning as they are using them for lesson preparations, accessing digital libraries as well as online learning resources.

5.3.3 Teachers' and learners' attitudes toward the use of ICTs for instructional use

The study concludes that most teachers feel that the use of ICTs for instructions saves them teaching time as it requires a short time to present more information while learning content can be carefully selected and organized. Furthermore, most teachers felt that the technology could be in schools used to keep teachers and learners alike, updated and connected. They also noticed that the use of classroom apps could accommodate children with special needs or disabilities while enabling collaboration between learners themselves.

In addition, the majority of teachers felt that the use of technology in the classroom prepares learners for their future workplaces and promotes teacher-student interaction as well as knowledge retention. Teachers also felt that technology offers new learning techniques that prepare learners for the real world. It could be concluded that the majority of teachers still

had a positive attitude towards the use of ICTs for classroom instructions and most of them were eager to continue studying computer tools for use in the classroom because they believed they would help to hold students' attention, particularly as an intervention for students who were struggling.

Furthermore, the majority of learners also feel that the use of ICTs in teaching and learning is important and through technology, knowledge can be easily retained. More learners also agreed that they had access to ICT tools at home ICT were using them for learning purposes. They also believed that the use of classroom apps could accommodate children with special needs or disabilities. This means that technology offers new learning techniques that prepare learners for the real world. The study concludes that the majority of learners still have a positive attitude toward the use of ICTs for classroom instruction.

5.4 LIMITATIONS OF THE STUDY

All studies have limitations. The study covered only four secondary schools in the Sibasa Circuit in the Vhembe East District of Limpopo Province and included teachers and learners. Different findings could have materialised existed if the study had been expanded to other secondary schools in other circuits of the same district. Results from this study can therefore not be generalised to other types of schools.

5.5 RECOMMENDATIONS OF THE STUDY

Based on the research questions, literature evaluation, and study findings, the following recommendations are made:

- To improve the use of ICTs to support teaching and learning, ICT policies in schools should be reviewed and updated.

- The provincial Department of Basic Education should increase the extent of training for teachers on how to use ICTs to support teaching and learning.

- Because all school subjects require teachers to present explanations, the Department of Basic Education should increase the provision of ICT tools such as data projectors, whiteboards, and laptops and strong internet connection to schools to support effective teaching and learning.

- The Department of Basic Education should also provide all teachers and learners with computer tablets or laptops so that they can maximise their skills in using ICTs for teaching and learning.

- School management should ensure that electricity backup generators and solar panels are installed in schools for the continuous supply of electricity to power ICT tools during load shedding.

- Schools should integrate ICT usage into their daily routines by incorporating more digital tools in classroom activities and assignments. This can include using educational software, online platforms, and digital collaboration tools. Regular usage will help both teachers and learners become more comfortable and proficient with technology.

- The Department of Basic Education should also conduct awareness campaigns and workshops to highlight the benefits of ICT in education. Share success stories and case studies demonstrating how ICT has improved learning outcomes. Schools should foster a positive environment where teachers and learners feel supported and confident in using technology. Additionally, provide incentives for teachers who effectively integrate ICT into their teaching practices.

5.6 SUGGESTIONS FOR FUTURE STUDIES

The research could be extended to other circuits in the different districts, communities, and secondary schools in Limpopo province. The extent of the problem as well as the guidelines may differ according to different circumstances in the districts.

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APPENDIX 1: COMMITTEE CLEARANCE CERTIFICATE

CONFIDENTIAL

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

OFFICE OF THE PREMIER

Office of the Premier

Research and Development Directorate

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LIMPOPO PROVINCIAL RESEARCH ETHICS

COMMITTEE CLEARANCE CERTIFICATE

Review Date: 05 September 2023

Project Number: LPREC/109/2022: PG

Subject: Secondary Schools Teachers and Learners' Attitudes towards Information and Communications Technology Instructional Use in Sibasa Circuit, Vhembe District Limpopo

Researcher: Mulaudzi TL

Chairperson: Prof I Swarts

Swarts

Chairperson: Limpopo Provincial Research Ethics Committee

The Limpopo Provincial Research Ethics Committee (LPREC) is registered with National Health Research Council (NHREC) Registration Number **REC-111513-038.**

Note:

i. **This study is categorized as a Low Risk Level in accordance with risk level descriptors as enshrined in LPREC Standard Operating Procedures (SOPs)**

ii. **Should there be any amendment to the approved research proposal; the researcher(s) must re-submit the proposal to the ethics committee for review prior data collection.**

iii. **The researcher(s) must provide annual reporting to the committee as well as the relevant department and also provide the department with the final report/thesis.**

iv. **The ethical clearance certificate is valid for 12 months. Should the need to extend the period for data collection arise then the researcher should renew the certificate through LPREC secretariat. PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRIES.**

CONFIDENTIAL

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

OFFICE OF THE PREMIER

TO: DR MC MAKOLA

FROM: PROF I SWARTS

CHAIRPERSON: LIMPOPO PROVINCIAL RESEARCH ETHICS COMMITTEE (LPREC)

REVIEW DATE: 05 SEPTEMBER 2023

SUBJECT: SECONDARY SCHOOLS TEACHERS AND LEARNERS' ATTITUDES TOWARDS INFORMATION AND COMMUNICATIONS TECHNOLOGY INSTRUCTIONAL USE IN SIBASA CIRCUIT, VHEMBE DISTRICT LIMPOPO

RESEARCHER: MULAUDZI TL

Dear Colleague

The above researcher's research proposal served at the Limpopo Provincial Research Ethics Committee (LPREC). The committee is satisfied with the methodological and ethical soundness of the proposed study.

Decision: The research proposal is granted full approval

Regards

Chairperson: Prof I Swarts

Secretariat: Ms J Mokobi

Date: 18/09/2023

APPENDIX 2: REQUEST TO CONDUCT A RESEARCH

REQUEST FOR PERMISSION TO CONDUCT A RESEARCH

ENQ: Mulaudzi T.L P.O Box 845, Vuwani, 0950

Cell: 079 4475 3232

25 JULY 2023

The Principal

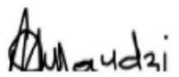
Dear sir / Madam

REQUEST TO CONDUCT A REASERCH

1. The above matter has reference.
2. I am **Mulaudzi T.L** of student number **11541152** registered for a Master's degree in Curriculum Studies with the University of Venda under the Supervision of Dr M. Mpeta.
3. For one to qualify to graduate for the above Degree one should conduct a research study, hence thE request to do research in your school. The research will be in a form of a questionnaire which will be filled by teachers and learners at their spare time.
4. The topic of my research is: ASSESSMENT OF SECONDARY SCHOOL TEACHERS' AND LEARNERS 'ATTITUDES TOWARDS INFORMATION AND COMMUNICATIONS TECHNOLOGY INSTRUCTIONAL USE IN SIBASA CIRCUIT, VHEMBE-EAST DISTRICT, LIMPOPO.
5. Hoping that you will find this in order.

Thanking you in advance

Yours faithfully Signature of the applicant



The applicant: Mulaudzi T.L

Supervisor: Dr Mpeta M.

APPENDIX3: QUESTIONNAIRES FOR TEACHERS

QUESTIONNAIRES FOR TEACHERS

The following questions are developed for study purposes only. They are formulated to elicit information on teachers' attitudes towards the use of ICTs in teaching and learning process. The information gathered will remain confidential. Your response is highly appreciated.

SECTIONA: Demographic data

Kindly complete the items below by filling in the required information

1. Gender:[put a cross] MALE ☐ FEMALE ☐

2. Age(in years):……

3. Highest educational level:……

SECTIONB: General understanding about Information and Communication Technology (ICT)

1. What do you understand by the term ICT?

   .....

2. To what extent do you use ICTs? Choose the extent to which you use ICTs by making an **X** on the correct answer below.

   5-Always ☐ 4-Often ☐ 3-Sometimes ☐ 2 - Rarely ☐ 1-Never ☐

3. Communication tool(s) you mostly use [put a cross]

(a). Television ☐ (b). Smart phones ☐ (c). Computer ☐ (d). Radio ☐

4. How are you using ICTs to support the teaching and learning process? Choose the correct answer(s) by making an (**X**) on the correct answer (s) provided on the table below.

Use(s) ICTs to support teaching and learning process	**Mark with an X in the space provided below**
Lesson preparation	A.
Power point presentation of subject content	B.
Accessing online teaching and learning resources.	C.
Creating classwork, home-work and assignments for teaching and learning.	D.
Giving learners feedback after assessments	E.
Collaboration with peers from other schools	F.

SECTION C: Statements that relate to the use of ICTs in teaching and learning

General statements are listed below. Choose the category that represent your understanding with regard to the use of ICTs in teaching and learning process by Making a cross **(X)** in the correct space from“ strongly agree”, “disagree”, “not sure”, “agree” to “strongly agree’’.

Statements	**Strongly Disagree**	**Disagree**	**Not sure**	**Agree**	**Strongly Agree**
1.The use of ICT saves teaching time as it requires short time to present more information.					

2.The use of technology in teaching and learning enables teachers to decrease their paperwork.					
3.ThroughtheuseofICTs learning content can be carefully selected and organized					
4.TheuseofICTsinteaching and learning promotes teacher-student interaction.					
5.Educationalapps enable Collaboration between students.					
6.The use technology in teaching and learning can improve knowledge retention.					

7.The use of technology in the classroom prepares learners for their future workplaces.					
8.The use technology in school can be used to keep teachers and learners alike, updated and connected.					
9.The use of Classroom apps can accommodate children with special needs or disabilities					

10. Technology offers new learning techniques which prepare learners for the real world.					

THANK YOU…….

APPENDIX4 : QUESTIONNAIRES FOR LEARNERS

QUESTIONNAIRES FOR LEARNERS

The following questions are developed for study purposes only. They are formulated to elicit information on learners' attitudes towards the use of ICTs in teaching and learning process. The information Gathered will remain confidential. Your response is highly appreciated.

SECTIONA: Demographic data

Kindly complete the items below by filling in the required information

1. Gender:[put a cross] MALE ☐ FEMALE ☐

2. Age (in years):……

3. Grade:……

SECTIONB: General understanding about Information and Communication Technology (ICT)

4. What do you understand by the term ICT?:.....

……..

5. To what extent do you use ICTs? Choose the extent to which you use ICTs by making an **(X)** on the correct answer below.

5-Always ☐ 4-Often ☐ 3-Sometimes ☐ 2 - Rarely ☐ 1-Never ☐

5. Communication tool(s) you mostly use [put a cross]

(a).Television ☐ (b).Smart phones ☐ (c).Computer ☐ (d).Radio ☐

6. Communication tool(s) available in your school [put a cross]

(a).Data projector ☐ (b).Television ☐ (c).Smartphones ☐ (d).Computer ☐

(e).Radio ☐

6. How are you using ICTS to support the learning process? Choose the correct answer(s) by making an (**X)** on the correct answer(s) provided on the table below.

Use(s) ICTs to support learning process	**Mark with an X in the space provided below**
Accessing online learning resources	A.
Collaboration with peers from other schools	B.
Completing worksheets/exercises and homework	C.
Completing online learning quiz	D.
Accessing digital libraries	E.
Receiving feedback after assignments	F.

SECTIONC: Statements that relate to the use of ICTs in teaching and learning

General statements are listed below. Choose the category that represent your understanding with regard to the use of ICTs in teaching and learning process by making a cross **(x)** in the correct space from “strongly agree”, “disagree”, “not sure”, “agree”, to “strongly agree’’.

Statements	**Strongly Disagree**	**Disagree**	**Not Sure**	**Agree**	**Strongly Agree**
1. The use of ICTs in teaching And learning is important					
2. More learners have access to ICT tools at home					

3. More learners are using ICT tools for learning purposes					
4.The use of technology in Classrooms encourage learner's creativity.					
5.Through technology knowledge can be easily retained.					
6.TheuseofICTsinteaching and learning promotes teacher-student interaction.					
7.The use of technology in the classroom prepares learners for their future workplaces.					

8. The use technology in school can be used to keep teachers and learners alike, updated and connected.					
9. The use of Classroom apps can accommodate children with special needs or disabilities					
10. Technology offers new learning techniques which prepare learners for the real world.					

THANK YOU…….

APPENDIX 5 : LETTER OF INFORMATION FOR TEACHERS AND LEARNERS

Title of the research study: Secondary School Teachers' And Learners 'attitudes towards Information and Communications Technology Instructional Use in Sibasa Circuit, Vhembe District, Limpopo.

Principal Investigator/s /researcher: Mulaudzi Thanyani Lucky

Supervisor: Dr. Mpeta M. **Co-Supervisor:** Dr. Muremela G.M

Brief Introduction and Purpose of the Study:

I am Mulaudzi Thanyani LUCKY a Masters student in Education at the University of Venda under the Department of Professional and Curriculum Studies. I would like to request you to be part of my research study, which is on Secondary School Teachers' And Learners' attitudes towards Information and Communications Technology Instructional Use in Sibasa Circuit, Vhembe District, Limpopo. I hope to assess the challenges that face teachers and learners in their day-to-day use of Information and Communications for Classroom Instruction.

Purpose of the study:

The following are the main objectives of the study:

- To assess teachers' attitudes toward the use of ICTs in the teaching process; and
- To investigate learners' attitudes toward the use of ICTs in the learning process

Outline of the Procedures:

Participation in the study is not compulsory. If you agree to participate in this study, I will use questionnaires to assess your attitude toward the use of Information and Communications Technology for classroom instructions. If you decide to cease taking part at any moment, you are free to do so. Throughout the process, you are under no obligation to respond to any questions with which you are uncomfortable.

The questionnaires will be put forth in a private session that has been booked. The locationwillbeatyourschool,andthetimewillbeannouncedinduecourse.Ifsomeone has any doubts or reservations, they are welcome to opt out of the study.Everyone has the right to decline involvement in the research study if they have any doubts or reservationsorbelievethatdoingsocouldcausethemtobecomephysically,emotionally, orpsychologicallydisturbed.Ifyouagreetoparticipatebutlaterdecideagainstit,youare free to leave the session at any moment without providing a reason. Your sincerity in responding to the questions will be valued. The time allocated for the individual questionnaire schedule is 15 to 25 minutes at maximum.

Questionnaire process:

Two questionnaires were created by the researcher titled "Questionnaire on Teachers' Attitudes towards Information and Communications Technology Instructional Use" and "Questionnaire on Learners' Attitudes towards Information and Communications Technology Instructional use''. Therefore, these are the two instruments used to gather data for this study.Two sections will make up each instrument. The instrument's Section A will be used to collect data on the biographical information, such as gender, age, and teaching experience. The instrument's Section B will be used to gather teachers' and learner's general understanding of Information and Communication Technology (ICT).

Risks or Discomforts to the Participant:

Participants won't experience any risk or discomfort because I don't believe that participating in the study will result in any risk to their physical or mental health. Since the Covid-19 virus is still much with us, strict protection guidelines must be adhered to without exception. Therefore, before handling any questionnaire guides, participants will be sanitized, and mask-wearing and social distancing will be monitored.

Benefits:

Although you might not immediately profit from the study, the findings could help us raise the standard of education.

Reason/s a Participant May Be Withdrawn from the Study:

It is voluntary to take part in this study. You also have the option to revoke your agreement to take part in the study at any point without providing a reason. There won't be any disciplinary action taken against you if you choose to withdraw. You can get in touch with the researcher at the address provided if you decide later to withdraw your consent.

Remuneration:

There will be no financial rewards for the participants. Your participation in the study is free of charge. The participants will get no sort of payment.

Costs of the Study:

Any expenses incurred as a result of the research study will not be charged to the participants. The researcher is in charge of making sure that all costs are covered. The researcher plans to apply for a Univen Research Grant to help with funding.

Confidentiality:

Participants are made aware that the purpose of the study is to assess teachers' and learners' attitudes toward information and communications technology instructional use. All study-related documents will be held in strict confidence. Nobody will be able to associate you with the responses you provide, and I won't record your name anywhere. Information will not be released to anybody not authorized to receive it and will only be used for this study. Participants' identities would not be revealed in the publication or presentation of the results. After completion of the project the research data will be stored in computer protected password.

Research-related Injury:

No harm of any kind is predicted from the sessions.

People to Contact Should there be any issues or questions:

Researcher: Mulaudzi Thanyani Lucky.

CellNo:07944752323

Email:mulaudzithanyani1154@gmail.com.

Supervisor: Dr. M Mpeta

TelephoneNo:0159629177

Email:mamotena.mpeta@univen.ac.za.

Co-supervisor: Dr. GM Muremela

Telephone No: 015 962 9177 or by

Email:grace.muremela@univen.ac.za.

Callthesecretariatoftheuniversity'sresearchethicscommitteeat0159629058

ComplaintscanbereportedtotheDirector:ResearchandInnovation,Prof JMakhubele on 015 962 8313 or Georges Ivo.Ekosse@univen.ac.za

General

In general, participation in research must be voluntary and predicated on informed choices. Voluntariness and informed choices are evidenced by the informed consent process which must take place before the research commences, in principle, and be affirmed during the courseofthestudy,aspartofthecommitmenttoanongoingconsentprocess(Departmentof Health, 2015)..

CONSENTFORM

Statement of Agreement to Participate in the Study:

- I.....thus confirm that the researcher (Mulaudzi Thanyani Lucky), who holds the following research ethics clearance Number **FHSSE/23/CSEM/02/2006**, has fully disclosed to me the nature, methodology, advantages, and dangers of this study.
- I have also received, read, and comprehended the participant letter containing information that was previously mentioned regarding the study.
- I am aware that the study's findings, along with my sex, age, and initials, will be processed anonymously and included in a study report.
- I acknowledge that the researcher may process the data gathered during this study using a computerized system due to the needs of the research.
- I am aware that after completion of the project the research data will be stored in computer protected password.
- I am permitted to cease my participation in the study and withdraw my participation at any time without consequence.
- I realize that major new findings produced throughout the course of this research that may be related to my participation will be made available to me.
- I have had ample chances to ask questions and (of my own free decision) consider myself prepared to participate in the study.

Participant's Full Name	Signature	Date	Time
.....	.....	.....	.....

Full Name of Legal Guardian (If applicable)	Signature	Date	Time
.....	.....	.....	.....

I, MULAUDZI T.L hereby affirm that the above-mentioned participant was fully informed about the purpose, methodology, and dangers of the above mentioned research study.

Name of the researcher:	Signature Time	Date:
……	……	……

Name of the witness Time (If applicable)	Signature	Date:
……	……	……

Please note the following:

Research details must be provided in plain language and appropriate to the participants' level of understanding and should be free of jargon and unexplained acronyms. Prospective participants should be helped to arrive at an informed decision by use of appropriate language (grade10) level-use Flesch Reading Ease Scores on Microsoft Word), selecting of a non-threatening environment for interaction and the availability of peer counselling (Department of Health, 2015). Participants may contact the REC at the contact details provided if they have queries or complaints about their rights and welfare as research participants. They may contact the researcher at the contact details provided if they have queries about the research project. The choice whether to participate is voluntary, refusal to participate will not be penalised and choosing to participate can be reversed, i.e. the person may decide to terminate participation at any time without explanation or prejudice (Department of Health, 2015). Minors, i.e. personsunder18yearsofage,22arelegallyincapableofperforminglegaltransactionswithoutassistance from a parent or guardian. In the research context, this means that, in principle, anyone under the age of 18 years may not choose independently whether to participate in research; a parent or guardian must give permission for the minor to choose (Department of Health, 2015)..

References:

Department of Health: 2015. Ethics in Health Research: Principles, Structures and Processes https://knowledgehub.health.gov.za/elibrary/ethics-health-research- principles-processes-and-structures

APPENDIX 6:ASSENT FORM FOR LEARNERS UNDER THE AGE OF 18

ASSENTFORMFORLEARNERSUNDERTHEAGEOF18

TITLE OF THE RESEARCH PROJECT: Secondary School Teachers' and Learners' attitudes towards Information and Communications Technology Instructional Use in Sibasa Circuit, Vhembe District, Limpopo.

RESEARCHERS'NAME(S): Mulaudzi Thanyani Lucky

RESEARCHER'S CONTACT NUMBER: 079 447 5323

What is RESEARCH*?*

Research is something we do find **NEW KNOWLEDGE** about the way things (and people) work. We use research projects or studies to help us find out more about children and teenagers and the things that affect their lives, their schools, their families and their health. We do this to try and make the world a better place!

What is this research project all about?

Is to explore and describe the teachers' and learners' attitudes towards the use of ICTs in supporting teaching and learning in secondary schools in Sibasa circuit. After the outbreak of COVID-19 the use of ICTs in education remained a hotly contested issue worldwide. The reason for bringing this issue on-board is the recognition that the use ICTS for teaching and learning has a potential to improve quality of teaching and learning.

Why have I been invited to take part in this research project?

Your response is important in terms of addressing the challenges that face teachers and learners in their day-to-day use of Information and Communications for Classroom Instruction.

Who is doing the research?

I am Mulaudzi Thanyani LUCKY a Masters student in Education at the University of Venda under the Department of Professional and Curriculum Studies. My research study, which is on Secondary School Teachers' And Learners' attitudes towards

Information and Communications Technology Instructional Use in Sibasa Circuit, Vhembe District, Limpopo.

What will happen to me in this study?

If you agree to participate in this study, you are expected to complete a questionnaire to assess your attitude toward the use of Information and Communications Technology for classroom instructions.

Can any thing bad happen to me?

Participants won't experience any risk or discomfort because I don't believe that participating in the study will result in any risk to their physical or mental health. Since the Covid-19 virus is still with us, strict protection guidelines must be adhered to without exception. Therefore, before handling any questionnaire guides, participants will be sanitized, and mask-wearing and social distancing will be monitored.

Can anything good happen to me?

There will be no financial rewards for the participants. Your participation in the study is free of charge. The participants will get no sort of payment. Although you might not immediately profit from the study, the findings could help us raise the standard of education.

Will any one know I am in the study?

Nobody will be able to associate you with the responses you provide, and I won't record your name anywhere. Information will not be released to anybody not authorized to receive it and will only be used for this study. Participants' identities would not be revealed in the publication or presentation of there sults. After completion of the project the research data will be stored in computer protected password.

Who can I talk to about the study?

People to Contact Should there be any issues or questions:

Researcher: Mulaudzi Thanyani Lucky.

CellNo:07944752323

Email: mulaudzithanyani1154@gmail.com.

Supervisor: Dr. M Mpeta

TelephoneNo:0159629177

Email:mamotena.mpeta@univen.ac.za.

Co-supervisor: Dr. GM Muremela

Telephone No: 015 962 9177 or by

Email: grace.muremela@univen.ac.za.

Call the secretariat of the university's research ethics committee at 0159629058

Complaints can be reported to the Director: Research and Innovation, Prof J Makhubele on 015 962 8313 or Georges Ivo.Ekosse@univen.ac.za

What if I do not want to do this?

If you decide to cease taking part at any moment, you are free to do so. Throughout the process, you are under no obligation to respond to any questions with which you are uncomfortable.

Do you understand this research study and are you willing to take part in it?

YES NO

Has the researcher answered all your questions?

YES NO

Do you understand that you can STOP being in the study at any time?

YES NO

_____ _____

Signature of Learner Date

APPENDIX 7: RESEARCH ETHICS LETTER

ETHICS APPROVAL CERTIFICATE

RESEARCH AND INNOVATION
OFFICE OF THE DIRECTOR

NAME OF RESEARCHER/INVESTIGATOR:
Mr TL Mulaudzi

STUDENT NO:
11541152

PROJECT TITLE: Secondary Schools Teachers' and Learners' Attitudes towards Information and Communications Technology Instructional Use in Sibasa Circuit, Vhembe District, Limpopo.

ETHICAL CLEARENCE NO: FHSSE/23/CSEM/02/2006

SUPERVISORS/ CO-RESEARCHERS/ CO-INVESTIGATORS

NAME	INSTITUTION & DEPARTMENT	ROLE
Dr M Mpeta	UNIVEN, Professional and Curriculum Studies	Supervisor
Dr G Muremela	UNIVEN, Educational Studies	Co-Supervisor
MR TL Mulaudzi	UNIVEN, Professional and Curriculum Studies	Investigator – Student

Type: **Masters' Research**
Risk: **Straightforward research without ethical problems (CATEGORY 1)**
Approval Period: **June 2023 – June 2024**

The Research Ethics Social Sciences Committee (RESSC) hereby approves your project as indicated above.

General Conditions
While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following.

- **The project leader (principal investigator) must report in the prescribed format to the REC:**
  - **Annually (or as otherwise requested) on the progress of the project, and upon completion of the project.**
  - **Within 48hrs in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.**
  - **Annually a number of projects may be randomly selected for an external audit.**
- **The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the REC. Would there be deviated from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.**
- **The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date; a new application must be made to the REC and new approval received before or on the expiry date.**
- **In the interest of ethical responsibility, the REC retains the right to:**
  - **Request access to any information or data at any time during the course or after completion of the project,**
  - **To ask further questions; Seek additional information; Require further modification or monitor the conduct of your research or the informed consent process.**
  - **withdraw or postpone approval if:**
  - **Any unethical principles or practices of the project are revealed or suspected.**
  - **It becomes apparent that any relevant information was withheld from the REC or that information has been false or misrepresented.**
  - **The required annual report and reporting of adverse events was not done timely and accurately,**
  - **New institutional rules, national legislation or international conventions A it necessary**

ISSUED BY:
UNIVERSITY OF VENDA, RESEARCH ETHICS COMMITTEE
Date Considered: June 2023

Name of the RESSC Chairperson of the Committee: Prof TS Mashau

Signature PTSMashau

UNIVERSITY OF VENDA
OFFICE OF THE DIRECTOR
RESEARCH AND INNOVATION
2023 -06- 20
Private Bag X5050
Thohoyandou 0950

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"A quality driven financially sustainable, rural-based Comprehensive University"

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