

**Exploring Teachers' Understanding and Practices of
Integration of Information and Communication
Technology in Teaching Accounting**

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This thesis is submitted in fulfilment of the requirements for
the degree of

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in the

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UNIVERSITY OF KWAZULU-NATAL

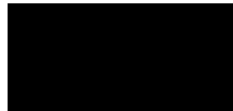
February 2024

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DECLARATION

I, Nosihle Veronica Sithole, declare that this thesis is my own work and has never been submitted for examination in any other institution. Where the work of others has been used it is indicated and acknowledged.

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ABSTRACT

The evolution of technology in the education sector has resulted in greater recognition of Information and Communication Technology (ICT) in the classroom to transform teaching and learning worldwide. This study explored Accounting teachers' understanding and practices of integration of ICT in teaching Accounting in Umlazi District, KwaZulu-Natal, South Africa. The literature indicates that ICT has been adopted by the education sector worldwide and most countries have ICT policy frameworks to guide teachers on ICT integration. Nevertheless, in developing countries including South Africa, policies have failed to meet the aims of ICT integration in teaching and learning and teachers face barriers such as lack of professional training, resources, and technical support. To complement the literature, the Technological Pedagogical and Content Knowledge (TPACK) theoretical framework and the Unified Theory of Acceptance and Use of Technology (UTAUT) conceptual framework informed the empirical inquiry. An explanatory sequential mixed method study aimed to determine Accounting teachers' understanding and practices of ICT integration in teaching Accounting in Umlazi District. Quantitative data were collected through a self-designed questionnaire and qualitative data through focus group discussions, observations and semi-structured interviews. Multiple sampling strategies were used to select the sample for the questionnaire and participants for focus group discussions, classroom observation and individual interviews. Quantitative data were analysed through Statistical Package for the Social Sciences (SPSS) and qualitative data were analysed thematically. The findings indicated that Accounting teachers are aware of selected technologies, namely, tablets, laptops, computers, copier machines, printers, digital cameras, scanners, LCD panels and/ or data projectors, and video conferencing systems. However, their understanding and use is limited. However, Accounting teachers are proficient with word processing, the internet and e-mail used mainly for personal communication. Teachers often use a smartphone and WhatsApp for teaching Accounting. Findings showed the benefits of integrating ICT in teaching, such as improving teaching and learning through innovations. Barriers are lack of professional training, technical support and resources, theft, power outages and limited teaching time. Smartphones constitute a frequently used and efficient technology tool in teaching Accounting. This study suggests a connective pedagogy to promote smartphones and social media platforms in teaching Accounting.

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DEDICATION

This study is dedicated to my family for their tremendous support through this journey.

LIST OF ACRONYMS & ABBREVIATIONS

4IR	Fourth Industrial Revolution
CAPS	Curriculum Assessment Policy Statement
CAT	Computer Applications Technology
CK	Content Knowledge
DBE	Department of Basic Education
DoE	Department of Education
E-Book	Electronic Book
E-Education	Electronic education
E-Learning	Electronic learning
FC	Facilitating Conditions
FET	Further Education and Training
HoD	Head of department
ICT	Information and Communication Technology
IS	Information Systems
IT	Information Technology
KZN	KwaZulu-Natal
NEPAD	New Partnership for Africa's Development
PCK	Pedagogical Content Knowledge
PE	Performance Expectancy
PK	Pedagogical Knowledge
SADC	Southern African Development Community
SDG	Sustainable Development Goal
SPSS	Statistical Package for Social Sciences
SA-SAMS	South African Schools Administration and Management Systems
TCK	Technological Content Knowledge
TK	Technology Knowledge
TPACK	Technological Pedagogical and Content Knowledge
TPCK	Technological Pedagogical Content Knowledge
TPK	Technological Pedagogical Knowledge

UK	United Kingdom
UKZN	University of KwaZulu-Natal
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
USA	United States of America
UTAUT	Unified Theory of Acceptance and Use of Technology

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CHAPTER ONE

INTRODUCTION OF THE STUDY

1.1 INTRODUCTION

In this chapter, I give an orientation to the study. The discussion begins with the background information of the study after which the statement of the problem follows. I then present the critical research questions formulated in response to the problem statement, discuss the rationale or the motivation for the study, significance and the clarification of key concepts in relation to the research topic. In addition to the above, this chapter also highlights the existing literature that informs the study, an overview of theoretical framework, a summary of the methodological approach adopted in investigating the research topic as well as the demarcation of the study. An overview of the different chapters of the thesis is also presented in this chapter. In conclusion, I provide the synopsis of the chapter.

Over the past decades, technological innovation has brought a rapid change in the use of technology worldwide. Individuals, organisations and society have been exposed to these exponential changes through the use of personal computers, laptops, the internet, and the World Wide Web in different daily activities. Furthermore, on the professional level, computers, the use of the internet and different software applications have assisted businesses in ensuring quality transparency in recording business transactions and calculations. At the school level, these developments have helped teachers to ensure quality teaching and record keeping. Nevertheless, technological developments have disrupted conventional processes of teaching. Teachers have had to acquire new technological knowledge and skills to incorporate subject content, knowledge, and skills from numerous sources and use traditional and unconventional media (Daher et al., 2018).

The only method teachers use to incorporate knowledge and subject content from numerous sources is through the integration of Information and Communication Technology (ICT) in the process of teaching. In view of this, the current research sought to explore teachers' understanding and practices of integration of ICT in teaching Accounting.

1.2 BACKGROUND OF THE STUDY

Research has shown that the appropriate implementation of ICT in schools can encourage learners to obtain knowledge and skills that promote ongoing learning (Adegbenro et al., 2017; Celebi, 2019; Dangi & Saat, 2018; Karki, 2019; Meyer & Gent, 2016; Stoilescu, 2014). These scholars add that technology plays a significant role in the growth of any country's economy, social and educational status. As a result, the integration of technology-based tools in the education system has become very popular in the 21st century. The 21st century requires learners equipped with skills necessary to keep up with the current global demands in the workplace (Motsoeneng et al., 2021). Therefore, teachers are required to blend ICT innovatively in the learning process and to support a constructive learning atmosphere (Celebi, 2019; Motsoeneng et al., 2021). The use of technology brought about a radical change in the learning environment that has led to a shift from a teacher-centred approach to an approach that involves learners more in the learning process. This provides learners with access to innovative technology tools that allow them to focus more on global issues than on elementary problems.

The possibility of technology to advance the learning environment is widely acknowledged by the South African education sector. As a result, the former Department of Education (DoE) initiated ICT in all schools in South Africa (DoE, 2007; Department of Basic Education [DBE], 2016). Furthermore, an ICT policy, the White Paper on e-Education, was developed to guide teachers to advance learners with significant technology skills required to meet the needs of the changing world (DoE, 2004; DBE, 2016). Teachers are also required to utilise ICT tools “confidently and creatively to help develop the skills and knowledge learners need as lifelong learners to achieve personal goals and to be full participants in the global community” (DoE, 2004, p.17). The education sector affirms that ICT can create a lively learning environment while developing learners with highly intelligent thinking skills (DBE, 2010a; 2010b). The need to produce learners with advanced thinking skills in Accounting as a school subject is crucial because the subject concentrates on analysing and interpreting business financial information.

In agreement with the Curriculum Assessment Policy Statement (CAPS) Accounting Grades 10-12 (DBE, 2011b), the ICT policy states that learners should have the ability to “access, analyse, evaluate, integrate, present and communicate information; create knowledge and new information by adapting, applying, designing, inventing and authoring effectively in a

knowledge society by using appropriate ICT” (DoE, 2007, p. 3). Furthermore, CAPS informs teachers how to impart critical knowledge and problem-solving skills in Accounting that will prepare learners for the digital changes and the Fourth Industrial Revolution (4IR) (Motsoeneng et al., 2021). According to the DoE (2004; 2007), ICT allows teachers and learners to develop their understanding, problem-solving, propositional and innovative abilities. This is in line with the aim of the subject, Accounting, which is to develop learners who can make informed decisions, develop skills and knowledge related to real-world situations, apply problem-solving principles and meet the demands of the Accounting occupation manually and electronically (DBE, 2011c, 2012a). Hence teachers are encouraged to access and integrate various technologies in teaching and learning environments to sustain the learners’ attention and promote meaningful teaching and learning in the classroom (Onwuagboke et al., 2015).

In order to implement effective ICT integration teachers should be well trained, professionally developed and technologically literate. This requires thorough planning, effective preparation, and professional support from different stakeholders. Teachers also need to have an adaptive disposition open to change that will assist them in understanding this exponential transformation. An adaptive disposition enables teachers to evaluate the ICT integration process in the education system. According to Kisirkoi (2015), the successful integration of ICT in teaching and learning requires both the teacher and learner to be innovative and creative. In addition, to be able to provide quality ICT integration in school subjects the Technological Pedagogical Content Knowledge (TPACK) approach should be applied (Koehler & Mishra, 2009). TPACK provides teachers the opportunity to integrate technology and required pedagogy appropriately. In addition, teachers can apply the right instructional methods to align technology with the content.

Nevertheless, numerous challenges have negatively affected the integration of ICT in education. These include highly inadequate infrastructure, illiteracy in ICT infrastructure, lack of training, poor adoption and poor maintenance of ICT in disadvantaged communities, and contextual issues, such as lack of power and theft (Padayachee, 2017; Rambrij, 2018). Developing countries have limited budgets to distribute across different sectors hence they are often negative when changes are to be adopted and implemented. The high cost of ICT infrastructure makes it to be difficult for countries to implement ICT integration in education. Inappropriate ICT integration in education may result in the failure to achieve ICT goals.

Notwithstanding, ICT is currently perceived as a technique that will bring many positive outcomes in the education sector.

In addition, during the COVID-19 pandemic and lockdown restrictions, the education sector in South Africa and worldwide was obliged to utilise various advanced methods of instruction to enhance traditional learning. As a result, teachers had to adopt online teaching and learning to proceed with teaching and learning after schools were closed. Furthermore, the resolution by the Minister of Education to close schools due to the outbreak of the COVID-19 pandemic compelled teachers to familiarise themselves with online teaching practices in the face of obstacles. Most teachers had limited knowledge and experience regarding utilisation of ICT in instructional processes. The need to use diverse virtual teaching and learning platforms was also evident in Accounting since the subject requires constant practice and the information is always changing. Thus, this study aims to explore teachers' understanding and practices of ICT integration in Accounting in secondary schools.

1.3 PROBLEM STATEMENT

The South African education system has adopted the integration of technology into all levels of education to support teaching and learning in classrooms (Hart & Laher, 2015). The implementation of the White Paper on e-Education (DoE, 2004) was a powerful impetus to the innovative phenomenon of ICT. The goal of the White Paper on e-Education was to allow both teachers and learners the opportunity to utilise ICTs in South Africa. The inclusion of ICT in the Accounting classroom realises the outcomes and aims that are stipulated in the CAPS Accounting Grades 10-12. According to the latter, the integration of ICT changes the teaching and learning environment, while supporting the instructional process in Accounting classrooms. This means effecting changes in instructional methodology by effective integration of ICT in lesson planning, designing teaching and learning activities and administering assessments (Amory et al., 2015; Mooketsi & Chigona, 2014; Vandeyar, 2015). Furthermore, appropriate integration of technology sustains the learners' attention and promotes meaningful instructional processes in the learning environment (Akpan, 2015; Haji, 2017; Ndlovu, 2022).

Moreover, Accounting has its own distinctive concepts that are vital in understanding the subject since they lay a foundation for mastering and grasping the complex subject knowledge (Ngwenya & Arek-Bawa, 2019). The use of ICT-based tools such as laptops, computers and tablets have the potential to help learners construct knowledge and conceptual understanding

in Accounting (Alemu, 2015; Ogechi, 2015; Padayachee, 2017). As a result, integrating ICT in teaching offers learners an opportunity to create meaning out of abstract concepts found in Accounting and this enhances learning concepts in constructive and purposeful ways.

Changes in education posed by the outbreak of pandemic restrictions worldwide demonstrated that ICT integration is vital in teaching Accounting as well as in teaching other subjects in schools. During the pandemic lockdown, teachers were compelled to use technology in their instructional processes including online content delivery and assessment to finish the content on time and remain in contact with the learners. Teachers in schools are generally well-positioned to adopt ICT in the instruction process, but studies show that teachers often struggle to integrate ICT effectively (Alemu, 2015; Dangi & Saat, 2018; Padayachee, 2017; Zulu, 2020). However, the adoption of ICT in the education sector and the encouragement of teachers to integrate it into teaching and learning proves that minimal integration has taken place although this is still at low levels (Kisirkoi, 2015; Rambrij, 2018; Siyaya, 2023). Furthermore, there is limited research on Accounting teachers' understanding and practices of integrating ICT into their teaching which might be the cause of limited implementation. Thus, this study explores how Accounting teachers understand and practise the integration of ICT in the teaching and learning process.

1.4 RATIONALE FOR THE STUDY

The motivation for undertaking this study partly emanated from my past experience as a student teacher, an Accounting teacher, a lead educator in underperforming schools, a Departmental Head and a Deputy Principal and my current experience as a lecturer in Commerce Education. When I was a student teacher, I was compelled to enrol for Methodology, including Methodology in Accounting. This module was aimed at equipping student teachers with relevant skills and knowledge of the Accounting curriculum in schools through lectures, developing lesson plans, sending and receiving electronic data from lecturers and searching for information related to the module and subject. Further, online discussions, completing and submitting assignments online encouraged me to utilise ICT in teaching Accounting subjects. Moreover, I observed that utilisation of ICT creates an active learning environment and improves students' understanding of the module. Therefore, this experience encouraged me to integrate ICT into my teaching practice as a student teacher.

During my teaching practice, I endeavoured to integrate ICT into my Accounting lessons by creating PowerPoint lesson presentations and bringing laptops for learners to share when searching for information. In addition, I utilised YouTube videos and demonstrations from the internet to introduce my lessons. I observed that learners were very participative and interested in being taught regularly with ICT tools. This concurs with Ghavifekr and Rosdy (2015) who assert that through ICT integration learners can even understand complex concepts since they are productive and own their learning. In addition, during teaching practice I observed teachers teaching various subjects and I noticed that teachers understood and endeavoured to integrate ICT in their teachings although traditional chalk and talk teaching still dominated. This was also noted by Motsoeneng et al. (2021) who assert that some teachers are still reliant on the traditional method of teaching rather than technology utilisation due to a lack of confidence, inadequate skills, and lack of knowledge and support (Ciroma, 2014; Kiru, 2018).

Furthermore, my role as lead teacher and cluster coordinator in Accounting played a significant part in the rationale of this study. My responsibility was to support teachers and schools who were performing poorly in Accounting. I had to work closely and engage with teachers on moderation, setting question papers and devising different teaching methods that could be utilised to enhance learners' understanding of Accounting. I had to visit schools underperforming in Accounting during the weekends. While I was onsite, I noticed that teachers downloaded previous question papers online, printed and photocopied handouts and used Microsoft Word. Nevertheless, there was rarely ICT integration in the classroom nor were there technology resources installed in the classrooms. Taking into consideration the demands of the 21st century, the nature of the Accounting subject and the demands in the workplace to equip learners with digital skills, I was encouraged to conduct this study. I envisioned measuring Accounting teachers' knowledge and practices regarding ICT integration in the classroom. Furthermore, my appointment as an Accounting methodology lecturer during the pandemic encouraged me to conduct this study.

In particular during the outbreak of the COVID-19 pandemic all sectors had to adapt to the changes. In the education sector, schools had to close and the Minister of Education encouraged remote learning. Since Accounting requires learners to participate in daily activities to practise and develop full comprehension of topics or content, we had to teach via WhatsApp, Zoom, Microsoft Teams, and Google Meet. However, some teachers failed due to various challenges. Therefore, I also wanted to measure Accounting teachers' understanding on ICT integration in

the Accounting curriculum during the time of the lockdown. Lastly, this study was also a product of an extensive literature review that revealed that, while integrating ICT in the classroom has been well documented, there is little implementation (Celebi, 2019; Muslem et al., 2018; Ogechi, 2015; Razak et al., 2019; Stoilescu, 2014). This provoked me to explore how teachers practised ICT integration in Accounting during these changes.

1.5 THE SIGNIFICANCE OF THE STUDY

This study is significant for several reasons. As a former Accounting teacher, the study contributed to broadening my expert and academic competence while giving me a chance to advance my knowledge and comprehend the intense discussion about the hybrid between theory and practice of ICT integration. The study also gave me a chance to participate in and contribute to discussions on teachers' understanding and practices of technology in teaching Accounting. Advanced knowledge and competence in ICT utilisation in schools were among the top goals of the DBE (Meyer & Gent, 2016). Thus, this study was significant to all Accounting teachers to advance their skills and knowledge of ICT integration.

Alemu (2015); King (2020) and Siyaya (2023) note that there is limited literature on ICT integration in Accounting in secondary schools; therefore, this study was also significant by adding knowledge to the body of literature. I attempted to theorise Accounting teachers' understanding and practices of using ICT in their instruction process and hoped that the theoretical knowledge developed in this research study would contribute to existing research on ICT integration, particularly in Accounting. In addition, this study is significant in exploring Accounting teachers' understanding and practices of integrating ICT in the 21st century, before and after the COVID-19 outbreak. Further, the study gathered in-depth information that can assist subject advisors, principals, and policymakers to comprehend the extent of support that teachers need with regard to ICT integration in secondary schools.

This study provided Accounting teachers an opportunity to reflect on their Technological Pedagogical and Content Knowledge (TPACK) in Accounting teaching. The study provided a comprehensive understanding of the types of effective digital resources or technology learning tools used in Accounting classrooms and the kinds of impediments and opportunities teachers encounter when devising relevant solutions. Taking into consideration the theories that exist in relation to technology, this study is significant in the sense that it will add new knowledge to the theories and through findings other theories could be developed. Lastly, the findings of this

study were important as they identified the type of support teachers require for effective integration of ICT in Accounting. This support includes continuous professional development to achieve the learning outcomes, acquisition of digital resources and broadened understanding of ICT integration in Accounting through engagement in continuous professional training and the publication of relevant academic articles.

1.6 PURPOSE OF THE STUDY

The purpose of the study was to explore teachers' understanding and practices of integration of ICT in teaching Accounting in Umlazi District.

1.7 CRITICAL RESEARCH QUESTIONS

- What are Accounting teachers' understanding and practices of integration of ICT in teaching Accounting in Umlazi District?
 - What technologies are being used in teaching Accounting in Umlazi District?
 - To what extent do teachers use ICT tools in teaching and learning in the classroom?
- How do Accounting teachers integrate ICT in teaching Accounting in Umlazi District?
 - What knowledge do Accounting teachers have in terms of TPACK in teaching and learning of Accounting?
 - How do Accounting teachers use TPACK to practice ICT integration in Accounting?
- Why do Accounting teachers understand and practice integration of ICT in teaching Accounting the way they do?
 - What factors influence or motivate and hinder teachers in integration of ICT in teaching Accounting?

1.8 RESEARCH OBJECTIVES

- To explore Accounting teachers' understanding and practices of integrating ICT in teaching Accounting in Umlazi District.
 - To understand technologies being used in teaching Accounting in Umlazi District.

- To determine the extent teachers use ICT tools in teaching and learning in the classroom.
- To examine how Accounting teachers integrate ICT in teaching Accounting in Umlazi District.
 - To investigate the knowledge Accounting teachers have in terms of TPACK in teaching and learning of Accounting.
 - To explore how Accounting teachers use TPACK to practice ICT integration in Accounting.
- To determine why Accounting teachers understand and practice integrating ICT in teaching Accounting the way they do in Umlazi District.
 - To understand the factors that influence or motivate and hinder teachers in integration of ICT in teaching Accounting.

1.9 BRIEF LITERATURE REVIEW

The advent of technological changes in the education sector has led to a considerable emphasis on and wide embrace of ICT integration in the school curriculum in many countries. Consequently, both developed and developing countries have encouraged the fastest rate possible of ICT integration in the classroom (Gebremeskel et al., 2016). However, studies have reported that developing countries are still at an early stage when it comes to ICT integration in schools (Mashile, 2017).

1.9.1 Conceptualisation of ICT

The phenomenon of ICT has been defined by scholars in various ways depending on one's viewpoint and the surroundings. Das (2019) and UNESCO (2013b) define ICT as a combination of two concepts which are Information Technology (IT) and Communication Technology. Further, they describe IT as a scientific, technological, and engineering field that provides management techniques for handling and applying information and is connected with economic, social, and cultural matters. On the other hand, Tazvishaya (2014) defines ICT as a universal system in which ideas are exchanged and information and knowledge are shared through utilisation of digital devices such as cell phones and computers to connect and communicate with people. Similarly, Msila (2015) states that ICT consists of hardware and software, while the latter includes any communication device or application, encompassing radio, TV, cellular phones, computers and computer networks, digital cameras, compact discs

(CDs), digital video disks (DVDs), cell phones, satellites, and fibre optics, including local area network (LAN) and wide area network (WAN), among other associated applications.

Furthermore, the following ICT tools are recognised as the best tools to integrate ICT effectively in subject teaching: word processors, data projectors, PowerPoint spreadsheets, search engines, interactive whiteboards, mobile technologies, smartphones (e-mail, blogs, videos, etc.), tablets, instant messaging, podcasts, CD-ROMs, Wikipedia, simulations, animations and e-books (Amory et al., 2015; Batchelor & Olakanmi, 2015; Govender & Govender, 2014; Mereku & Mereku, 2015; Mooketsi & Chigona, 2014). These communication devices are used and applied for telecommunications and micro-electronics in the acquisition, storage, retrieval, transfer and dissemination of information (Siyaya, 2023). In this study, I refer to ICT as all technology tools, hardware, and software that may be utilised in teaching and learning Accounting in a classroom.

1.9.2 ICT policy in South Africa

This extensive technology phenomenon is guided by policies for effective implementation in schools. As a result, countries have developed their ICT policies to provide insight into ICT in schools, its aims and objectives and its importance in schools. In South Africa, the government developed an ICT policy framework called the e-Education policy with the aim of ensuring that every education stakeholder in South Africa has a comprehensive understanding of ICT in the instructional procedure and is competent with ICT (Ziphorah, 2014). One of the most vital goals of the first ICT policy framework in South Africa was to ensure that every learner in the South African education system was ICT capable by 2013. This meant that they should be to utilise ICT confidently and creatively to obtain the skills and knowledge needed to compete in the global world and their social lives (DoE, 2003; 2004).

However, Meyer and Gent (2016) note that although the strategy and policy is available, implementation is slow and capacity is limited. Objectives are not clear and a strategy that is integrated across the system is lacking. Access to technology is limited and unequal across provinces and school quintiles. This is demonstrated by the slow progress of ICT implementation in schools in some provinces including KwaZulu-Natal (KZN). Since the ICT policy framework provides a comprehensive description of ICT, the next sub-topic focuses on technology integration in teaching and learning in the classroom.

1.9.3 Importance of technology integration in teaching and learning

The education sector worldwide has embraced the momentum of technology integration at school due to its positive contribution to pedagogy. According to Ghavifekr et al. (2014), technology integration provides numerous alternatives for enhancing the teaching process in the classroom. One of these alternatives is the improvement of pedagogical mechanisms in the classroom. Pedagogy is improved by utilisation of various teaching and learning technology resources such as computers, laptops, smartphones, the internet and interactive whiteboards. Furthermore, technology integration improves pedagogy by providing teachers with various methods of teaching, namely, moving from the traditional method of chalk and talk to more digital learning such as online lessons. Again, technology integration has improved pedagogy by encouraging a learner-centred approach rather than a teacher-centred approach (Alemu, 2015; Rambrij, 2018). This approach allows Accounting teachers to facilitate rather than lecture, which is what the Accounting subject requires the most.

In addition, Alemu (2015) and Aydin et al. (2016) advocate that the most crucial role played by technology in teaching is to improve the quality of teaching and learning. In this study enhancing the quality of teaching and learning means various methods are used by teachers to deliver their lessons, learners find their own ways of gathering information related to their learning, and effective teaching takes place in the classroom. According to Meyer and Gent (2016), effective integration of technology into teaching and learning means the utilisation of the appropriate technological tools at appropriate places in the learning progression to enhance a process that creates value in the learner's education. Similarly, Ghavifekr and Rosdy (2015) maintain that technology integration in teaching allows teachers to include educational videos, develop lesson plans, keep data, manipulate data and make their teaching more meaningful.

The integration of technology in teaching and learning maintains the curriculum, provides effective communication between the learners and teachers, and provides 21st century skills which are most needed in the education of learners. Nevertheless, Celebi (2019) reveals that some teachers resist technology integration in the classroom since they assume it will replace them. On that note, Ghavifekr and Rosdy (2015) and Mthethwa (2015) affirm that technology integration does not replace quality teachers, but it assists teachers in enhancing their teaching.

Technology in teaching further assists both teachers and learners to acquire and utilise various teaching and learning materials. Currently, the integration of technology in subject teaching

makes things easier since most teaching materials such as books are available online. Maduabuchi and Emechebe (2016) note that technology allows learners to search for different learning materials from original sources and obtain wider information. This then gives learners an opportunity to find additional resources for their learning. However, in most schools such learning materials and opportunities are not available for various reasons. Moreover, technology integration encourages learners in their learning. McFarlane (2019) suggests that the pace of integrating ICT into the school curriculum should be rapidly increased to allow learners to acquire advanced technological skills and digital tools to be able to be creative and innovative in solving problems. Since this study is based on Accounting, it is essential to further understand the importance of ICT integration in Accounting.

1.9.3 Importance of ICT integration in Accounting

Accounting is one of the subjects that emphasises and recognises the vital role of ICT integration in Accounting pedagogy due to its practical nature. Kwarteng (2014) also emphasises the importance of integrating ICT into the Accounting curriculum. Teachers can utilise the internet to search for additional activities online for learners to practise every day to assist Accounting learners and teachers to keep up with Accounting standards. Furthermore, all Accounting topics in the Further Education and Training (FET) phase require integration of ICT to enhance learners' understanding and complement teachers teaching materials. For instance, Accounting has its own unique concepts that learners need to develop a profound understanding of; therefore, ICT integration is crucial to assist learners to search for these concepts on the internet for greater understanding. In addition, learners can utilise ICT to recognise, analyse and construct financial statements through online demonstrations. Teachers can set tests and tasks using ICT tools which provide learners an opportunity to broaden their understanding through utilising digital devices and teachers may present their Accounting lessons using a variety of ICT tools. Nevertheless, literature indicates limited studies on the importance of ICT integration in Accounting as a school subject; most literature focus on the importance of ICT in higher education (as a discipline) (Alemu, 2015; Kwarteng, 2014; Rhodes, 2019; Salome & Chukwunwendu, 2014). Therefore, this study is aimed at stressing the importance of ICT integration in Accounting in schools.

According to King (2020) and Padayachee (2017), ICT integration in Accounting is perceived as an important tool in transforming the learning procedure. When learners utilise ICTs in their Accounting learning, they become productive and collaborative which makes them gain

independence and effectiveness to achieve better learning outcomes in Accounting. King (2020) further asserts that the productivity of learners in Accounting creates an opportunity for learners to learn more about Accounting on their own without relying on teachers. Motsoeneng et al. (2021); Rhodes (2019) and Skhephe and Caga (2019) state that ICT integration in Accounting improves the relationship between a teacher and a learner which makes the learner more collaborative in Accounting learning.

Integration of ICT in Accounting is essential to keep teachers and learners updated on any curriculum developments taking place in the subject which assists career decisions. ICT is therefore important to advance learners' knowledge and skills and inform them about changes taking place in the workplace. King (2020) further notes that integrating ICT into Accounting is crucial as it provides equal learning opportunities for all learners. In addition, Amory et al. (2015) concur that ICT integration allows teachers an opportunity to deal with each learner's needs and to promote equal learning opportunities. Therefore, ICT in Accounting plays a huge role in supporting learners to learn irrespective of their learning abilities and learning locations. Lastly, Motsoeneng et al. (2021) note that integrating ICT in Accounting in schools is crucial since Accounting teachers may lack the skill to create an active learning environment because of the demanding content. ICT integration introduces innovation and creativity to the classroom (Skhephe & Caga, 2019).

Accounting subject requires both teachers and learners to be innovative to make the subject more interesting. Teachers may utilise the internet and computers to search for ways of creating innovative learning experiences. However, Li (2022) points out that the Accounting curriculum is undergoing drastic extreme reform as a result of technology utilisation in the classroom which may cause challenges for teachers. On that note, Padayachee (2017) argues that inadequate technology resources and unclear teaching strategies hinder the effectiveness of technology integration. The pandemic outbreak had a disseminating impact on ICT integration in schools throughout the globe.

1.9.4 ICT integration in schools during COVID-19

In the 21st century integrating ICT in schools' operations has been stimulated by policy documents such as the White Paper on e-Education and social media platforms. Moreover, the sudden outbreak of the COVID-19 pandemic worldwide highlighted the utilisation of ICT in teaching and learning; as a result, many countries planned to make ICT utilisation compulsory

in the education sector (Li, 2022). During the pandemic, the World Health Organization (WHO) advised measures to combat and control the spread of COVID-19: regular washing of hands with water and soap, avoiding shaking of hands, wearing breathable facemasks to cover nose and mouth, using hand sanitisers when water and soap are unavailable, avoiding hugging, crowds and touching infected persons/objects, maintaining social distancing thereby avoiding cluster gatherings, washing used facemasks and used clothes before reusing, eating the correct diet and exercise and staying at home when it was not paramount for one to go out (WHO, 2020).

Schools are places where teachers and learners gather for the purpose of teaching and learning. No schools have less than 50 learners in a school and some schools have large numbers with more than 50 learners per class. Furthermore, some schools in South Africa had no access to water and inadequate resources to comply with COVID-19 regulations. Therefore, it was realised that outbreak could spread rapidly in schools. As a result, schools had to be closed immediately while the education sector devised strategies to keep the process of teaching and learning going. According to König et al. (2020); Li (2022) and Subedi et al. (2020), the education sector endeavoured to keep teachers and learners in contact during this time through emphasising the integration of ICT in the curriculum.

In addition, teachers were asked to bring learners together by simulating normal classroom teaching even in remote locations through the utilisation of ICT. According to König et al. (2020) and Onah et al. (2020), teachers found it difficult to collaborate with learners in remote learning and this impacted the teaching procedure and the life of teachers. Yet Kanu et al. (2021) and König et al. (2020) assert that as much as the COVID-19 pandemic created negative outcomes in education, it created important opportunities for teachers' exposure to the utilisation of ICT in teaching, for example, using WhatsApp, Facebook and the internet to communicate with learners. They further note that ICT played an important role in updating teachers and learners about the status of COVID-19 through different technology devices.

Li (2022) maintains that during the COVID-19 pandemic, ICT played an extensive role in education which included providing a safe, timely, and flexible way for educational institutions to sustain operations. They further note that the utilisation of ICT through online platforms, social media and broadcasts allowed the rapid provision of emergency remote teaching, transferring traditional face-to-face teaching to virtual learning. Even though the COVID-19

pandemic was unanticipated, it transformed education systems, particularly teaching and learning procedures.

1.9.5 Teachers' understanding and practices of integrating ICT in teaching

Teachers are the most important role players in the educational institution, as most school activities cannot take place on their own. Buabeng-Andoh (2019) recognises teachers as the agent of change in any educational reforms. The author further asserts that teachers play a huge role in implementing the phenomenon of ICT in schools and learners' learning depends on teachers. In teaching any subject, teachers as people who are experts in that subject decide what learners need to learn guided by curriculum policy. Thus, teachers are drivers of teaching and learning in the classroom. The extensive role teachers played during ICT implementation in a classroom can never be overemphasised. All endeavours to successfully implement ICT and achieve ICT objectives were placed in the hands of teachers. Thus, this study regards teachers' understanding and practices of ICT implementation as essential.

Teachers' understanding and practices are crucial to measuring their knowledge and skills regarding ICT integration in general. Teachers' understanding and practices reveal both external and internal experience. This is confirmed by literature dealing with teachers' understanding of ICT integration in schools (Mahlo, 2020; Manhivi, 2019; Mukhari, 2016; Rambrij, 2018; Siyaya, 2023). These scholars showed that teachers accepted and recognised the value of ICT in the education system; however, their understanding and practices were not equivalent. A study conducted by Zulu (2020) indicated that teachers had different levels of understanding and implemented different practices regarding ICT integration in Mathematics, although they all believed it would support instruction. Stoilescu (2014) found that Mathematics teachers showed a disconnect between Mathematics theory and practice when they were integrating ICT and thus failed to utilise all available technology when teaching Mathematics. Pirtheepal (2019) found that teachers had a moderate understanding of ICT integration in English and that ICT integration supported their teaching and students' learning process. Maduabuchi and Emechebe (2016) indicated that teachers observed how utilisation of ICT in teaching English comprehension improved learners' vocabulary and that learners were excited about using digital tools when doing comprehension. This experience encouraged the teachers to acquire more understanding of ICT.

The overall finding from the above-mentioned studies is that teachers have an idea of ICT, they are fascinated about ICT integration in all school subjects and they use ICTs, such as computers, laptops, internet and whiteboards in teaching. Nevertheless, they have encountered substantial setbacks such as insufficient time, unequal distribution of resources, lack of clarity regarding the e-Education policy, lack of skills to integrate ICT and inadequate support and infrastructure (Msila, 2015; Vandeyar, 2015). To further comprehend teachers' understanding and practices, it is crucial to describe the theory underpinning this study.

1.10 AN OVERVIEW OF THEORETICAL AND CONCEPTUAL FRAMEWORK

Technological Pedagogical and Content Knowledge (TPACK) was used to frame the study. TPACK is a theoretical framework that explains and defines the types of knowledge required by a teacher for effective pedagogical practice in a technology-enhanced classroom. According to Meyer and Gent (2016), TPACK highlights the important knowledge components to consider for the successful integration of technology in the instructional process. Furthermore, Amory et al. (2015) concur that this theoretical framework supports teachers in integrating technology theory and practice into the teaching and learning process.

Initially, the Technological Pedagogical Content Framework (TPCK) framework was designed by Shulman (1986) with the purpose of including teacher knowledge in the pedagogy and content of a subject. Shulman's framework focused on three important elements, namely, Pedagogical Knowledge (PK), Content Knowledge (CK) and Pedagogical Content Knowledge (PCK). Later Koehler and Mishra (2009) modified Shulman's framework by adding Technology Knowledge (TK) to develop the Technological Pedagogical and Content Knowledge framework (TPACK). Therefore, TPACK consists of seven crucial elements (Koehler et al., 2014; Mailizar & Fan, 2020; Mlilo, 2019; Skhephe & Caga, 2019). Each element plays a vital role in supporting teachers' effective comprehension of ICT integration. In this study TPACK informed my understanding of teachers' knowledge and practices of ICT integration in Accounting. For instance, it informed my understanding of Accounting teachers' level of content knowledge, their teaching strategies and how they incorporate technology into their teaching. This study also employed a conceptual framework to underpin this study as theoretical framework employed was not going to adequately answer the research questions and achieve research objectives.

Although TPACK provides key information about the knowledge teachers require to utilise and integrate technology in the classroom, I also sought to explore how teachers have accepted technology integration in the Accounting classroom and what persuades them to utilise technology in teaching and learning Accounting the way they do. Therefore, the Unified Theory of Acceptance and Use of Technology (UTAUT) conceptual framework guided this research study. The UTAUT is a technology acceptance model formulated by Venkatesh et al. (2003). According to Manhibi (2019), UTAUT is generally recognised for being able to assess if the person integrating technology accepts or rejects it. It involves four essential constructs to elaborate the user's main purpose of utilising an Information System (IS) and the utilisation behaviour (Venkatesh et al., 2003). These key constructs are performance expectancy, social influence, effort expectancy and facilitating conditions (Venkatesh et al., 2003). The UTAUT model helped me in determining factors that motivate and hinder Accounting teachers to integrate technology into teaching. It also furthered my understanding of why some teachers integrate ICT in teaching Accounting the way they do.

1.11 AN OVERVIEW OF THE RESEARCH METHODOLOGY

This section outlines the methodology of this study that include research paradigm, research approach, research design, data collection methods, data analysis method and ethical issues.

1.11.1 Research paradigm

This study utilised a mixed-method research design, thus pragmatism has been adopted as the research paradigm. This paradigm allowed me to comprehend teachers' worldview and beliefs about ICT integration in teaching Accounting. In education research, paradigm refers to the researcher's worldview; this simply means the beliefs and philosophies the researcher has about the world and how the researcher understands it and takes action in that world (Kivunja & Kuyini, 2017). Drawing from the above description, in this study paradigm is defined as the way teachers think, what constitutes their beliefs and makes them see the world the way they do. Creswell and Creswell (2017) and Guetterman et al. (2019) note that pragmatism is a philosophical paradigm that focuses on plurality, mixed methods (quantitative and qualitative) and is more concerned about research questions and the consequences of the research. Creswell (2016) and Shanmugam (2020) state that pragmatism is concerned with the results of the research, the procedures, circumstances, and outcomes of the investigation rather than the logic of the study. Similarly, Kivunja and Kuyini (2017) argue that it is impossible to find the truth

about the real world by utilising one method, hence this research paradigm is appropriate for this study to explore Accounting teachers' understanding and practices.

1.11.2 Research approach: Mixed-method approach

This research study adopted a mixed-method approach due to its nature, meaning data were collected using quantitative and qualitative methods. Data in this study absorbed both numerical and text data and utilised closed-ended and open-ended questions to comprehend the research phenomenon. Incorporating both qualitative and quantitative approaches was to my advantage since it boosted the strengths and reduced the weaknesses of each approach.

1.11.3 Research design

Creswell and Creswell (2017) notes that in a mixed-method approach and design, there are three models that have been developed to elaborate further and expand the mixed-method. These are the explanatory sequential mixed-method model, the convergent parallel mixed-method model and the exploratory sequential mixed-method model. This study utilised the explanatory sequential mixed-method to comprehend teachers' understanding and practices of ICT integration in teaching Accounting.

1.11.4 Explanatory sequential mixed-methods research design

According to Creswell (2016), a sequential explanatory mixed-method approach provides the researcher with the ability to answer the research questions accordingly and structure the research study. The explanatory sequential mixed-method research is also called a two-stage model (Guetterman et al., 2019). The two-stage model gave me the opportunity to collect data in two categories. The first category collected data using the quantitative method and then analysed the data collected to build on the next category. The next category is where I collected data using the qualitative method and analysed data obtained so that it could add to the first category (quantitative). Through these two categories I gained more accurate and comprehensive data since data were collected twice and analysed twice. In addition, Creswell (2016) states that qualitative design assists the researcher to identify appropriate research instruments, and sample methods to follow up the quantitative design.

1.11.5 Rationale for using explanatory sequential design

The motivation for utilising the explanatory sequential design in this study was that the quantitative research and outcomes gave me a clear picture of the research phenomenon, which is teachers' understanding and practices of ICT integration in teaching Accounting. Therefore, further analysis was conducted through qualitative data collection to polish, broaden and describe the general picture provided through quantitative results (Guetterman et al., 2019). Likewise, the explanatory sequential design has the benefit of clearly recognised quantitative and qualitative parts, and this is a benefit for readers along with the researcher who designs and pursues the study. The explanatory sequential design starts by obtaining quantitative results from a population in the first category, and then refining or explaining these findings through qualitative exploration in the second category (Creswell, 2016).

1.11.6 Data collection

This study utilised four methods of data collection: questionnaires, focus group discussions, observations and individual interviews.

1.11.6.1 *Quantitative method*

Under the quantitative method, questionnaires were used.

1.11.6.2 *Questionnaires*

In this study, I utilised structured a questionnaire with closed-ended questions to collect responses on teachers' understanding and practices of ICT integration in teaching Accounting (cf. Appendix I). The questionnaire covered Accounting teachers' demographic characteristics, such as circuits, age, gender, grade teaching, level of education and teaching experience. Further the questionnaire also consisted of questions related to the TPACK framework and the four components of the UTAUT model. The questionnaires were distributed electronically to teachers via WhatsApp, email and Google Docs. These methods were convenient since teachers could be reached irrespective of location, they were able to complete the questionnaire at their own convenience and it avoided travelling costs incurred by travelling to schools during the pandemic. After questionnaires were returned, they were analysed and the second phase of generating data through qualitative methods followed.

1.11.7 Qualitative method

Under the qualitative method, I utilised focus group discussions, observations and individual interviews to generate rich information.

1.11.7.1 *Focus group discussions*

After analysing the questionnaires, I conducted focus group discussions with Accounting teachers based on an interview schedule to obtain insight and detailed information on the responses provided in the questionnaires (cf. Appendix J). Focus group discussions were held online via Zoom; the advantage of this virtual discussion was teachers were able to engage while they were in their own comfort zone and in remote locations. Creswell and Creswell (2017) notes that collecting qualitative data online through chat room interactions, e-mail, instant messaging and videoconferencing benefits both the researcher and the participants; however, obstacles such as data issues, internet access and technical skills may be experienced. During the process, teachers shared ideas and interacted with each other. My role was that of facilitator by posing follow-up questions or asking open-ended questions. In addition, I recorded teachers' discussions digitally for analysis purposes. Thereafter, observations were conducted.

1.11.7.2 *Observations*

In this study, I observed teachers in Accounting classroom teaching as a full observer. I did not change roles since I sought to capture every act taking place in the classroom. I remained in the classroom for the whole period noting everything regarding the instruction process. Furthermore, I utilised an observation schedule during the observations to ensure detailed information was accurately recorded to answer the critical research questions (cf. Appendix K). While in the field I took notes and digitally recorded everything taking place in the field (school and the classroom). Photos were also taken as supporting evidence. Faces of the participants were not revealed.

1.11.7.3 *Individual interviews*

In this study I conducted semi-structured interviews with Accounting teachers in secondary schools based on an interview schedule (Appendix L) to explore their understanding and practices of integrated ICT in Accounting. Each interview lasted 60 minutes per teacher and took place in the teacher's natural setting via Zoom and WhatsApp. The participant had the choice of selecting a preferred method. The interviews were digitally recorded for transcribing and safekeeping. Data were stored on a laptop computer and later analysed.

1.11.8 Sampling

This section includes a description of the population of this study and sampling size.

1.11.8.1 *Population*

For this study, the targeted population comprised all (179) Accounting teachers in Umlazi Durban South District. Umlazi District has 14 circuits, 26 Accounting clusters and 143 secondary schools offering Accounting in the FET phase, therefore, these teachers came from these circuits. The rationale for conducting a study in this district was based on easy accessibility since I stayed in the area and worked with most schools in the district as a lead educator.

1.11.8.2 *Sampling size*

Guetterman et al. (2019) argues that mixed-method sampling strategies involve both probability and non-probability sampling in selecting cases for a research study. In this study, I used a multiple sampling technique. Firstly, the name and number of secondary schools offering Accounting data were obtained from the Department of Education head office. Therefore, 179 teachers were purposively selected for the collection of quantitative data. In other words, the population of this study was 179 Accounting teachers. Two criteria were used to select teachers who participated in the questionnaire: all teachers who are teaching Accounting in the FET phase in Umlazi district and who hold a teaching diploma or degree (qualification). The population of teachers teaching Accounting was obtained from the database of Accounting teachers in Umlazi district. From the population of 179 teachers, 151 Accounting teachers accepted the invitation to take part in the quantitative data gathered through the questionnaire and availed their WhatsApp numbers for virtual copies of the questionnaire or addresses for paper copies of the questionnaire. One hundred and twenty-nine (129) Accounting teachers completed and returned the questionnaires. The response rate was thus 85,4%.

Secondly, I adopted stratified probability sampling to select teachers for focus group discussion, observations, and individual interviews. I created a list of Accounting teachers with their clusters. There are 26 clusters in the Umlazi District. This was to ensure that I align each teacher with a correct cluster. Thereafter, I created a list of clusters with numbers 1-26. I then

allocated teachers to their respective clusters. The clusters were then sub-grouped. In those groups, teachers were assigned numbers of 1-7. The rationale for ending at seven was that there was a cluster with seven schools. Since teachers were all assigned numbers, I then selected three numbers from each cluster, namely number 1, 3 and 7. Therefore, three teachers were randomly selected from each cluster for focus group discussions, in totality 78 Accounting teachers (3 teachers $\times$ 26 Accounting clusters). Since they were a large number, they were divided into seven groups of 10 participants and one group of 8 participants. This gave a total of eight focus group discussions that were conducted.

For observations, I started by listed the 14 circuits in the Umlazi District with numbers 1-14. The numbering of circuits was to ensure that I did not omit circuits on the lists. I then split the number of teachers into groups and each group consisted of ten participants. Thereafter, I allocated each teacher a number from 1-10. From the groups, all teachers with number 2 and 4 were randomly selected. In other words, two teachers were randomly selected from each circuit for observations. Therefore, observations were administered with 28 (2 teachers $\times$ 14 circuits) Accounting teachers. Lastly, one teacher was randomly selected from each circuit (14 circuits) for individual interviews. To draw a random sample of one teacher er circuit, I chose teachers allocated number 1 in the observation list and requested them to participate in the individual interviews. In total 14 Accounting teachers participated in individual interviews. Thereafter, data was analysed accordingly.

1.11.9 Data analysis

The Statistical Package for the Social Sciences (SPSS) version 27 was employed for analysing quantitative data while qualitative data were analysed through the use of thematic data analysis. Furthermore, the analysis of quantitative and qualitative data was done sequentially. In this study, quantitative data obtained from the closed-ended questions (questionnaires) were reduced and analysed using descriptive and inferential statistical analysis. Descriptive statistics was used to report teachers' demographic characteristics and independent variables. Inferential statistical analysis reported on dependent variables (T-Test and ANOVA). Data analysis was recorded in the form of tables and graphs and supplemented by qualitative findings.

Qualitative data obtained from focus group discussions, observations and individual interviews were reduced and analysed using inductive and deductive data analysis. The inductive process demonstrated working back and forth between the themes and the database until I established

a comprehensive set of themes on teachers' understanding and practices. Then deductive analysis followed. I looked back at the data from the themes to determine if more evidence should support each theme or whether additional information was needed. As such for qualitative analysis, I transcribed both the audio-recorded observations and individual interviews verbatim. Teachers' observations were compared to individual responses and analysis was done through coding and developing themes to report findings on teachers' understanding and practices of integrating ICT teaching Accounting. In order to report on the data analysed, a written presentation including the voices of participants, my reflection, descriptions and literature was provided.

1.12 ETHICAL ISSUES

Since this research study sought to explore teachers' understanding and practices of ICT integration in teaching Accounting, I interacted with teachers about their own assumptions, values, beliefs and personal perspectives. Therefore, it was essential for me to consider ethics in this study. The ethical principles to which I adhered entailed seeking permission, obtaining informed consent, ensuring anonymity and confidentiality and avoiding harm to participants.

1.12.1 Permission and informed consent

Before proceeding to data collection, the research proposal was submitted to the University of KwaZulu-Natal (UKZN), Research and Ethics Committee to obtain permission to conduct the study. Authorisation was also requested from the KZN DoE (Pietermaritzburg) to conduct research in Umlazi District schools. After permission was granted to conduct my research, consent forms were issued via WhatsApp or e-mail to principals of the schools, teachers, learners and parents to inform them about my study. I also paid a visit to the schools to discuss my project. Informed consent letters explicitly described the nature of the study and its objectives; teachers were thus invited to be part of this study. It was explained that they would not receive any financial benefit from participation and they were free to withdraw at any time without penalty. Principals, teachers, learners and parents were given time to read and sign the consent forms should they agree to take part in this research study or allow their children to be observed.

1.12.2 Anonymity

The researcher should protect the identity of the participants and the research sites. Participants may be uncertain about participating in a study. In this study, all Accounting teachers'

information was kept confidential by assigning pseudonyms to all participating teachers and the research sites. Anonymity was also applicable to ensure that the Accounting teachers participated freely in this research study. According to Ziphorah (2014), keeping participants anonymous in the research encourages them to share information more easily.

1.12.3 Confidentiality

Data generated from this study such as transcripts and recordings were only accessible to my supervisor and me and only used for the purpose of the project. Photographs do not reveal faces. The data generated by Accounting teachers including the digital recordings, copies of interviews and transcripts was kept safe on devices with secure passwords. The data will be kept for at least five years on a password locked computer or locked safe.

1.12.4 Validity and reliability

This section outlines the trustworthiness of this study based on its validity and reliability.

1.12.4.1 *Trustworthiness of the study*

The accuracy and quality of this study was validated by reliability and validity, in other words, I validated information gathered by me and provided by Accounting teachers.

1.12.4.2 *Validity*

In this study, I started by designing the questionnaire and distributed copies to different teachers. Again, during initial interviews and follow-up interviews similar questions were discussed about teachers' understanding and practices; in that manner, I was able to validate data from different teachers using similar questions.

1.12.4.3 *Reliability*

Validity in this study was measured by the four instruments (questionnaires, focus group discussions, observations and interviews) as they were the best instruments to measure teachers' understanding and practices of ICT integration in Accounting. Ten questionnaires were piloted for internal consistency. I further observed if using these instruments resulted in obtaining similar results about the research phenomenon. After the pilot study, the questionnaire was reformulated and tested again on SPSS to generate quality result and accuracy.

1.12.5 Limitations

I have identified certain limitations of this study. Firstly, this study was conducted during the COVID-19 pandemic and I required more time to conduct observations and interviews than initially planned. The use of technology when collecting data (e.g., Zoom meetings) was challenging as some teachers were not competent with technology devices. Furthermore, the research gatekeepers limited me in terms of selecting a large group of teachers and access to schools was not easy. This research study was conducted in townships and urban areas. Although areas shared some contextual issues with rural areas, I was not able to generalise this study of ICT integration to Accounting teachers in different geographical areas. This research study was conducted in one out of nine provinces in South Africa (KZN) and within a single district (Umlazi Durban South District). Therefore, findings were not generalised to other provinces and other districts. In addition, only teachers from three FET grades (Grades 10-12) were selected to participate in this study, while ICT integration is relevant to all grades in schools. Therefore, findings applied only to the FET phase. Furthermore, this research was only conducted in one subject, Accounting, excluding school subjects that might yield different results.

1.13 ORGANISATION OF THE THESIS

This research study consists of eight chapters, a brief summary of each chapter is presented below:

Chapter 1 provides an insight into the study's introduction, background, problem statement, rationale and significance. Further, critical research questions, objectives, and a chapter summary are given.

Chapter 2 discusses the literature related to teachers' understanding and practices of ICT integration in teaching Accounting. The review of the literature is presented under various subheadings namely conceptualisation of concepts, ICT policy in South Africa, ICT policies in other countries, technology utilisation in education, the need for ICT integration in education and the importance of ICT during COVID-19. Furthermore, technology integration in teaching and learning of Accounting education and level of ICT integration in South African schools are discussed. Lastly, factors influencing teachers to integrate ICT in teaching Accounting are dealt with.

Chapter 3 provides a detailed explanation of the theoretical and the conceptual framework underpinning this study. TPACK and UTAUT were selected on the basis of providing comprehension and knowledge on integration of ICT in the classroom.

Chapter 4 discusses the research methodology of this study according to the following: research approach, research paradigm, research design, sampling method, data collection methods, data analysis methods, validity and reliability, ethical considerations and the study's limitations.

Chapter 5 presents and discusses findings on the primary research question: What are Accounting teachers' understanding of integration of ICT in teaching Accounting in Umlazi District? To answer this question three themes were developed: firstly, technologies teachers use in teaching accounting; secondly, the extent to which technologies are used in teaching accounting; and thirdly, teachers' level of proficiency in technology use. This chapter later presents findings on teachers' reasons for utilising technology.

Chapter 6 presents, interprets and analyses findings on the second research question: How do Accounting teachers integrate ICT in teaching Accounting in Umlazi District? The TPACK questionnaire was developed and administered and responses were used to answer this research question. Further, qualitative findings, T-Test and ANOVA statistical analysis support the findings.

Chapter 7 presents, interprets, and analyses findings on the third research question: Why do Accounting teachers understand and practise integration of ICT in teaching Accounting the way they do? The UATUT conceptual framework was used to answer this research question by developing a questionnaire and responses were presented as findings. The findings were presented quantitatively and supplemented by qualitative findings. Later factors influencing Accounting teachers to integrate ICT were discussed.

Chapter 8 presents a deeper discussion of findings by employing literature and theories to support, confirm or refute findings.

Chapter 9 presents the key findings, a suggested model, implication of findings, suggestions for future research, limitations and conclusion of this research study.

1.14 CHAPTER SUMMARY

This introductory chapter presented an overview of the research study. It covered the background of the study, introduction, problem statement, rationale, significance of the study, the purpose of the study, critical research questions, objectives, brief literature review, research methodology and ethical considerations. Further, the limitations of the study and the orientation of chapters were presented.

CHAPTER 2

2. UNDERSTANDING AND PRACTICES OF ICT IN TEACHING: REVIEW OF RELATED LITERATURE

2.1. INTRODUCTION

The preceding chapter outlined an introduction to this research study. This chapter aimed at a providing review of scholarly literature related to the purpose of this research study. The previous literature examined teachers' understanding and practices of ICT in general teaching and more specifically in the teaching of Accounting. The rationale was to obtain a background to the research topic based on extant scholarship. Therefore, the following sub-headings were addressed in this chapter: ICT conceptualisation, policy guiding e-Education in South Africa and other countries, technology in teaching and learning and the importance of integration of ICT in teaching and learning. Further, the nature of Accounting was outlined, the importance of integration of ICT in Accounting, teachers' understanding and practices on ICT integration in teaching and factors influencing teachers to integrate ICT in teaching.

2.2. CONCEPTUALISATION OF CONCEPTS

This section outlines broad descriptions of two critical concepts of this study.

2.2.1 Conceptualisation of technology in education

The concept of technology has gained recognition and importance due to its impact in various areas including business, education and social life. Further, the current digital era has embraced the concept of technology. As a result, various scholars have shared various definitions from various areas to offer a deeper, comprehensive understanding of this broad concept. DBE (2011b, p. 8) describes technology as “the use of knowledge, skills, values and resources to meet people’s needs and wants by developing practical solutions to problems, taking social and environmental factors into consideration”. Gumbo (2016) describes technology as a school subject that consists of content and methods that intend to prepare learners for technological or engineering (job) environments. Technology in education is a unique theory-practice subject that presents opportunities for teachers to engage learners in learning activities through a problem-solving approach to investigate, design, make, evaluate and communicate (DBE, 2011b; 2012b). In indigenous cultural terms, technology refers to material technology, such as bows and arrows and fishing nets; social technology, such as management methods; social

institutions (e.g., patriarchy or matriarchy); songs, jokes or ideas; and communication technology, including use of language and nonverbal signals (Gumbo, 2016). Technology has always served as both a driving force and an instrument of innovation in any area of human activity (Siyaya, 2023). This study conceptualises technology as digital devices, methods and systems that result in scientific knowledge being used for practical purposes.

2.2.2 Conceptualisation of ICT

Modernisation and globalisation in the world are significant to the advent of technology in various sectors, such as business, industry, social life and education. As a result, the education sector has widely adopted technology in the classroom. Furthermore, the concept of technology around the globe has developed into ICT. Currently, the commonly used concept for technology in education is ICT. Hence, it is critical to have a clear comprehension of the ICT concept. According to Hafifah and Sulisty (2020), the term, ICT, was coined in the 1990s when the education system adopted technological facilities in the education setting. On the other hand, Adarkwah (2021) recognises ICT as the procedures and management systems and science and technology which professionals use to manage, apply and link data with social, cultural, and economic issues.

Furthermore, ICT is an umbrella concept that encompasses any communication tool, including radio, television, mobile phones, computer and network resources as well as various facilities and devices such as video conferencing and online learning. ICTs include a variety of electronic devices such as computers (desktops, laptops), copier machines, data projectors, interactive whiteboards, the internet, digital cameras, televisions (TVs), CD/DVD players, and radios. ICT is a very broad phenomenon that includes any digital device that can electronically store, retrieve, create, modify, and disseminate digital data such as computers (Kaware & Sain, 2015). Similarly, Kiru (2018) asserts that ICT refers to electronic devices (laptops, chrome books), handheld devices (iPads, iPods), interactive devices (interactive whiteboards), application software, and social media tools that are used for commerce and communication. Msila (2015) and Rambrij (2018) define ICT as hardware and software that are utilised for communication or application such as cellular phones, satellites, and fibre optics, LAN and WAN. ICT comprises all the technologies used for the transmission of digital materials, comprising hardware and software systems for physical storage and logical representation of sets of data.

The DoE (2004) describes ICT by dividing the ICT concept into three categories: Information Technology (IT), Communication Technology (CT), and ICT. IT refers to the software and hardware programmes that can be used to obtain, access, retrieve, organise, present, and store data. The software includes data and multimedia programmes while hardware includes computers, laptops, cellphones and cameras (DoE, 2004). Furthermore, CT refers to the networks used for communication such as faxes and e-mails. These tools assist in effective and quick communication whether between teachers and learners, traders and buyers, or trading between businesses. Lastly, ICT is a combination of IT and CT that enables the processing, management, and exchange of data, information, and knowledge (DoE, 2004; DBE, 2009a). On the other hand, UNESCO (2013b) describes ICT as a scientific, technological and engineering discipline and management techniques used in handling information and its application and association with social, economic and cultural matters. Thus, ICT plays a vital role in creating and exchanging knowledge and information in everyday lives in many areas such as the school, workplace, and community (Fraillon et al., 2014; Makhlouf & Bensafi, 2021).

Adarkwah (2021) views ICT as a reliable tool for both the education system and teachers to implement and facilitate educational transformation and communication. Hodgkinson-Williams, as cited in Makwela (2019), describes ICT integration in teaching using four phases in a computer: firstly, as representational tool, ICTs are utilised to reproduce the information of instruction; secondly, as cognitive tools, ICTs are used to generate and develop ideas of understanding; thirdly, as meditational tools, ICTs are utilised to enhance knowledge construction; and finally, as transformational tools, ICTs bring change and reshape current teaching and learning.

Due to the tremendous role of ICT in education, concepts such as e-learning, e-Education, blended learning, online learning, and distance learning have been developed to better comprehend ICT in education and the classroom. Teachers in schools utilise these concepts when they refer to ICT. Therefore, it is pivotal for this research study to demonstrate deeper insight into their meanings. According to Ciroma (2014) and DoE (2004), e-learning, e-Education, and online learning can be defined as all forms of learning in basic and higher learning that use information technology, such as the internet, an intranet (LAN), or extranet (WAN) whether wholly or in part, for teaching and learning, interaction, evaluation, and facilitation. Furthermore, Web-based learning promotes e-Learning through the utilisation of

browsers such as Internet Explorer, Firefox, and Google Chrome. Several terms are used to denote learning that moves beyond the walls of the classroom: e-learning is one such concept. It is defined as any learning that delivers information, communication, education, and training by utilising technology, especially the internet.

Similarly, Singh and Thurman (2019) define e-Learning as all the innovative techniques teachers or instructors utilise for instructional purposes including computers and other ICT tools. Adarkwah (2021) and Ciroma (2014) describe blended learning as learning models that intertwine traditional chalk and talk learning with e-Learning (using digital devices to learn). For instance, teachers can have one face-to-face lessons and lessons online after school or on weekends to continue with teaching and learning. Sometimes, the teacher can blend learning in one period by switching teaching resources. Arthur-Nyarko and Kariuki (2019) argue that blended learning and e-Learning are beneficial, however their effectiveness solely depends on the type of country and its resources. Therefore, developing countries do not enjoy the effectiveness of e-Learning and blended learning as much as developed countries due to inadequate resources (Lembani et al., 2023). Many types of e-Learning in South African schools are not successful due to certain reasons. Nevertheless, all countries (developing or developed) have formulated policies to guide ICT and e-Education.

2.3. ICT POLICIES

The respective ICT integration policies and their effectiveness in selected countries, developed and developing, are expounded in this section.

2.3.1. ICT policy in the South African education system

ICT policies lay a roadmap for various stakeholders in education, more specifically teachers. These ICT policy frameworks also measure ICT education development and rigorous implementation in the instructional practice. According to Zeng (2022), ICT integration policy in basic education means the measures and standards designed by a government to manage and guide the process of ICT integration in schools in order to achieve educational goals. The massive advancement of technology globally has motivated South Africa to adopt ICT in the education system. Furthermore, the 21st century also necessitates the equipment of South African learners with advanced technical knowledge and skills that will be meaningful in their lives. Hence, there is a formulated ICT policy framework to monitor the adoption of ICT. The aim of policy frameworks is to define ICT, formulate aims and objectives and guide teachers

on implementation procedures. Similarly, Gibson et al. (2018) concur that a country's ICT policies guide the adoption and use of technology by explicitly defining national goals to be achieved.

In South Africa, the White Paper on e-Education was developed as a guide to the adoption and implementation of ICT (DoE, 2004; DBE, 2009b). According to Vandeyar (2015), the Department developed two policies to guide ICT implementation in education: the White Paper on e-Education Draft policy in 2004 and the Guidelines for Teacher Training and Professional Development in ICT and Training in 2007. The White Paper intended to direct quality teaching and learning through modern technological resources in schools (DoE, 2004). The Guidelines for Teacher Training and Professional Development in ICT and Training policy's intention is to ensure a sound comprehension of ICT knowledge, skills, values, and attitudes needed by teachers for productive curriculum implementation (Vandeyar, 2015).

In addition, the White Paper on e-Education's main goal was to ensure that every manager, teacher, and learner in South African schools had a good comprehension of ICT and was competent and confident to utilise ICT by 2013 (DoE, 2004). Moreover, the policy intended to provide the following: an opportunity for the younger generation to grow up with digital skills and knowledge which would allow them to compete globally; to provide digital skills to improve educational practice across all subjects and encourage ICT integration in the curriculum; and to transform teaching and learning through ICTs which would encourage a learner-centred and activity-based approach to education (DoE, 2004). Vandeyar (2015) asserts that the White Paper on e-Education provided a framework for communication between the government and education sector to plan for effective teaching and learning required in the 21st century.

In line with this, the DoE (2004) maintained that the ICT policy framework was imperative to support the education system including curriculum, pedagogy and assessment reforms to facilitate improved education and improved use of educational resources through ICTs. But du Plessis (2015) argues that the ICT policy framework only provided limited information on teachers' procedures to integrate ICT effectively in teaching in South Africa. Similarly, Padayachee (2017) adds that the DoE (2004) policy framework on e-Education does not clearly clarify its objectives, the budget for ICT, resources needed, and the implementation strategies

in the classroom, resulting in vague technological pedagogy and uncertainty about appropriate technology resources to use in the classroom.

To add to the debate, Adegbenro et al. (2017); Hove and Grobbelaar (2020); Padayachee (2017) and Vandeyar (2015) contend that the DoE policy's long-term ICT implementation strategy has not been achievable. In the light of gaps in the White Paper, in 2013 the Department of Communications (DoC) introduced the South Africa Connect policy to assist organisations such as schools to obtain ICT knowledge (Mwapwele et al., 2019). This policy aimed at enhancing digital education through innovation on the internet and other digital devices such as tablets (Department of Communications [DoC], 2013). Furthermore, Mwapwele et al. (2019) add that South Africa Connect was introduced to ensure the availability of fast internet access in all primary and secondary schools in the country (DoC, 2013). The policy recommends teachers' and principals' internet connectivity to support access to ICT learning materials that can enhance learning in classrooms (Mwapwele et al., 2019). In addition, the South African Connect policy has been supported by the National Integrated ICT Policy White Paper and the Policy on High Demand Spectrum and Policy Direction on the Licensing of a Wireless Open-Access Network (Department of Telecommunications and Postal Services [DTPS], 2019). These policies are an extension of the White Paper on e-Education (DoE, 2004); however, they have limited focus on schools since they deal only with connection.

The above discussion indicates the existence of an ICT policy in South Africa; however, it is ineffective and has been criticised for its limitations. Thus, a discussion of the policies of selected developed and developing countries is essential by way of comparison.

2.3.2. ICT policies in other countries

All countries foresee ICT as a means to accelerate knowledge and stimulate economic growth. As a result, every country takes measures to carry out ICT implementation in various industries. In the education system, ICT integration is stressed globally and guided by formulation of policies. Since all countries have formulated and endorsed ICT policy integration in education, a few developed and developing countries were selected to exemplify ICT policies and their implementation. The rationale of selecting countries from developed and developing countries was to compare design and implementation.

2.3.2.1. *Australia*

Australia is one of the most developed countries in the world with an advanced education, technical infrastructure, and high-quality internet access (Schrum et al., 2015). As a result, their ICT curriculum is introduced from Grade 7 up until Grade 12 through software subjects with core topics related to technology. These subjects are Information and Software Technology (IST), Software Design and Development (SDD), Information Processing and Technology (IPT), and Technological and Applied Studies (TAS) (Stoilescu, 2017). Australia has several documents that endorse ICT integration in education. Some of these include the learning in an online world policy, which concentrates on bringing change in Australian schools, ensuring the opportunities provided by new technologies are exciting, harnessing these technologies for learning is vital, and providing equal technology opportunities to societies (Ministerial Council on Employment, Education, Training and Youth Affairs Australia [MCEETYA], 2008).

Secondly, the document “A Digital Education Revolution”, states:

“Computers and broadband are shaping the 21st century. We need to ensure that Australian schools are able to provide students with the tools they will need to live and work in a world shaped by technological change. Thirdly, The Adelaide Declaration, states that these national goals provide a basis for investment in schooling to enable all young people to engage effectively with an increasingly complex world. This world will be characterised by advances in information and communication technologies, population diversity arising from international mobility and migration, and complex environmental and social challenges” (MCEETYA 2008, p. 1).

The Ministry of Education in Australia designed a policy framework called Digital Education Revolution (DER) in 2008. This framework outlines three core objectives, namely, to appreciate ICT as an essential and relevant part of life; to develop students’ ability to work with ICT; and to advance students’ knowledge, skills, and understanding (Stoilescu, 2014). The Australian framework prioritises the process of digital learning and application, with no narrow moral or ideological political objectives. Furthermore, DER provides an adequate plan for the accessibility of ICT resources so that every school has digital teaching and learning resources, and those resources are utilised efficiently. Again, it provides adequate guidelines for utilising

technical tools and resources for processing information and a foundation for knowledge, communication, and collaboration in all areas of the curriculum (Tran & Stoilescu, 2016).

These authors further conclude that the DER policy framework is guided by ICT leadership which safeguards a coordinated plan to provide schools with infrastructure, learning resources, and teacher capacity to address 21st century educational challenges. Moreover, the ICT leadership monitors professional development and makes sure that teachers have the skills and tools to design and deliver knowledge and skills that meet student needs and mobilise the benefits and resources of the DER. The policy also recognises the importance of ICT integration to enhance and assist in achieving student learning outcomes and providing educational materials (Stoilescu, 2014). The policy framework in Australia is well implemented as evidenced in the ICT annual government report reporting on the achievements of the policy.

2.3.2.2. China

China has the largest basic education system and a large population in schools. The country, therefore, prioritised educational reforms such as the advent of ICT integration in education to ensure learners obtain quality basic education and obtain relevant 21st century skills and knowledge. In China, ICT integration education began with technology development in the schooling system which resulted in the government formulating a national ICT policy. The national ICT policy aimed at developing ICT education in basic education, providing planning and guidance in ICT development (Zeng, 2022). Zeng further states that China rigorously implemented ICT integration in basic education, and technology resources were a priority to achieve the policy's aims. Furthermore, numerous projects have been initiated to support ICT integration in basic education and stimulate network access.

These include School Network Popularisation (*xiao xiao tong*, Chinese), Class Network Popularisation (*ban ban tong*, Chinese), and Distance Education in Rural Areas (DERA) (Zeng, 2022). DERA has played a pivotal role in promoting ICT integration in rural areas' basic education through broadcast stations, instructional CDs, satellite reception stations for instruction, and computerised classrooms (Zeng, 2022). In addition, principals and teachers have been well-trained to use ICT resources. Jiao et al. (2014) conclude that after the provision of ICT resources and training focus was put on providing media platforms for the public such as online courses. Zeng's study reveals that the policy shows progress in ICT development in

education even though some ICT resources such as software mentioned in the policy are still not implemented.

2.3.2.3. *Vietnam*

In Vietnam, numerous documents have been proposed about ICT education and they were not critically informed nor well-implemented (Tran & Stoilescu, 2016). As a result, in 2009, the Vietnamese Ministry of Education and Training (VMOET) proposed a National Plan for ICT in Education and it emphasised innovation in curriculum, technology development in teaching and learning and more teacher training (Tran & Stoilescu, 2016). The VMOET prioritised cognitive aspects in ICT learning; as a result, its major objectives were to concentrate on students' logical thinking and to recognise the social domain of ICT as critical. Furthermore, the government invests in ICT resources for high schools to implement quality technical teaching and learning (Tran & Stoilescu, 2016). Nevertheless, some gaps have been identified in the plan: lack of clarity, the student ratio per laptop is more than one, inadequate ICT resources and teacher training. The VMOET report further revealed that the plan states the ICT educational objectives; however, there are no practical measures stated to evaluate the content delivery. Secondly, the National Plan for ICT in Education was implemented in 2009 but the ministry has not provided a report on the progress and result of the implementation of ICT education to the public. Lastly, the objectives are well articulated but implementation is vague (Tran & Stoilescu, 2016).

2.3.2.4. *Chile*

In Chile, ICT education began to be recognised in the 1990s however social inequality affected effective implementation. As a result, ICT educational policy ended up concentrating on solving social inequality challenges. According to Giraldo and Báquiro (2020), the Chilean government aimed for national digitilisation through an educational computer programme called Links. Moreover, the Chilean government designed a programme called Computational Mobile Laboratories (LMC), reaching 250,000 students who benefited only in the fourth and fifth grades of primary education. These programmes are aimed at enhancing ICT integration in education and having interconnection of schools through the internet while promoting virtual spaces for collaboration and promoting the design of digital content to support the curriculum (Giraldo & Báquiro, 2020).

The national ICT education policy in Chile aimed at providing access to and fostering the use of digital technologies to enhance students' learning in school subjects and develop their digital skills in primary and secondary schools (Claro & Jara, 2020). ICT policy aimed at introducing ICT in schools, training teachers to utilise ICT and providing ICT access in rural areas. Furthermore, the government developed Enlaces National Support Network, which is intended to train teachers and provide them with technical and pedagogical support. Teachers in primary and secondary schools were given an opportunity to work in the university as trainers to get an insight into educational technology and the use of technology resources (Claro & Jara, 2020). ICT policies create efficient and effective integration of ICT in the classroom; however, studies have revealed that some goals stated in the policy document are still not implemented.

2.3.2.5. *Zimbabwe*

In Zimbabwe, technology utilisation began in the 1980s and the fast growth of technology resulted in the first national ICT policy in 2005. The purpose of the national policy was to guide the acceleration of ICT growth in all sectors (Ministry of ICT Postal and Courier Services [MICTPCS], 2016). The national ICT policy is constantly revised and updated to accommodate regular technology changes. The national ICT Policy on education stipulates the following aims: to facilitate the deployment and exploitation of ICTs in the educational system from primary school upwards; to work with the relevant Ministries to include ICT training and education in schools, colleges, and universities; to provide equitable access to ICT-enabled education and training in all parts of the country, including disadvantaged communities; to promote e-learning and use of e-learning materials throughout Zimbabwe; to boost connectivity for remotely located schools in order to facilitate the e-learning programme; and to encourage, promote and apply research and development in ICTs in society (MICTPCS, 2016).

In addition, Manhibi (2019) concurs that the ICT policy framework was designed by the government to integrate technology into teaching and learning, particularly in primary and secondary education. Manhibi further states that the policy framework describes the procedure for successfully achieving technology integration, the resources required for integration, and professionally training teachers. However, Machivenyika (2018) and MICTPCS (2016) mention that the first ICT policy failed because of drawbacks; a second policy was implemented in 2018 but certain objectives have not been achieved. Some hindrances include a shortage of ICT qualifications among teachers, insufficient resources and funds to maintain

ICT, lack of internet connectivity in some areas, and the level of poverty in the country where learners cannot afford ICT tools (MICTPCS, 2016). Still, on that note, the Zimbabwe government has initiated projects to support the aims of the national ICT policy on education, namely, World Links Zimbabwe, The African Virtual University Teacher Education Project, and College IT Enhancement Programme (CITEP) (MICTPCS, 2016).

2.3.2.6. *Malaysia*

In Malaysia, the Ministry of Education (MoE) recognised the significance of integration of ICT in the curriculum for primary and secondary schools. The MoE responded by adding the national ICT education transformation shifts in Malaysia's latest Education Blue Print (PPPM) 2013-2025 which concentrates on educational developments (Ghavifekr et al., 2014). However, this transformation left some gaps for ICT integration in the classroom such as the ratio of ICT resources allocated to teachers and learners (Shan et al., 2016). Therefore, the second transformational shift in ICT educational policy called Leverage ICT To Scale Up Quality Learning across Malaysia was put in place to close such gaps. The ICT transformation policy aimed to establish and provide more internet accessibility in the nation's schools to create a virtual learning environment via an education development programme called *1BestariNet* for all 10,000 schools by 2013. It also aimed to augment online best practices content starting with a video library of best teachers' delivery lessons in critical subjects in 2013 and to maximise the use of ICT for distance learning and self-paced learning to expand the capacity of learning outcomes and allow for more customised learning requirements (Ghavifekr et al., 2014). By designing this ICT transformational shift policy, the MoE aims to provide quality ICT skills to all primary and secondary school learners so that they can work remotely and bridge the gap between the lack of resources and other ICT facilities and the gap between rural schools and urban schools so that each student can have his/her own ICT resources such as a computer (Ghavifekr et al., 2014).

In conclusion, the above discussion indicates that the vacuum of integration of ICT in the education system has been globally acknowledged, resulting in various policy frameworks that countries have formulated. Policies are available in both developed and developing countries. Some policies are continuously updated by additional projects to enhance ICT integration implementation. From the above discussion, it can be summarised that both developed and developing countries face challenges when it comes to ICT integration. Notably, even some of the countries with clear policies have failed to implement successful ICT integration due to

factors such as lack of resources, lack of equipped teachers, and resistance. While those who have a weak policy that is unclear to implement may have resources but guidance is lacking on the implementation. All policies rigorously stipulate their intentions and transformational aims; however, in some countries not all objectives have been met. All the ICT policies discussed above focus on providing ICT resources, training and supporting teachers. Developed countries have adequate investments and ICT resources to implement goals from the policy while developing countries fail to achieve all objectives of ICT policies due to financial constraints. To measure how far these ICT policy goals have been achieved, it is wise to first understand technology utilisation in education.

2.4. TECHNOLOGY UTILISATION IN EDUCATION

The concept of technology in the education system arose when computers were first introduced at schools for effective administration. Chen (2015) asserts that technologies in education began decades ago with a computer in an effort to improve instructional procedures and have significantly increased globally. Administrators and school managers were the only people who had access to these computers (Hafifah & Sulisty, 2020; Li, 2014). Normally only one computer was allocated per school (Ghavifekr et al., 2014; Padayachee, 2017). However, the 21st century and globalisation have widely advanced technology in education, more especially in teaching and learning. As a result, the concept of technology has been perceived as an imperative issue in teaching and learning (Ghavifekr & Rosdy, 2015). Similarly, Chen (2015) and Kirschner (2017) state that technology is a useful phenomenon that promotes development in schools and society. Furthermore, Ghavifekr and Rosdy (2015) note that technology has grown exponentially in many countries since it is seen as a quick technique to transfer knowledge and information, and communicate the curriculum to learners who need to become knowledgeable about society.

According to Batane and Ngwako (2017) and Ghavifekr and Rosdy (2015), technology use in the classroom is perceived as a solution to the numerous challenges of teaching and learning, and teachers are encouraged to utilise technology in their teaching. Li (2022) and DoE (2004) concede that the main reason for this encouragement is the extensive benefits of technology in learners' learning and its role in curriculum innovation. Zhao et al. (2016) assert that in the 21st century technology in teaching and learning is a strategy to solve illiteracy. For instance, the variety of technologies allow learners to find more resources to read and practise with. Three elements influence teachers' use of technology in their teaching and learning: the context

of learners and learning, differing designs for learning and the characteristics, constraints and benefits of technology (Kirkwood & Price, 2014). Technology-based learning plays a crucial role in developing self-directed lifelong learners that have skills and knowledge necessary for the modern rapidly changing world and it further blends the needs and cultural experiences of learners. Teachers also acquire a chance to be lifelong learners due to the constant updates and development they can access through technology.

Moreover, Tondeur et al. (2016) assert that technology in the classroom promises to promote learner-centred teaching and to improve learners' performance. However, Sutton and DeSantis (2017) argue that the potential of technology to promote learner-centred learning is still limited as many teachers are uncertain how to shift to learner-centred learning through technology. In addition, literature reveals the improper use of technology to achieve learner-centred learning demonstrates that teachers are not well prepared to use technology to influence meaningful learning in their classrooms (Sutton & DeSantis, 2017). Hence, Kirschner (2017) states that because of the complexity and changes taking place in the classroom, teachers should obtain various technical skills needed to operate technology.

Although technology utilisation in teaching and learning has been a subject of great significance, however, its complexity cannot be ignored. Mooketsi and Chigona (2014) and Ghavifekr et al. (2014) concur that technology is very complex to implement in teaching and learning due to its nature and they suggest proper planning from teachers in order to overcome its complexity. On a similar note, Batane and Ngwako (2017) assert that teachers' limited theoretical understanding, conflicting beliefs, school cultures, and lack of training challenge the effective utilisation of technology in the classroom. Buabeng-Andoh (2019) and Aksal and Gazi (2015) further conclude that technology integration in the classroom is still inadequate even though huge investments have been made especially in types of equipment. Umugiraneza et al. (2018) indicate that the utilisation of ICTs in the curriculum delivery of Mathematics in Kwazulu-Natal primary schools is still low when compared to high schools as some primary school teachers still have no access to ICT resources, particularly in marginalised schools. Mukhari (2016) also found that some primary schools in Gauteng are lagging behind in technology utilisation due to a lack of access to ICTs. Siyaya (2023) notes that schools in rural South Africa are limited in ICT use due to poverty that hinders successful utilisation.

2.5. THE NEED FOR TECHNOLOGY INTEGRATION IN TEACHING AND LEARNING

This section provides an in-depth review of literature related to the need for ICT integration in teaching and learning.

2.5.1. Importance of ICT

The importance of ICT has gained momentum in the education, economic and social sectors. Developing countries such as Uganda, Ethiopia, Kenya, and other many African and Asian countries have begun to emphasise the importance of ICT in the education sector and other sectors (Gebremeskel et al., 2016). In the education sector, the importance of ICT is stressed due to the immense role it plays in the teaching and learning procedure. Over the past decades, the education sector has been transformed and ICT has become the most crucial technique in bringing transformation and achieving transformation goals in education. Steukers (2017) indicates that the significance of integrating ICTs is featured in the Global Development Agenda, which commits the international community to ensure inclusive and equitable quality education and to promote lifelong learning opportunities for all.

Onwuagboke et al. (2015) adds that ICT is very important in education as it conveys the importance of teachers and learners moving away from traditional approaches to a more transformed teaching and learning. A transformed teaching and learning approach involves a shift from a teacher-centred to a learner-centred approach, utilisation of technology education, remote teaching and learning, collaborative learning, inclusive learning and an instructional procedure that develops critical thinking skills. ICTs allow each country to measure its own transformation level and implementation achievements. Furthermore, Buabeng-Andoh (2019) concurs that ICT has turned out to be a vital element in educational reforms and is very important in the school curriculum.

The worldwide experience of ICT confirms the role of ICT in the education system to enhance teaching and learning in schools. According to Ghavifekr et al. (2016), the enhancement approach can be referred to as the importance and potential of ICT to enhance the content of the subject. As a result, numerous scholars have concurred that ICT in education improves the quality of teaching and learning. Shadreck (2015) asserts that ICT improves classroom instructional practice through the integration of ICTs with teaching and learning. In the same vein, Karki (2019) states that ICT in the education sector is important as it improves classroom

delivery, increases access to different learning materials, and develops problem-solving skills for learners. Even though ICT has been viewed as a solution to improving the quality of teaching and learning in the classroom, teachers encounter challenges during the implementation process. Moreover, Shadreck (2015) suggests that the importance of ICT in the classroom demands that policy designers identify challenges that might hinder teachers from improving their teaching and learning through ICT integration.

Alemu (2015) adds that ICT in the education system improves teacher knowledge and skills and learner achievement. ICTs allow learners to acquire curriculum knowledge on their own and teachers assist where there is a specific need. Adding to the debate Shadreck (2015) argues that, beside the fact that ICT is valued in instructional practice in schools, it also improves students' learning skills, allows equal access to education, and provides motivation as well as the ability to complete learning activities. Mwendwa (2017) further notes that the integration of ICTs into the school curriculum allows learners to work effectively and independently. Therefore, the teacher's responsibility is to facilitate learning, design assessment activities and guide learners in their learning.

Furthermore, the importance of ICT has been emphasised in schools and society as it has immense power to prepare learners for the 21st century. The 21st century demands learners to be ICT capable in their learning and to be equipped with technological skills (Shadreck, 2015). The rationale for emphasising technological skills in the 21st century is that it prepares learners for the workplace and industry (Ghavifekr & Rosdy, 2015). It is also crucial as it provides learners with different learning opportunities which may also be utilised in solving societal problems. Buabeng-Andoh (2019) asserts that schools of the 21st century are compelled to design an ICT-oriented curriculum and the school should have ICT facilities in order to allow effective ICT implementation. Most activities take place digitally at the current time worldwide, hence the education sector aims at equipping every learner with valuable knowledge and skills.

After several complaints from teachers about their administrative burden, the education sector encouraged ICT utilisation in schools as the shift from paperwork to digital work reduces administration. The introduction of the South African Schools Administration System (SA-SAMS) has been one of the endeavours of the DBE to solve the administration burden in schools. As a result, teachers are bound to mark attendance registers on a computer, capture

marks, and compile achievement reports electronically. This is in line with Alemu (2015) who asserts that ICT has enormous potential to improve school functioning besides teaching and learning. According to Pima (2019), ICT in the education sector plays a crucial role in assisting teachers to administer administrative duties by utilising ICT tools such as desktop computers, laptops, calculators, telephones, printers, scanners, the internet, and video cameras.

The extensive literature on ICT has revealed that many developing countries are adopting ICT because of its great potential in society and education. Adegbenro et al. (2017) indicate that current job opportunities require highly skilled employees who are computer literate, innovative, and creative to ensure improved performance and societal transformation. In this 21st century skills, particularly digital skills, are the most important requirements in any job-seeking person. Thus, the government emphasises ICT integration as early as the lower grades. Using ICTs in the context of a knowledge environment enables the individual to participate successfully in a world in which ICT is an essential requirement for advancement in government, civil society and business (Amory et al., 2015).

Literature indicates that learners learn better with technology in the classroom since ICT allows the fastest learning process while maintaining order in the classroom. Ghavifekr et al. (2016) reveal that ICT plays a vital role in achieving learning objectives in the classroom in every subject. In addition, ICT creates room for active learning and technology utilisation can take place in every subject. Thus, schools need to include ICT in the curriculum to develop a knowledge society.

Nowadays our lives are dependent on ICT due to its multifaceted roles. ICT has invaded and transformed many aspects of our lives to the extent that we live in a world that is dominated by technology. Hence ICT is acknowledged as an important component of our lives. Ciroma (2014) states that the significance of ICT is acknowledged in politics, economy, and education throughout the world due to the tremendous positive impact on the lives of individuals. ICT has become the centre of society in such a way that nearly all live activities involve technology. For instance, making a phone call, sending an e-mail, going to the bank, using a library, listening to sports coverage on the radio, watching the news on television, working in an office or the field, going to the doctor, driving a car or catching a plane involve technology (Ghavifekr et al., 2014).

Makhlouf and Bensafi (2021) concede that ICTs are playing an integral role in constructing and exchanging knowledge among nations and are impacting human life, namely, the way we work, the way we play, the way we live, and the way we learn. Moreover, Ciroma (2014) maintains that ICT in education is essential as it educates the generations on technical skills and knowledge of using digital devices. Similarly, Hove and Grobbelaar (2020) concur that ICT integration is an important element for educating learners about educational reforms that can transform learners into productive knowledge users. Hence, the education system values the importance of ICT in the classroom. ICT at the school level gives learners several opportunities that will assist them to transform their lives when they grow up. Learners acquire skills to be critical thinkers which helps them to think outside of the box.

Critical thinking skills include the ability to identify, explain, justify, manage, evaluate, monitor, and reflect. These skills are highly valued in the 21st century and ICT integration in education can give learners the ability to solve numerous problems. As a result, numerous countries have adopted ICT as the core curriculum (Chen, 2015; Makhlouf & Bensafi, 2021). Ghavifekr and Rosdy (2015) add that the vital role of ICT in the classroom has made some schools introduce ICT as a school subject. For instance, in South Africa, a few subjects have been introduced because of the vital role of ICT, namely, Computer Application Technology (CAT), Information Technology (IT) and Technical Mathematics. In addition, online learning or e-Learning is a result of the importance of ICT in the education system. This allows teachers to use other avenues to deliver the subject content and achieve curriculum outcomes. The literature reveals that ICTs were rarely used in the South African classroom in previous years; however, the significant role ICT has played in the last two decades of transforming the nature of teaching and learning has emphasised the necessity of ICT in the classroom (Gunzo, 2020; Mahlo, 2020; Makwela, 2019; Mukhari, 2016; Rambrij, 2018).

According to Waghid and Waghid (2016), the integration of ICTs in teaching and learning allows learners to comprehend their learning and critically evaluate how things work in education. On a similar note (DoE, 2004) maintains that ICT use in the classroom provides learners with an opportunity to obtain cognitive skills needed in their learning. When teachers and learners get exposed to ICT resources such as computers, tablets, laptops, smartphones, and the internet during the instructional process, they get a chance to improve numerous skills related to technology. Makwela (2019) adds that computer usage during instruction can equip learners with various skills such as calculations, using spreadsheets, word processing, data

manipulation, presentations, producing graphs, manipulating images, and searching for information on the internet. ICT integration is crucial to allow learners to obtain skills in solving contextual problems collaboratively as well as real-life problems by exploring, manipulating, and integrating available information from multiple sources as opposed to passively acquiring information from the texts selected by the teacher (Mukhari, 2016). ICT automatically brings learners together they can talk and discuss what they are doing and this, in turn, opens avenues for communication thus leading to learning development.

Since learners have been brought up in the digital era where digital devices are frequently used, they are always fascinated in the classroom if the learning integrates ICT resources. Ciroma (2014) concurs that merits of ICT in education are enjoyable lessons that improve learners' attendance, difficult lessons can be better comprehended, demonstrations and media catch learners' attention, and concentration is improved. Teachers are able to complete the curriculum and achieve its goals through the assistance of ICT in hastening curriculum delivery and network with other teachers to improve the quality of teaching and learning (Mukhari, 2016). ICT helps to build better communication between teachers and learners since learners can engage with teachers anywhere using ICT resources.

In addition, ICT is essential to advance learners' learning, provide various teaching strategies for teachers, and add more learning resources (Ciroma, 2014). This means that learners are allowed to explore their learning from different angles through the utilisation of numerous ICTs, which results in improved learner achievement. However, Higgins (2014) argues that ICT has nothing to do with improving learners' achievements. In other words, ICT does not improve learners' results, it only provides support to learning. Ciroma (2014) indicates that ICT is important in the sense that it educates all generations about digital skills, knowledge, and comprehension of how to operate software and hardware in instruction. Hence the significance of ICT in education cannot be overemphasised. ICT is crucial for successful teaching and learning in the classroom. Furthermore, it creates access to learning for learners with special needs and teachers obtain alternatives to address such needs (Hove & Grobbelaar, 2020).

The DBE believes that ICT integration is important to create access to learning opportunities, redress inequalities, improve the quality of learning and teaching, and deliver lifelong learning. Furthermore, ICT can accommodate differences in learning styles and remove barriers to

learning by providing expanded opportunities and individualised learning experiences (DoE, 2004). In addition, ICT is also significant in improving interpersonal skills, such as writing, public speaking, teamwork, and collaboration, and improved productivity skills, including creating high-quality products. ICT embraces inclusive education by providing opportunities, alternative methods of instruction, and flexible assessments for learners who experience barriers to learning (DoE, 2004). ICT integration assists teachers to teach learners according to their various abilities and allows learners to gather knowledge on their own. The global outbreak of COVID-19 endorsed ICT's importance.

2.5.2. ICT integration in the classroom

ICT integration is the focus of this research study. Therefore, it is pivotal to review other scholars' previous studies on ICT integration at school, more specifically in teaching and learning. Modern times have made life difficult and unequal in many countries. The rationale is that modern times require a digital native which is not what every country can afford for all its public. This is what Chen (2015) refers to as digital division and inequality, where some countries are privileged to have ICT access while others are not. Nevertheless, both developed and developing countries have endeavoured to overcome this modern inequality by integrating ICT in schools (Aslan & Zhu, 2018; Junco, 2014). This is because every learner has the right to access to education and schools are perfect environments to educate learners. Therefore, the chances of learners obtaining digital skills and becoming digital natives are very high. Digital natives are defined as people with a high-level interest in using technology (Junco, 2014). Therefore, ICT integration is highly encouraged and recommended in the classroom.

The encouragement has been acknowledged by the majority of schools as evidenced in research around the globe (Aslan & Zhu, 2018; Chen, 2015; Daher et al., 2018; Ghavifekr & Rosdy, 2015; Graham et al., 2020; Kiru, 2018; Makhoul & Bensafi, 2021). According to Ghavifekr and Rosdy (2015), ICT in the classroom can be defined as the utilisation of computer-based communication incorporated into the daily classroom instructional process which prepares learners for the current digital age. In the classroom, ICT also means appropriate selection, use, mix, fusion, and integration of pedagogy and technology (UNESCO, 2013a).

On the other hand, Hero (2020) comments that ICT integration includes factors intertwined at school, which include curriculum, teacher characteristics, training and development, infrastructure, and organisational factors like school leadership, school culture, and supportive

framework. Ghavifekr et al. (2014) claim that ICT integration refers to the introduction of computer technology into schooling programmes in order to develop learners' knowledge and competencies in technology. Padayachee (2017) and Mukhari (2016) indicate that ICT in the classroom is a great technique to comprehend knowledge of the subject matter, knowledge of teaching and learning practices, and knowledge of technical skills. In addition, ICT integration in the classroom aims to improve and increase the quality of teaching and learning and increase access to learning.

ICT integration in the classroom is achievable through ICT resources including word processors, data projectors, PowerPoint, spreadsheets, search engines, interactive whiteboards, mobile technologies, smartphones (e-mail, blogs, videos, etc.), tablets, instant messaging, podcasts, CD-ROMs, Wikipedia, simulations, animations, and e-books (Amory et al., 2015; Govender & Govender, 2014; Mereku & Mereku, 2015; Mooketsi & Chigona, 2014). According to Ghavifekr and Rosdy (2015) and Haji et al. (2017), the integration of ICT resources in the classroom enhances learners' learning through motivation and assists learners in comprehending difficult subject concepts. Nevertheless, Verma et al. (2016) argue that integration of ICT resources does not work for everyone and every educational activity; it solely depends on the purpose of using ICTs and how they are used.

Correspondingly, Daher et al. (2018) add that ICT integration creates an opportunity for learners to interact with technology and understand the foundational content of the subject. ICT utilisation in the classroom also benefits instructional practices by allowing effective learning and encouraging interactions among learners and it promotes and reinforces the 21st-century teaching currently needed in this digital era (Haji et al., 2017; Shing et al., 2018). Furthermore, Malik et al. (2019) indicate that ICT in the classroom benefits teachers by facilitating and optimising the learning process, expanding learning opportunities, improving learning quality and efficiency, allowing for independent learning and cooperative learning, and encouraging the realisation of lifelong learning.

This clearly indicates that the utilisation of ICT in the classroom has several benefits for pedagogy. Ghavifekr and Rosdy (2015) maintain that ICT integration is a necessity in all subjects at schools for effective learning. Similarly, Ghavifekr and Rosdy (2015) assert that ICT integration in the classroom allows learners to share resources, move from the unknown to the known, and participate in collaborative learning. ICT in the classroom allows learners to

have unlimited access to their education, assists in monitoring teacher developments, and enhances the skills of teachers (Haji et al., 2017). According to Hong (2016) and Malik et al. (2019), ICT in the classroom boosts learning, makes the curriculum more interesting, encourages lifelong learning and instills problem-solving skills, communication skills and decision-making skills among learners. In addition, it assists teachers to facilitate e-learning in their classrooms.

Ghavifekr and Rosdy (2015) assert that ICT in the classroom develops the minds of both teachers and learners in accessing the curriculum. Teachers find various ways to impart the curriculum and learners develop knowledge through the utilisation of multiple ICT which enables them to explore the curriculum online rather than using limited resources such as textbooks. In addition, Ghavifekr and Rosdy (2015) state that ICT assists teachers in delivering effective lessons by developing innovative ideas on how to promote active learning in the classroom. Malik et al. (2019) add that some of the means teachers use for effective ICT use in the classroom include TV education, social networking, text, demonstration, sound, images, and videos. They further note that these ideas make teachers more aware of the teaching needs rather than merely creating interesting lessons just for enjoyment.

Notwithstanding the benefits discussed above, literature has revealed several challenges regarding ICT integration in the classroom (Bai et al., 2019; Rana & Rana, 2020). The first challenge that has been identified is that developing countries are at a low stage with ICT integration in the classroom (Aksal & Gazi, 2015; Ciroma, 2014). This is because of financial instability in acquiring technical resources, maintaining these resources, and providing adequate ICT training to teachers. ICT integration requires massive investment for effective implementation and to keep abreast with updates and repairs of these resources. Many schools suffer from these drawbacks. However, Winter (2021) argues that ICT integration nowadays is no longer a challenge in the classroom, but teachers cause complications. This is in line with literature that argues that although some countries have made huge investments in ICT integration in the classroom, teachers are still reluctant to implement it (Daher et al., 2018; Shing et al., 2018; Nkula & Krauss, 2014; Padayachee, 2017).

2.5.3. Level of integration of ICT in the South African schools

South Africa is a developing country which has made slow progress in ICT integration in the classroom. The DBE (2014) and Padayachee (2017) concede that ICT integration improves

learning. However, the expectations of the DBE have not yet been reached, possibly due to differences in the government's expectations and the teachers in the classrooms (Mooketsi & Chigona, 2014). Literature reveals that in South Africa teachers have limited ICT skills and competencies to integrate ICT into their instructional practices. They tend to teach learners about ICT resources rather than integrating the resources into teaching and learning (Gunzo, 2020; Madoda, 2018; Msila, 2015; Ndlovu, 2022; Nkula & Krauss, 2014; Padayachee, 2017). The literature further concludes that even those teachers with basic technology skills do not use ICT in their classrooms. Nkula and Krauss (2014) and Padayachee (2017) concur that only a small number of South African teachers are effectively integrating technology in the classroom.

Even though there are barriers regarding the level of ICT integration, Madoda (2018) asserts that there have been intervention programmes to assist teachers. These include SCOPE (Finnish Development Support), SchoolNet SA, and the South African Institute for Distance Education which has developed 11 Teacher Development Modules for introducing ICT into schools. SchoolNet SA provides online, mentor-based in-service training to teachers to introduce ICT into the curriculum and management, and INTEL "Teach to the Future" Teacher Development Programme provides teacher training in ICT integration into teaching and learning (DoE, 2004). Furthermore, the Connect endeavour have been developed to assist schools with internet access. The DBE (2015) suggests four strategies to improve ICT integration in the classroom: establishing a link between ICT usage in the classroom and learning goals, understanding the various types of technologies available, establishing collaboration with stakeholders to drive e-education, and analysing the status quo of e-education initiatives and their envisioned results.

The White Paper on e-Education indicated a process of ICT implementation in the Western Cape, Gauteng, Northern Cape, Free State, KZN, Mpumalanga, and North West (DoE, 2004). These provinces have established programmes to support the improvement of ICT integration in the classroom. Western Cape has developed the Khanya project, Gauteng has developed Gauteng OnLine and Northern Cape has developed the Connectivity Project. Recently, the Minister of Basic Education in Gauteng initiated a programme of teaching with tablets rather than using a textbook and chalkboard to develop both teachers and learners with digital skills in instruction (Msila, 2015). In addition, the Gauteng DoE established computer laboratories in 25 working stations with internet connectivity to enhance the use of ICT in the classroom

(Mukhari, 2016). Nevertheless, Mukhari reports that effective integration of ICT in teaching and learning is still behind due to negative factors which hinder teachers.

The White Paper on e-Education further concludes that e-mail, word processing, and the internet are the most frequently used ICTs in the classrooms. Still, on that note, Msila (2015) notes that television, laptops, and projectors are the greatest used ICT resources in South African classrooms. Mooketsi and Chigona (2014), Mereku and Mereku (2015), Batchelor and Olakanmi (2015), Govender and Govender (2014) and Grant et al. (2015) concur that ICT resources are used to a lesser degree in the classroom; however, more in-depth knowledge is required of the categories of ICT which teachers use and how. Ndibalema (2014) maintains that there is little evidence of the success of ICT in schools mainly because there are no clear ICT educational strategies in place to improve teachers' pedagogical skills. Hence it is essential to understand teachers' practice and understanding of ICT integration in the classroom.

2.5.4. Importance of ICT integration in education during the COVID-19 pandemic

The COVID-19 pandemic revealed the huge necessity and significance of ICT integration in education. One of the roles was to allow teachers to develop ICT competencies and support whole learning experiences (Chen, 2015). The outbreak of COVID-19 worldwide impacted daily living and the education system. Since the virus was believed to be more vulnerable to older generations, there was a fear that the younger generation would bring the virus into households from schools because that is where younger people meet in large numbers. Secondly, schools are places where teachers and learners gather for teaching and learning. Unfortunately, there are some schools with large numbers of learners per classroom. Furthermore, some schools in South Africa lacked access to water and adequate resources to comply with COVID-19 regulations. Therefore, the Minister of Education and the government responded to these assumptions by closing schools with immediate effect in March 2020.

According to König et al. (2020), Szyszka et al. (2022) and Subedi et al. (2020), the education sector endeavoured to keep teachers and learners in contact during this time by emphasising the integration of ICT in the curriculum. Furthermore, teachers were asked to bring learners together in normal classroom teaching even in remote locations through remote learning facilitated by ICT. Hero (2020) further asserts that the education departments in many countries encouraged the full utilisation of ICT during the pandemic. ICT utilisation had to be implemented through online learning or e-learning during the school closure (Adarkwah,

2021). Teachers had to utilise various ICT resources such as cellphones, the internet, computers, laptops, and tablets to communicate with learners online. Classes had to be conducted online via WhatsApp, Zoom, Microsoft Teams, and other connectivity services and platforms.

In addition to policies for integrating ICT in school, the COVID-19 pandemic worldwide greatly stimulated the utilisation of ICT in teaching and learning and some countries planned to make ICT utilisation compulsory in the education sector (Li, 2022). Onah et al. (2020) and König et al. (2020) identified challenges teachers encountered to bring collaboration in remote learning and how it impacted the teaching procedure and the life of teachers. In addition, (Kanu et al., 2021) asserts that the COVID-19 pandemic created opportunities for teachers to be exposed to utilisation of ICT in teaching, for example, using WhatsApp, Facebook and internet to communicate with learners. They further note that ICT was a great influence in also updating teachers and learners about COVID-19 through different technology devices.

Winter et al. (2021) maintains that during the pandemic, ICT played an extensive role which included providing a safe, timely, and flexible way for educational institutions to sustain school operations. They further note that utilisation of ICT such as online platforms, social media, and broadcasts, emergency remote teaching was quickly offered, transferring traditional face-to-face teaching to virtual learning. Thus, the pandemic transformed education systems, more specifically on teaching and learning procedures. Furthermore, McFarlane (2019) states that the integration of ICT in the school curriculum should be rapidly increased to allow learners an opportunity to advance in technological skills and digital tools to be able to be creative and innovative in solving problems.

Currently, with the end of the pandemic, teaching and learning have gone back to face-to-face. However, teachers are still encouraged to utilise ICT in their instructional process in the classroom in order to improve their ICT integration comprehension. This also allows learners to acquire a good grasp of utilising ICTs in their learning. Some teachers are currently blending face-to-face teaching with online teaching. Since this is an Accounting study it is crucial to look at the importance of ICT in teaching Accounting.

2.6. TECHNOLOGY INTEGRATION IN TEACHING AND LEARNING OF ACCOUNTING EDUCATION

2.6.1. Nature of Accounting as school subject

Various definitions of Accounting have been provided by Accounting scholars from time to time. Therefore, the nature of Accounting can be described as the language of business, which means, analysing, reporting, and communicating business financial information (Chakma, 2015; Kwarteng, 2016). Accounting is an art which means it necessitates knowledge, attention, and experience to maintain the financial books of a business systematically. The nature of Accounting can be regarded as an information system as it plays a crucial role in providing service providers (learners and teachers) with business knowledge and skills. Accounting publishes information daily which is essential for people to understand (Garg, 2019). In addition, the nature of Accounting includes the recording of financial information between businesses. Hence, Accounting has been recognised as a business language for all sectors of the world (Ngwenya, 2014). For instance, the nature of Accounting is no longer only about recording business transactions but also about solving societal and economic problems. Therefore, the education sector has regarded Accounting as one of the crucial and critical subjects in secondary schools.

The DBE (2011c, p.8), defines “Accounting deals with the logical, systematic and accurate selection and recording of financial information and transactions, as well as a compilation, analysis, interpretation, and communication of financial statements and managerial reports for use by the interested parties”. Furthermore, the Accounting subject equips learners with the knowledge, skills, and values concerning Financial Accounting, Managerial Accounting, and Auditing (Mbili, 2019). Therefore, the nature of Accounting can be said to provide learners with relevant knowledge and skills for any Accounting profession they may embark on in the future. It can be a financial profession or a social-based profession since the subjects equip learners with various essential skills.

According to Barac and Du Plessis (2014), the nature of the Accounting subject is practical. Thus, learners in Accounting need everyday activities to practise what they are being taught. Ngwenya (2014) concurs that the practical nature of Accounting subject requires regular activities and practice to obtain analysis and interpretation skills. On the other hand, Kwarteng (2016) asserts that the nature of Accounting requires a small shift from the rules of thumb that

have been designed to guide teaching practices. Salome and Chukwunwendu (2014) view the nature of Accounting as involving recording, classifying, and organising the financial information of businesses. I opine that the nature of Accounting is practical and theoretical. Accounting content is theoretical and the practicality side depends on a very good understanding of the theory. This is also evident in the structure of question papers during examinations. Hence, Kwarteng (2019) emphasises the importance of combining theory and practice. Accounting is also active therefore it requires an active and critical thinker teacher who can implement reforms quickly. The nature of Accounting reveals a huge necessity for ICT integration during Accounting teaching.

2.6.2. Introduction of ICT in Accounting education

Worldwide educational transformation made the DBE respond by modifying the National Curriculum Statement (NCS) across all subjects including Accounting. In 2004 the government responded by developing guidelines for ICT integration in all NCS subjects in the FET band (Rhodes, 2019). The documented guidelines aimed at encouraging teachers to integrate ICT in teaching and learning and equip learners with technology in their learning. In Accounting, Rhodes (2019) and Alemu (2015) contend that ICT introduction in Accounting began in higher education modules where students are equipped with relevant job knowledge and skills. Rhodes (2019) further states that in Accounting education, ICT was introduced by Accounting software such as Pastel, Quickbooks, and Interactive Business. This software was used in integrating ICT in Accounting Education especially in higher education. No evidence was observed of the use of this software in secondary schools. Rhodes (2019) asserts that the introduction of software to enhance the practical nature of Accounting has not discouraged teachers from using traditional teaching. They further note that in Accounting teaching and learning, more ICTs should be absorbed without compromising the essential principles and content of the subject. To add to the debate Motsoeneng et al. (2021) argue that teachers in Accounting are frustrated by the act of integrating theory and practice of Accounting with ICT tools. Hence ICT integration should be considered.

2.6.3. Importance of ICT integration in Accounting

Accounting is one of the subjects that necessitates technology integration in its teaching due to its nature. Accounting is structured in a manner that provides practical skills and knowledge to learners that might be of great help in their social life and their future. Accounting is practical therefore ICT can assist in achieving the aims of the subject. Furthermore, Accounting content

is designed according to a similar standard throughout the globe; thus, reforms in Accounting should be equally implemented. The evolution of technology integration in Accounting has been strongly recognised worldwide. This helps to standardise the Accounting curriculum. Several scholars have identified ICT as the most important tool in Accounting due to the different functions it can perform in the classroom. However, most studies are based on higher education (Alemu, 2015; Berikol & Killi, 2021; Kisirkoi, 2015; Ghavifekr & Rosdy, 2015; Rana & Rana, 2020; Tan & Wong, 2020).

According to King (2020), ICT integration in Accounting is perceived as an important tool in transforming the learning procedure. When learners utilise ICTs in their learning, they become productive which makes them own their learning. The moment learners gain ownership of their subject learning, they become independent and effective which is one of the learning outcomes in Accounting. Since Accounting has several formats that learners and teachers need to master, teachers can use hardware to project their lesson which saves times rather than writing on the chalkboard. They can also use software to do calculations and interpret information. King (2020) further asserts that the productivity of learners in Accounting creates an opportunity for learners to learn more information about Accounting on their own without relying on teachers. Skhephe and Caga (2019) state that ICT integration in Accounting improves the relationship between a teacher and a learner which causes the learner to be more collaborative in Accounting learning. Furthermore, King (2020) states that when teachers integrate ICT into Accounting teaching and learning, they become agents of learning, providing new knowledge and skills, and constantly searching for subject information to update learners.

Accounting is a practical subject that equips learners and students with the real skills needed by the workforce. ICT integration is valuable in the subject of Accounting to assist teachers and Accounting learners with relevant, practical and critical thinking skills. Accounting education studies revealed that the use of ICT in the classroom cuts costs, while reaching broader spectators through tools such as the World Wide Web, video conferencing, allowing for the normalisation of quality instruction, and enabling each learner to learn at his/her own pace (Daher et al., 2018). The use of ICT in classrooms allows schools to enlarge their understanding, respond to environmental requirements, support cross-cultural and cross-functional teams to engage and work together and allow faster and more practical cooperation between teachers from various nations while maintaining a targeted level of quality delivery of knowledge and education (Rambrij, 2018). The use of ICT in the classroom can allow more

time and space flexibility for teachers to use the educational materials. It can also allow for continuous content testing of learners and more freedom in taking initiative, learning on their own and being more creative individually (Karakainen & Saikkonen, 2021; Winter et al., 2021).

Integrating ICT into Accounting is crucial as it provides an equal learning opportunity for all learners. Amory et al. (2015) also concurs that ICT integration allows teachers an opportunity to deal with each learner's needs and promote equal learning opportunities. Thus, ICT in Accounting allows learners to learn despite their learning abilities and learning locations. In addition, ICT integration is an important component in Accounting for bringing innovation and creativity to the classroom (Skhephe & Caga, 2019). Accounting subjects require both teachers and learners to be innovative to make the subject more interesting. Farid et al. (2014) opine that a reason for ICT to be enthusiastically embraced in educational institutions is how it assists teachers to be innovative in their teaching by using different technological tools and the internet. However, Saal et al. (2019) argue that such innovation may not be effective and efficient if teachers still lack an understanding of ICT integration.

According to Li (2022), the Accounting curriculum has undergone drastic reform from technology utilisation in the classroom. Some reforms are beneficial; others are challenging. ICT integration has been recognised as a vital strategy to assist teachers in their pedagogy in Accounting. Nevertheless, Padayachee (2017) argues that inadequate technology resources and unclear teaching strategies hinder the effectiveness of this strategy. Alemu (2015) states that integrating ICT in Accounting is crucial to move from a teacher-centred to a learner-centred approach and a shift from the traditional method of teaching to more effective methods. Integrating ICT into Accounting pedagogy benefits both teachers and learners. Teachers improve their teaching styles and gain a deeper understanding of subject expertise; learners gain collaborative problem-solving and participation skills.

Accounting teachers become facilitators in their pedagogy, which is one of the objectives of CAPS. Even though ICT has positive benefits in Accounting pedagogy, Skhephe and Caga (2019) note that Accounting teachers continue with the traditional method of teaching even though ICT integration has been introduced in schools. The authors further note that this has affected the learners' results in topics such as Companies, Close Corporation, and Inventory Valuation which are technologically liable. Nevertheless, Mwendwa (2017) argues that

teachers are still resistant to technology due to drawbacks encountered when integrating ICT into the curriculum. Moreover, Skhephe and Caga (2019) argue that teachers fail to integrate ICT into the curriculum since the policy on e-Education (DoE, 2004) was too wide and not precise for each subject.

The Accounting curriculum is designed to provide work-related skills and information hence the importance of ICT in Accounting is valuable. ICT integration in Accounting assists teachers in teaching learners content that is relevant to the workplace or industries. Most careers in Accounting require learners to have basic knowledge about ICTs. As a result, the education sector is encouraging more technology use in the classroom. Currently, the field of work in Accounting demands digital expertise. Through being equipped with ICTs and obtaining an understanding of ICT integration in Accounting, learners learn more about the subject and skills related to it. According to Alemu (2015), learners who integrate ICT in Accounting can understand even difficult concepts in Accounting. The Accounting curriculum contains unique and difficult concepts that act as background in comprehending Accounting content. Therefore, ICTs can assist learners with various ways to comprehend those concepts.

King (2020) reveals that integration of ICT in Accounting in Africa is affected by numerous technological drawbacks. Moreover, Mafuraga and Moremi (2017) concur that ICT integration in African countries is still faced with implementation drawbacks, especially in practical subjects such as Mathematics, Physical Sciences, and Accounting. It has always been the case with developing countries, where ICT integration is reported to be at a lower stage than developed countries such as Europe (Makoelle & van Der Merwe, 2014). Accounting teachers have inadequate computer skills to integrate ICT in their classrooms. In addition, rural areas in South Africa lack the technology tools to integrate ICT into Accounting (Skhephe & Caga, 2019). This results in a limited understanding of ICT in Accounting classrooms in rural areas. Furthermore, Mathevula and Uwizeyimana (2014) identified scarcity of funds as the main drawback in integrating ICT into Accounting education. Bearing in mind the imperatives of integration of ICT discussed above, it is also vital to understand ICT integration in the classroom in general.

Although there is an array of studies that have been conducted on ICT integration, majority of these studies focus on ICT integration in higher education. According to Dahawy et al. (2014) incorporation of Information and Communication Technology in Accounting education is

administered through tools such as the world wide web and video conferencing, allow for standardisation of quality of instruction, and enable each student to learn at his/her own pace. The authors further assert that Accounting instructional methods have recently witnessed rapid change in a relatively short period of time because of ICT integration that involves use of flip chart on an easel in addition to audio visual equipment like a movie, filmstrip or projectors. Integration of ICT in Accounting has been noted though computer applications, especially, presentation tools, such as Microsoft PowerPoint, the use of the Internet and World Wide Web gives infinite access to a wealth of information and knowledge of the subject (Dahawy et al., 2014; King, 2017; Mathevula & Uwizeyimana, 2014). Skhephe and Caga (2019) claimed that integration of ICT in Accounting can be reinforced through a wide range of methods falls into technology learning, such as using email to get teaching and learning materials. These authors later raised out concerns on the challenges that hinders successful ICT integration within schools including technology e-learning readiness and ICT accessibility.

2.7. TEACHERS' UNDERSTANDING AND PRACTICES OF ICT IN THE CLASSROOM

This section elaborates on topics that are related to the importance of ICT integration in the classroom, the role of teachers, teachers practices and practices in other countries.

2.7.1. Importance of teachers in ICT integration in the classroom

Teachers play various irreplaceable roles in the instruction practice, and they have influence on the teaching and learning process, hence they are called the 'engines of education'. Furthermore, they are the relevant structures to initiate and implement a change in the instruction process. The recent advent of the integration of ICT into teaching and learning has revealed the immense importance of teachers in the classroom. Ghavifekr and Rosdy (2015) assert that the teachers' role is getting more important especially in the usage of ICT in pedagogy which could increase the learner achievement, creativity, and thinking skills. However, Amory et al. (2015) argue that teachers are no longer the only source of information in the classroom, learners can learn on their own using ICT resources. Nkula and Krauss (2014) caution, however, that ICT integration in the classroom does not merely mean placing a computer in front of learners, but it means teachers should use their capabilities to teach through or with computers in the classroom.

Ever since the phenomenon of ICT in the classroom has taken its course, teachers are key players every day in teaching and learning. According to Nkula and Krauss (2014), teachers are essential in the integration of ICTs in the classroom since they have the best understanding of how to use these ICTs. In addition, Hero (2020) and Mukhari (2016) regard teachers as agents of change and facilitators of ICT in learning in the classroom. Referring to teachers as agents of change in ICT means that teachers accept, adapt, and implement the technological changes of ICT in the classroom. Teachers' responsibility during the ICT integration in teaching and learning is to integrate ICTs appropriately, guide learners on utilising ICTs, utilise relevant ICTs such as software and hardware, monitor the effectiveness of ICT integration in the classroom, and ensure teaching and learning are improved. The above-mentioned can only happen if teachers have a sufficient understanding of ICT integration and how it is practised in the classroom. Therefore, the next sections will discuss teachers' understanding of the integration of ICT and thereafter, their practices.

2.7.2. Teachers understanding of ICT in the classroom

In South Africa, literature has revealed that the majority of teachers have a limited to moderate understanding of the integration of ICT in the classroom (Batane & Ngwako, 2017; Chisango et al., 2020; Graham et al., 2020; Gunzo, 2020; Mahlo, 2020; Makwela, 2019; Mirzajani et al., 2016; Msila, 2015; Nkula & Krauss, 2014; Padayachee, 2017). These studies further reveal that teachers' limited to moderate understanding has been observed during their instructional practice in the classroom. Msila (2015) stated that some teachers frequently found themselves teaching the technology rather than teaching with it. The literature revealed that some technology, such as access to the internet, web-based learning, e-mail facilities, and multimedia projectors, were not given attention in some secondary schools (Mirzajani et al., 2016). When teachers have no access to technology resources, their understanding of the integration of ICT into teaching is very limited. To understand better ICT integration, technical resources should be utilised daily.

Ghavifekr and Rosdy (2015) state that teachers and learners who have access to digital resources daily show a better understanding of ICT integration. Padayachee (2017) revealed that the younger generation of teachers has a better understanding of ICT integration than the older generation since they spend more time on digital devices such as computers. The fact that few teachers are effectively integrating ICT in teaching and learning shows that there is still limited and moderate understanding of the integration of ICT. Teachers do not even understand

how some ICT resources function let alone the understanding of the software. Teachers in schools know the basics of computers because they are widely used in schools nowadays. Pirtheepal (2019) also revealed that teachers showed a moderate understanding of ICT integration and they experienced enormous support with ICT integration in the teaching and learning process of English as school subject.

2.7.3. Teachers' practices of ICT in the classroom

Since light has been shed on teachers' understanding, it is imperative in this paragraph to discuss teachers' practices in the classroom. Primarily, ICT integration in the classroom involve teachers combining various technology tools to teach. For instance, preparing slides (PowerPoint Presentations) and use them to teach rather than using the traditional method of textbook and chalkboard and the talk. Teachers using Whiteboard to write or display data through overheads projectors. Utilizing videos to teach, for example, a teacher downloading a video to teach a certain topic or record himself/ herself teaching then play that video for learners. Integration of ICT also include to teachers taking learners to computer labs and carry out class activities or projects. Learners could also search for information of the lesson and prepare presentations to be presented in the classroom. The overall description of ICT integration refers to any utilization of digital devices to carry out instructional activities. Nevertheless, according to Dahawy et al. (2014), some issues to be consider when thinking of integration of ICT in teaching includes need for expensive infrastructure and large startup costs, finding qualified instructors, insufficient resources, and the lack of face-to-face instruction, which may diminish the trainees interpersonal, social, and communication skills. According to Ghavifekr et al. (2014), teachers' practices of ICT integration in the classroom can be measured by their competencies, confidence, and self-efficacy. They further assert that without teachers' confidence and competency in the integration of ICT in teaching and learning, effective practices cannot occur. Ghavifekr et al. (2014) and Orlando (2015) argue that integrating ICT into teaching is a complex task due to its dynamic nature. On a similar note, (Hero, 2020) contends that the integration of ICT into teaching and learning is a complex process that requires preparedness to make the learning more meaningful and fruitful. Various factors influence teaching practice; hence, teachers' practices of ICT integration can be complex and affected by attitudes and beliefs about ICT integration. Positive attitudes and beliefs are crucial for teachers to provide effective practices of integration of ICT.

Mirzajani et al. (2016) argue that some teachers may have positive attitudes toward integrating ICT in the classroom but refrain from doing so due to low self-efficacy which makes them consider themselves not adequately qualified to incorporate technology in the teaching-learning process. Ghavifekr et al. (2014) state that teachers' attitudes are also another key factor that plays a role in ICT integration in teaching and learning. Nkula and Krauss (2014) concur that integration of technology practice into teaching and learning depends on how teachers view ICT integration and their beliefs. In the study conducted by Daher et al. (2018), it was revealed that Mathematic teachers had positive attitudes and beliefs on ICT integration which resulted in improved knowledge and practices. Another study by Hero (2020) revealed that teachers in private schools frequently practised ICT integration by giving learners technology-based activities, monitoring their progress, accomplishing curriculum content, and bringing collaboration in teaching and learning. Teachers in Gauteng failed to implement ICT due to the introduction of new technology such as computers and tablets at the same time they were attempting to comprehend the CAPS curriculum (Msila, 2015).

2.7.4. Teachers' understanding and practices of ICT in the classroom in other countries

Orlando (2015) found that Australian teachers have a very good understanding of ICT integration in the classroom, which increased practices, improved their frequency of use of ICT and increased their development of more related resources to use. In Ghana, teachers revealed a limited understanding of the integration of ICT because of inadequate resources (Adarkwah, 2021). In Malaysia, teachers have a good understanding of integration of ICT due to the frequency of using ICT in their teaching through the utilisation of hardware and software. Onwuagboke (2015) found evidence of insufficient ICT understanding among a group of surveyed secondary school teachers in Ogun State, Nigeria. According to Li (2004), language teachers in China revealed a moderate understanding of ICT integration practices since they most frequently use PowerPoint and the internet to address professional needs in improving teaching, designing materials, and conducting professional development.

Ghavifekr and Rosdy (2015) found that Malaysian teachers effectively use ICT integration to teach which revealed that they had an adequate understanding of ICT integration. In another Mathematics study, Daher et al. (2018) noted that teachers had moderate knowledge of integration of ICT, and their poor practice of integrating ICT in their mathematics teaching was due to different types of obstacles. As agents of change, teachers should be ICT literate which will engender positive attitudes towards the use of computer and information technologies

(Singh & Thurman, 2019). Teachers need to be confident and competent in using various ICT tools to build their trust in the technology. Without teachers' competency and mastery skills of ICT integration which are appropriate to their needs, ICT is not put to good use in instructional delivery (Ghavifekr et al., 2014). The above literature indicates teacher understanding of ICT varies as does the extent of their practices. It is therefore wise to explore factors that influence and hinder teachers from integrating ICT into their teaching.

2.8. FACTORS HINDERING TEACHERS FROM INTEGRATING ICT IN THEIR TEACHING

The modernisation of ICT in education has been well acknowledged globally and teachers have been fascinated about ICT in schools. However, the literature has revealed many factors affecting the integration of ICT in instructional practice. These factors tend to affect the effective adoption of ICT in teaching and learning. Furthermore, teachers as core drivers of ICT integration may end up disregarding the effectiveness of ICT integration in their teaching. The paragraphs below aim to provide an in-depth description of these factors based on various studies.

2.8.1. Inadequate ICT resources

In a classroom, there are core ICT resources needed for integration of ICT in the subject curriculum. These include computers, laptops, whiteboards, overhead projectors, printers, and access to internet connectivity. When these are not available, successful adoption of integration in teaching and learning is in vain. In most countries, inadequate ICT provision is due to lack of funds to acquisition the appropriate resources. In contrary, Ghavifekr et al. (2014); Kolobe and Mihai (2021); Makhoulf and Bensafi (2021); Manhibi (2019) firmly agree that massive investments have been made on ICT integration to acquire ICT resources. These investments have been made even in developing countries where there are economic issues. Nevertheless, teachers are still hindered by the greater lack of resources in various developing countries than in developed countries (Mathevula & Uwizeyimana, 2014).

For instance, in the United States of America, National Centre for Education Statistics (NCES) revealed that 99% of full-time regular public-school teachers had access to ICT resources such as computers or the internet in their schools (Schrum et al., 2015). Similarly, in the United Kingdom, teachers did not lack resources but lacked time and appropriate lesson schedules (Manhibi, 2019). On the other hand, in Tanzania, teachers and learners lacked computers and

other ICT resources (Mtebe & Raisamo, 2014). South Africa is also challenged by inadequate resources, especially in marginalised schools and rural areas (Gunzo, 2020; Mathevula & Uwizeyimana, 2014; Mukhari, 2016). Social status has a huge impact on the sufficient ICT resources. For instance, if a society has a high standard of living, levels of adequate resources are very high. Those who cannot afford basic necessities suffer from inadequate ICT resources.

Similarly, Mathevula and Uwizeyimana (2014) concede that in South Africa ICT resource projects have been initiated to assist teachers who are hindered by inadequate resources to access ICT. These include the Teacher Laptop Initiative (TLI) and Thutong (place of learning) portal; however, implementation is slow. These resources intend to allow teachers to have access to ICT resources. Inadequate ICT resources result in a lack of access to ICT and inequality among schools. The study conducted by Choung and Manamela (2018) revealed that there is still inequality in ICT integration in schools due to the lack of access to ICT resources. Graves and Bowers (2018) state that the majority of historically disadvantaged communities still suffer from inequality of resources. Resources are always allocated last in the previously disadvantaged schools which causes them to lag behind with transformation. Again, the study conducted by Gunzo (2020) revealed that lack of access to ICTs is one of the causes of stagnation in ICT integration.

Limited access to ICT infrastructures, such as Smart Classrooms and computer labs, leads to insufficient or no ICT use at all (Onah et al., 2020). Crucial ICT resources that are indispensable for the integration of ICT in education are a supply of electricity and stable internet connectivity. Electricity is core to the functioning of ICT resources; hence, successful ICT implementation cannot be carried out without electricity. Some deep rural areas in South Africa have no power and the ongoing load shedding by Eskom has affected successful ICT integration in many schools (Mahlo, 2020). In some disadvantaged areas, poor network is still a massive barrier hindering teachers in endeavours to integrate the basics of ICT in their teaching. According to Castaño-Muñoz et al. (2014), the internet has the potential to enhance communication and interaction and it allows teachers and learners to integrate technology into the teaching and learning process. However, in South Africa internet access and usage are still at an infant stage in schools due to high costs. Some schools with limited ICT resources have attempted to implement ICT integration education but are not successful due to no internet access. Gunzo (2020) concurs that many South African schools have limited or no internet

access which results in low connectivity, slow progress, and unreliable connections for teachers and learners to use.

In addition, the study conducted by Buzuzi and Chigona (2021) shows that Mathematics teachers failed to integrate ICT into their teachings because of limited access to ICT resources. Mukhari (2016) had similar findings where primary school teachers indicated a lower understanding of ICT integration than high school teachers due to lack of access to ICT resources. Therefore, most studies found inadequate access to resources as a factor that prevents effective ICT integration for educational purposes. The more teachers can be given a chance to be exposed to ICT resources, the more educational ICT aims will be achieved. Queiros and de Villiers (2016) conclude that inadequate access to ICTs such as the internet, online studying materials, and computers can leave learners demotivated and fearful, which affects the ICT implementation process. Lack of access to ICT resources also prevents teachers from acquiring adequate ICT skills and competency. This factor is discussed below.

2.8.2. Inadequate ICT skills and competency

Teachers' technology skills, knowledge, and competency have a huge impact on the successful adoption of ICT integration in the classroom. These impact teachers' beliefs, attitudes, resistance, confidence, and self-efficacy. When teachers have insufficient ICT skills and are incompetent with ICT integration, they tend to develop negative attitudes, be resistant to change and lack the confidence to implement. Makwela (2019) disagrees with the sentiment that teachers' integration of ICTs relies on their attitudes and beliefs about ICT. The author argues that other factors contribute to teachers' non-adoption of ICT integration such as lack of digital competencies. Contrary, Choung and Manamela (2018) contend that ICT competencies depend on teachers' attitudes toward ICT. If teachers have negative attitudes toward ICT integration, the likelihood of implementation is low; if their attitudes are positive, the chances of integration are very high (Chisango & Marongwe, 2021; Makwela, 2019). The frequency of use of ICT resources in instructional practice depends on beliefs and attitudes, ICT skills, and the confidence to use the ICT. Padayachee (2017) asserts that teachers' attitudes toward ICT integration are influenced by the age of teachers.

The older generation of teachers have a more negative attitude towards ICT integration and are resistant to the change (Mahlo, 2020; Mukhari, 2016). Gunzo (2020) argues that the younger generation is competent with ICT integration in the classroom simply because they

recently completed higher education studies where they were given a chance to learn about ICT integration in teaching. Conversely, Semerci and Aydin (2018) indicate that their findings demonstrated that there were no significant differences between age and attitudes towards ICT integration in teaching and learning among secondary school teachers in Ankara. In addition, teachers' competence in using ICT builds confidence in their teaching. The moment teachers lack the confidence to integrate ICT into their instructional practice, they are likely to fail in their attempts. Lack of confidence in ICT integration results in low self-efficacy among teachers. Gunzo (2020) states that confidence in the use of ICT is built through practice and powerfully determines whether a teacher will integrate ICT or not. Lastly, Ghavifekr et al. (2014) conclude that in order for a teacher to integrate ICT resources in teaching effectively, professional training in skills, knowledge, competencies on ICT integration is urgently needed.

2.8.3. Inadequate ICT professional training

Much research has been carried out to indicate that inadequate ICT capacitation has affected the effectiveness of ICT integration (Ghavifekr et al., 2014; Gunzo, 2020; Makhoul & Bensafi, 2021; Makwela, 2019; Mathevula & Uwizeyimana, 2014; Mukhari, 2016). These studies indicate that teachers have not been adequately trained in ICT integration. Even where training is provided in preservice teacher education, ongoing short-term courses are not provided in schools where the integration takes place. Umugiraneza et al. (2018) state that the ICT integration that has been introduced in schools should be accompanied by regular professional training such as workshops that will equip teachers on what are ICTs and how to integrate them into the instructional practice. On a similar note, Tondeur et al. (2016) assert that continuous ICT professional development is pivotal for teachers to integrate ICT into their subjects successfully. ICT integration is a practical activity that requires constant practice from teachers.

Lugalia et al. (2015) note that ICT professional development workshops have not been effective since they are conducted for only one day and follow-up or support is absent thereafter. Similarly, (2016) and Tiba (2018) noted that in the Western Cape ICT training programmes were a once-off, and teachers did not share the information they obtained from the workshops at schools to develop one another. Furthermore, Tiba (2018) noted that the training provided by the Khanya Project in the Western Cape was insufficient as some teachers were still not sufficiently confident to integrate their ICT knowledge and apply skills in their teaching and learning after the training. Gunzo (2020) indicates that the education stakeholders should be aware that the current ICT training does not prepare teachers to integrate ICT into

their teachings but offers only the basic skills of operating a computer. On the other hand, Tondeur et al. (2016) argue that there has been numerous efforts at teacher professional development that have successfully trained teachers to integrate ICT into their teaching.

Some of these programmes include the Vodacom Mobile Education Programme which was established by the South African government in partnership with Vodacom in the nine provinces to provide ICT training for teachers. Each province had its own centre aiming to enhance the technical training programme for teachers (Buzuzi & Chigona, 2021). Furthermore, the programme aims at developing about 1400 teachers annually in the utilisation of ICT to support teaching and learning, focusing on Mathematics and Science subjects (Mathevula & Uwizeyimana, 2014). Another programme called Train the Trainer by the Internet Service Providers' Association of SA (ISPA) was designed for South African teachers in rural areas to be continuously trained on ICT and to develop innovative skills.

According to Makwela (2019), teacher professional development is crucial to provide teachers with correct technical and pedagogical knowledge and skills for in-service teachers as well as pre-service teachers and to stimulate teachers' cognitive ICT resources. For instance, the ICT for Rural Education Development (ICT4RED) project was developed in the Eastern Cape rural areas to enhance the integration of tablets in teaching by rural teachers to alleviate poor quality education in rural areas (Makwela, 2019).

The above literature postulates factors that prevent teachers from integrating ICTs into their teaching. However, other factors have been discovered by various scholars. Mahlo (2020) and Mukhari (2016) argue that there are internal and external factors that prevent teachers from integrating ICTs into their teaching which include the following: lack of vision and mission about the significance of ICT in teaching and learning, poor leadership support, lack of instructional time, inadequate ICT infrastructure and inappropriate organisation, and technical problems.

Similarly, Winter et al. (2021) discovered negative teacher attitudes towards computers, lack of knowledge, insufficient number of computers and ICT infrastructure, expensive cost of ICT tools, inadequate infrastructure, and poor maintenance, obsolete and problematic ICT equipment, inadequate and poorly trained teachers on ICT use, limited and unreliable sources of power, dissatisfaction with the introduction of ICTs in education and teachers' lack of

confidence as major factors which hinder the implementation of ICTs in schools. Mailizar and Fan (2020) discovered inadequate ICT support at the school, technological infrastructure, issues such as attitudes towards ICT, the importance of ICT use, the ability to use ICT, and beliefs. Notwithstanding, positive factors have been identified to influence teachers in using ICTs in their teaching. These are discussed below.

2.9. FACTORS MOTIVATING ICT INTEGRATION IN TEACHING AND LEARNING

The previous literature indicates that factors that motivate teachers to infuse technology in their instructional practices. These include availability of technical resources, ICT competencies, increasing learners' motivation, making teaching more enjoyable and increasing learner' self-confidence and esteem and teachers' attitudes and perceptions of integrating ICT (Pima, 2019; Saad & Sankaran, 2020; Winter et al., 2021). The global adoption of ICT integration in schools has inspired positive expectations on behalf of the DBE and the belief in teachers as agents of curriculum impartation. However, the top education stakeholders (government, curriculum designers, and ministers of education) need to consider the important factors that drive teachers to implement ICT integration in teaching and learning. Fu and Hou (2015) identify external factors that influence teachers to integrate ICT into their instructional practice: technology availability, accessibility of ICT equipment, adequate time to plan for instruction, technical and administrative support, clear school curriculum, school climate and culture, and manageable teaching load (Fu & Hou, 2015).

Internal factors involve the comprehension of ICT utilisation, self-determination, beliefs, which may conflict with the application of ICT, attitudes toward technology integration, perceptions, including intention or motivation to use ICT, self-confidence and knowledge, technology skills, readiness to use ICT and technology self-efficacy. Similarly, Msila (2015) discovered that adequate ICT resources, school culture, IT and administrative support, clear ICT educational policy, teachers' ICT pedagogical perspectives, adequate professional development, and teachers' characteristics such as age and gender are factors that contribute to effective ICT integrations for teachers.

Orlando (2015) note that staff development in terms of empowering staff with technological skills, affording them new methods of teaching, collaborative working, access to the internet and other ICT tools, interaction with learners, self-motivation, positive attitudes and support

from the school leadership are powerful factors contributing to the use of ICT in teaching. Mukhari (2016) concludes that all factors discussed contribute to ICT integration but the most important one is to provide a clear understanding of ICT integration and continuous professional development. If teachers are well equipped with ICT skills, they will always improvise with the few ICT tools that they have to bring integration into the classroom.

2.10. CHAPTER CONCLUSION

This chapter examined literature on teachers' understanding and practices of ICT integration. The literature reviewed was local, national, and international to acquire an in-depth comprehension of integration of ICT in education. The literature concentrated on ICT integration into teaching and learning. The chapter reviewed various descriptions of ICT. From various similar descriptions, I observed that ICT integration has been introduced in schools to equip learners with digital required in the 21st century skills worldwide. In addition, ICT integration in education means various technical resources (hardware and software) are put together to create knowledge, communicate with learners, and store and manipulate information.

The chapter further articulated policies around ICT in both developed and developing countries. The literature showed that most countries have ICT policy frameworks in place albeit challenges. Technology use in the classroom and the importance of ICT in teaching and learning have been discussed in this chapter. Since this is an Accounting study the nature of the Accounting subject, the introduction of ICT in Accounting, and the importance of ICT integration have been deliberated. Teacher' understanding and practices of integration of ICT in teaching were demonstrated as well as the factors hindering and contributing to teachers' effective ICT integration.

The next chapter will discuss the theoretical frameworks underpinning this research study.

CHAPTER THREE

3. THEORETICAL AND CONCEPTUAL FRAMEWORK

3.1. INTRODUCTION

The previous chapter provided in-depth literature on the research topic of this study. This chapter discusses the theoretical underpinning this study, namely, TPACK and the UTAUT conceptual framework. TPACK was reviewed first and then UTAUT follows.

3.2. TECHNOLOGICAL PEDAGOGICAL AND CONTENT KNOWLEDGE (TPACK)

The development of TPACK was initially the work of Shulman (1986;1987) who used PCK descriptions to describe teachers' understanding of integrating technology for productive teaching and learning (Koehler & Mishra, 2009). Since this framework has been modified and described by various scholars, this study selected Koehler and Mishra's (2009) full exposition of TPACK. According to Koehler and Mishra (2009) and Malik et al. (2019), good teaching using technology is driven by the three essential elements, content, pedagogy, and technology. They further assert that these three elements interact together, and each has a unique role to play in quality teaching and learning integrated with technology.

Content, pedagogy, and technology are types of knowledge that every teacher needs, whether teaching integrated with technology or not. These three types of knowledge form what is referred to as TPACK. To give a fuller description, the terms used together with their abbreviations are Content Knowledge (CK), Pedagogical Knowledge (PK), Technological Knowledge (TK), Pedagogical Content Knowledge (PCK), Technological Content Knowledge (TCK), and Technological Pedagogical Knowledge (TPK) (Koehler et al., 2014). Technological Pedagogical and Content Knowledge (TPACK) can be referred to a teacher's capacity to facilitate learning of certain content through a pedagogical approach and technology (Malik et al., 2019). These knowledges which comprise TPACK are described in detail below.

3.2.1. Content Knowledge (CK)

CK refers to knowledge about the subject matter to be learned and the knowledge is contained in the curriculum (Malik et al., 2019). On a similar note, Makwela (2019) describes CK as the subject knowledge needed by teachers before they choose which correct technology to

implement in their instructional practice. CK is the teacher's knowledge about the subject matter to be learnt or taught. Knowledge and the nature of inquiry differ greatly between fields, and teachers should understand the deeper knowledge fundamentals of the disciplines they teach (Koehler & Mishra, 2009). CK is extremely significant for teachers in any subject specialisation. In order for teachers to deliver effective and adequate teaching and learning, the content should be appropriate and accurate. Inadequate subject content knowledge may result in a high rate of failure and incompetency among learners.

Koehler and Mishra (2009) endorse that knowledge about subject content is crucial for teachers as it involves knowledge of concepts, theories, ideas, organisational frameworks, knowledge of evidence and proof, as well as established practices and approaches toward developing such knowledge. CK in this study measured Accounting teachers' subject matter, in other words, how informed Accounting teachers are regarding the curriculum content. For instance, teachers in Accounting necessitate accurate content knowledge since Accounting is one of the critical subjects in schools. Accounting teachers offer learners clear descriptions of concepts, good content knowledge in presenting the subject matter, and appropriate theories in teaching Accounting. Adequate content knowledge boosts Accounting teachers' competencies in using unique teaching strategies and results in their gaining confidence in providing quality teaching and learning. In this study, this element permitted me to obtain insight into Accounting teachers' content knowledge. The second element in TPACK knowledge is PK.

3.2.2. Pedagogical Knowledge (PK)

Pedagogy refers to techniques of teaching or any other factors related to teaching. Therefore, PK may be defined as teachers' knowledge about teaching. Further, it describes teacher's knowledge about a variety of teaching practices, strategies, and methods to promote learners' learning (Koehler et al., 2014). Moreover, pedagogy is an ongoing process, hence teachers' pedagogical knowledge should be regularly evaluated and developed. For instance, if there are curriculum changes, teachers are trained on how best they can teach that knowledge to learners. Koehler and Mishra (2009) and Makwela (2019) assert that PK involves teachers' in-depth understanding of teaching and learning. They further conclude that PK refers to understanding how students learn, general classroom management skills, lesson planning, student assessment, knowledge about techniques or methods used in the classroom, the nature of the target audience, and strategies for evaluating student understanding. Koehler and Mishra (2009) and Malik et al. (2019) add that PK requires an understanding of cognitive and social learning

theories so that teachers can appropriate teaching strategies, address special needs teaching and solve any other pedagogy related problem. The implication of PK in this study examined Accounting teachers' understanding of teaching the subject. This included knowledge about appropriate teaching methods, strategies and techniques to teach Accounting. The Accounting subject consists of several misconceptions and has broad content; therefore, teachers are required to have correct PK such as teaching strategies to assist them in breaking down the content in a manner that learners will understand.

3.2.3. Pedagogical Content Knowledge (PCK)

Koehler and Mishra (2009) describe PCK using Shulman's (1986) conceptualisation which describes PCK as the transformation of the subject matter into teaching. Furthermore, this transformation happens when teachers interpret the subject matter from the curriculum, devise various strategies to deliver it to learners, and develop multiple instructional materials, alternative conceptions and students' prior knowledge. PCK covers the core business of teaching, learning, curriculum, assessment, and reporting, such as the conditions that promote learning and the links among curriculum, assessment, and pedagogy (Koehler et al., 2013). Similarly, Malik et al. (2019) define PCK as the understanding of how to formulate and teach the subject content in order for learners to easily learn. PCK refers to knowledge of pedagogy appropriate to the teaching of specific subject content (Rambrij, 2018).

PCK includes the methodologies and strategies employed in the classroom, which are fundamental to the teaching and learning process (Kwarteng, 2019). In this study, Accounting teachers needed to show understanding of how they transform Accounting concepts and knowledge to teaching. This element gave me an understanding of Accounting teachers' knowledge on teaching the content. It revealed how Accounting teachers are informed of curriculum delivery which includes content and assessment. The next type of knowledge discussed is TK.

3.2.4. Technology Knowledge (TK)

The current exponential growth in technology education in the classroom results in more focus on measuring teachers' TK. TK refers to the capability of teachers to integrate technology into their instruction. TK is an individual's deeper understanding of IT such as knowing how to use technology at work and in daily life (Koehler & Mishra, 2009). They further note that TK reflects more than just the normal computer literacy. On the other hand, Malik et al. (2019)

state that TK refers to the understanding of how to operate software and hardware. For Kanchai (2021) TK refers to technology exploitation in teaching or facilitating pedagogic activities in the classroom with technology. Integration of technology is the heart of this study; therefore, this distinction assisted me to measure Accounting teachers' TK in their teaching of Accounting. Their TK knowledge determined their understanding and practices of integration of ICT in Accounting. Accounting teachers' TK reflected their literacy in technology. Since technology plays a pivotal role in curriculum and teaching, the next element discussed is TCK.

3.2.5. Technological Content Knowledge (TCK)

Technology and content relationships were formulated long ago because of the technology revolution (Koehler & Mishra, 2009). This is because without technology content cannot be developed. The technology works closely with content to formulate changes and update where there is a need. A good understanding of technology in educational instructional practice creates opportunities to select the correct technologies to present the content ideas (Malik et al., 2019). Technology has the power to impact how the content is presented, hence teachers are required to be competent with the subject matter and how to best teach that content using various technologies. Koehler and Mishra (2009) concur that teachers need to understand which specific technologies are best suited for addressing subject-matter learning in their domains and how the content dictates or perhaps even changes the technology. Therefore, TCK gave insight into Accounting teachers' knowledge on technology suitable for understanding content. This might include the types of technologies teachers are informed about in enhancing their CK and improving content. This is a crucial element for teachers to integrate ICT in their teaching.

3.2.6. Technological Pedagogical Knowledge (TPK)

Teaching is forever changing and often teachers are required to adopt and implement the changes. For curriculum change and the integration of ICT into teaching and learning, the teachers should be ready and adaptable. Koehler and Mishra (2009) describe TPK as comprehension of teaching and learning that can change when certain technologies are integrated into teaching. They further assert that comprehension of the provision and affordability of technology and how tools can be purchased differently according to changes in context and purpose is an important part of understanding TPK. Malik et al. (2019) concede that TPK consists of knowledge about how technology can facilitate pedagogical approaches such as using game design to support the practice of computer networks. TPK is imperative

because it provides knowledge about the most popular software programmes that are not specifically designed for teaching and learning. Software programmes such as the Microsoft Office Suite (Word, PowerPoint, Excel, and Web-based technologies such as blogs or podcasts) are designed for purposes of entertainment, communication, and social networking (Koehler & Mishra, 2009). In this study, this element was used to examine Accounting teachers' knowledge on technologies to be utilised for teaching. Teachers need to understand how instructional practice can be connected to the correct technologies for effective teaching and learning. Lastly, a complete description of TPACK is provided below.

3.2.7. Technology Pedagogy and Content Knowledge (TPACK)

The above descriptions highlighted deep descriptions of core knowledges that make up the TPACK framework. TPACK is knowledge about how to facilitate learners' learning of content through pedagogical and technological approaches (Malik et al., 2019). According to Koehler and Mishra (2009), the TPACK framework is above all three forms of knowledge (content, pedagogy, and technology). TPACK involves the comprehensive interactions among content, pedagogy, and technology knowledge. It accurately states a deeper description of skills and knowledge required for pedagogy and technology in the classroom. In addition, TPACK is the basis of effective teaching with technology, requiring an understanding of the representation of concepts using technologies; pedagogical techniques that use technologies in constructive ways to teach content; knowledge of what makes concepts difficult or easy to learn, and how technology can help redress some of the problems that students face; knowledge of students' prior knowledge and theories of epistemology; and knowledge of how technologies can be used to build on existing knowledge to develop new epistemologies or strengthen old ones. The main aim of this study was to explore teachers' understanding and practices of integration of ICT in the teaching of Accounting. Therefore, from the above descriptions, TPACK was the appropriate framework to underpin this study since it provides knowledge to be considered for the successful integration of ICT in the classroom. This element gave me an opportunity to measure the overall understanding of how Accounting teachers combine content, pedagogy and technology. Figure 3.2.7 depicts the TPACK theoretical framework.

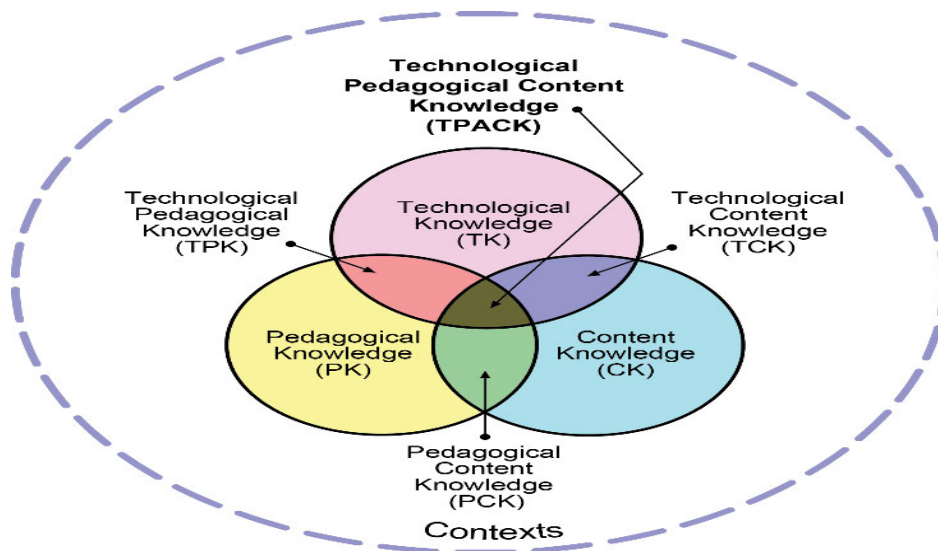


Figure 3.2.7: TPACK framework and its knowledge (Koehler et al., 2013, p.15)

3.3. UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY (UTAUT)

The previous theoretical framework assisted me in exploring Accounting teachers' understanding through the core elements of knowledge. On the other hand, UTAUT enabled me to understand factors contributing to Accounting teachers' acceptance and usage of ICT in their teaching. Therefore, I draw conclusions on teachers' practices of integration of ICT in Accounting teaching. The UTAUT model was formulated by Venkatesh et al. in 2003. This theory comes from the seven constructs that determine the user's acceptance of technology. However, only four constructs were theorised after observing the major role they play in an individual's acceptance and usage behaviour of technology (Venkatesh et al., 2003). These four constructs are performance expectancy, effort expectancy, social influence, and facilitating conditions. Each of these constructs are articulated in depth below.

3.3.1. Performance expectancy

Performance expectancy measures the degree to which an individual believes that using the system will help him or her to attain gains in job performance (Kabakci Yurdakul & Çoklar, 2014; Venkatesh et al., 2003). Furthermore, there are five models under the performance expectancy construct which are the strongest predictors of the user's intention. The first one is perceived usefulness, which measures the user's beliefs that by using a certain system the job will be enhanced. Secondly, extrinsic motivation refers to the perception that users will want to perform an activity because it is perceived to be instrumental in achieving valued outcomes.

Thirdly, job-fit describes the capabilities of the system to enhance an individual's job performance. Fourthly, relative advantage refers to the degree to which using innovation is perceived as being better than using its predecessor. Lastly, outcome expectations refers to outcome expectations as related to the consequences of behaviour (Venkatesh et al., 2003). This construct measured how Accounting teachers believe that ICT integration will enhance their teaching.

3.3.2. Effort expectancy

Effort expectancy measures the degree of ease associated with the use of the system (Attuquayefio & Addo, 2014; Venkatesh et al., 2003). Again, this construct consists of three variables that capture the concept of effort expectancy, namely, Perceived Ease of Use, which defines the degree to which a person believes that using a system would be free of effort; Complexity, the degree to which a system is perceived as relatively difficult to understand and use; and Ease of Use, the degree to which using innovation is perceived as being difficult to use (Venkatesh et al., 2003). This study aimed at exploring Accounting teachers' understanding and practices of integration of ICT among Accounting teachers. This system of ICT integration is new to them therefore level of ease and difficulty were well examined by this variable. It furthered assisted to examine factors that might contribute to willingness to use the system (ICT) which are age, gender, experience and voluntariness of use.

3.3.3. Social influence

The system of ICT is new to many individuals and every society develops its own perspectives which can highly influence the user. According to Venkatesh et al. (2003), social influence is defined as the degree to which an individual perceives that important others believe he/she should use the new system. There are three variables to predict the user's behavioural intention to the system. Firstly, the subjective norm describes the person's perception that some important people should or should not perfect the behaviour in question. Secondly, social factors define the interaction that a user can have with a subjective group of cultures and the agreement the user has due to social situations. Lastly, image measures the level at which a user uses an innovative system perceived to enhance the image of the user (Venkatesh et al., 2003). This construct gave me an idea of how social influences affect teachers' understanding and practices of integration of ICT.

3.3.4. Facilitating conditions

Facilities have been reported as an issue for effective integration of ICT systems in most studies. Facilitating conditions are described as the degree to which an individual believes that an organisational and technical infrastructure exists to support the use of the system (Venkatesh et al., 2003). This construct is supported by perceived behavioural control, facilitating conditions, and compatibility. It reflects perceptions of internal and external constraints on behaviour and encompasses self-efficacy, resource facilitating conditions, and technology facilitating conditions (Venkatesh et al., 2003). This helped me to examine facilitating conditions teachers in Accounting encounter when integrating ICT into their teaching. Figure 3.3.4 below portrays Venkatesh et al.'s (2003) UTAUT framework:

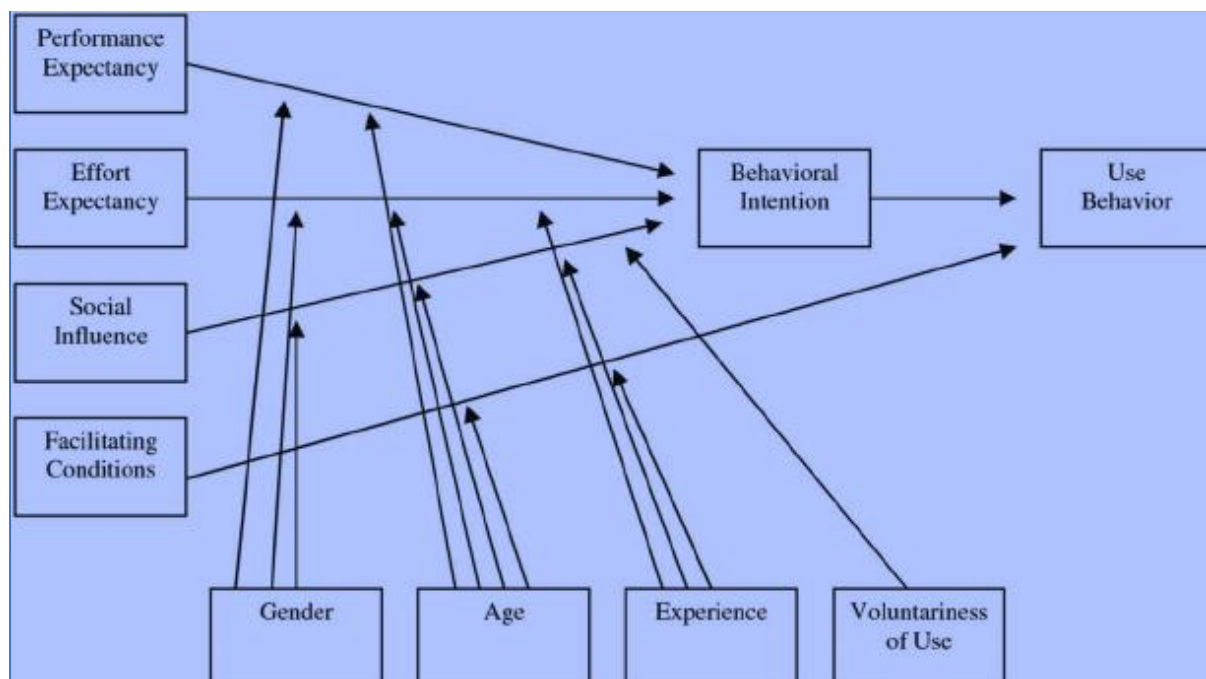


Figure 3.3.4: Unified Theory of Acceptance and Use of Technology (UTAUT). (Venkatesh et al., 200, P.447)

Employing TPACK and UTAUT to frame this study assisted me to answer the research questions successfully and achieve the research objectives of teachers' understanding and practices of ICT integration in teaching Accounting. As I intended to develop strategies to enhance ICT integration in teaching Accounting these two frameworks were very benefiting as I was able to understand what to consider when emphasising ICT integration in Accounting. These frameworks also provided an in-depth guidance on how to assess teachers' knowledge and skills on ICT integration and the factors that might hinder the implementation.

Chapter Summary

This chapter presented the theoretical and the conceptual framework employed to conduct this research study. TPACK elements provided comprehension of various understandings for technology integration in the classroom. These elements make it clear what knowledge and practices Accounting teachers necessitate in order to integrate ICT in teaching Accounting effectively. Further, the UTAUT conceptual framework was discussed to provide comprehension of Accounting teachers' acceptance and usage of ICT in teaching Accounting. Four UTAUT elements (performance expectancy, effort expectancy, social influence, and facilitating conditions) were used to measure Accounting teachers' acceptance and use of ICT in teaching Accounting.

CHAPTER FOUR

4. RESEARCH DESIGN AND METHODOLOGY

4.1. INTRODUCTION

The previous chapter expounded the theoretical framework, TPACK, and the conceptual framework, UTAUT, which informed this study. I utilised various research methods to collect data, analyse data, interpret data obtained and carry out the appropriate sampling. All these research methods were clustered under research methodology or research procedure. Research methodology in this study guided me to answer the critical research questions rigorously, and to carry out the purpose of this research study. Patten and Newhart (2018) describe research methodology as the building blocks that are utilised to build information on a certain research phenomenon, and they enlighten the researcher to better question the data obtained and make informed decisions. In research, researchers identify a research problem, develop research questions to address the problem, and select the appropriate research methods to generate and analyse data (Johnson & Christensen, 2019).

Therefore, this chapter provides a broader description of the research methodology I administered to obtain, analyse and interpret data on teachers' understanding and practices of integration of ICT in teaching Accounting. I provide an in-depth articulation of the research approach employed in this research study, research paradigm, research design, and sampling procedure (sample size, research sites, participants, and their demographic data). I further discuss the data collection methods (questionnaires, focus group discussion, observation, and in-depth interviews). Data analysis procedures selected (SPSS version 27 and thematic data analysis) are explained. I conclude by discussing the trustworthiness of the study (validity & reliability), ethical considerations and a summary of the chapter. The descriptions, rationales for the choices and implications of these research methods are discussed below.

4.2. RESEARCH APPROACH

Planning to conduct research is complex, hence in this study the research approach guided me on where to start and how. Cohen et al. (2018) suggest that in order for a researcher to select the appropriate approach, philosophical assumptions and various methods should be considered. The research approach may be referred to as a detailed description of how the researcher will initiate research on the phenomenon being researched. The research approach

indicates techniques or avenues of gathering data from the start until the end. Creswell and Creswell (2017) and Johnson and Christensen (2019) describe the research approach as a broad procedure put in place by the researcher on how data will be collected, analysed, and interpreted. These authors further indicate that the appropriate selection of a research approach relies on the researcher's decision such as philosophical assumptions, personal experience, people involved in the study, and type of research problem. In addition, research approach is defined as a broad proposal of performing research intertwining philosophical worldview, research design, and fundamental research methods (Creswell & Creswell, 2017).

There are three research approaches namely, quantitative, qualitative and mixed-methods (Cohen et al., 2018; Creswell & Creswell, 2017; Johnson & Christensen, 2019; Patten & Newhart, 2018). The quantitative approach collects, analyse, and interprets research data statistically, in other words, it utilises numeric data. While the qualitative approach utilises non-numeric data such as words, texts and images. The mixed-method approach utilises both quantitative and qualitative approaches to conduct research (Johnson & Christensen, 2019). The researcher may select one of these three approaches when conducting a research study. The choice of selection depends on the phenomenon, the type of the study, and the research questions the researcher would like to address. All these three approaches work effectively in any research study. However, Patten and Newhart (2018) believe that the mixed-method approach works best since the researcher can utilise both quantitative and qualitative approaches at once to gather information. Therefore, in this study I employed a mixed-method approach to explore teachers' understanding and practices of integration of ICT in teaching Accounting.

4.2.1. Mixed-method approach

This research study is grounded in a mixed-method approach because it incorporates the two research methods, which are quantitative and qualitative. Furthermore, it operates with words and statistics. In addition, it utilises open-ended questions and close-ended questions (Creswell & Creswell, 2017). This allowed me to gain rich data on teachers' understanding and practices of integration of ICT in teaching Accounting. Through this mixed-method I was able to obtain data in text forms and statistical forms. A variety of questions was also created to generate data. According to Creswell (2016); Guetterman et al. (2019), the mixed-method approach blends two research approaches, utilises different research designs that may involve philosophical assumptions and theoretical frameworks and different data collection methods. Hence in this

study after selecting both research approaches, I adopted a pragmatic worldview, collected quantitative and qualitative data (numeric and text), utilised an explanatory sequential research design and data were foregrounded by the theoretical framework (TPACK). I implemented a broad survey using quantitative instruments in order to generalise results to a population of Accounting teachers. Thereafter, I administered qualitative instruments to deepen the research phenomenon data.

Quantitative and qualitative approaches can be utilised in one study since their procedure of research is distinct and the amount of data yields may not be similar (Creswell & Creswell, 2017; Guetterman et al., 2019). The mixed-method is mostly utilised when a researcher seeks to obtain a deeper understanding of the phenomenon or the problem statement or the research question. In social science research, a quantitative approach might not yield much information needed to answer the research questions. Therefore, the qualitative approach is preferred in generating more data and developing a report. Patten and Newhart (2018) argue that each approach has its strengths and weaknesses, hence, they yield different answers to different research questions. For instance, in this study, the quantitative method alone would not answer all the research questions. Therefore, the qualitative method addressed gaps identified after administration of quantitative data.

In addition, incorporating the approaches allows the researcher to explore both inductive and deductive approaches. The inductive approach is utilised by qualitative researchers since it concentrates on observations and conclusions to formulate a theory. Whereas the deductive approach is utilised by quantitative researchers and concentrates on testing hypotheses and finding unexpected results (Cohen et al., 2018; Johnson & Christensen, 2019). After collecting data, I intended to contribute to theory on Accounting teachers' understanding and practices of integration of ICT. In order to do so, I observed Accounting teachers teaching and drew conclusions about their understanding and practices.

According to Creswell and Creswell (2017), a mixed methods approach can apply to all the phases of research, such as theoretical foundations, choosing research paradigms, research design; data collection methods, data analysis, sampling, validity, reliability, interpretation; reporting; and results of the research. They further assert that mixing two approaches increases the level of creditability of the outcomes obtained and the opportunity to utilise those outcomes effectively. Cohen et al. (2018) and Guetterman et al. (2019) add that the mixed-method

approach also improves the accuracy of research data and reliability through triangulation, reduces bias in the research, and enables compensation between the strengths and weaknesses of research strategies. Mixing the two approaches broadens the breadth and width of the study and develops strong arguments for the researcher (Patten & Newhart, 2018). Further, incorporating both approaches might contribute discrete data, however all will be useful in the research project.

Mixing both approaches might entail advantages and disadvantages, for instance, collecting massive data from various research methods, approaches, and epistemology creates a large volume of data which might turn out to be a burden to analyse such data (Creswell, 2021). In this study, I was aware that the mixed-method approach would generate massive data therefore quantitative data were analysed with a quantitative instrument. Qualitative data were also transcribed, coded and themes were developed and categorised according to the critical research questions. It is also worth noting that there are major discrepancies that have to be noted between these two approaches. The quantitative approach collects data with closed-ended questions and normally the hypothesis is tested in the laboratory. For this study's purpose, descriptive and correlational approaches were used to guide the quantitative research. Descriptive approach seeks to obtain information on current state of phenomena by proving accurate profile of situations, people or events (Rahi, 2017). While correlational approach seeks to determine the extent of a relationship between two or more variables using statistical data. In this study, descriptive involved demographic data, questionnaires on internet usage ICT use and frequency, level of ICT proficiency and TPACK questionnaires. While correlation was constructed on 7 variables of TPACK. Such data gave me the opportunity to test the hypothesis statistically. Therefore, I was able to collect and analyse data using a statistical instrument such as questionnaire and SPSS software. On the other hand, the qualitative approach collects data with open-ended questions and rich data is obtained in research sites (Patten & Newhart, 2018). In the quantitative approach, the researcher has limited freedom as compared to utilising a qualitative approach. While in qualitative research the researcher is at liberty to make changes where it is necessary.

The quantitative approach works with a large population and a large number of questions in the quantitative data generation instrument. On the other hand, the qualitative approach works with a small population to generate data (Creswell, 2016; Johnson & Christensen, 2019). Even

though the population might be relatively small, the data that will be generated is rich. Lastly, the quantitative approach is objective, which means it is not based on personal experience, feelings, or opinions in representing the facts. The qualitative approach is subjective, which means data and facts are represented based on personal experiences, feelings, and opinions (Johnson & Christensen, 2019). The above-mentioned features of each approach compelled me to select a mixed-method approach. Under qualitative approach, phenomenology was selected as it attempts to capture the heart of a phenomenon by studying it through the eyes of individuals who have had direct experience with it (Teherani et al., 2015). Through phenomenology approach I was able to get the essence of teachers understanding and practices of ICT integration through their experiences. Further, through this approach I had the ability to sample participants purposively, generate and analyse data qualitatively since phenomenology is the ideal methodology to apply for research that involves peoples' perceptions, experiences and definitions of the phenomenon. Qualitative methods allow the researcher to collect local knowledge and give voice to participants. Further, qualitative researchers are often interested in gathering data that is in a context. For example, the particular organisation, geographic location, or period of time may contribute to understanding the responses of the people included in the study (Patten & Newhart, 2018). This study collected data on local Accounting teachers in local schools in the Umlazi District in order to determine their understanding and practices of integration of ICT.

Combining both quantitative and qualitative has mostly been utilised in science research; however, there has been a growing trend of utilisation of a mixed-method approach in social studies (Creswell, 2016). Hence in this study I employed a mixed-method approach. According to Johnson and Christensen (2019), the quantitative research approach believes in the scientific confirmatory method, where the research phenomenon is tested in theory and hypothesis. Researchers who utilise the quantitative approach believe that it is essential to clearly indicate the hypothesis and examine those hypotheses with numerous data to verify their accuracy. The quantitative research approach is sometimes referred to as a narrow-angle lens which means participants may be asked to concentrate on examining one factor practically and then study the outcome (Creswell & Creswell, 2017).

On the other hand, the qualitative research approach does not rely on the scientific method; it concentrates on understanding a social phenomenon from the participants' perspectives and assumptions which is the intention of this study. Johnson and Christensen (2019) and Creswell

and Creswell (2017) opined that the qualitative approach believes in developing new hypotheses and theories as well as discovering more information about the researched phenomenon. Qualitative research approach utilises a deep and wide-angle lens to study human behaviours and reality. This is because qualitative researchers believe that behaviour choices and reality are created from various factors such as the type of people, their thoughts, assumptions, and the state of living (Shanmugam, 2020). Lastly, the qualitative research approach leads to naturalistic research which attempts to study the everyday life of different groups of people and communities in their natural setting.

Therefore, I observed teachers at schools in their classrooms teaching an Accounting lesson. This provided me with data from their natural settings and the perceptions of the societies and human actions about the research phenomenon. Again, this approach assisted me to explore issues about the research problem which is teachers' understanding and practices of integration of ICT in teaching Accounting. The qualitative approach in this study was carried out through social interactions, that is interaction with the participants (Accounting teachers).

4.2.2. The rationale for utilising a mixed-method approach

Numerous reasons transpired me in this study to utilise a mixed-method approach. These include the ability of a mixed-method approach to implement a rigorous methodology of both quantitative and qualitative approaches. The methodology procedures for quantitative and qualitative research emanates from worldview and theoretical positions (Johnson & Christensen, 2019). The mixed-method approach is utilised because of its power of drawing on both qualitative and quantitative research and minimising the limitations of both approaches (Creswell, 2014). Mixed methods permit the researcher to have access to both quantitative and qualitative data. It is an effective approach to allow the researcher to have comprehension of the research problem and research questions by comparing various perspectives drawn from quantitative and qualitative data (Creswell, 2021).

Explaining quantitative results with a qualitative follow-up data collection and analysis enhances the quality of research. Evaluating both the processes and the outcome of a project is an experimental intervention (Creswell & Creswell, 2017). Through the utilisation of a mixed-method approach, I was able to obtain clarity on uncertainty and contradictory philosophies. Since this research study employed a mixed-method approach, a pragmatic research paradigm was adopted.

4.3. PRAGMATIC PARADIGM

In this research study, I chose a pragmatic paradigm to comprehend detailed information on teachers' understanding and practices of integration of ICT in teaching Accounting. The pragmatic paradigm embraces that both quantitative and qualitative research may be combined in one single project. Johnson and Christensen (2019) and Guetterman et al. (2019) assert that in the pragmatic paradigm the researcher should prioritise what works best in answering research questions, generating rigorous data, and validating findings. Furthermore, pragmatists concentrate on the end value of the research. The main important factor of the pragmatism worldview is that it is not limited to one philosophical assumption and single reality; it believes that philosophy is developed in actions, situations, and results (Cohen et al., 2018; Creswell & Creswell, 2017). In pragmatism, the researcher has an option of a variety of research methods, techniques, and plans that will fit into the research study's needs. The pragmatic researcher concentrates on what and how questions which are essential to comprehend the intended results. Lastly, pragmatist researchers concur that research takes place socially, politically, and historically. The mixed-method approach and pragmatic worldview work similarly thus, I selected a pragmatic approach.

The pragmatic paradigm concentrates on utilising quantitative and qualitative data in framing the research study, addressing the research problem, collecting data, and analysing data (Guetterman et al., 2019). The pragmatic paradigm permits the researcher to combine various data, research methods, and a variety of worldviews. In addition, information to answer the research questions incorporates both numerical and narrative data. The pragmatic paradigm integrates various understandings of the world, different conceptual frameworks, and various thoughts of the world regarding the researched phenomenon. According to Cohen et al. (2018), a pragmatic paradigm focuses on successful practices and observations.

Kivunja and Kuyini (2017) add that in pragmatism, the researcher is not so concerned about the accuracy or the untruthfulness of the idea, but the researcher is more concerned with whether the idea can make a difference. Pragmatism is not an anything-goes, sloppy, unprincipled approach, it has its standards of rigour, and these are that the research should answer the research questions and deliver useful, practicable, reliable, and valid answers to questions put by the research (Cohen et al., 2018). In this study I intended to answer the critical research questions rigorously hence I adopted a pragmatic paradigm. This was achievable

through incorporating both quantitative and qualitative research since each research was able to measure the validity of answers.

Adopting a pragmatic paradigm provided me an opportunity to authentically address the research problem which is teachers' understanding and practices of integration of ICT in teaching Accounting. I gained a large amount of data that addressed triangulation regarding this phenomenon. It permitted me to comprehend effectively the real-world views of Accounting teachers on ICT integration in general and in Accounting in particular. In addition, it allows mixed philosophical assumptions, increases validity and reliability, and portrays 'what works' (Cohen et al., 2018). Kivunja and Kuyini (2017) describe the pragmatic paradigm in four ways. A relational epistemology means that the researcher decides what is an appropriate relationship needed to that particular study. In addition, a non-singular reality ontology means there is no single reality and all individuals have their own unique interpretations of reality. Furthermore, a mixed methods methodology combines quantitative and qualitative research methods and lastly, a value-laden axiology research what the benefits the people in the research.

The following characteristics of the pragmatic paradigm also transpired me to select this paradigm: the importance of 'workability' in the research study; the ability of the researcher to utilise what works to answer the research questions or address the research problem without being concerned about the nature of the research study (quantitative or qualitative); and selecting the worldview that liberates the researcher to utilise any method and any research design to carry out the purpose of the research study. A researcher may also utilise the best approaches to gain knowledge using every methodology that helps to discover knowledge (Cohen et al., 2018; Johnson & Christensen, 2019; Kivunja & Kuyini, 2017).

The next sub-section describes the research design for this study.

4.4. RESEARCH DESIGN

A research approach, research paradigm, and research design work closely with each other and they are interrelated. In order to cover the research methodology in totality, all three should emerge. Research design is an overall strategy that the researchers choose to incorporate with different components of the study coherently and logically, thereby, ensuring that they will effectively address the research problem, research questions, procedure for the collection, and analysis of data. Research designs are types of inquiry within qualitative, quantitative, and

mixed methods approaches that provide specific direction for procedures in a research study (Creswell & Creswell, 2017). Since this study has selected a mixed-method approach and a pragmatic paradigm, the appropriate research design for this study is an explanatory sequential research design.

4.4.1. Explanatory sequential research design

I chose an explanatory sequential research design since the design permitted me to utilise both quantitative and qualitative research in conducting research. Explanatory sequential research design instructs the researcher to first conduct quantitative research, analyse the findings and then build more data with the second phase which is qualitative research (Creswell, 2016; Creswell & Creswell, 2017; Patten & Newhart, 2018). These scholars further assert that the researcher has to note the quantitative data that needs to be elaborated further through qualitative data. This creates an opportunity for the researcher to have an adequate understanding of the information acquired. Furthermore, overlap gaps and dissatisfaction were noted during the quantitative research (Johnson & Christensen, 2019). Quantitative data might generate brief information that might limit the researcher's articulation, hence the explanatory sequential is utilised in this study. Creswell (2021) asserts that this design is referred to as explanatory because it is the first stage of conducting research in a quantitative form and findings are explained more in qualitative terms. Sequential means quantitative research is followed by qualitative research.

Foregrounding this study on a mixed-method approach necessitated me to adopt an explanatory sequential research design to assist me to collect, interpret, and analyse data in two phases. I first collected data in quantitative form with a questionnaire instrument. The questionnaire entailed a set of questions related to teachers' understanding and practices of integration of ICT in teaching Accounting. The data obtained in this instrument was statistically interpreted and analysed with the appropriate method chosen, SPSS version 27. After administering this process, I revisited the critical research question of this study to ensure that the qualitative phase builds with relevant data. The three critical research questions driving this study are: What are Accounting teachers' understanding of the integration of ICT in teaching Accounting in the Umlazi District? How do Accounting teachers integrate ICT in teaching Accounting in Umlazi District? Why do Accounting teachers understand and practise the integration of ICT in teaching Accounting the way they do?

Thereafter, a second phase of collecting, interpreting, and analysing data resonated. The second phase was the qualitative phase. This was to ensure that qualitative data builds on the quantitative data that the researcher already obtained. Since I had analysed data quantitatively, it was easy to understand the gaps and which aspects require deeper information. I built on the first phase by collecting data from three various qualitative methods, namely, focus group discussions, observations, and in-depth interviews. Each instrument consisted specific questions, either on the research phenomenon or on the theoretical frameworks, or both. The rationale was to affirm that deeper information is acquired in all aspects of the research problem. After completing both phases, data emerged, and critical analysis occurred in order to construct findings and develop a report.

Explanatory sequential research design is believed to be powerful in conducting quantitative research; however, it requires further exploring the results (Creswell & Creswell, 2017). Explanatory sequential research designs are most appropriate to research that analyses relationships or trends using a quantitative approach, but also wants to be able to address underlying mechanisms or reasons. The explanatory sequential mixed-methods design involved collecting quantitative data through a cross-sectional survey and qualitative data through semi-structured interviews, observation and focus group discussions sequentially (Guetterman et al., 2019). The quantitative results typically inform the types of participants to be purposefully selected for the qualitative phase and the types of questions that will be asked of the participants (Johnson & Christiansen, 2019).

4.4.2. The rationale for utilising explanatory sequential design

The motivation for utilising explanatory sequential design in this study is that the quantitative research and its outcomes allowed me to have a small picture of teachers' understanding and practices of ICT integration in Accounting. The qualitative phase gave me a full picture of the researched phenomenon through broad data, polishing data collected, and describing the general picture provided through quantitative results (Creswell, 2016). The explanatory sequential design starts by obtaining quantitative results from a population in the first category and then refining or explaining these findings through qualitative exploration in the second category (Creswell & Creswell, 2017). The explanatory sequential design has the benefit of clearly recognised quantitative and qualitative parts, and this was beneficial for the reader and me, the researcher, who designed and pursued this study.

In addition, the explanatory sequential research design is perceived as a design that has a strong foundation in quantitative data. The detailed questionnaire in this study was regarded as the means of gathering quantitative data, which gave me a good background before moving to the second stage of qualitative data. The explanatory sequential research design advocates that the data collection in the second stage cannot be conducted until the first stage results are obtained. Therefore, the below information elaborates on the various methods of data collection of both two methods. This study commenced with the quantitative data collection method and then the qualitative methods.

4.5. SAMPLING

Selecting the appropriate population and research sites for this research study was one of my primary objectives as a researcher to obtain reliable data. This study sought to explore teachers' understanding and practices of integration of ICT in teaching Accounting using a mixed-method approach. Therefore, sampling was administered for both approaches (quantitative and qualitative). For accuracy and precision sampling, I selected sequential mixed methods sampling. This sampling method maintains that the first sampling method influences the proceedings of the next one (Johnson & Christensen, 2019). For instance, in this study, a large number of participants were sampled for quantitative data and from those I selected smaller groups for the qualitative methods. I used random sampling for quantitative data and purposive for qualitative method. In other words, from the equal opportunity that was given to all participants to participate in a study for quantitative sample, in qualitative sampling, I used a criterion I developed to select participants. This subsection articulates broadly the sampled population, sample size, sampled research sites, and sampling approaches that were employed in this research study.

4.5.1. Population, sample size and technique

In this research study, the population was significant as it generated data on the research phenomenon. Secondly, the population played an important role in answering critical research questions. Cohen et al. (2018) indicated that the population is the target group from which the researcher intends to gather information. The population of the research study emerges from the research phenomenon, hence sample size is determined by the population. There are kinds of factors that a researcher should consider for rigorous sample size. These include the purpose of the study, nature of the study, research design, methods of collecting data, and data analysis

(Cohen et al., 2018; Patten & Newhart, 2018). Determining the number of participants in the research study can be very complex.

In this study, the population was 179 Accounting teachers who were Accounting specialists or currently teaching Accounting in secondary schools of Umlazi District. Umlazi District has 14 circuits, 26 Accounting clusters, 143 schools offering Accounting as a school subject and 179 Accounting teachers. All 179 Accounting teachers formed the population.

In this study, I used a multiple sampling technique. Firstly, the name and number of secondary schools offering Accounting data were obtained from the Department of Education head office. Therefore, one hundred and seventy-nine (179) teachers were purposively selected for the collection of quantitative data. In other words, the population of this study was 179 Accounting teachers. Two criteria were used to determine the population: all teachers who are teaching Accounting in the FET phase in Umlazi district and who hold a teaching diploma or degree (qualification) formed the population. The population of teachers teaching Accounting was obtained from the database of Accounting teachers in Umlazi district.

From the population of 179 teachers, 151 Accounting teachers accepted the invitation to take part in the quantitative data gathering through the questionnaire and availed their WhatsApp numbers for virtual copies of the questionnaire or physical addresses for paper copies of the questionnaire. One hundred and twenty-nine (129) Accounting teachers completed and returned the questionnaires. The response rate was thus 85,4%.

Secondly, I adopted stratified probability sampling to select teachers for focus group discussion, observations, and individual interviews. I created a list of Accounting teachers with their clusters. This was to ensure that I align each teacher with a correct cluster. Thereafter, I created a list of clusters with numbers one to twenty-six (1-26). I then allocated teachers to their respective clusters. The clusters were then sub-grouped. In those groups, teachers were assigned numbers of one to seven. The rationale for ending at seven was that there was a cluster with seven schools. Since teachers were all assigned numbers, I then selected three numbers from each cluster namely one, three, and seven. Therefore, three teachers were randomly selected from each cluster for focus group discussions, in totality 78 Accounting teachers (3 teachers $\times$ 26 Accounting clusters). Since they were a large number, they were divided into seven groups of 10 participants and one group of eight participants. This gave a total of eight

focus group discussions that were conducted. In qualitative studies, the sample size is usually smaller (Merriam & Tisdell, 2015). The recommended number of participants according to (Maree, 2016) are 5 to 12 participants thus each focus group discussion has 8 to 10 participants.

For observations, I started by listing circuits with numbers, one to fourteen (1-14). The numbering of circuits was to ensure that I did not omit circuits on the lists. I then split the number of teachers into groups and each group consisted of ten participants. Thereafter, I allocated each teacher a number from one to ten (1-10). From the groups, all teachers with number two and four were randomly selected. In other words, two teachers were randomly selected from each circuit for observations. Therefore, observations were administered with 28 (2 teachers $\times$ 14 circuits) Accounting teachers. Lastly, one teacher was randomly selected from each circuit (14) for individual interviews. In order to randomly sample this one teacher, I chose all number teachers allocated number one in observation and requested them to be part of individual interviews. In total 14 Accounting teachers participated in individual interviews. In qualitative research a small number of participants normally 1- 20 or 20-30 is recommended for semi-structured interviews (Creswell & Creswell, 2017). This gives an opportunity the researcher to obtain in-depth and relevant data that will answer the research questions. For the purpose of this study, 14 participants for semi structured interviews were adequate to assist me in responding to research questions and developing themes. This was also good for accurate analysis of data. Thereafter, data was analysed accordingly.

4.5.2. Demographic data of sampled population

Figures (A1 to A9) present the demographic characteristics of participants who responded to the questionnaire. These characteristics include the school circuit in which the respondent comes from, gender, age, qualification, teaching experience, participants' teaching position at school, the school quintile of each respondent, and grade(s) each respondent teach. I included the demographic characteristics of participants to understand the impact of demographic characteristics on ICT integration in teaching and learning as the previous literature reviewed alluded that such characteristics have an impact on ICT integration in education.

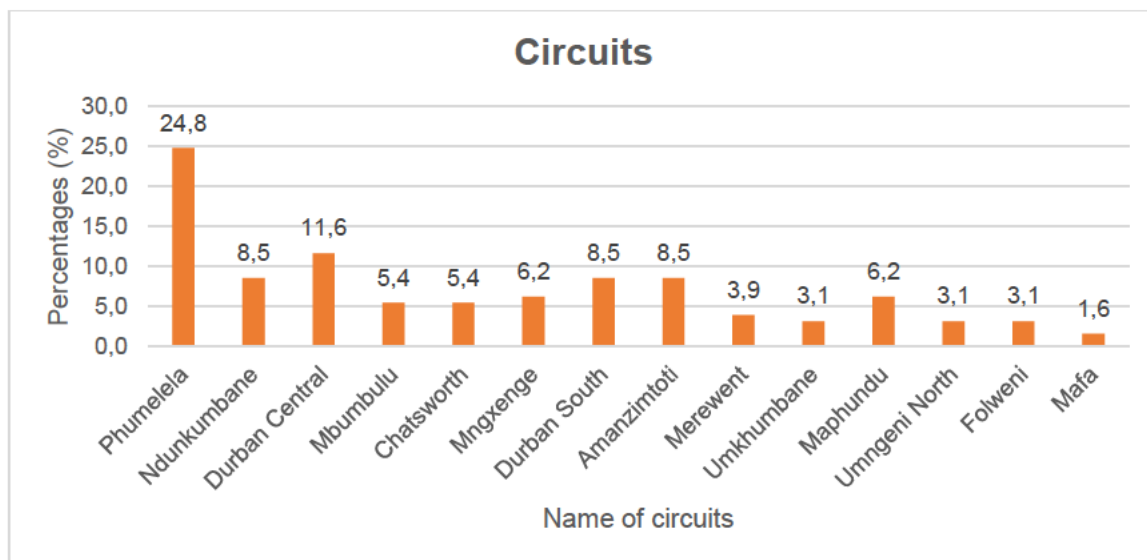


Figure 4.5.2.1: A1 Distribution of participants who participated in each circuit.

The above graph (Figure 4.5.2.1: A1) depicts the name of the circuits and the number of participants who participated in this study in each circuit via the questionnaires. The number of participants per circuit is labelled in percentages for easy articulation. Umlazi District has 16 circuits that offer Accounting as a school subject in the FET phase. However, out of the 16 circuits only 14 circuits participated in this study (88%). In other words, participants used in this study were from 14 circuits, none came from the other two circuits. Phumelela circuit had the highest number of participants in the questionnaires (24.8%) followed by the Durban Central circuit with 11.6%. Ndunkumbane, Durban South and Amanzimtoti shared a similar percentage of 8.5%. Similarly, Mbumbulu and Chatsworth shared the same score of 5.4% whilst Umkhumbane, Umngeni and Folweni scored 3.1%. The circuit with the least participants was Mafa (1.6%). The overall findings showed that every circuit was represented to some extent which provided information about every circuit. Including circuits assisted me to measure teachers' level of understanding and practices of ICT integration in teaching Accounting in each circuit.

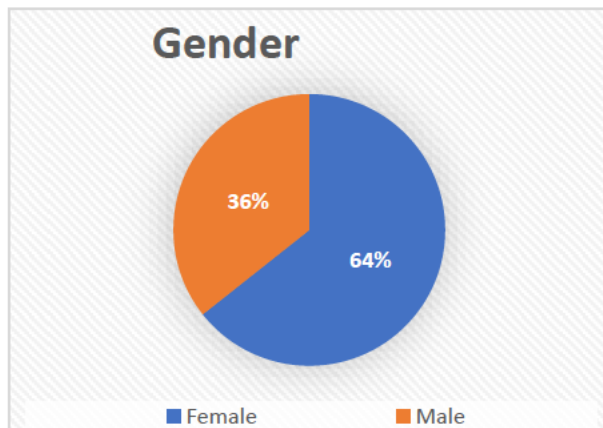


Figure 4.5.2.2: A2 Distribution of participants' gender

The population of this study was slightly dominated by females (64%) and males indicated the lower percentage of 34% (Figure 4.5.2.2: A2). The overall number of participants was 129, 83 were females and 46 were males. This indicated that there are more female teachers teaching Accounting in the uMlazi district. Having both genders represented in this study gives me an opportunity to understand the views of each gender on ICT integration in teaching Accounting.

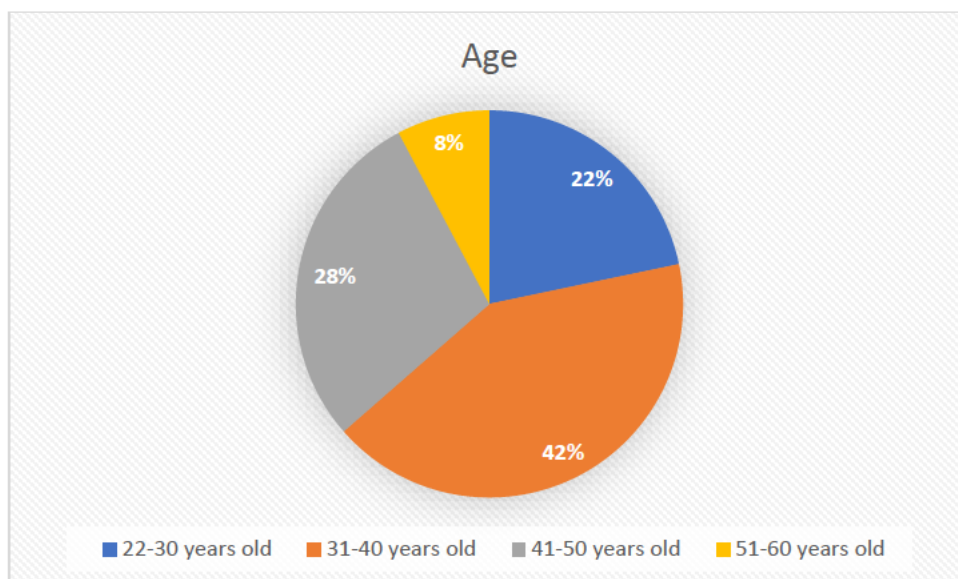


Figure 4.5.2.3: A3 Distribution of age ranges of Participants

The findings obtained in the graph above illustrate the age of Participants. Participants between the age of 31-41 years had the highest percentage (42%). This was followed by participants between the age of 41-50 years old with 28%. Participants who ranged between 22-30 years were reported at 22% and the smallest age group was 51-60 years old (8%). According to the

literature reviewed, the older generation tends to be resistant to technology transformation (Mathevula & Uwizeyimana, 2014; Msila, 2015; Padayachee, 2017).

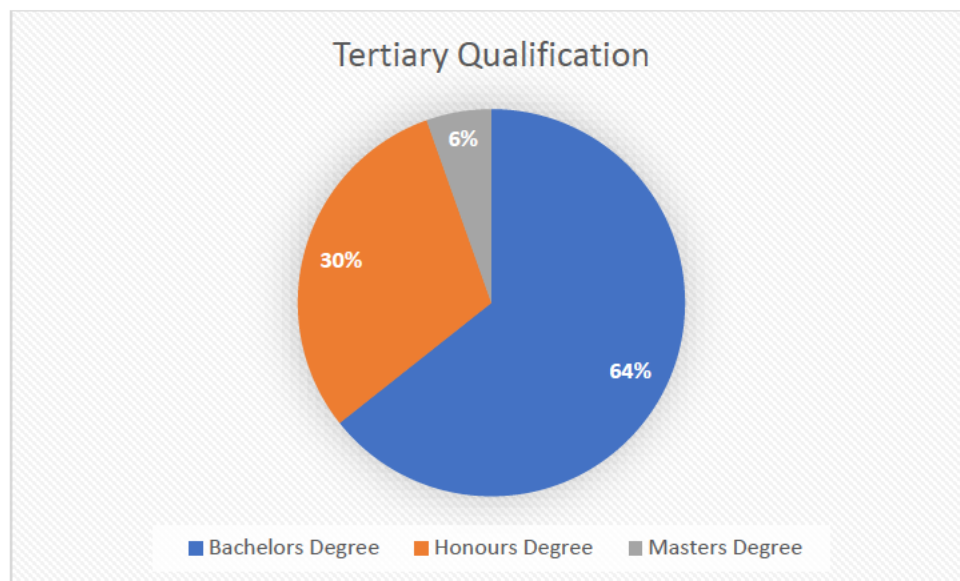


Figure 4.5.2.4: A4 Distribution of -participants' highest qualifications

The questionnaire provided Participants with six qualification categories to rank themselves. None of the -participants held Doctoral degrees (0%). The majority of -participants held a Bachelor of Education degree (64%), followed by an Honours degree with a moderate percentage of 30%; only 6% of participants held a Masters in Education (Figure 4.5.2.4: A4). Measuring -participants' level of education assisted in aligning their level of understanding and practices of ICT integration in teaching Accounting since it is believed that the more educated p-articipants are, the more they are capable of incorporating technology in their teaching. Thus, this research included the -participants' level of education.

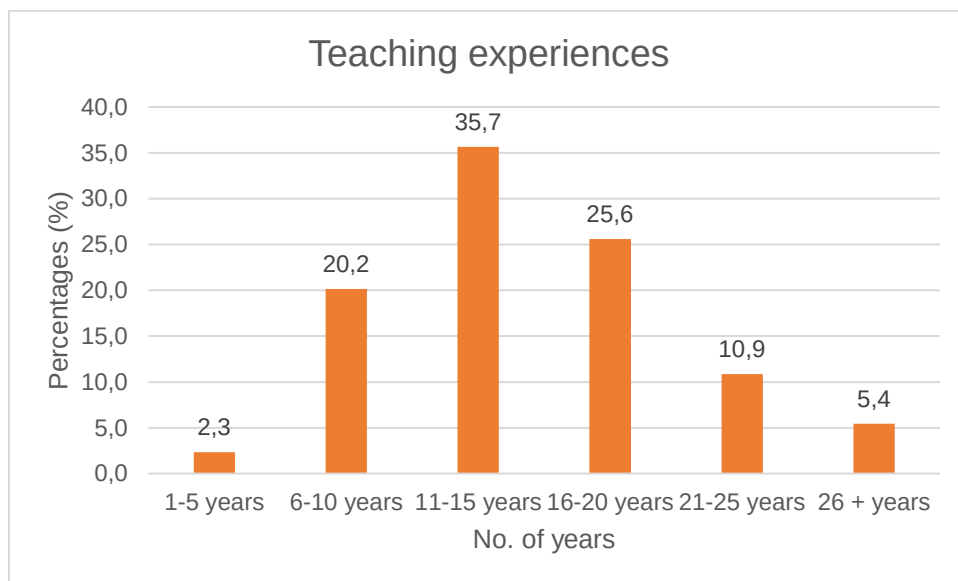


Figure 4.5.2.5: A5 Participants' teaching experiences

Figure 4.5.2.5: A5 depicts the findings on the experience of participants in teaching Accounting. The number of years teachers have taught the subject of Accounting determines the level of exposure to integrating ICT in teaching Accounting. Furthermore, teaching experience also provides an understanding of whether there is a difference between teachers' understanding and practices of ICT integration in teaching Accounting between novice and seasoned teachers. The highest percentage of participants had experience of 11-15 years in the field of teaching (35.7%), followed by 25.6% with the experience of 16-20 years. Participants with 6-10 years comprised 20.2% while -participants with 21-25 years comprised 10.9%. Participants with 26 years and above of teaching experience indicated 5.4% and few Participants had less than 5 years of teaching experience (2.3%).

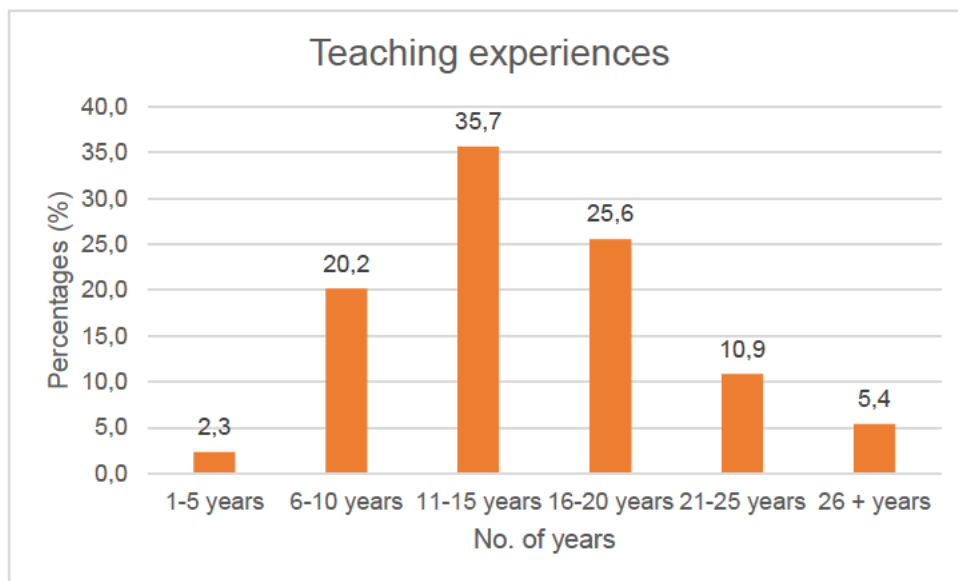


Figure 4.5.2.6: A6 participants' teaching positions

Figure A6 indicates that participants held different positions in their schools. Participants who are post-level one educators reported a relatively high score (67%). Twenty-seven percent (27%) of participants are managing commerce departments (Departmental Heads). Participants who hold higher leadership roles were relatively low: 3% were deputy principals and 3% were principals. However, they were still teaching Accounting.

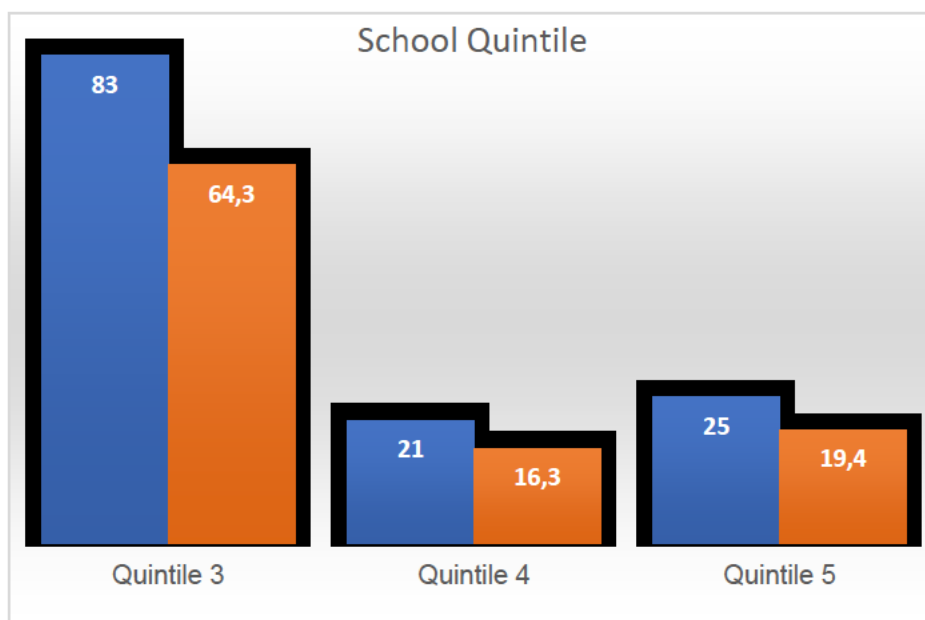


Figure 4.5.2.7: A7 Distribution of participants' school quintile

This research study selected schools from various school quintiles. The DBE ranks schools according to the state of poverty or affordability of the community. According to the South African Schools Act no 84 of 1996, Section 39(7), schools range from quintile one up to five. Quintile five schools are well resourced, parents receive good salaries and they are fee-paying schools. Quintile one represents the poorest schools, which are non-fee paying schools (Ogbonnaya & Awuah, 2019). Since this study explores teachers' understanding and practices of ICT integration in teaching Accounting, it is, therefore, vital to include school quintiles since the issue of resources might have an impact on teachers' understanding and practices of ICTs in their teaching. Table A7 above provides findings on the school quintiles of the schools in which participants worked. Only three school quintiles were involved in this study. Schools in quintile 3 comprised 64.3% of schools which participated in the study; 19.4% were schools in quintile 5 and 16.3% were schools in quintile 4. No schools in quintile 1 and 2 participated in this research study. The explanation is that the study was conducted in a township area where most schools fall under quintile three. Although a semi-rural area, such as Imbumbulu, was included, schools in that circuit are ranked under quintile three. Table 8A illustrates circuit names, number of Accounting teachers in each circuit, number of schools in each circuit and the corresponding school quintile.

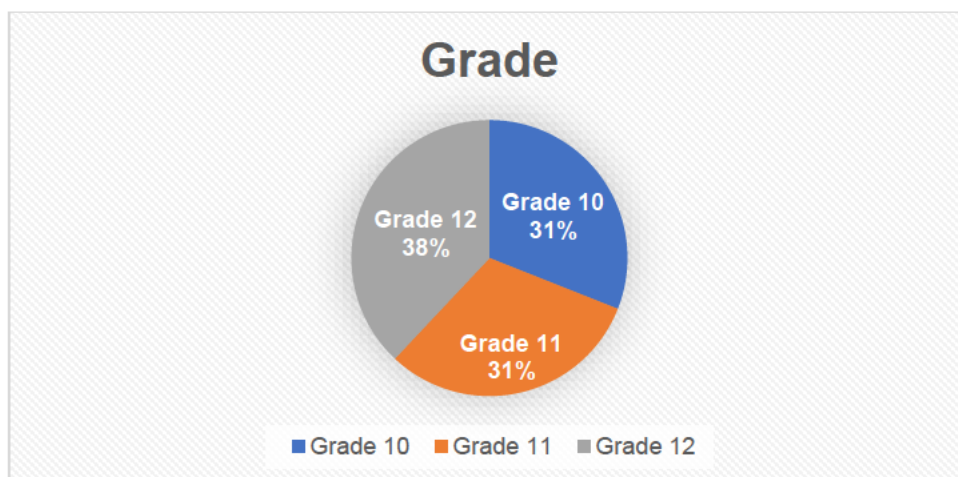


Figure 4.5.2.8: A8 Distribution of grades taught by participants

To ensure that all participants were all Accounting teachers in the FET phase, grades were included in the questionnaire. Figure 4.5.2.8: A8 indicated that some participants were teaching more than one grade, for instance, Grades 10 and 11. The results showed similar results for all three grades. Participants indicated the highest percentage (38%) in Grade 12, while Grades 10

and 11 ranked with the same score (31%). The next table portrays a brief summary of sampling size of this study.

Circuit names	Number of Accounting teachers	Number of schools	Quintiles
Phumelela	17	13	3
Ndunkumbane	14	11	3
Durban Central	11	7	4 & 5
Mbumbulu	12	9	3
Chatsworth	14	8	3 & 4
Mngxenge	8	7	3
Durban South	11	7	4
Amanzimtoti	16	11	3 & 5
Merewent	14	14	3 & 4
Umkhumbane	11	13	3 & 4
Maphundu	11	7	3 & 4
Umngeni North	17	18	3 & 4
Folweni	12	10	3
Mafa	11	8	3

Figure 4.5.2.9: A9 Statistics analysis of the study

4.5.3. Research sites and participants

In this research study, observations were conducted face-to-face in schools in classroom settings. All the research sites were secondary schools located in Umlazi township. Ogbonnaya and Awuah (2019) and Creswell (2021) assert that the research site may be limited to one metropolitan city or to one small geographic area. Umlazi is a township in KZN, South Africa, located south-west of Durban. It is the fourth largest township in South Africa, therefore, it consists of a large number of schools. These schools are located in various geographical areas and vary in income distribution. The sampling technique I employed to sample research site was Random Number Generator. For this technique I use SPSS software to generate random numbers. All schools were populated into SPSS and analysed accordingly to generate random samples. The pseudonyms given to the eight schools randomly sampled in this study were Cambridge High School, Bright Future High School, Ikusasalethu High School, The Ark High School, Imbali High School, Eyethu High School, Rising Star High School and Siyaphumelela High School.

The choice of these schools is based on from easy accessibility and availability of participants. I have worked closely with these schools in Accounting meetings and moderations. As a result, I did not have any difficulty accessing the participants for my study. These research sites are described in detailed below.

Cambridge High School and Bright Future High School are both public schools in an urban area surrounding by good housing located five kilometres from the city centre of Durban, South Africa, and they are four kilometres distant from each other. These are quintile five, fee-paying schools; parents' income is considered before admitting a learner, literacy is high and unemployment is low. However, the school accommodates 20% of learners from poor backgrounds who might not afford the school fees. Roads to the schools are tarred. Learners have easy access as most are transported by parents or by lift clubs. The schools are well fenced, and security is high with surveillance cameras. These schools are well built triple-story buildings, and the environment is very neat and conducive for learning. These schools have running water, clean toilets and electricity. Classrooms are well built; they are furnished and well-kept. The classes I observed had cameras, intercom, projector, whiteboard, chalkboard, desks, cupboards and drawers to keep books and chairs and desks for every learner. In the corridors, there are multiple notice boards. These schools specialise in ordinary subjects, however, they also offer technical subjects such as Technical Mathematics, Information

Technology, Engineering Graphics and Design. Accounting is one of the major subjects in the commerce department. Cambridge has 982 learners, and 86 teachers and Bright Future has 900 learners and 79 teachers.

Cambridge High is performing well academically as a result, it has numerous sponsors in various departments. Both schools consistently maintain a 100% National Senior Certificate pass rate. Further, these schools are well resourced with advanced technology resources such as computers, laptops, technology and science laboratories and a Mathematics and Science Centre. Other facilities in these schools include a music centre, floodlit sports fields, an Olympic swimming pool with water polo adaptation, an indoor cricket centre, an elegant coffee/uniform shop, a tuck shop, basketball facilities and squash courts. These schools report a high level of parental support and involvement. All racial groups are represented at these schools.

The next two research sites discussed are The Ark High School and Rising Star High School. The Ark High School is situated 14 kilometres away from the city of Durban, South Africa; Rising Star High School is located 15 kilometres away. These two schools are quintile four fee-paying schools albeit cheaper than the afore-mentioned research sites. These schools are built in a semi-urban area in beautiful surroundings with houses and shops. The community can afford a reasonable lifestyle and employment rate is average. These schools have good access roads, schools are fenced, good buildings and the school climate is conducive for learning. However, classrooms do not have adequate technology resources.

In these two schools, the conditions were similar: lighting inside the classrooms, plugpoints, white boards, a chalkboard and tables and chairs for each learner. The classrooms are not overcrowded, and notice boards are displayed in the corridors. These schools specialise in ordinary subjects; however, The Ark High School offers three technical subjects, Computer Application Technology (CAT), Design & Technology and Engineering Graphics and Design. The National Senior Certificate pass rate ranges between 90% and 100%; parents are supportive to the learners and the school. The Ark High School has 1013 learners and 84 permanent teachers; Rising Star High School has 889 learners and 69 permanent teachers. Both these schools have Accounting as a major subject in the commerce department. These schools reported having technology resources such as computers, laptops, whiteboards, and overhead projectors; however they are not sufficient for everyone.

Computer labs with a few computers are available and both schools have science labs. In addition, both schools have a functioning library and sports grounds and The Ark also has a swimming pool. These schools have good access to water and sanitation. The Ark High School is situated in a moderately populated area and learners mainly use lift clubs to get to the school. Bright Future High School is in a densely populated area and learners use lift clubs and public transport, such as buses and taxis. Both these schools are confronted with traffic congestion since public transport use the same route as learners take to school.

The other four research sites are located in the central area of Umlazi township in different sections and they are 24 kilometres away from Durban central. These schools are Ikusasalethu High, Imbali High, Eyethu High and Siyaphumelela High School located 4.2 to 5.5 kilometres away from each other. They are all non-fee paying quintile three schools. Schools in Quintiles 1 to 3 are non-fee paying schools and receive more funding per learner from the government (Ogbonnaya & Awuah, 2019). All these schools are subsidised by the government with funds, a feeding scheme and other educational facilities such as textbooks, school furniture and buildings. These schools are located in a township area and the economic status and the standard of living of the surrounding population is low. Some schools are surrounded by Residential Development Project (RDP) houses and informal settlements. Roads to the schools have potholes' some are gravel which becomes a challenge on rainy days. All these schools are fenced; however, the security level is very low. Two only have day security and there are no cameras around the school premises.

Three schools of the four specialise in ordinary school subjects and no technical subjects are offered. During the three years prior to the time of writing, Ikusasalethu High's National Senior Certificate pass rate ranged from 75% to 86%, Imbali High from 80%-90%, Eyethu High from 75% to 89% and Siyaphumelela High from 83% to 90%. Ikusasalethu and Eyethu have similar buildings and facilities. The buildings are rectangular, the structures are old, and they are constantly vandalised even after renovations. Some classrooms have no doors and no windows; some classrooms have no power; previous installations have been stripped. In Eyethu only the Grade 12 block is electrified with plugpoints. Classrooms have desks, teachers' desks and chalkboards. No other kind of technology resources are present.

These schools have dusty dysfunctional school libraries; books are very old. Both schools have science labs with limited equipment. These schools have no computer labs, computers are available at the administration and each department has its own laptop. Ikusasaletu has 45 tablets contributed by Vodacom; however, they are not working. Both schools have access to water and electricity in a few buildings. Ikusasaletu has 540 learners and 25 teachers, Eyethu has 854 and 31 teachers. These schools have manageable classroom sizes. Major challenges are learning difficulties, poverty, illiteracy of parents and lack of parental support.

Imbali High and Siyaphumemela High do not vary that much from the other schools discussed. The only discrepancies are the buildings, school structures, additional subjects offered, enrolment and the number of teachers. Imbali High is a large school with double story buildings; Siyaphumelela is large but single-storied. Classrooms have broken windows and no doors; most classrooms have no power but are furnished with learners' desks, a teacher's table, old noticeboards, chalkboards and cupboards to keep textbooks. Both these schools have science labs and one computer room with limited resources. Classrooms are overcrowded. Imbali High School offers additional subjects such as Hospitality, Technical Mathematics, Computer Application Technology (CAT) and Technical design and drawings.

Imbali has 3115 learners and 133 teachers, Siyaphumelela has 2111 learners and 98 teachers. The National Senior Certificate pass rates range from 80% to 90% in the previous three years to writing. Imbali High School has various educational activities such as music, soccer, tennis and rugby. These schools still maintain a conducive learning environment; however, they are overcrowded.

4.6. METHODS OF DATA COLLECTION

Data collection methods set guidelines for the researcher on the population involved in the research, procedures, and instruments to utilise in collecting data. Various methods are used in research for data generation, namely, tests, documents, questionnaires, interviews, focus group discussions, individual interviews, and observations. According to Johnson and Christensen (2019), a researcher may utilise tests (examine research participants' capabilities on the research phenomenon), questionnaires (complete a particular set of questions on the research phenomenon), interviews (respond to questions through conversations), focus group discussion (a small group of engagement regarding the research phenomenon) and interviews (a meeting between the researcher and the participant asking a question on a research phenomenon).

This research study selected four methods of data generation. The rationale for multiple methods of data collection is to obtain a richer and deeper comprehension of the research problem and to answer the research question adequately. The four data collection methods were questionnaires, focus group discussion, observations, and in-depth interviews, and a full description of each is given below.

4.6.1. Quantitative data collection method

4.6.1.1. *Questionnaires*

In general, questionnaires refer to a set of questions constructed together to gather information on a certain phenomenon or research problem. Shanmugam (2020) defined questionnaires as data collection instruments that have to be completed by participants through filling in responses to designated questions. They further note that questionnaires provide participants with self-reports on assumptions, thoughts, beliefs, perspectives, behaviour, values, and personality. Questionnaires are mostly utilised by quantitative researchers and researchers who are interested in statistical analyses. In addition, questionnaires work effectively in a study with a large sample and it is easy to administer the data obtained (Creswell & Creswell, 2017). Questionnaires are the fastest method, easy and reliable. There are two kinds of questions, namely open-ended questions and closed-ended questions (Johnson & Christensen, 2019). Open-ended questions can also be referred to as semi-structured questions and closed-ended questions can be referred to as structured questions (Cohen et al., 2018).

Open-ended questions provide freedom to participants to respond freely to questions in a manner that enables them to articulate their genuine understanding and worldview (Guetterman et al., 2019). In contrast, closed-ended questions limit participants in their response as they are compelled to respond to predetermined responses which do not necessitate their elaboration (Johnson & Christensen, 2019). There are various kinds of closed-ended questions, namely, ranking questions, multiple choice, rating, ratio, constant sum, contingency, and dichotomous questions (Creswell, 2021; Creswell & Creswell, 2017). In most cases in closed-ended questions, the researcher provides participants with responses to choose from such as yes or no. Another difference between these two types of questions is open-ended questions are mostly utilised in exploratory research where a researcher is keen to find more information on the phenomenon. On the other hand, closed-ended questions are utilised in confirmatory research where a researcher wants to test the research phenomenon (Johnson & Christensen,

2019). Open-ended questions allow participants to write down their own responses in detail while closed-ended questions group participants' responses into one category. In the closed-ended question, participants provide honest and personal experiences of the research phenomenon by ticking the correct box or numbers; in the open-ended question there are spaces provided for articulation (Creswell & Creswell, 2017; Cuban & Jandrić, 2015).

Creswell and Creswell (2017) note some advantages and disadvantages of questionnaires. Namely, questionnaires provide the researcher with a legitimate response that is rich and in-depth. The participant can provide full responses in their own words and the chance of accuracy is high (Guetterman et al., 2019). A disadvantage of an open-ended questionnaire is that it produces immense data which might be difficult for the researcher to handle. Open-ended questions are time-consuming as the participant has to elaborate on their responses (Johnson & Christensen, 2019). In addition, questionnaires that predominate in open-ended questions are referred to as qualitative questionnaires. Questionnaires that have mainly closed-ended questions are described as quantitative questionnaires. Nevertheless, open-ended questionnaires and closed-ended questionnaires can be incorporated to form a mixed questionnaire (Johnson & Christensen, 2019).

In this study, ten questionnaires were piloted to Accounting teachers before the commencement of data collection. This was to allow me to obtain preliminary information, to determine any ambiguous questions on the research topic and to check internal consistency and reliability. The responses on piloted questionnaires were populated on SPSS software and analysed accordingly. The correlation showed that questions dealing with TPACK elements should be revised.

The questionnaire (Appendix 1) utilised Likert scale questions that consist of categories such as strongly agree, agree, neutral, strongly disagree, or disagree. Secondly, it had typical ranking questions such as ranking from high, medium, low and none, daily, once or twice a week, once or twice a month, and never. It also had multiple choice questions where a participant was provided with statements and answers to choose from, for instance, selecting an age group, school quintile, or qualification.

I adopted a structured or closed-ended questionnaire which can be employed in a research study that consists of a large population. Secondly, the questionnaire included multiple choice

questions where participants were provided with a range of responses to choose from. Thirdly, the questionnaire mainly utilised a Likert scale and ranking type questions (Cohen et al., 2018; Creswell & Creswell, 2017). Other rationales that motivated me to utilise structured questionnaires were that they are quick for the participant to complete and quick for me to administer and they generate a frequency that can be statistically analysed. The questionnaires in this study commenced with a short paragraph welcoming the participant, appreciating the willingness to complete the questionnaire, stating the intention of the questionnaire, encouraging the participant to be authentic when responding to the question and the instructions for completing the questionnaire. This affirms a rapport between the researcher and the participant becomes comfortable in responding to the questionnaire (Guetterman et al., 2019).

The questionnaire in this study was divided into two parts: part one consisted of thirteen items namely A1-A12 and number B (UTAUT elements). Part two consisted of TPACK elements with their items numbered C-H.

a) Part one

Part one of the questionnaire covered the demographic information of participants, namely, name of the school (pseudonym), name of the circuit (pseudonym), gender, age, qualification, teaching experience, current position, subject teaching, and school quintile. Participants were required to tick the relevant answer to themselves. All boxes provided for participants to tick were numbered to easily populate data on SPSS. Demographic information was imperative in the research study, as it allowed me to comprehend the characteristics of the participants of the study (Creswell, 2016). A9 which was the next question was on the frequency and purpose of utilising ICT. The question contained ten items provided as purposes and participants were expected to select from a response of never, daily, once or twice a week, less than a month, or once or twice a month. A10 provided participants with six factors that might significantly prevent them from using ICT.

Question A11 consisted of twenty items categorised into three groups. The items were examining the level of frequency on ICT tools. The first five items (A11.1.1 to A11.1.7) were ICT tools, the next six items (A11.2.1 to A11.2.7) dealt with applications of these six ICT tools, and the last six items (A11.3.1 to A11.3.6) concentrated on web applications. Participants were asked to rate themselves on the level of frequency of these items. Options were ranging from

never, every day, twice a day and monthly. Question A12 was similar to the previous question in terms of items, however, the question concentrated on proficiency of using the ICT tools. Participants had to choose their responses from none, little, moderate and high. The last question (B) asked participants their feelings regarding factors that might motivate or hinder them to integrate ICT. A Likert scale of strongly disagree, disagree, neutral, strongly agree, and agree was presented for participants to rank their responses. The question contained twenty-three items that were categorised according to UTAUT elements. Items were grouped according to their relatedness to each UTAUT element.

Part two of the questionnaire was structured as follows.

b) Part two

Part two comprised of items examining participants' knowledge and practices of integration of ICT in teaching Accounting using TPACK. Six TPACK elements were presented with items and numbered from C to H. All items participants were required to select their responses on a Likert of strongly disagree, disagree, neither agree nor disagree, agree and strongly agree. The first element was Pedagogical Knowledge numbered as C and it consisted of seven items. The second element (D) asked participants about Content Knowledge and entailed three items. Element three (E) asked participants about Technological Pedagogical Knowledge and had nine items. The fourth element (F) asked participants about Technological Content Knowledge and contained four items. Element five (G) asked participants about Pedagogical Content Knowledge and had four items. Element six (H) asked participants about TPACK and contained three items. That was the end of the questionnaire.

4.6.2. Qualitative data collection methods

This section discusses the qualitative data collection methods which aimed at in-depth data. Firstly, the focus group discussion is discussed.

4.6.2.1. Focus group discussion

The focus group discussion is described as the occasion when a small group of participants and a researcher meet to discuss the research phenomenon or problem. According to Patten and Newhart (2018) and (Shanmugam, 2020), a focus group discussion refers to a conversation of

a research moderator with purposively sampled participants who engage on the research problem. The moderator guides and leads the conversation through designed questions. Focus group discussions can be defined as short collective interviews with the researcher rather than an individual interview (Creswell & Creswell, 2017). In the focus group discussion, the researcher may choose to coordinate the session or appoint an assistant.

In this study, eight focus group discussions focused on teachers' understanding and practices of integration of ICT in teaching Accounting. I used virtual focus group discussions via the Zoom platform to gather data on teachers' understanding and practices of integration of ICT in Accounting teaching. Questionnaires' responses left areas of uncertainty which warranted further explanation and the focus group was useful in this regard.

Prior to the focus group discussion, I consulted with the participants on a convenient time and 80 % agreed on the virtual method via Zoom. The participants and I were located in remote areas and an online discussion allowed participants engage freely in the discourse. In a focus group discussion, a facilitator has to ensure that conversation is facilitated, and recorded for later transcribing. Shanmugam (2020) noted that focus group discussion benefits the researcher with deeper information and valid perceptions since the conversation takes place in one social setting rather than a one individual discussion. Since the focus group discussion occurred virtually, I recorded the session and utilised an audio recorder as a backup.

These participants were sampled from the questionnaire's responses. The criteria were based on completed questionnaire, teaching Accounting and has a diploma or degree in teaching. The rationale for selecting these participants was that I wanted to confirm the quantitative data obtained through questionnaires and utilising people with a common interest. I personally facilitated the discourse guided by a set of questions (focus group discussion schedule, cf. Appendix J). The schedule starts with a welcome, appreciation of the acceptance of the invitation, the purpose of the meeting and procedures. The schedule contained three sections with a discrete number of questions for each. The first section only had two items, the name of the school and the circuit (pseudonyms were used). The second section consisted of thirteen questions that asked participants to elaborate when responding. These questions focused on ICT understanding and practices in Accounting teaching, factors preventing teachers' integration of ICT in their teaching, factors motivating the integration of ICT in Accounting,

and DBE support. The third section had four general questions related to the understanding and practices of integration of ICT in schools.

In the focus group discussion, I ensured that every participant participated in the conversations and there was no criticism expressed by participants or domination of the discussion by certain participants (Cohen et al., 2018). Further, a focus group discussion allows participants to engage with each other on the given research problem. A focus group discussion intends to obtain in-depth information on the researched problem from various views at once. This is achieved by ensuring that participants focus on the research problem through administering open-ended questions (Guetterman et al., 2019).

Johnson and Christensen (2019) argue that a focus group discussion should consist of six to twelve participants who are chosen to answer questions and provide information. Further the focus group discussion should not have more than ten questions and the length of the discussion should be from a minimum of one hour to three hours (Creswell, 2016). In this study, the focus group discussion was planned for an hour; however, 30 minutes was allowed as additional time. Focus group discussion should be conducted in a conducive environment where participants feel at ease to contribute ideas (Creswell & Creswell, 2017).

After the focus group discussions, observations occurred which are discussed below.

4.6.2.2. *Observations*

The previous method opted to attain data in a group of participants, in one setting, with one set of questions for the whole group at the same time. Eight classroom observations were held to gather evidence of what participants alluded to during the focus group discussion regarding teachers' understanding and practices of ICT integration in teaching Accounting. Observations play a significant role in a research study since it allows the researcher to verify and gain more insight into people's action regarding the research problem or phenomenon (Shanmugam, 2020). Observations refer to the act of watching and listening to people in a certain setting. Johnson and Christensen (2019) describe observation as a method of observing people's behavioural patterns on a certain researched phenomenon in order to obtain information.

Shanmugam (2020) indicates some advantages of utilising observation. Observations allow the researcher to capture information live and in the natural setting of social occurrences. Secondly,

observations provide more authentic and valid information than analysing information from records. During the observations, the researcher is able to observe all activities of people that might be verbal or non-verbal. The good thing about observations is that the researcher obtains information first-hand, and the reality of the data is acquired (Shanmugam, 2020). Observations provide deep information from self-reports such as questionnaires and focus group discussions. Secondly, the researcher is able to obtain the actual behaviour than the behaviour obtained on self-reports. Some disadvantages include time consumption, massive preparation, and resources required which results in additional costs, and people faking their behaviours because they are observed (Creswell, 2016; Johnson & Christensen, 2019).

According to Cohen et al. (2018), there are three kinds of observations, which are described as follows. Highly structured observations are when researchers know in advance what will be observed, and they design categories for observation. Semi-structured observations consist of a research problem that the researcher wishes to solve with the data generated from observations. Lastly, unstructured observations are when a researcher has no predetermined idea of what to observe but enters the field to observe everything and decide what is appropriate for the research study (Guetterman et al., 2019). This research study employed semi-structured observations. I observed Accounting teachers teaching Accounting lessons in the FET phase in secondary schools. The rationale for the observations was to obtain rich data about teachers' understanding and practices of integration of ICT in teaching Accounting. Another rationale was that I already knew the research problem therefore observations were a good method to generate data to solve the problem. Patten and Newhart (2018) assert that semi-structured and unstructured observations are hypothesis-generating, while highly structured observations are hypothesis-confirming.

After deciding on the type of observations, I needed to choose my role during the observation. A researcher may choose from four roles of an observer, namely, a complete participant, participant-as-observer, observer-as-participant, and lastly, a complete observer (Cohen et al., 2018; Creswell & Creswell, 2017; Johnson & Christensen, 2019; Shanmugam, 2020). A complete participant is when a member of the team hides his or her role of observer. This member will obtain knowledge in the team as an outsider but may not adequately understand everything. The participant-as-observer reveals his or her role of observer to people which may result in keeping some matters confidential but leads to insufficient reliable data. Observer-as-participant is when an observer is not from within the group but decides to take some part in

the activities of a team. His or her role of researcher is clearly stated to others. A complete observer is a researcher only observes the setting, people, behaviours, actions, situations, and other issues the researcher may be keen to find information about (Cohen et al., 2018). The role of a complete observer is separated from the activities of the team; further, the complete observer focuses on taking field notes, videotaping, or recording for accuracy of data transcribing. During the observations of this study, I decided to be a complete observer. In every observation, I sat at the back of the classroom observing the lessons, recording with an audio recorder and taking notes of what is happening. This was to avoid lesson disruption and observation fatigue in both teachers and learners.

I used an observation schedule (Appendix K) to ensure accurate data were captured, minimise bias and to be reminded of the essential issues that caused me to conduct observations. The observation schedule stated the research topic, the purpose of observation and particulars of the observed lesson such as the name of the school, cluster name, date, and time. It further entailed fifteen items of interest, such as, the kinds of ICT resources available, the level of usage in the lesson and the teacher's proficiency to utilise the resources. An observation protocol was also made available at this point to guide me since eight lessons were observed. The observation schedule was a plan whereby I conducted my observations in terms of behaviours, activities in the classroom, the physical setting of the classroom, reactions and events happening. It was one page in length.

Writing field notes assisted me to add to the recordings since there were no videos taken during observation. This compelled me to be extra mindful, to note detail and to note down my observations quickly. Observations can be quantitative and qualitative form may occur in a laboratory or a natural setting (Creswell, 2021; Guetterman et al., 2019). Johnson and Christensen (2019) describe a natural setting as any environment anywhere where people's behaviours may be observed, such as, schools, classrooms, playgrounds, clinics, hospitals, restaurants, and so forth. Similarly, Cohen et al. (2018) indicate that observing people in natural settings produces a record of their daily activities and social behaviours. In education research, observations in naturalist settings are usually carried out in the classroom. According to Patten and Newhart (2018), researchers observe people in a context that the researcher understands and where the phenomenon under study is occurring. Therefore, I observed learners and teachers in the Accounting classroom, which was an environment I understand well as a former Accounting teacher.

Quantitative observations are quantified in frequency and numbers. Quantitative observations refer to standardised observations which means the researcher has a clear plan regarding who will be observed, what is observed, when will the observation take place, where will the observation occur and how will the observation be carried out (Johnson & Christensen, 2019). In qualitative observation, the researcher is observing everything related to the research problem or phenomenon. This research study utilised both quantitative and qualitative observations. The rationale for utilising both was that this study used a mixed-method approach. Therefore, observations followed a standardised plan and frequency was also noted; hence both forms were utilised. Observations were made according to the checklist (Appendix J) and audio-recorded.

The observations did not last for more than one period. In some schools, I observed for an hour since it was their normal lesson time. The observations were carried out on school days and during school times. I did not interfere with the teacher's lesson since I was a complete observer. The next section elaborates on the last qualitative data method for this research study.

4.6.2.3. Interviews

I also engaged with 14 participants individually through 14 in-depth interviews to confirm and expand on what was shared in the focus group discussions and observed during the classroom observations. The intention of the in-depth interviews was to find out what participants said individually about teachers' understanding and practices of integration of ICT in teaching Accounting. To summarise, I conducted in-depth interviews to affirm data already obtained, acquire clarity, and add to the data that has been obtained with the other methods.

An interview consists of an interaction between two people, the interviewer and the interviewee. An interviewer is the person responsible for asking questions, seeking clarity, and controlling the interview session. An interviewee is a person responding to questions on the research problem, in this case, a selected participant (Johnson & Christensen, 2019). The interviewer seeks information and the interviewee supplies information. Cohen et al. (2018) describe an interview as a social and interpersonal interaction between a researcher and a participant regarding the research problem or phenomenon. Interviews are not solely concerned with data collection; they also allow the researcher and the participant to share data

on their lives, human issues, worldviews and personal matters (Creswell, 2016). This is why in the interview process the researcher should provide his or her background information and likewise the participant. Various kinds of interviews have been identified (Creswell & Creswell, 2017; Guetterman et al., 2019; Johnson & Christensen, 2019). These are quantitative and qualitative interviews, structured, semi-structured, and unstructured interviews, and non-directive and focused interviews.

A quantitative interview is guided by an interview protocol which is a document designed for data collection. It includes interview items, interview instructions, and response categories (Creswell & Creswell, 2017; Guetterman et al., 2019). The quantitative interview intends to standardise the findings. This means that the interviewer attempts to have similar responses from interviews. Some scholars regard a quantitative interview as a formal interview. On the other hand, a qualitative interview is viewed as a complex interview. A qualitative interview contains open-ended questions which provide in-depth information. In this kind of interview, the interviewer gets to comprehend the interviewees' beliefs, values, thoughts, and knowledge regarding the research problem (Johnson & Christensen, 2019).

In the qualitative interview, the researcher should prepare to follow up questions on the interviewee's responses to capture the gist of the response. Further, in qualitative interviews, the interviewer may conduct virtual, face-to-face or telephone interviews. These interviews involve unstructured and generally open-ended questions that are few and intended to elicit views and opinions from the participants (Creswell, 2021). Structured interviews, semi-structured and unstructured interviews are the main types of interviews and are mostly used in research studies. The definition of these three is similar to the types of observations discussed above. Structured interviews are planned prior to the process, questions are designed in a schedule where the interviewer has limited access to modify words and the content.

Semi-structured interviews consist of open-ended questions where a researcher has full access to modify questions to suit the research problem (Shanmugam, 2020). In semi-structured interviews, the researcher may also use probes. The semi-structured interviewer may modify questions with each interviewee should she or he notice that some questions are not answered well. Unstructured interviews describe the interview process where the interviewer has freedom with the entire interview process, this includes the process, sequence, and questions (Cohen et al., 2018). Unstructured interviews are planned but the interview is a free process.

In this study, I conducted 14 semi-structured interviews (one Accounting teacher was randomly selected from each circuit) to explore teachers' understanding and practices of integration of ICT in teaching Accounting. The rationale was to acquire lucid and explicit responses from the participants. Semi-structured interviews allowed me to conduct interviews freely and to change questions as suited the research problem. Participants could respond freely to questions. Interviews lasted 60 minutes. Participants could choose the format: face-to-face or virtual since by then the government and the university had lifted some COVID-19 related restrictions when conducting interviews. During the virtual interviews, I requested participants to turn on their cameras to see the participants' reactions when responding to questions.

Since participants are full-time teachers, interviews occurred after school hours, on weekends, or during breaks to ensure that teaching and learning were not affected. For face-to-face interviews participants were at liberty to choose a venue of their preference. I utilised an interview schedule during the interview (Appendix L). The interview schedule was three pages long and included sixteen questions with a space for answers. Probes or prompts were included as follow-up questions so that explicit responses were attained. This allowed me to seek clarity on responses and to rephrase the questions to the participants should they not understand them. A bibliographic section was provided to capture information about the participant. Lastly, I also made short notes to remember the interview's intention.

All interviews were audio recorded and I took some notes during the interviews. The rationale was to ensure accurate information was captured in the recording. Photographing or videotaping was not used during the interview process. I ensured unbiasedness during the interview processes so that participants could talk freely. Participants were all asked similar questions and interviews were all conducted in English. The questions were based on the literature findings regarding ICT integration in an Accounting classroom and the theoretical framework guiding this study. Since participants may be nervous about interviews, ethical issues were explained prior to the interviews. This resulted in researcher-participant rapport.

There are several advantages and disadvantages a researcher should note when selecting interviews as a research method. Firstly, interviews provide in-depth data since the researcher may utilise probes when a researcher provides limited knowledge or unclear responses. Secondly, interviews are very flexible and powerful data collection methods since the

interviewer can obtain data either through verbal or nonverbal, face-to-face, or online interviews, heard or seen interviews, and written or recorded interviews (Creswell & Creswell, 2017). The face-to-face interview allows the researcher to note information through facial expressions, gestures, and actions which give the researcher an idea of the response. Interviews ensure that the researchers acquire precise information on the research problem. On the other hand, disadvantages include, prolonged preparation, interviewee fatigue, interviewer bias and inconvenience to interviewees (Cohen et al., 2018).

In addition, it is crucial that a researcher should comprehend the purpose of the interview in order to determine the above advantages. Johnson and Christensen (2019) and (Cohen et al., 2018) state three essential purposes of utilising interviews in research. The primary purpose of interviews is to collect information on the research problem to comprehend participants' feelings and beliefs about the research problem. To test and confirm the research problem or hypothesis. Lastly, an interview may be utilised to connect the methods of data collection. In most cases, interviews are identified as the last method of data generation in a research study where a researcher utilised more than one method. Since this study intended to comprehend teachers' understanding and practices, interviews allowed me to note their values, beliefs, assumptions, and attitudes about ICT integration in Accounting. This was the last method of data collection thereafter I analysed data.

4.7. DATA ANALYSIS

This research study followed a mixed-method approach and a sequential explanatory research design. Therefore, data collected on teachers' understanding and practices of integration of ICT in teaching Accounting were analysed quantitatively and qualitatively. However, the procedure was administered in two phases not concurrently. Quantitative data (questionnaires) were analysed using SPSS version 27 and the thematic analysis method was used to analyse qualitative data.

4.7.1. Quantitative data analysis

4.7.1.1. SPSS version 27

Firstly, quantitative data (questionnaire responses) were analysed using SPSS version 27. This is the latest version of SPSS and the subscription is Build 1.0.0.1275. SPSS is a computerised software used to analyse data statistically. Arkkelin (2014) describes SPSS as computer software that is able to adapt and reduce large data in a wide variety of statistical procedures.

SPSS allowed me to reduce massive data collected through questionnaires to numbers. Secondly, it allowed me to easily comprehend teachers' understanding and practices of integration of ICT in Accounting teaching.

Teachers' demographic information, the types of ICT resources they use, frequency of use, factors affecting the use of ICT resources, and so forth were statistically summarised in SPSS. Further, in statistical analysis such as SPSS, data can be categorised either under descriptive or inferential statistical analysis (Arkkelin, 2014; Patten & Newhart, 2018). Since SPSS deals with numerical data, I chose descriptive statistical analysis. Descriptive statistics allowed me to summarise frequency data graphically. Johnson and Christensen (2019) assert that in descriptive statistics the researcher depicts important characteristics of information by organising it into an easily predictable form. Cohen et al. (2018) add that descriptive statistics do not make any predictions or interferences; they simply work with what was found in various ways. The descriptive statistics summarise all of the frequencies in one way.

In this study, after SPSS analysed data statistically, frequencies were summarised in a more predictable form which was graphical. The two kinds of graphs I used were bar graphs and line graphs. In addition, another rationale for utilising SPSS was that questionnaires consist of extensive questions with numerous items that yield large data. Johnson and Christensen (2019) assert that SPSS is the best method to analyse large data and that SPSS is a reliable, professional and affordable method of data analysis in any typical research. Arkkelin (2014) articulates other reasons for using SPSS in analysing quantitative data. These include its popularity within both academic and business circles, making it the most widely used package of its type. SPSS is also a versatile package that allows many different types of analyses and data transformations. Lastly, the SPSS software package is continually being updated and improved, and so with each major revision comes a new version of that package.

The next subsection elaborates on the method of analysing qualitative data of this research study.

4.7.2. Qualitative data analysis

4.7.2.1. Thematic analysis method

Thematic analysis is a method of analysing qualitative data that involves searching for similar ideas in a set of data. These recurring ideas are incorporated together to form themes (Jason &

Glenwick, 2016). Thematic analysis does not quantify data like the previous form of descriptive statistical analysis. Secondly, it is a prolonged procedure, unlike quantitative data analysis (Jason & Glenwick, 2016). According to Clarke and Braun (2017), thematic analysis is a method of identifying, analysing and reporting common patterns and trends in qualitative data collected. This research study employed an inductive approach under thematic analysis since it gave me an opportunity to utilise qualitative methods such as observations to draw conclusions that were formulated as theories (Johnson & Christensen, 2019).

Similarly, Shanmugam (2020) and Mildred (2017) advocate that the inductive approach in thematic analysis implies that the researcher will read and listen continuously to the raw data collected and then develop themes, understandings, concepts, explanations, and theories on the researched phenomenon. In completion of this research study, I intended to develop a theory or theories on teachers' understanding and practices of integration of ICT in teaching Accounting. Data collected by means of three qualitative data collection methods were analysed using thematic analysis, namely, focus group discussions, observations and in-depth interviews. In order to develop themes, I followed a very strenuous procedure of transcribing, coding and thereafter the development of themes. Patten and Newhart (2018) advise researchers on five steps of formulating themes in a research study.

Firstly, the researchers should arrange and familiarise themselves with data collected through various actions depending on methods used to collect data. For instance, listening, transcribing and reading transcripts in interviews and notes. Secondly, the researcher has to develop codes and thirdly, the researcher should formulate themes using the codes identified in the second step. Firstly, I transcribed audio recordings. This was because in thematic analysis the researcher cannot start analysing data until all methods appointed to collect data are carried out (Creswell, 2016). In transcribing data, I started with focus group discussion recordings to which I listened repeatedly, and notes were typed. A similar process was followed with the observations and interviews. Observation and interview schedules were also used at this stage.

Thereafter, I coded the transcribed data using various codes. Coding is the first step to reducing data into smaller segments by labelling (Cohen et al., 2018). Similarly, Clarke and Braun (2017) affirm that codes are the smallest units of analysis that capture interesting features of the data relevant to the research question. From the above descriptions, coding can be referred to as the building blocks for themes of large data and data may be coded in sentences or in

paragraphs. Coding can be carried out on non-text data such as audio, videos, graphs, images and also on textual data such as field notes (Jason & Glenwick, 2016).

To develop codes in this study I rigorously organised all transcribed data together in an attempt to familiarise myself with it. Secondly, I went to the transcripts per data collection method and developed codes such as U (Understanding), P (Practices), PC (Pedagogical Content), CK (Content Knowledge), TR (Technology Resources) and so forth. These codes assisted me to comprehend Accounting teachers' patterns and trends which articulated a broader idea of their understanding and practices. Open coding was performed sentence-by-sentence to create flexibility for me in understanding. Thereafter, all the various codes were categorised together to formulate themes that were used to answer the critical research problems, aligned with the theoretical framework and the topic of this research study. Clarke and Braun (2017) argue that thematic analysis allows the researcher not to simply summarise the data content, but to identify, and interpret key ideas of the data guided by the research questions.

Clarke and Braun (2017) and Shanmugam (2020) indicate that themes provide a framework for organising and reporting the researcher's analytic findings. Further, the researcher has to redefine and review the themes formulated since not all themes may be relevant to the research phenomenon. Lastly, the researcher has to write the themes in a manner that portrays analysis of the data collected. Themes assisted me in explicitly exploring teachers' understanding and practices of integration of ICT in teaching Accounting. The analysed data were collected through the participation of participants at the research sites (schools). Therefore, it was essential to articulate explicitly the population of the study and the sites.

4.8. VALIDITY AND RELIABILITY

4.8.1. Validity

In research, validating findings is significant to guarantee the trust of the information obtained on the research phenomenon. The researcher has to consider validity issues during the selection of data collection methods since the findings will have to be validated. I explored various descriptions of the concept validity, before articulating how it was ensured (Ogbonnaya & Awuah, 2019). Cohen et al. (2018) state that validity refers to the faithfulness of findings of the research study to answer the research questions. Further, validity is concerned with assumptions underpinning the statistics used and the construct and content validity of the measures used. Shanmugam (2020) describes validity as a measurement to measure the

accuracy of instruments utilised such as questionnaires, tests, interview schedules and so forth. For the researcher to validate a particular measurement, the purpose of measuring should be vividly indicated. Validity can also be defined as the correctness and faithfulness of results of the research study (Jason & Glenwick, 2016). Assuring validity in quantitative, qualitative, and mixed research is discrete. Each research type has its own factors to measure validity.

In this study, I incorporated both quantitative and qualitative data therefore the findings came from both kinds of research. Further, data were generated using methods from both these kinds of research. Hence this section provides an in-depth articulated explanation of validity in both kinds of research. I commenced by discussing validity of quantitative findings (questionnaire responses). In quantitative research, validity is measured using four factors, namely, internal, external, construct and statistical conclusions (Johnson & Christensen, 2019). On the other hand, Creswell and Creswell (2017) and Cohen et al. (2018) indicate three kinds of factors to measure validity in quantitative research. These are content validity, predictive or concurrent validity and construct validity. Creswell and Creswell (2017) further assert that utilising an existing instrument improves the quality of validity of the instrument since validity of the instrument can be measured with previous scores.

In this study, I utilised a questionnaire instrument that entailed technology information questions and TPACK knowledge using a Likert scale. In this questionnaire instrument, these questions have been previously used by other scholars to obtain information on technology use in the classroom (Koehler et al., 2014; Manhibi, 2019; Meyer & Gent, 2016; Peter, 2019). Therefore, I validated my findings with their results to ensure accurate information. In addition, I adopted content validity to assure quality validity of quantitative data on teachers' understanding and practices of integration of ICT in teaching Accounting. Content validity can be achieved when there are selected participants who complete the instrument and selected experts who analyse the findings and measure if participants' responses answer the questions in relation to the content researched (Cohen et al., 2018; Patten & Newhart, 2018).

I distributed questionnaires to participants and requested statistical experts (IT personnel) to analyse the findings using SPSS. Thereafter, I requested three doctoral degree holders to review the questionnaires and findings. This was done to affirm that the content (teachers' understanding and practices of integration of ICT in Accounting teaching) was accurately measured and errors were rectified. Johnson and Christensen (2019) highly recommend

participant feedback or member checking on the interpretation made by the researcher. Further, member checking verifies omissions and misinterpretations. The next subsection articulates procedures to ensure validity in qualitative findings of this research study of teachers' understanding and practices of integration of ICT in teaching Accounting.

In qualitative research, the researcher is not concerned with generalising data since it seeks to obtain deeper information on the researched phenomenon and the research questions. Therefore, explicit validity measures are imperative. Qualitative validity can be referred to as trustworthiness which means findings are trusted, plausible, and credible. In qualitative validity, the researcher is encouraged to utilise multiple validity procedures to ensure the accuracy and authenticity of findings (Creswell & Creswell, 2017). Some of these procedures are triangulation, member checking, rich, thick description, clarifying bias, peer debriefing, and spending prolonged time in the field. Similarly, Cohen et al. (2018) suggest four significant measures to ensure qualitative validity, namely, dependability, confirmability, creditability, and transferability. Guetterman et al. (2019) and Johnson and Christensen (2019) recognise triangulation to validate qualitative findings. Triangulation validates data obtained from various methods and produces similar findings.

I guaranteed validity in qualitative data through adopting a triangulation procedure. In this study, triangulation involved three data methods, focus group discussion, observations and in-depth interviews which were employed to explore teachers' understanding and practices of integration of ICT in teaching Accounting. I ensured that field notes were written while on the research sites to guarantee I did not forget important information to be captured. A voice recorder was used to record data gathered by all three procedures of data collection methods. Since I wanted to guarantee validity of the findings, transcripts were made and returned to ten participants who had to verify the accuracy of the findings and their discourse. These participants were those who participated in all three sources of data collection. Transcripts were reported in themes developed by me to make things easier for the participants. Creswell (2021) regard this as a member checking procedure where a final report or specific section is taken back to participants to verify whether what the researcher wrote is accurate or not. For interviews, I ensured validity through comparing interviews with one another. The intention was to check if participants' responses yielded similar results.

Researcher bias is a well-recognised threat to validity. This threat means that the findings obtained suit the researcher's wants; in other words, the researcher is selective of the results obtained to favour him or her (Johnson & Christensen, 2019). When a researcher is biased, some information is ignored even if it is accurate because the researcher wants to fulfil a certain desire. To overcome this threat in this study I kept in mind the reflexivity strategy. This strategy allowed me to be honest and critical in the findings of this study. Self-reflection was consistently done and reminders of the research questions to be achieved were constantly noted. Every time before and after a method of data collection was carried out, I would revisit the research topic and the research questions to ensure research bias was avoided.

Even in selecting participants, research sites and members to assist in validating my findings, I avoided bias by ensuring that I selected participants who are within the Accounting specialisation in teaching, participants who availed themselves on voluntary bases, were willing to participate and who have an understanding of my phenomenon. I selected research sites (schools) that offer Accounting as a school subject from discrete quintiles and that were conveniently accessible to me. During the interpretation of findings, my experience and background as a former teacher were not considered since they were going to create bias in interpreting results. I ensured that during the interpretation I kept my critical research questions in mind. Further, my supervisor as a person who is an expert in my field of study assisted me to select appropriate participants, obtain accurate information and interpret findings accurately. The next subsection elaborates on the reliability of this study.

4.8.1.1. Reliability

To explore teachers' understanding and practices of integration of ICT in teaching Accounting, I employed various measures of data collection. The rationale was to consider the accuracy of data and to ensure reliability in findings. Reliability measures the extent to which data collection instruments present consistent and similar results of the researched phenomenon (Creswell & Creswell, 2017; Shanmugam, 2020). In research, reliability consists of dependability, consistency, and duplicability over time, over instruments, and over groups of participants. Further, reliability concentrates on accuracy and precision of research findings (Cohen et al., 2018). In educational research, reliability means the study utilised tests that constantly produce consistent findings. From the above descriptions, a solid definition of reliability is consistency. According to Patten and Newhart (2018), reliability can be achieved through administering two sets of instruments twice and the compared results. Similarly, Cohen

et al. (2018) note that reliability can be ensured through carrying out data collection with a similar group of participants, in a similar context and then comparing findings. In addition, Creswell and Creswell (2017) recommend an internal consistency strategy to ensure reliability in a research study.

I adopted internal consistency to ensure reliability in this research study of teachers' understanding and practices of integration of ICT in teaching Accounting. Ten questionnaires were piloted to ensure reliability of the questionnaire. This study administered questionnaires with Likert scale items for quantitative data and statistical analysis was employed to analyse the findings. Therefore, internal consistency was essential since the instrument scale items assessed were supposed to be under similar construct, in order to obtain suitable intercorrelations (Creswell, 2021; Creswell & Creswell, 2017). Further, internal consistency involves how items in a test measure consistency under one construct. In internal consistency, I tested the consistency of scores within the questionnaire since I wanted to avoid administering two tests for quantitative reliability. This was to evaluate the extent to which items within the questionnaire measured the phenomenon of technology knowledge, usage, and the TPACK theoretical framework. Shanmugam (2020) and Patten and Newhart (2018) argue that scores obtained from a single instrument can be utilised to evaluate the internal consistency of test scores. In a nutshell, it evaluates whether the participant yields consistent scores across all tests.

Since I utilised a single test, a split-half reliability test was applied. I split the first half using the odd numbers and a test was administered. In the second half, I used the even numbers and administered the test as well. I then, administered a mathematical procedure to obtain an average of all splits test reliability coefficients. The reliability coefficient is measured with a score of zero (0) and plus one (+1.00). If the results indicate zero that means the reliability is vague, in other words, the consistency of results is limited, while +1.00 indicates a high level of consistency in results (Johnson & Christiansen, 2019). In addition, I adopted Cronbach's alpha, which is symbolised by α (Creswell & Creswell, 2017; Johnson & Christensen, 2019; Patten & Newhart, 2018). Cronbach's alpha (α) value ranges between 0 and 1, with optimal values ranging between 7 and 9. To put this simply, if Cronbach' alpha scale indicates 70 % that is good and if it indicates 90 % and above it is excellent (Johnson & Christensen, 2019). The value from Cronbach's alpha was calculated using computer software and compared to the results from the splits test to ensure reliability. The computer software applied in this case was

SPSS version 26 since the test (questionnaire) contained many Likert items. The next subsection elaborates on ensuring reliability in qualitative findings.

Qualitative data consisted of detailed findings about the research study, therefore, quality reliability should be ensured. I guaranteed reliability by ensuring that all three sets of qualitative findings yielded consistent and stable findings. Creswell and Creswell (2017) indicate that reliability is concerned with stability and results repeatedly producing similar results. Each data gathering method followed a clearly defined procedure of administration. These were the observation schedule and field notes, focus group interview schedule and individual interview schedule. In the focus group discussions notes were taken during the engagements with participants and later were merged with transcripts to verify if similar results were obtained. In observations, all twenty eight lessons were observed twice with the class, the same teacher and the same periods. The observation schedule was used in in all repeated observations. Cohen et al. (2018) recommend repeated observations with the same participants to ensure reliability.

In the individual interviews, the interview schedule guided me in ensuring reliability. Thus, I posed similar questions to all participants and interpreted their responses. In addition, my supervisor trained me in conducting interviews and avoiding researcher bias. My supervisor later reviewed my findings of the research. Since qualitative findings necessitate in-depth interpretation, I adopted strategies of dependability to ensure reliability. Dependability is the concept that defines reliability (Shanmugam, 2020). Dependability can be achieved through member checks, debriefing by peers, triangulation, prolonged engagement in the field, and persistent observations in the field. To ensure dependability in this study I shared my interpretation of findings with three doctoral holders who carried out similar studies on technology usage in schools, applied triangulation, and carried out persistent observations. I further sent my findings and interpretation to my supervisor to ensure planned procedures were followed, data accurately analysed and interpreted, and findings were authentic and reliable.

After data were validated and reliability confirmed, I present steps taken to ensure ethical compliance in the ensuing subsection.

4.9. ETHICAL CONSIDERATION

To explore teachers' understanding and practices of integration of ICT in teaching Accounting I involved participants and research sites. Creswell and Creswell (2017) emphasise the significance of considering ethical issues prior to conducting research. All ethics issues such as permission to conduct research, informed consent, confidentiality, anonymity and protection of participants from harm were administered prior to conducting research. These are discussed below.

4.9.1. Permission to conduct research

The initial stage was to request permission from relevant authorities to conduct research. In October 2021 I submitted my research proposal to the University of KwaZulu-Natal research office where I am enrolled as a doctoral student. I received feedback with suggested corrections in the same month. In November 2021 I defended my proposal, and it was approved in December of the same year. I then applied for ethical clearance from the Research and Ethics Committee, which was granted in April. Thereafter, authorisation was requested from the KZN DoE (Pietermaritzburg) to conduct research in Umlazi District schools. The permission was granted in the month of April. Since the right to conduct my research was awarded, I commenced with the procedure of distributing informed consent.

4.9.2. Informed consent

Informed consent is designed to inform participants about the risks and benefits of participating in the research (Creswell & Creswell, 2017). Even though the KZN DoE granted me permission to use Umlazi District high schools, it was still essential to obtain approval from the Umlazi District and school principals. Therefore, the first consent letters with a declaration section were distributed to circuit managers and school principals by hand delivery. The rationale was to avoid the delays in returning the consent letters. Further, I explained my research study verbally to be able to quickly respond to the follow-up questions. Teachers also played an important role in data collection, therefore requesting their permission to participate in this research study was crucial. Consent letters with a declaration section were distributed by hand again to Accounting teachers. Lastly, to obtain rich data, observations were planned. Observations concerned learners present in the classroom and parents as those responsible for their learners' education. For this reason, consent letters were issued to learners who would be observed and their parents. Parents' consent letters were also translated into IsiZulu. The declaration section was provided for them to sign should they be willing to participate.

Informed consent explicitly described the nature of this study, its objectives, participants' roles in the research study and humbly requested them to take part in the research. The consent forms explained the benefits of participating in this study, the rights of participants and protection, how participants would obtain feedback, no financial benefits attached to participation and freedom to withdraw at any time without penalty. According to Creswell and Creswell (2017) and Johnson and Christensen (2019), the intention of informed consent is that it describes the potential benefit(s), the potential harm, and the right to withdraw at any time without penalty. Every person who was issued a consent letter was given ample time to read and sign the declaration should they agree to take part in this research study. Ninety percent (90 %) of the consent forms of selected participants were successfully signed and returned.

4.9.3. Anonymity

In this study, I ensured that the identities of participants and the research sites were protected. Participants are often nervous when about participating in a research study. Cohen et al. (2018) reiterate that a strategy to ensure the privacy and confidentiality of participants is to remove their identities in a research study. In this study, all Accounting teachers' information was kept confidential by the use of pseudonyms (codes) for all the teachers and the research sites that took part in this study. Participants were named T1, T2, T3, T4, T5, T6, T7 and T8 and so on. Research sites were named Cambridge High School, Bright Future High School, Ikusasaletu High School, The Ark High School, Imbali High School, Eyethu High School, Rising Star High School and Siyaphumelela High School. Anonymity allowed participants to participate freely in this research study. According to Kivunja and Kuyini (2017), keeping participants anonymous in the research induces them to share information more easily.

4.9.4. Confidentiality and privacy

Privacy is sometimes used to describe confidentiality hence I articulated both concepts here. In research, participants are very concerned about their privacy since they will share personal information; therefore a researcher should not disclose participants' information that might cause harm (Creswell & Creswell, 2017). Further, participants' real names and characteristics should be kept private. The researcher has to ensure privacy in data collected regarding participants, for instance, voice-recorded information should be kept only by the researcher. This is because every human has the right to privacy. Data generated from this study were accessible to me and the supervisor and used only for the purpose of this research project. The

supervisor and I had access to transcripts and recordings which were kept safe on password locked technological devices. The data generated by Accounting teachers including the digital recordings, copies of interviews and transcripts was kept safe on devices with secure passwords. The data will be kept for at least five years on a password locked computer or locked safe.

4.9.5. Study limitations

In every research study, there are notable limitations since it is a huge task to conduct research and in social science always involves humans. In this study, discussion participants failed to keep up to time; as a result, some joined the Zoom meeting late. Secondly, some participants lacked the skills necessary to participate in a virtual meeting and I had to instruct them individually on how to operate smartphones or laptops in this regard. The date and time of observations changed on occasion. Participants necessitated constant reminders of appointments and tasks. The idea that the pragmatic paradigm is concerned about the end value (outcome) of the research seems to be inconsistent with what any PhD study seeks to focus on, i.e. on the process of research, this was a limitation for this study.

4.10. CHAPTER SUMMARY

In this chapter, I described the research approach I followed in this study of teachers' understanding and practices of integration of ICT in teaching Accounting. I adopted a mixed-method which means both quantitative and qualitative research methods were used according to the pragmatic research paradigm and an explanatory sequential research design. These methods were explicitly articulated including the rationales for selecting them. The sampling procedure and techniques were also discussed. Detailed descriptions were also provided of the sample size, research sites and participants. I further went on to discuss the four methods of data collection, namely questionnaires (quantitative), focus group discussion, observations and depth interviews (qualitative). During qualitative data collection, I used voice recorders, interview schedules and observation schedules to guide me in capturing accurate data. Field notes were also used.

I further discussed the latest SPSS version 27 used to analyse data statistically or numerically. Thereafter, thematic analysis was described. Under thematic analysis, the inductive approach was adopted to allow me to develop a theory or theories. Transcribing and coding were utilised to ensure that I have accurate data from participants. Measures to guarantee the reliability and

validity of this large body of work were discussed. In addition, I discussed the ethical considerations of the research study, including permission to conduct research, informed consent, confidentiality and privacy, and anonymity. Then lastly, I provided a brief discussion of limitations and a summary.

In the next chapter, I will present my findings on teachers' understanding and practices of integration of ICT in teaching Accounting. Under data analysis chapter, data will be presented in two chapters, chapter 5 and 6 according to themes. Chapter 5 will answer the first research question: What are Accounting teachers' understanding of integration of ICT in teaching Accounting in Umlazi District? This question will have two themes, namely, technologies teachers use in teaching Accounting and the extent to which technologies are used in teaching Accounting. Chapter 6 will focus on the second research question: How do Accounting teachers integrate ICT in teaching Accounting in Umlazi District? TPACK will be used to answer this question.

CHAPTER FIVE:

5. TECHNOLOGIES USED IN ACCOUNTING TEACHING AND LEARNING

5.1. INTRODUCTION

The previous chapter supplied a broad elaboration on the research design and methodology of the study. This chapter presents findings on data obtained that aimed to answer the following research question:

- What are Accounting teachers' understanding of integration of ICT in teaching Accounting in Umlazi District?

As explained in detail in Chapter 4, quantitative data were generated through a questionnaire (Appendix I). The questionnaire was divided into two sections. Data obtained from the first section is used to answer the above research question and the findings from the second section will be analysed in the next chapter. Data obtained was analysed through SPSS version 27. The SPSS findings are reported in descriptive and inferential statistical analysis. Furthermore, qualitative data is utilised to supplement quantitative data findings. To answer this research question rigorously, three themes emerged from the quantitative data.

The first theme focuses on the technologies teachers use in teaching Accounting. The second theme presents data regarding the extent to which technologies are used in teaching Accounting, while the third theme focuses on the purposes and the frequency of Accounting teachers' use of technology. These three themes are adequate to reveal teachers' understanding of integrating technology in teaching Accounting. This chapter commences by providing brief demographic characteristics of the participants of this study (quantitative and qualitative). Further findings are presented in themes and numerical tables.

5.2. BRIEF DEMOGRAPHIC PROFILE OF PARTICIPANTS

The demographic profile of participants is included to be able to analyse data by looking at the distribution of participants' responses in the light of demographic characteristics. In addition, the demographic profile is included to establish the impact of demographic characteristics on ICT integration in teaching and learning as the literature review indicated that demographic characteristics impact ICT integration in education. Furthermore, demographic characteristics

are provided to be able to analyse descriptive and inferential statistics which summarise the features of the study.

Table 5.2.1. below depicts demographic characteristics of the participants who participated in the quantitative data collection per the questionnaire (Part 1: A1-A8).

A1.Name of the circuit	
Phumelela	24.8%
Ndunkumbane	8.5%
Durban Central	11.6%
Mbumbulu	5.4%
Chatsworth	5.4%
Mngxenge	6.2%
Durban South	8.5%
Amanzimtoti	8.5%
Merewent	3.9%
Umkhumbane	3.1%
Maphundu	6.2%
Umgweni North	3.1%
Folweni	3.1%
Mafa	1.6%

A2. Gender	
Female	64%
Male	34%

A3. Age	
22-30 years old	22%
31-40 years old	42%
41-50 years old	28%
51-60 years old	8%

A4. Tertiary qualification(s).	
Bachelors Degree	64%
Honours Degree	30%
Masters Degree	6%

A5. Teaching experience	
1-5 years	2.3%
6-10 years	20.2%
11-15 years	35.7%
16-20 years	25.6%
21-25 years	10%
26 + years	5.4%

A6. Teaching position	
Post level 1	67%
Departmental head	27%
Deputy Principal	3%
Principal	3%

A7. School Quintile	
Quintile 3	64%
Quintile 4	16,3%
Quintile 5	19.4%

A8. Grade	
Grade 10	31%
Grade 11	31%
Grade 12	38%

Table 5.2.1 Demographic characteristics of participants who responded to the questionnaire

Table 5.2.1 indicates the demographic characteristics of participants who participated in the quantitative data gathering, in other words, the participants who responded to the questionnaire. To easily analyse data, each demographic characteristic listed in the table provides a numerical percentage of those who participated. One hundred and fifty-one (151) questionnaires were distributed and 129 were returned (response rate of 85.4%). Fourteen circuits in the Umlazi District were involved and participants fell into two broad groups, male and female. Age was presented in four groupings, teaching qualifications were clustered in three categories and the years of teaching experience were clustered in six groupings. Participants were categorised according to four teaching positions, school quintiles were in three groups (Quintiles 3-5), and three FET grades were selected (Grades 10, 11 and 12). Participants were asked to complete their demographic characteristics when responding to the questionnaire and they were also

required during qualitative data collection. The participants' demographic characteristics include age, gender, educational level and teaching experience (Ndibalema, 2014).

Table 5.2.2 below presents demographic characteristics of the participants who participated in the qualitative data gathering (focus group discussions, observations and interviews).

Table 5.2.2 Demographic characteristics of participants who participated on interviews

Participants names (pseudonyms)	Age	Gender	Teaching Experience	School quintile
1. Teacher 1	32	F	10	5
2. Teacher 2	44	F	21	3
3. Teacher 3	39	F	15	3
4. Teacher 4	33	M	11	3
5. Teacher 5	50	F	30	4
6. Teacher 6	36	F	11	4
7. Teacher 7	42	M	19	3
8. Teacher 8	27	M	5	3
9. Teacher 9	38	F	13	3
10. Teacher 10	47	F	18	4
11. Teacher 11	52	F	34	3
12. Teacher 12	29	M	8	5
13. Teacher 13	45	F	21	3
14. Teacher 14	36	F	13	3

Table 5.2.2 above presents crucial demographic characteristics of participants who participated in qualitative data gathering (interviews). The demographic characteristics listed above deal with age, gender, teaching experience, and school quintile. Pseudonyms were used for participants and all age groups were presented according to the categories provided on the

questionnaire. The youngest teacher was 27 years old with teaching experience of five years while the oldest teacher was 52 years old with teaching experience of 34 years. Both genders were represented although females dominated. Establishing experience in the field of teaching Accounting teachers was also crucial to align with the findings. Nine participants (9) came from school quintile 3 (non-fee-paying schools); three (3) from quintile 4 and two (2) from quintile 5 (fee paying schools).

The first theme to answer the research question is presented below.

5.3. TECHNOLOGIES TEACHERS USE IN TEACHING ACCOUNTING

This first theme indicates various types of technologies teachers use in teaching Accounting, the applications of these technologies and their web applications. To diligently answer the first research question on teachers' understanding of integration of ICT in teaching Accounting, I needed a fuller picture of teachers' level of understanding of these technologies and their applications. Therefore, the section below presents the few selected technologies, applications and web applications. The table does not match the technology tool to its application or web application; it was designed to keep the information brief and assembled.

Table 5.3.1 Technologies teachers use in teaching Accounting

NO.	TECHNOLOGY TOOLS	TECHNOLOGY TOOLS APPLICATIONS	TECHNOLOGY TOOLS WEB APPLICATIONS
1.	Tablet	Word Processing	Website Development
2.	Laptop	Database	Electronic References (e.g., Encarta., World Book)
3.	Computer	Spreadsheet (Excel)	Discussion Groups, List servers
4.	Digital Camera	Graphics Program	Email
5.	Scanner	Presentation Software (PowerPoint)	internet (WWW)
6.	LCD Panel and or Data Projector	YouTube videos	Assistive Technologies (for the disabled e.g., deaf, no arms)

7.	Video Conferencing System	Software (specific to your subject e.g. GIS, CAD, PASTEL)	

Table 5.3.1 indicates that the selected technology tools listed in the questionnaire were Tablets, Laptops, Computers, Digital Cameras, Scanners, LCD Panels and or Data Projectors, and Video Conferencing Systems (cf. A11: 1.1-1.7, Appendix I). These technologies were selected with the idea that they are more useful in teaching and learning. During the interview engagements with the participants, they affirmed these technology tools are valuable in teaching Accounting, including smartphones which were not included on the above table. Participants indicated that they were more familiar with tablets, laptops, and computers as these are most often incorporated in their teaching. Nevertheless, all participants declared that they understand the all above-mentioned technologies even though they do not use all of them in their teaching.

The teachers' comments were confirmed during the observations. Technology tools such as laptops, printers, smartphones, computers, scanners and LCD Panel and or Data Projector were available in classrooms, as illustrated below. The pictures below were taken during observations in few schools. They are showing some of technology resources schools have.

Picture 5.3.1.1 ICT tools used in the during teaching



Picture 5.3.1.2 ICT tools used in teaching



Picture 5.3.1.3 ICT tools in the classroom



Pictures 5.3.1.4 ICT tools in the classroom



Picture 5.3.1.5 smartphones used in the classroom



Teachers were asked during the interviews whether the ICT devices (computers, laptops, whiteboards, etc.) are installed in their classroom or are movable and how easy the access to them was. Participants shared various responses regarding this question. Some participants indicated that the ICT tools are stored in computer labs, so learners have to move to those labs when a teacher is conducting a technology-enhanced lesson. Others stated that they had to move projectors and computers to a certain room when teaching technology-enhanced lessons.

The technology applications that were listed in the questionnaire were Word Processing, Database, Spreadsheet (Excel), Graphics Program, Presentation Software (PowerPoint), YouTube videos and Software (specific to the subject e.g. GIS, CAD, PASTEL) and the frequency of their use was also probed (cf. A11: 2.1-2.7, Appendix I). Findings indicated that participants are more familiar with Microsoft applications namely word processing, Spreadsheet (Excel), and PowerPoint software. They use word processing more often as the protocol requires professionalism through producing typed work for learners, especially in formal activities. During focus group discussion, participants mentioned that they have mastered the Word application; it is an application they often play around with and it is not demanding. Teacher 8 said:

“Microsoft Word is one of the applications we were well capacitated in at college since we were not allowed to submit something handwritten

therefore from there, I always play around with it when planning my teaching and [it] does not even need the internet”.

YouTube was also regarded as an easy application for participants. YouTube makes their lives easy and they use it daily for various activities. Most participants admitted during the focus group discussion that they are not familiar with software (specific to the subject e.g., GIS, CAD, PASTEL) and graphic programmes.

Website Development, Electronic References (e.g., Encarta., World Book), Discussion Groups, Email, internet (www), and Assistive Technologies (for the disabled e.g., deaf, no arms) were the selected web applications listed in the questionnaire (cf. A11: 3.1-3.6, Appendix I). All participants are familiar with e-mail and the internet and confirmed this unanimously during the focus group discussion. However, they disclosed that they do not use e-mail for teaching while the internet is the most used web application for various search engines. During the interviews, participants affirmed that they do not understand the other web applications as they have never used them in their teaching. The next section provides analysis of the second theme.

5.4. THE EXTENT TO WHICH TECHNOLOGIES ARE USED IN TEACHING ACCOUNTING

This section presents analysis of the extent to which technologies are used in teaching Accounting. The extent to which technologies are used was measured in the questionnaire by a frequency that ranged from never, every day, twice a week, and monthly. The frequency further determined the level of understanding teachers have of these technologies and their applications. In addition, teachers' proficiency in these technologies and their application was also measured to obtain more information to answer the research question. Therefore, this theme provides two sub-themes of analysis that include frequency levels and proficiency levels. These two sub-themes are the frequency level analysis of technologies teachers use in teaching Accounting and the teachers' level of proficiency in technology use. Each sub-theme has three categories.

The categories for the first theme are the frequency level of the use of technology tools, the frequency analysis of the use of technology applications and the frequency analysis of the use of web applications.

The second sub-theme has the following categories: the proficiency analysis of the use of technology tools, the level of proficiency in using technology applications and the level of proficiency analysis on the use of web applications.

Quantitative data in this sub-theme is presented in numerical tables and then supplemented by qualitative data.

5.4.1. Frequency level analysis of technology tools teachers use in teaching Accounting

This section presents data on the type of technological devices or tools and the frequency of use of each technology in the teaching and learning of Accounting. In this section, the analysis of technologies is done in three different categories. The first category of the analysis is about technology tools used and the level of frequency, the second category is about the technology applications used and their frequency of use, and the third category is about the web applications and their frequency of use. The participants were asked to indicate the frequency as follows: never, every day, twice a week and monthly. Qualitative data is also used to confirm or support quantitative data.

5.4.1.1. Frequency of use of technology tools in teaching Accounting

This section presents the results on how frequently accounting teachers use the selected technology tools in the teaching and learning of Accounting. Participants were asked to indicate their frequency as follows: never, every day, twice a week and monthly. The questionnaire responses were confirmed by the participants selected to take part in the interviews.

Table 5.4.1.1 The frequency of the use of technology tools

NO.		FREQUENCY			
		NEVER	EVER Y DAY	TWICE A WEEK	MONTHL Y
	ICT TOOLS:				
A11.1.1	Tablet	10.1	34.9	26.4	28.7
A11.1.2	Laptop	0	22.5	47.3	30.2
A11.1.3	Computer	0	8.5	55.0	36.4

A11.1.4	Digital Camera	82.2	0	0	17.8
A11.1.5	Scanner	38.8	0.8	12.4	48.1
A11.1.6	LCD Panel and or Data Projector	60.5	1.6	9.3	28.7
A11.1.7	Video Conferencing System	41.9	2.3	18.6	37.2

Table 5.4.1.1 presents the results of the analysis of the frequency of the technology tools used in the teaching and learning of Accounting. Analysis indicated that all teachers have used laptops, computers and digital cameras although the frequency varies. On the contrary, the majority of teachers have never used LCD panels and data projectors (60,5%), video conferencing (41,9%) and scanners (38,8%). Although 10% of participants never used a tablet to teach Accounting, 34.9% use it every day, 26.4% and 28,7% use it twice a week and monthly respectively. During the focus group discussion, some participants stated that they have not used tablets in their teaching because the school did not provide them with such resources, and they do not have their own personal tablets. Others clearly stated that they use their own tablets including their own data if they need to use technology in their teaching. Teacher 2 said:

“Fortunately for me, I have my own tablets however I don’t carry them at school since it is also used by my kids. I can say I use search engines maybe weekly to search for teaching supporting materials”.

A few participants indicated that they use school tablets that were donated. However, Wi-Fi sometimes becomes a challenge when there is a need to connect to the internet. This is confirmed by Teacher 3:

“For us, in our school, we have close to 60 tablets in the storage not working, we saw them once because they were donated by Vodacom after that we were told the school does not have money for IT personnel who will come and programme all of them for teaching and learning. Thus, I rely on my phone every time for my teaching and I use it every day”.

Similarly, Teacher 4 indicated that they have tablets that they use to download teaching materials, although they have to share.

“In my school, each departmental manager has a school tablet and we are allowed to use it when we need one. However, they are not usable because they do not have internet.

Furthermore, participants during individual interviews mentioned they are familiar with tablets since they are portable and, in most cases, they use them when preparing for their teaching at home. Again, the majority of Accounting teachers who have tablets were not sponsored. They bought them for their personal use and use them for their teaching. Participants elaborated that the practicality of tablets in teaching began during the COVID-19 lockdown when face-to-face learning was not possible. They mentioned that they learned to use and appreciate tablets during the lockdown since they used them to communicate with learners and store teaching materials. Participants commented as follows:

“For me, I would say COVID 19 made me use my tablets every day because I wanted to engage with my learners for activities”. (Teacher 6)

“During the pandemic, I used both my phone and the tablets especially when downloading papers as I did not want my phone to have insufficient space because of question papers and memos, normally use it once a week”. (Teacher 7)

Participants mentioned that tablets and smartphones became popular during the pandemic and they communicated with learners by WhatsApp most frequently. In addition, participants declared that although there are tablets for learners, the supply is limited and they are not maintained. Teacher 6 added:

“For me, I would be honest, using my tablets for teaching only started during the pandemic. I went to get a new sim card so that I download WhatsApp for my learners’ group as having their group on my private phone was not a good idea for me. So since then, I now and again send them things via WhatsApp using my tablets, maybe I use it every day now. It works because even when I want us to work on a weekend late, I send them tasks and we get to agree on a specific time when they will send me their responses in pictures and explain

using voice notes. So, the tablet works well for me as I don't want learners to have my personal contact".

During the discourse, participants declared that those who did not have tablets used a cell phone. Most teachers used smartphones for calculations during their teaching and teaching.

"I don't have a tablet, as a result, I have never used it in my teaching I normally use my smartphone maybe twice a week and I feel it works similar to a tablet because I can do nearly everything on the phone which is also done by a tablet user. I used to use my phone every day for teaching during COVID however now I use it maybe twice a week". (Teacher 1)

"I don't have a tablet and I have never used it but I use my phone I think every day when I am teaching even for calculations". (Teacher 5)

"I don't have a tablet hence I haven't used it in my teaching and I think my phone makes my job easier when I need to use it for my teaching because it is portal device. I can even search and download something while in class teaching". (Teacher 8)

From the above quotes, it is clear that participants use both tablets and smartphones as tools in teaching Accounting.

Regarding laptops, none of the Participants to the questionnaire have never used a laptop (0%); those who use it every day scored 22.5% (relatively low), those who use it twice a week had a moderate percentage of 47.3% and lastly, 30.2% use it once a month. During the discussion with participants, laptops were viewed as the most loved and usable technology tool by Accounting teachers. Participants stated that they also understand a laptop better hence they normally use it once a week or twice a month. They further reveal that they keep most of their teaching resources on laptops. Nevertheless, some participants indicated that they do not use laptops every day since they do not have their own personal laptops. They mostly rely on the school's laptop which they have to request and sign for if they are leaving the school premises with it. One participant revealed that in their school with a teaching staff of over 60 teachers,

eight have laptops and although there is a computer lab, it is mostly occupied by science learners. Thus, they cannot use laptops every day in their teaching.

Those who use a laptop daily concurred that it is an effective method to catch learners' attention and it motivates learners in the classroom. A large proportion (80%) reveal that as much as they can use laptops, they are not directly used in teaching but they use them as an aid in teaching. They normally download teaching materials for printing, and for demonstration. Most participants advocated that they use laptops weekly to write and print lesson plans. On the other hand, 20% indicated that they use laptops for projects, PowerPoint slides, capturing data on Excel and preparing presentations. Teacher 10 asserted that it was impossible for her to use a laptop to teach due to the insufficiency of technology resources in the school and the high rate of crime in the area.

Teacher 10 said the following about laptops:

“Mmm, for me, I can't use a laptop every day in my teaching as each department has two laptops so I use it once a week when I look for class activities and other materials that will be needed in the topic I will be teaching”. (Teacher 10)

Teacher 3 indicated that he prefers to use a laptop when teaching because he believes in visual methods.

“Well, I can say I use it every day as I rely on soft copies a lot when I teach and it's my own laptop not for the school”

Teacher 5 added: *“Fortunately, our school is well-resourced therefore, I sometimes project my slides and I use a laptop every day to prepare and to print as well”.*

Teacher 6 also mentioned that his laptop played a significant role during the COVID era as his phone had limited space. He said:

“My laptop assisted me during COVID and my phone always complained about insufficient space. Even my WhatsApp was on my laptop and after that, I have just developed the love to use it every day”.

While Teacher 1 said: *“Eish, I don’t count the frequency of my laptop usage as I use it when a need arises. But I normally use it twice a month to prepare tests, print and I capture learners’ performance”.*

Teacher 5 commented that she finds laptops efficient, however she is more familiar with chalkboard teaching.

“Laptops are good for teaching, but I can’t use them every day they need data and sometimes they delay me in teaching a practical subject like Accounting I think my mind finds chalkboard quicker and clearer to teach accounting”.

Concerning the use of a desktop computer, all Participants have incorporated a computer in their teaching of Accounting, however it is noted that frequency varies on the availability and accessibility of the computer. It was revealed that the incorporation stimulates their understanding of this technology device. Participants who incorporate computers twice a week in their teaching ranked higher (55.0%), monthly ranked at 36.45% while those who incorporate it every day scored the lowest (0.8%). During the discussions, it was noted that teachers understand a computer as useful for accessing data, storing data, manipulating data and printing materials which are similar activities noted in the above discussions. Further, participants seemed to understand a computer synonymously with a laptop. They even mentioned some schools have replaced computers with laptops hence they are more exposed to laptops. Some participants indicated that using a computer takes place occasionally, such as monthly.

With regards to the digital camera, similar results were obtained as regarding a computer. Participants who integrate a camera in teaching Accounting twice a week had the highest percentage (68.2%), every day (14%) and monthly (17.8%) were relatively low. Participants during the focus group discussion reported that they understand how to operate a camera and used it in their teaching prior to the lockdown. They announced that it not complex and more

efficient for their teaching. One participant was quoted saying she normally takes videos of her learners when they teach each other Accounting and keeps the videos as a motivation to them. On the other hand, some participants added that the effectiveness of digital cameras in teaching Accounting came into effect during the lockdown when they could not interact with learners in a traditional face-to-face setting. All participants disclosed that they use a smartphone camera, it is convenient and makes teaching more creative. One participant alluded that a camera is the best technology device to use since learners love taking pictures and videos and they normally return to them for better understanding. During the interview, one participant admitted that he uses the camera often as he uses TikTok sometimes to teach Accounting. Teachers' understanding of digital cameras was also confirmed by the percentage of those who use it twice a week. Participants affirmed that they understand digital cameras well since they normally use them to take pictures for learners on information, activities and corrections on the activities. Accounting teachers mentioned that sometimes they take videos of themselves explaining the activities and send them to learners for better understanding. A few participants commented as follows:

“During the pandemic, I was using WhatsApp to teach, how so? I would take pictures and send them to my learners on WhatsApp groups. The picture might be an activity, a certain section on the topic being taught and the links to demonstrations. Again, when we do corrections I would send a picture of my response with an explanation. Therefore, my camera has played a huge role in ensuring effective teaching is taking place. I normally use it every day”. (Teacher 12)

“I use my digital camera once a week for teaching and learning. It is only on weekends when maybe we are working on some topics while we are away from the classroom”. (Teacher 8)

“Digital cameras are so helping these days to pass information to our learners, at times I use my camera every day for my teaching because sometimes you find that copying machine and printers are not working so I would take pictures and send them to my learners, and we work rather than losing a day of teaching”. (Teacher 6)

On the other hand, Teacher 3 argued that poor quality of pictures discouraged her to use pictures in her teaching. *“For me, I can’t use my digital camera in my teaching every day as taking pictures is not what I like and my phone has really bad picture quality”*.

Regarding scanners, findings reveal that many Participants do not use scanners in their teaching of Accounting (never, 38.8%). Participants who use scanners every day indicated 0.8%, who use them twice a week 12.4% and those who use them monthly scored a moderate percentage of 48.1%. During the interviews, participants stated that they know scanners; however, they hardly use them in teaching Accounting. Participants remarked the following during interviews:

“Scanners are the most shortage of resources most schools suffer from same as in my school we use our phone to scan because the photocopying machines cannot scan. I, therefore, use it on a rare case maybe once a month”. (Teacher 2)

Similarly, Teacher 12 said:

“I can say I use a scan twice a month when I am scanning activities or additional teaching materials for my learners”. (Teacher 12)

However, concern was raised about the use of scanners in teaching. Teacher 6 elaborated as follows: *“I have never used a scanner in my teaching because I have never seen it in my school, instead, I print a lot”*.

Concerning the LCD Panel and or Data Projectors, results revealed that the majority of Participants have never used a LCD Panel or Data Projector (60.5%), 2.3% use them every day, twice a week reported 18.6% and only 28.7% use them monthly. During the focus group discussion, participants said that they are willing to incorporate data projectors in their teaching, however they are limited by the available technological tools. In addition, they agreed that they understand the overhead projector, however they rarely use it in teaching. The few who incorporated stated the following:

“I use PowerPoint presentation in most of my teaching as I teach CAT and Accounting so I use a CAT class to teach Accounting hence I ranked myself as a user of the projector every day”. (Teacher 1)

The view of Teacher 1 was further supported by two other participants. The first of the two participants, speaks of their frequency:

“Yoh, I have never used data projector to teach Accounting, the only time I remember when I was using PowerPoint was in college for presentations”. (Teacher 5)

Teachers 13 highlights how she uses PowerPoint once a month:

“I try to use it once a month as it is something I like to integrate it into my teaching but since we have one classroom to use the projector it is difficult”. (Teacher 13)

Lastly, Video Conference System findings reported a high score of 41.9% of Participants who have never used a Video Conference System to teach Accounting. Participants who use it every day scored the lowest at 2.3%. Those who incorporate it twice a week were ranked at 18.6% and 37.2% were reported for Participants who use it monthly. Participants reveal that prior to COVID-19 they have never used a conference system in teaching. However, during the pandemic, meetings were held on conference call which enhanced their understanding. Teacher 1 said:

“Yes, we are used to conference calls but we have never used it in teaching until COVID-19 hit our country. During COVID, I used the conference call a lot in my teaching probably every day. Now it is once a month”.

Teacher 12 elaborated:

“I use a conference system with colleagues in the cluster not with learners as some learners do not have smartphones”.

Teacher 5 said:

“I have never used conference calls to teach; it is complicated for me”.

5.4.1.2. Frequency of use of technology applications in teaching Accounting

This section provides analysis of how often teachers use technology applications in teaching Accounting. Participants were provided with seven technologies and had to rank their frequency on each application. Qualitative data were also used to support the quantitative findings.

Table 5.4.1.2 Frequency analysis of use of technology applications

NO.		FREQUENCY			
		NEVER	EVER Y DAY	TWICE A WEEK	MONTHL Y
	APPLICATIONS:				
A11.2.1	Word Processing	0	10.9	45.7	43.4
A11.2.2	Database	9.3	3.1	28.7	58.9
A11.2.3	Spreadsheet (Excel)	12.4	3.1	15.5	69.0
A11.2.4	Graphics Program	83.7	2.3	3.1	10.9
A11.2.5	Presentation Software (PowerPoint)	69.0	0	8.5	22.5
A11.2.6	YouTube videos	9.1	36.4	40.5	14
A11.2.7	Software (specific to your subject e.g. GIS, CAD, PASTEL)	98.4	0.8	0.8	0

The findings in Table 5.4.1.2 reveal that all Participants have applied word processing in their teaching of Accounting (never 0%). Nevertheless, those who use it every day were relatively few (10.5%) and moderate scores were reported for those who incorporate it twice a week (45.7%). During interviews, participants indicated that they often use word processing in planning lessons and developing activities for learners and frequent use has led to a good grasp of the application. This is what the teachers said:

“I use Word application for lesson planning and typing formal tasks so I could say I use it once a week”. (Teacher 4)

“For me, I cannot use word application every day in Accounting as you are aware that most tasks come with an answer sheet. Therefore, I use it twice a month for things such as tests”. (Teacher 1)

Teacher 12 indicated that in her school they have a computer lab and she uses word processing almost every day to prepare learners’ work:

“In my school, teachers have their own computer lab so I use it every day because during my free periods, I am always at the computer lab typing my learners’ class activities”.

Regarding database application, findings illustrate that the majority of Participants use the database monthly (58.9) while 3.1% use it every day and only 9.3% have never used the database in the teaching of Accounting. Qualitative data reported that Accounting teachers understand the database as a system to keep Accounting data such as records, learners’ performance, capturing and manipulation of learners’ information and subject moderation reports. As a result, most teachers do not often use a database because it is not normally used for teaching Accounting. Those who have used it indicated that they use it monthly to record learners’ marks and to track learners’ performance. Hence, this application was mainly used by senior teachers and heads of department (HoDs). Teacher 1 pronounced:

“Database sometimes confuses me hence I indicated I use it monthly because that is where I capture and check learners’ performance”.

Teacher 12 felt that it was her responsibility to monitor progress of Accounting learners. As a result, she had to access database almost every day to check learners’ information. As a senior teacher, she indicated that she has created files with different activities for each topic. She uses that database to assist other teachers, including novice teachers with activities. Teacher 12 said:

“Well, I have my files with all activities and materials for teaching all topics. I use database almost every day in my Accounting teaching as I need to extract

activities and other information now and again to help other teachers with activities. I record those learners who don't complete homework in my file".

With regards to Spreadsheet (Excel), although there are teachers who have never used it (12,4%), most participants incorporate Spreadsheet (Excel) monthly (69.0%) in teaching Accounting. During the interviews, participants mention that they use Spreadsheet (Excel) to capture marks and complete subject administration and the use of the South African Schools Administration and Management System (SASAMS) has exposed them to Excel as it requires teachers to update learners' information weekly or monthly. Teacher 8 had the following to share:

"I don't normally use Excel for teaching, but I use it to capture marks on a spreadsheet and since now we are using SASAMS another software that makes me use Excel spreadsheets probably weekly".

The participants who indicated that they never used the Spreadsheet (Excel) commented as follows:

"I honestly don't like Excel it is very confusing, so I don't recall myself ever using it in my teaching of any subject. It is used to enter learners' marks but I don't do it because it is done by the school clerk". (Teacher 2)

"I also don't use the spreadsheet in teaching Accounting as I do not have a good understanding of it". (Teacher 9)

Nonetheless, other teachers remarked that in addition to using spreadsheet as a repository for marks, they incorporate it in teaching Accounting. This is what they said the following:

"I found Excel to be very simple since I also project my Accounting lessons, I copy and paste answer sheets and we work from Excel and sometimes it helps me with calculations, I use it twice monthly". (Teacher 6)

“I use Excel in Accounting when I am modifying a question and an answer sheet to suit my intention of a task and that happens maybe twice a week”.

(Teacher 12)

Concerning graphic programmes, questionnaire findings reported a high percentage of Participants who have never used a graphic programme to teach Accounting (83.7%) while 16,3% of the Participants used it to a limited extent. During interviews, participants articulated that they do not use graphic programmes regularly and most believed that it is not applicable in Accounting. The few participants who said that they used it mentioned that they have never used it in the direct teaching of Accounting but they have used it in the subjects Computer Applications Technology (CAT) and technical mathematics. Teacher 3 commented:

“I once taught technical mathematics so I would use the programme every week but here in Accounting, no, I have never used it. Again, in physical science I use to use it a lot”.

Table 5.4.1.2 indicates that most teachers (69%) have never used presentation software (PowerPoint) in teaching Accounting. Although some teachers use it (31%), no teacher used PowerPoint every day. When PowerPoint was discussed during focus group discussions, participants explained that the lack of laptops and data projectors hinders them from integrating PowerPoint in their teaching of Accounting. Participants who have laptops at their schools indicated that they use PowerPoint but not every day. They felt that preparing PowerPoint presentations is time-consuming but they try to use it at least once a month if they want to vary teaching methods. Teacher 7 pronounced:

“I like using PowerPoint but I cannot use it every day as it requires a lot of preparation, especially in Accounting those formats are difficult to copy and paste. However, once a month I take my learners to the computer lab for a PowerPoint presentation”.

Teacher 4 indicated that she uses PowerPoint presentations only on special occasions, for instance, during Integrated Quality Management System (IQMS) evaluations which means she use PowerPoint twice a year.

Most participants (90.9%) indicated that they have used YouTube videos to teach Accounting. Although teaching with YouTube videos was not a popular method of teaching since it requires internet and data, teachers explained that during COVID-19 they used it more frequently when referring learners to demonstrations and examples of certain topics. This is how they explained the frequency of YouTube:

“Mmmm, to be honest COVID made me use YouTube videos in my teaching so I would say it’s once a month, however, I always encourage my learners to use it especially when they are studying at home”. (Teacher 5)

“I did use YouTube videos a lot during the lockdown from then I find them to assist learners understanding therefore even now I use it twice a month”. (Teacher 1)

“I used YouTube in my teaching maybe twice a month when I’m introducing a certain topic those videos assist me to know how to create in teaching a topic. But during the lockdown, I was forced to send recorded videos to my learners explaining topics”. (Teacher 8)

Lastly, Table 5.4.1.2 depicted that a vast majority of Participants are not using Software (specific to your subject e.g., GIS, CAD, PASTEL) to teach Accounting (98.4% never). Those who incorporate it every day and twice a week indicated 1.6%. Although Participants (1.6%) indicated that they use some of this software, during interviews teachers indicated that they have never used software in teaching Accounting. Participants clearly stated that they do not understand computer software applicable to teaching Accounting as they have never been exposed to any of them.

5.4.1.3. Frequency of use of web applications in teaching Accounting

This section presents the results of the analysis of the frequency of use of selected web applications in teaching Accounting. Participants were required to rank themselves on the frequency provided. Qualitative data (focus group discussion) was used to supplement participants’ responses.

Table: 5.4.1.3 Frequency analysis of use of web applications

NO.		FREQUENCY			
		NEVER	EVER Y DAY	TWICE A WEEK	MONTHL Y
	WEB APPLICATIONS:				
A11.3.1	Website Development	100	0	0	0
A11.3.2	Electronic References (e.g., Encarta., World Book)	98	0	0	1.6
A11.3.3	Discussion Groups, List servers	96.1	0.8	1.6	1.6
A11.3.4	Email	0	38.8	51.2	10.1
A11.3.5	internet (WWW)	0	70.5	29.5	0
A11.3.6	Assistive Technologies (for the disabled e.g., deaf, no arms)	96.1	2.3	0	1.6

Table 5.4.1.3 above indicates that almost all Accounting teachers have never used website development (100%), electronic references (98%), discussion groups (96,1%) and assistive technologies (99,1). However, 2.3% use Assistive Technologies (for the disabled e.g., deaf, no arms) web application every day and 1.6% use them monthly. Nonetheless, during observation, I observed that two participants used hearing aids during their teaching to boost their own hearing. Another participant used a voice amplifier while teaching. They also mentioned during the interview that they use such tools every day in their teaching. Teacher 3 said:

“I use these headsets every day because I have a large number of learners in my class and I have a hearing loss because of the car accident I got involved in”.

Teacher 4 said:

“In 2006 I had surgery in my throat so I use a voice amplifier every time I teach since my voice is too low”.

During the interviews, a few participants indicated that they use World Books and electronic references while doing their own studies.

On the other hand, all Participants have used email and the internet (WWW). Most participants (70.5%) use internet application every day when compared to e-mail (38.8%). During interviews, participants revealed that they do not use e-mail more often as the e-mails they normally receive are not directly related to their teaching. Nevertheless, in some cases, they would receive e-mails from subject advisors and other colleagues, especially on teaching materials. During the interviews, two participants indicated that in their schools they been recently introduced to the G6 communicator, which allows effective communication among teachers, learners and parents. I followed up on the majority of participants who use the internet every day and they indicated that they use it to search for information related to teaching Accounting. They further asserted that they regard the internet as an additional source enhancing their teaching. Others stated they use it twice a month for lesson planning and to download teaching materials that are uploaded online. Teacher 12 pronounced:

“internet enhances my teaching a lot therefore I use it once a week when preparing my teaching. There are teaching resources that are available online, I also use the internet to download those recourses when I want to use them.”.

Teacher 6 commented:

“I use the internet every day but not for merely teaching to chat, search news and other things data is expensive to use the internet every day for teaching and we are not sponsored”.

Although 70.5% of participants use the internet almost every day, other teachers explained that they use the internet via their smartphones for private purposes. They sometimes use it only once a week for teaching. Participants commented that downloading anything for teaching is costly, hence they normally keep it for personal use.

“In our school, we were once sponsored by Vodacom a free Wi-Fi and I don’t want to lie it was a period of a month and we saw a change in our teaching, we were using the internet more often but after that month

everything went back to normal as our school was not able to keep the contract with Vodacom. Now we can only connect on the internet if we are at the admin area that means you can take the internet to the classroom and the internet break discouraged us”. (Teacher 8)

5.4.2. Teachers’ level of proficiency in technology use

This chapter seeks to answer the following research question, what are Accounting teachers’ understanding of integration of ICT in teaching Accounting in Umlazi District? Establishing the participants’ level of proficiency provided information to answer this research question. Thus, this section presents analysis of teachers’ competency in the selected technologies and their application in teaching Accounting. The proficiency scale was high, moderate, little and none.

This sub-theme will present three categories of findings, namely, proficiency analysis of the use of technology tools, level of proficiency in using technology applications and level of proficiency analysis on use of web applications. In addition, qualitative data is used to confirm the responses of participants.

5.4.2.1. Proficiency analysis of use of technology tools

This section presents the analysis of teachers’ proficiency in the use of selected technology tools. Participants had to measure their capabilities by using the proficiency scales provided with the seven selected technology tools. The quantitative findings were supported by focus group discussion and confirmed by interviews.

Table 5.4.2.1 The analysis of the level of proficiency in selected ICT tools

NO.		PROFICIENCY			
		NONE	LITTLE	MODERATE	HIGH
	ICT TOOLS:				
A12.1.1	Tablet	0	8.5	33.3	58.1
A12.1.2	Laptop	0	8.5	72.1	19.4
A12.1.3	Computer	0	0.8	72.9	26.4

A12.1.4	Digital Camera	17.1	69.8	13.2	0
A12.1.5	Scanner	27.9	59.7	10.1	2.3
A12.1.6	LCD Panel and or Data Projector	51.2	41.1	4.7	3.2
A12.1.7	Video Conferencing System	36.4	53.5	6.2	3.9

Table 5.4.2.1 above illustrates that Participants have moderate to high skills on the first three ICT tools (Tablet, Laptop and Computer). Tablets were regarded as the tool which teachers are highly proficient in using during teaching. Interviews confirmed that participants are more capable of using tablets in teaching Accounting since it is the most common gadget they use in teaching and it is convenient. Participants showed moderate proficiency in using laptops and computers. Participants disclosed during the focus group discussions that their expertise using the above-mentioned digital tools is stimulated by frequent use. During the interviews, most participants conceded that they are more competent with smartphones and the application in which they are most competent is WhatsApp. Teachers commented:

“Well, competence on gadgets is moderate, I don’t want to rate my skills high as there are several components that I might not be familiar with but yeah I have a good understanding. I have basic skills to use technology such as using a cellphone and tablet”. (Teacher 1)

“As a person with an IT diploma background I can say I am very competent with technology tools like laptops, tablets, computers and digital cameras. I think its few things that I find challenging”. (Teacher 4)

Most Participants are not competent in the following technology tools: Scanner, LCD Panel and or Data Projector, and Video Conferencing System. Over 60% have no skills and capabilities to use these tools in teaching and learning.

5.4.2.2. Level of proficiency in using technology applications

This section presents the results of the analysis of teachers’ proficiency levels in technology applications used in teaching of Accounting. Participants were provided with seven selected

ICT applications and were asked to rate themselves according to proficiency. Further, interviews were used to supplement the quantitative data obtained.

Table 5.4.2.2 Level of proficiency in using technology applications

NO.		PROFICIENCY			
		NONE	LITTLE	MODERATE	HIGH
	ICT APPLICATIONS:				
A12.2.1	Word Processing	0	10.9	62.0	27.1
A12.2.2	Database	36.1	50.1	11.6	2.3
A12.2.3	Spreadsheet (Excel)	46.5	46.5	6.2	0.8
A12.2.4	Graphics Program	36.4	47.3	16.3	0
A12.2.5	Presentation Software (PowerPoint)	10.9	32.6	51.2	5.4
A12.2.6	YouTube	0	14.7	38.0	47.3
A12.2.7	Software (specific to your subject e.g., GIS, CAD, PASTEL)	82.9	10.9	6.2	0

Table 5.4.2.2 illustrates that more than 80% of the Participants indicated low proficiency in all the applications investigated with the exception of word processing and YouTube. Participants had the highest percentage of proficiency with regards to word processing and YouTube. Software had the highest percentage of non-proficiency with 82.9% of the Participants indicating they had no proficiency in using software to teach. Regarding software (specific to your subject e.g., GIS, CAD, PASTEL) results revealed that Participants are highly incompetent since there was a high percentage on “none” proficiency options (82.9%) and none of them believed they are highly competent (0%). Only 10.9% have limited competency in using use software and 6.2% have moderate competency. Also, 36.4% of the Participants reported that they do not have the knowledge to integrate graphics programmes, while 63.4% of the Participants indicated a lack of knowledge to integrate the database.

Presentation software (PowerPoint) reported an average score of Participants' competences (51.2%). Most teachers are competent in using word processing which is considered among the simplest technology in teaching and learning. During interviews, teachers indicated that word processing is the application that they are confident to use because they use it to type learners' activities and lesson plans.

Regarding technologies application competency, Teacher 8 and Teacher 4 asserted respectively:

“If I think about how have I applied technologies in teaching Accounting I would say the basic skills from Word, PowerPoint and WhatsApp worked very well for me and my learners because they were not a large group so I could share activities more especially during the COVID-19”.

“Regarding competency on PowerPoint, it was difficult because of a lack of resources in the school. I have never even got a case of using it or even to carry one because of crime. Using WhatsApp was my competence. Sharing links of previous question papers”. (Teacher 4)

Thus, participants indicated greater competency in Word Processing and YouTube.

5.4.2.3. Level of proficiency analysis on the use of web applications

This section presents the results of the analysis of teachers' proficiency in the technology web applications used in the teaching of Accounting. Web applications that were selected are Website Development, Electronic References, Discussion Groups, Email, Internet and Assistive Technologies and Participants had to rate their competency. Participants were requested to rank their proficiency in the questionnaire and follow-up was made during the interviews to confirm the quantitative data. Hence in this section quantitative data are supported by qualitative data.

Table 5.4.2.3 Analysis of results of the level of proficiency in using Web applications

NO.	PROFICIENCY

	ICT WEB-APPLICATIONS	NONE	LITTLE	Moderate	HIGH
A12.3.1	Website Development	100	0	0	0
A12.3.2	Electronic References (e.g., Encarta., World Book)	73,6	25.6	0.8	0
A12.3.4	Discussion Groups, List servers	45.7	51.9	2.3	0
A12.3.5	Email	0	10.1	53.4	2.3
A12.3.6	Internet (WWW)	0	10.9	49.6	39.5
A12.3.7	Assistive Technologies (for the disabled e.g., deaf, no arms)	94.6	5.4	0	0

Regarding the level of proficiency in web applications, Table 5.4.2.3 above illustrate that Participants have low skills in Website Development, Electronic References (e.g., Encarta., World Book), and Assistive Technologies (for the disabled e.g., deaf, no arms). This was indicated by the high percentages on the “none” proficiency option. Over 70% of Participants reported that they are not proficient in the three web applications out of the seven listed in the table. During the interviews, participants affirmed that they are not competent with these web applications since they have never used them in teaching. However, findings reported average competency on email and the internet (WWW) (above 90%). In the overall sample, all participants indicated competence with e-mail and the internet (none, 0%) even though they indicated different levels.

The next theme focuses on factors influencing teachers’ use of technology in teaching Accounting.

5.5. TEACHERS’ PURPOSES FOR USING TECHNOLOGY

This theme concentrates on the general reasons teachers use technology (the internet to be specific) and the frequency. Ten purposes were provided, and Participants were asked to indicate their frequency on a scale of never, daily, once or twice a week, less than once a month and once or twice a month. The aim of analysing the frequency of use of technology was to

obtain information on teachers' understanding of purposes of using technology other than teaching by measuring frequency.

5.5.1. Purposes and frequency of using technology (internet)

In this section, findings indicate the purposes of Participants' use of technology and their frequency of using the technology. Participants were provided with the following purposes, Teaching, Online Banking, Online Shopping, Research, News, Educational material, Games Vacation Planning, Communication (e.g., e-mail and chat) and Download music, movies, et cetera and they were requested to rate their frequency. Qualitative data (focus group discussion and interviews) were used to confirm Participants' quantitative responses.

Table 5.5.1 Purposes and frequency of using technology (internet)

	PURPOSE	Never	Daily	Once or twice a Week	Less than once a month	Once or twice a month
A9.1	Teaching	0	4.7	47.3	27.1	20.9
A9.2	Online Banking	2.3	8.5	44.2	28.7	16.3
A9.3	Online Shopping	76.7	0	0	5.4	17.8
A9.4	Research	29.9	3.1	14.7	11.6	42.6
A9.5	News	3.9	36.4	39.5	14.7	5.4
A9.6	Educational material	3.1	6.2	58.9	24.0	7.8
A9.7	Games	67.4	1.6	1.6	3.1	26.4
A9.8	Vacation Planning	72.1	2.3	0.8	0.8	24.0
A9.9	Communication e.g. E-mail & Chat	0	90.7	8.5	0.8	0
A9.10	Download music, movies, etc.	19.4	0	12.4	36.4	31.8

Table 5.5.1 indicates that all Participants use or have used the internet for the purpose of teaching Accounting (100%). However, a small group (4.7%) use the internet daily for the purpose of teaching. Further, a relatively moderate scale was indicated for those who use the internet for teaching Accounting once or twice a week and once or twice a month. During the interviews, it emerged that the internet is useful in teaching. However, the cost of data was a barrier to Participants' frequent use of the internet for the purpose of teaching. Participants further alluded that schools are not funded with data for the internet and even those schools with Wi-Fi do not allow teachers access to the password besides the school administration clerks and the School Management Team. A few participants shared the following opinions.

"I mostly rely on the internet once a week as the textbooks are outdated and the internet provides us with current and relevant information. In our school internet was used for the purpose of teaching during the COVID-19 crisis". (Teacher 10)

"For me, the internet is an important source of learning however we do not use it more often for the purpose of teaching because data is quite expensive and it is not something we can rely on, but I can say I use it once a week". (Teacher 4)

Regarding Online Banking, findings reveal that the majority (above 91%) of Participants use the internet for the purpose of online banking and only 2.3% have never used it. During the interviews participants clearly stated that they normally use online banking to buy airtime, data bundles and do electronic transfers, especially on paydays hence they selected the frequency of twice a week. On the contrary, the majority of Participants do not use the internet for the purpose of online shopping. This is evident by the results which depict that 76.7% have never used the internet for online shopping.

Further, an average percentage of participants use the internet for the purpose of research, while 30% has never used it for research. Participants indicated that they normally research information on subject activities such as projects or assignments; this use is not frequent. The few who use it every day clearly stated that they use it for the purpose of their personal studies such as postgraduate studies. Findings illustrate that most Participants (36.4%) use the internet for the purpose of watching and listening to the news daily; a few have never used it (3.9%).

During interviews, participants claimed that they always watch the news via the internet but the outbreak of the pandemic raised the bar. They further asserted the internet played a massive role in keeping teachers updated on the news related to the pandemic. Some participants even mentioned they use monthly to get curriculum news since the internet keeps the update for a while for those who missed it.

The findings further reported over 90% of Participants use the internet for the purpose of educational material and 3.1% never used it. On the purpose of using the internet for games and vacation planning, Participants showed similar findings. Both these purposes on “never” frequency indicate high percentages (67.4% and 72.1%) while on “daily” 2.6% and 2.3% are reflected. Most participants agreed during the focus group discussion that they hardly use the internet for games and planning vacations. Participants commented that data is costly hence they do not use it for gaming. Those who indicated that they use it for games elaborated that it is mostly for their children. Although the majority do not use the internet for the purpose of vacation planning, a few upload it for its convenience and reliability when planning vacations.

Lastly, the findings further reported 90.7% of Participants utilised the internet daily for communication such as chat and e-mail on a daily basis. During interviews, participants concurred that they chat via social media and the pandemic raised the frequency. As a result, teachers and learners are familiar with social media chat. Participants further mentioned that the pandemic introduced to using chat communication every day to teach Accounting. Virtual communication was an effective method of communication between teachers and learners and this has never stopped after the lockdown even it was not daily. Most participants said that they need the internet mostly for chatting as this is convenient. In the case of e-mail participants were more accustomed to personal use rather than work-related e-mail. None (0%) of the participants reported using the internet for downloading music or movies.

5.6. CHAPTER CONCLUSION

The chapter analysed, interpreted, and presented descriptive statistical findings of this research study in graphs and tables. The results were presented in percentages for explicit comprehension. Findings from qualitative data (focus group discussion, and individual interviews) confirmed or clarified quantitative findings.

The next chapter will present the inferential statistical findings on teachers' knowledge and practices of integration of ICT.

CHAPTER SIX

6. TEACHERS' KNOWLEDGE AND PRACTICES OF INTEGRATING ICT IN TEACHING ACCOUNTING

6.1. INTRODUCTION

The previous chapter presented findings on technologies Accounting teachers use in teaching Accounting and the extent to which technologies are used in teaching Accounting. This chapter presents findings obtained with the aim of answering the second research question:

- How do Accounting teachers integrate ICT in teaching Accounting in Umlazi District?

To answer this research question with rigour, a TPACK questionnaire instrument was designed and utilised. The TPACK questionnaire instrument comprised six TPACK elements, each consisting of various items. In addition, each element provided Participants with a Likert Scale of strongly disagree, disagree, neither disagree nor agree, agree and strongly agree. The rationale for six TPACK elements instead of seven was that after the pilot study the reliability check indicated that the element of TK had poor internal consistency with a Cronbach's alpha coefficient reported below .5. This meant that most items did not correlate. Therefore, the construct was removed. According to DeVellis (2012), an acceptable Cronbach's alpha coefficient above .7 and .8 is preferable.

Two themes were developed and utilised to understand how teachers integrate ICT in teaching Accounting. The following themes emerged from TPACK elements:

- Teachers' knowledge of integrating ICT in teaching Accounting.
- Teachers' practices of integrating ICT in teaching Accounting.

Teachers' knowledge was measured by three elements from TPACK that focus on knowledge while teachers' practices were measured with the other three TPACK elements focusing on pedagogy. Each main theme consists of three selected elements of TPACK that relate to addressing the theme. Participants' responses (quantitative findings) are presented in numerical tables and then confirmed with qualitative data from individual interviews and focus group discussions. In addition, T-test and ANOVA inferential statistics analysis are used to confirm the findings. Independent-samples T-test was conducted to test the following null hypothesis:

- There is no statistically significant difference between the two groups of Accounting (male and females) teachers in TPACK elements.

The ANOVA one-way analysis was also conducted to test the following null and research hypothesis:

H_0 : There is no statistically significant difference in the mean of demographic characteristics of Accounting teachers on the understanding of TPACK elements.

H_1 : There is a statistically significant difference in the mean of demographic characteristics of Accounting teachers on the understanding of TPACK elements.

The T-test and ANOVA analysis are reported in tables with descriptions. Lastly, correlation analysis is presented for TPACK variables. The findings are presented in the sections below according to themes.

6.2. TEACHERS' KNOWLEDGE OF INTEGRATING ICT IN TEACHING ACCOUNTING

To measure teachers' knowledge, three TPACK elements were selected, namely, CK, TCK and PCK. The three elements were selected because the items in each element measured teachers' knowledge of integrating ICT in teaching Accounting. In addition, there is an interaction between Content, Pedagogy and Technology when teachers integrate ICT in teaching Accounting. Therefore, the findings of these elements are presented below.

6.2.1. Content Knowledge (CK)

This section presents findings of Accounting teachers' CK selected to measure their knowledge of ICT integration in teaching Accounting. This element comprised three items to measure teachers' knowledge of the subject matters such as topics, problems and various methods to develop knowledge of Accounting. Participants were asked to rank their responses on a Likert Scale of strongly disagree, disagree, neither disagree nor agree, agree and strongly agree. The teachers who also participated in the interviews were also asked to substantiate their choice during the interviews and their responses were confirmed by observations. In addition, T-test and ANOVA analysis were also used to confirm the findings. T-test compared CK of the two groups of this study, which are males and females Accounting teachers. On the other hand,

ANOVA compared the statistically mean difference of CK with all demographic characteristics of participants in this study. Both T-test and ANOVA analysis results provide two numerical tables for each and descriptions. The demographic characteristics used for T-test and ANOVA analysis were discussed in Chapter 5 (5.2.1 and 5.2.2).

Table 6.2.1 Content Knowledge (CK)

		Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
D1	I have sufficient knowledge about Accounting.	0.8	3.1	0	58.9	37.2
D2	I have various ways and strategies for developing my understanding of Accounting.	0.8	0	0	63.6	35.7
D3	I keep developing my knowledge collection in Accounting.	0	0.8	0	67.4	31.8

Table 6.2.1 shows that the majority of Participants concur that they have adequate Accounting content knowledge. Results reveal that over 90% agree that they have sufficient Accounting content knowledge and only less than 4% disagree. During interviews, participants affirmed that they have adequate knowledge of the Accounting content as they have the ability to conduct effective lessons and learners understand the content they deliver. They further asserted that learners' quality academic performance in a subject indicates that teachers have accurate and adequate knowledge. Participants disclosed that they always attend content workshops to empower themselves and cultivate their knowledge in Accounting. Another participant announced that the number of years teachers have been teaching Accounting content is also a reason for their mastery of the content.

Nevertheless, a respondent who strongly disagreed that he does not have sufficient content knowledge stated that a lack of support to implement changes in the classroom makes him doubt the sufficiency of his knowledge of the content. The participant further explained that it is difficult for him to teach some topics; therefore, he normally shares teaching the content with another colleague. Another participant who disagreed also felt that constant changes in the

subject content cause confusion during instruction; hence he indicated having insufficient knowledge. The number of years of teaching experience contribute to teachers' content knowledge in Accounting. Teacher 5 commented:

“I have been teaching Accounting for decades and I have been part of all the changes that have been implemented. So, my content knowledge of the Accounting subject is very high”.

A similar sentiment was shared by Teacher 11:

“In teaching profession is very simple to master the content knowledge as changes do not affect the entire content. Thus, I believe I have enough knowledge up to date since I have been teaching Accounting for over 12 years”.

Furthermore, lesson observations confirmed that teachers have adequate knowledge of the content. This was substantiated by the way they explained content to learners. The lessons were productive when they were using ICT resources and learners were very cooperative. When learners were assessed through the class activity by giving feedback, they provided correct answers. In some cases, learners shared solutions with peers by explaining to each other how they formulated adjustments and calculations. The teachers used various strategies to elaborate on the answer to help learners understand. Some of the topics that were taught during the observations were Value Added Tax, Partnership, Analysis and Interpretation of Financial Statements, Final Accounts, Tangible (Fixed) Assets Cost Accounting and Budgeting. In all these topics, the observed participants provided relevant information, the explicit conceptualisation of concepts, relevant demonstrations and practical examples to enhance understanding of the topic.

Similarly, 99% of Participants indicated they have various strategies for developing their understanding of Accounting; only one participant had a contrary opinion. During the interviews, participants indicated that apart from the professional development that they usually attend on content, they have various groups on social media platforms where they share Accounting content knowledge, address content issues and devise strategies to best deliver the content of Accounting. One participant admitted that being part of Ukhozi FM extra tuition

programme had developed his teaching skills. Another participant disclosed that media and search engines play a huge role in developing Accounting CK. Participants alluded that teaching programmes on television develop their knowledge of Accounting content as they portray various ways of presenting content by Accounting experts. This is what participants added:

“We have a WhatsApp group that was created when we were still students at college and up to date that group is still active, and we are developing each other as Accounting teachers. It’s a very advanced group, we would sometimes have a meeting on how best to teach a particular topic, we share documents and various teaching strategies”. (Teacher 1)

“I am very ambitious and passionate about Accounting so at times I do not wait for professional training from the Department I have found Google to be the best method in developing myself and collecting new knowledge for Accounting. Google can provide various ways of teaching one content thus I use it”. (Teacher 4)

Furthermore, participants keep developing their knowledge collection in Accounting. During the interviews, they announced that they gather various teaching materials such as textbooks, support materials from the Department, previous question papers and materials from different provinces on the subject content. A few participants mentioned that they also develop their collection with online books.

Lastly, the findings above were confirmed with the Independent Sample t-test which was conducted to test the following null hypothesis:

- There is no statistically significant difference between male and female Accounting teachers’ CK.

Statistical results reported that there is no statistically significant difference between male and female Accounting teachers on CK as sig. (2-tailed) was above .05. This confirms that Accounting teachers’ CK does not depend on gender. The results are displayed in the tables below.

Table 6.2.1 (A) T-test for Content Knowledge across the gender

Variable	Gender	N	Mean	Std. Deviation	Std. Error Mean
J1. Content Knowledge	Female	83	12,8675	1,55995	0,17123
	Male	46	13,1087	1,36997	0,20199

Table 6.2.1 (B) Comparison of Male and Female Accounting Teachers on Content Knowledge (n = 83 females, 46 males)

Variable		<i>M</i>	<i>SD</i>	<i>t</i>	<i>Df</i>	<i>P</i>	<i>MD</i>	<i>CI</i>	<i>d</i>
Content Knowledge				-0.88	127	0.38	-0.24	-0.79 to 0.30	0.01
	Females	12.87	1.56						
	Males	13.11	1.37						

The above tables (6.2.1 A and B) confirm that between the two groups of Accounting teachers, there is no difference in the way they understand CK of the subject as females reported $M = 12.87$, SD of 1.56 and males indicated $M = 13.11$, $SD = 1.37$, $t(127) = 0.38$, $p > .38$ (two-tailed). The degree of a difference in the mean (MD) = -0.24 and the Confidence Interval of the difference (CI) was between -0.79 to 0.30. In addition, the magnitude of the difference (d) between the two groups of Accounting teachers is 0.01 which is a small effect size according to the guidelines proposed by Cohen (1988). Therefore, it can be concluded that there was no statistically significant difference between the Accounting teachers in understanding CK. In addition, similar results were indicated by ANOVA analysis. ANOVA compared the dependent variable with all demographic characteristics of the group of this study as discussed in Chapter 4.

A one-way between-groups analysis of variance was also conducted to compare 14 circuits of Accounting teachers on the understanding of CK. The results are presented and discussed below.

Table 6.2.1 (C): Means and Standard Deviations Comparing 14 circuits on Content Knowledge (n= Phumelela 32; Ndukumbane 11; Durban Central 15; Mbumbulu 7; Chatsworth 7; Mngxenge 8; Durban South 11; Amanzimtoti 11; Merewent 5; Umkhumbane 4; Maphundu 8; Umngeni North 4; Folweni 4; Mafa 2)

Circuits	Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Phumelela	32	12.69	1.12
Ndunkumbane	11	13.09	1.45
Durban Central	15	13.40	1.35
Mbumbulu	7	12.86	1.46
Chatsworth	7	13.71	1.70
Mngxenge	8	13.63	1.51
Durban South	11	13.55	1.29
Amanzimtoti	11	13.36	0.92
Merewent	5	13.20	1.30
Umkhumbane	4	12.75	0.96
Maphundu	8	12.25	3.54
Umngeni North	4	12.75	0.50
Folweni	4	12.50	1.00
Mafa	2	12.00	0.00

Table 6.2.1 (D): One-Way Analysis of Variance Summary Table Comparing 14 circuits on Content Knowledge (n= Phumelela 32; Ndukumbane 11; Durban Central 15; Mbumbulu 7; Chatsworth 7; Mngxenge 8; Durban South 11; Amanzimtoti 11; Merewent 5; Umkhumbane 4; Maphundu 8; Umngeni North 4; Folweni 4; Mafa 2)

Source		<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Content Knowledge							
	Between groups	13	28,103	2,162	0.97	0.49	0.10
	Within groups	115	257,618	2,240			
	Total	128	285,721				

The ANOVA analysis above also confirms that there is no statistically significant difference at the $p < .05$ level in the scores comparing 14 circuits: $F=0.97$, $p=.49$. The effect size, calculated using eta squared, was approximately 0.10, which was moderately medium effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Phumelela ($M=12.69$, $SD=1.12$); Ndunkumbane ($M=13.09$, $SD=1.45$); Durban Central ($M=13.40$, $SD=1.35$); Mbumbulu ($M=12.86$, $SD=1.46$); Chatsworth ($M=13.71$, $SD=1.70$); Mngxenge ($M=13.63$, $SD=1.51$); Durban South ($M=13.55$, $SD=1.29$); Amanzimtoti ($M=13.36$, $SD=0.92$); Merewent ($M=13.20$, $SD=1.30$); Umkhumbane ($M=12.75$, $SD=0.96$); Maphundu ($M=12.25$, $SD=3.54$); Umngeni North ($M=12.75$, $SD=0.50$); Folweni ($M=12.50$, $SD=1.00$) and Mafa ($M=1.00$, $SD=0.00$) did not differ significantly. Thus, the null hypothesis is accepted whereas the research hypothesis is rejected as far as CK is concerned.

In addition, a one-way between-groups analysis of variance was also conducted to compare the four age groups of Accounting teachers on the understanding of Content Knowledge. Findings are provided below.

Table 6.2.1 (E) Means and Standard Deviations Comparing four age groups of Accounting teachers (n= 22-30 years old 28; 31-40 years old 54; 41-50 years old 37; 51-60 years old 10).

Age	Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
22-30 years old	28	13.74	1.27
31-40 years old	54	12.94	1.32
41-50 years old	37	12.76	1.91
51-60 years old	10	13.40	1.26

Table 6.2.1 (E) One-Way Analysis of Variance Summary Table Comparing four age groups of Accounting teachers (n= 22-30 years old 28; 31-40 years old 54; 41-50 years old 37; 51-60 years old 10).

Source		<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Content Knowledge							
	Between groups	3	3,820	1,273	0.57	0.64	0.01
	Within groups	125	281,901	2,255			

	Total	128	285,721				

The findings above affirm that there was no statistically significant difference at the $p < .05$ level in the scores comparing four age groups: $F = 0.57$, $p = .64$. The effect size, calculated using eta squared, was approximately 0.01 and this was a relatively small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for 22-30 years old ($M = 13.74$, $SD = 1.27$); 31-40 years old ($M = 12.94$, $SD = 1.32$); 41-50 years old ($M = 12.76$, $SD = 1.91$); 51-60 years ($M = 13.40$, $SD = 1.26$) did not differ significantly. For that reason, the null hypothesis is accepted whereas the research hypothesis is rejected as far as CK is concerned.

Furthermore, a one-way between-groups analysis of variance was also conducted to compare three qualifications for Accounting teachers on understanding CK.

Table 6.2.1 (F) Means and Standard Deviations Comparing Teaching Qualifications of Accounting Teachers (n= Bachelors Degree 83; Honours 39; Masters Degree 7)

Teaching Qualifications	Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Bachelors Degree	83	12.88	1.63
Honours Degree	39	13.00	1.21
Masters Degree	7	13.57	1.13

Table 6.2.1 (G) One-Way Analysis of Variance Summary Table Comparing Teaching Qualifications of Accounting Teachers (n= Bachelors Degree 83; Honours 39; Masters Degree 7)

Source	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>P</i>	<i>Eta squared</i>
Content Knowledge						
Between groups	2	3,211	1,606	0.72	0.49	0.01
Within groups	126	282,509	2,242			
Total	128	285,721				

ANOVA results on CK above indicate that there was no statistically significant difference as $p < .05$ level in the scores comparing three qualifications of Accounting teachers was as follows: $F = 0.72$, $p = .49$. The effect size, calculated using eta squared, was approximately 0.01, which was a slightly small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Bachelors degree ($M = 12.88$, $SD = 1.63$); Honours ($M = 13.00$, $SD = 1.21$) and Masters degree ($M = 13.57$, $SD = 1.13$) did not differ significantly. As a result, the null hypothesis is accepted whereas the research hypothesis is rejected as far as CK is concerned.

Moreover, a one-way between-groups analysis of variance was also conducted to compare six categories of teaching experiences of Accounting teachers on understanding of CK.

Table 6.2.1 (H) Means and Standard Deviations Comparing Accounting Teachers Teaching Experience (n= 1-5 years 3; 6-10 years 26; 11-15 years 46; 16-20 years 33; 21-25 years 14; 26 + years 7)

Teaching experience	Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
1-5 years	3	14.00	1.00
6-10 years	26	13.00	1.30
11-15 years	46	12.91	1.88
16-20 years	33	12.70	1.16
21-25 years	14	13.21	1.31
26 + years	7	13.29	1.25

Table 6.2.1 (I) One-Way Analysis of Variance Summary Table Comparing Table 17a: Means and Standard Deviations Comparing Accounting Teachers Teaching Experience (n= 1-5 years 1; 6-10 years 28; 11-15 years 46; 16-20 years 33; 21-25 years 14; 26 + years 7)

Source		<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Content Knowledge							
	Between groups	5	7,313	1,463	0.65	0.67	0.03
	Within groups	123	278,408	2,263			
	Total	128	285,721				

The results above confirm that there is no statistically significant difference at the $p < .05$ level in the scores comparing six categories of teaching experiences of Accounting teachers: $F = 0.65$, $p = .67$. The effect size, calculated using eta squared, was approximately 0.03, which was moderately small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores 1-5 years ($M = 14.00$, $SD = 1.00$); 6-10 ($M = 13.00$, $SD = 1.30$); 11-15 years ($M = 12.91$, $SD = 1.88$); 16-20 years ($M = 12.70$, $SD = 1.16$); 21-25 years ($M = 13.21$, $SD = 1.31$) 26+ years ($M = 13.29$, $SD = 1.25$) do not differ significantly. Therefore, the null hypothesis is accepted whereas the research hypothesis is rejected.

A one-way between-groups analysis of variance was also conducted to compare four teaching positions of Accounting teachers on understanding of CK.

Table 6.2.1 (J) Means and Standard Deviations Comparing Teaching Positions of Accounting Teachers (n=Post level 1 86; Departmental head 35; Deputy principal 4; Principal 4)

Teaching positions	Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Post level 1	86	12.80	1.52
Departmental head	35	13.29	1.43
Deputy principal	4	13.25	1.50
Principal	4	13.00	1.41

Table 6.2.1 (K) One-Way Analysis of Variance Summary Table Comparing Teaching Positions of Accounting teachers (n=Post level 1 86; Departmental head 35; Deputy principal 4; Principal 4)

Source		<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>P</i>	<i>Eta squared</i>
Content Knowledge							
	Between groups	3	6,189	2,063	0.92	0.43	0.02
	Within groups	125	279,532	2,236			
	Total	128	285,721				

The above results indicate no statistically significant difference at the $p < .05$ level in the scores comparing four teaching positions of Accounting teachers: $F=0.92$, $p=.43$. The effect size, calculated using eta squared, was approximately 0.02, which was moderately small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Post Level 1 ($M=12.80$, $SD=1.52$); Departmental Head ($M=13.29$, $SD=1.43$), Deputy Principal ($M=13.25$, $SD=1.50$) and Principal ($M=13.00$, $SD=1.41$) did not differ significantly. As a result, the null hypothesis is accepted whereas the research hypothesis is rejected as far as CK is concerned.

Also, a one-way between-groups analysis of variance was also conducted to compare the three school quintiles (3,4 and 5) of the schools where Accounting teachers are employed on understanding CK.

Table 6.2.1 (L) Means and Standard Deviations Comparing School Quintiles (n= 83 Quintile 3; 21 Quintile 4; 25 Quintile 5)

School quintile	Content Knowledge		
	N	M	SD
Quintile 3	83	12.90	1.60
Quintile 4	21	13.33	1.39
Quintile 5	25	12.80	1.15

Table 6.2.1 (M) One-Way Analysis of Variance Summary Table Comparing School Quintiles n= 83 Quintile 3; 21 Quintile 4; 25 Quintile 5)

Source		<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>P</i>	<i>Eta squared</i>
Content Knowledge							
	Between groups	2	3,825	1,913	0.86	0.43	0.01
	Within groups	126	281,896	2,237			
	Total	128	285,721				

The results above also support that there is no statistically significant difference at the $p < .05$ level in the scores comparing the three school quintiles: $F=0.86$, $p=.43$. The effect size, calculated using eta squared, was approximately 0.01, which was relatively small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for quintile 3 ($M=12.90$, $SD=1.60$); quintile 4 ($M=13.33$, $SD=1.39$) and quintile 5 ($M=12.80$, $SD=1.15$) did not differ significantly. Thus, the null hypothesis is accepted whereas the research hypothesis is rejected.

Lastly, a one-way between-groups analysis of variance was also conducted to compare three Accounting FET grades (Grades 10, 11 and 12) on understanding CK.

Table 6.2.1 (N) Means and Standard Deviations Comparing for Grades (n= 40 Grade 10; 40 Grade 11; 49 Grade 12)

		Content Knowledge	
	<i>N</i>	<i>M</i>	<i>SD</i>
Grade 10	40	13.03	1.91
Grade 11	40	13.00	1.28
Grade 12	49	12.86	1.27

Table 6.2.1 (O) One-Way Analysis of Variance Summary Table Comparing Grades (n= 40 Grade 10; 40 Grade 11; 49 Grade 12)

Source		<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Content Knowledge							
	Between groups	3	3,820	1,273	0.17	0.85	0.01
	Within groups	125	281,901	2,255			
	Total	128	285,721				

Concerning Accounting teachers understanding of CK, results reveal that there is no statistically significant difference at the $p < .05$ level in the scores comparing three Accounting FET grades: $F= 0.17$, $p=.85$. The effect size, calculated using eta squared, was approximately 0.01, which was relatively small effect. Post-hoc comparisons using Tukey HSD test indicated

that the mean scores for Grade 10 ($M=13.03$, $SD=1.91$); Grade 11 ($M=13.00$, $SD=1.28$) and Grade 12 ($M=12.86$, $SD=1.27$) did not differ significantly. Thus, the null hypothesis is accepted whereas the research hypothesis is rejected as far as CK is concerned.

The subsection below presents the findings of the second TPACK variable used to measure Accounting teachers' knowledge.

6.2.2. Pedagogical Content Knowledge (PCK)

This section provides findings of PCK which was selected to measure teachers' knowledge of various teaching approaches, teaching strategies and a variety of methods for learners to better comprehend the lessons and easy instructional practices. Participants were asked to rank their knowledge of the selected items using the Likert Scale of strongly disagree, disagree, neither disagree nor agree, agree and strongly agree. Further, interviews and lesson observations were used to supplement their responses while T-test and ANOVA analysis confirmed the results. T-test compared one independent sample (gender) with the variable (PCK) and ANOVA analysis is also included to confirm the correlation between the variable (PCK) and demographic characteristics of the group.

Table 6.2.2 Pedagogical Content Knowledge (PCK)

		Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
G1	I can select effective teaching approaches to guide learners' thinking and learning in Accounting.	0	1.6	0	72.9	25.6
G2	I make my own lesson plan.	0	0	0.8	59.7	39.5
G3	I can make the difficult lesson easier for learners to understand.	0	0.8	0	62.8	36.4
G4	I make questions on my own to measure my learners' understanding towards the lesson.	1.6	3.9	0	65.1	29.5

Table 6.2.2 reports on the participants' ability to teach Accounting content. Findings report positive responses showing that the majority of participants can select effective teaching

approaches to guide learners' thinking and learning in Accounting (98.5% agree), while a small percentage of 1.6% disagreed. During the interview, participants confirmed that they are knowledgeable about various effective approaches to guide and enhance their learners' thinking and learning in Accounting. One of these approaches is case studies; participants elaborated that case studies are effective methods of teaching learners in Accounting as they present real-world cases that allow learners to apply Accounting knowledge and improve their thinking. Another approach they reported to be effective is peer tutoring learning. They asserted that peer tutoring allows Accounting teachers to group learners according to different abilities of learning.

During the observations, peer tutoring learning was evident in two classes. The first teacher requested learners to work in pairs on a class activity discussing adjustments. In the other class, the teacher demonstrated a collaborative approach to a topic in Grade 11 using a group of eight learners. Participants added the following:

“The approach that is mostly effective for me in teaching Accounting content is the collaborative approach as I believe my learners learn best in working and Accounting is a practical subject so individuality does not work. These learners are very smart in teaching one another.” (Teacher 10)

“Mmmm, for me problem-based and constructive approaches are effective to teach Accounting. The content of Accounting has changed from being to being complex, it always presents information for learners to analyse, apply and create information so these approaches are best to teach Accounting”. (Teacher 12)

Results further reveal that the majority of participants can make their own lesson plans (99.4% agreed). Participants reveal that they have a good understanding of how to develop lesson plans as it is something they learned at college. They also disclose that the subject advisors also provide them with lesson plans, and they just need to modify them to fit their timeframe. Participants can also make a difficult lesson easier for learners to understand (98.4% agreed). During the interviews, participants shared various ways they use to simplify difficult lessons for the learners. These include unique concept definitions using demonstrations and visuals

from the internet, regular practice and using different teaching and learning styles. In this study, all participants stated that they can create questions to measure learners' understanding of the lesson. One participant said that when she is teaching a certain section, she sometimes creates a set of questions from various question papers and textbooks to promote learners' understanding. During the observation, one teacher was observed explaining the question repeatedly to learners and she even code-switched to learners' mother tongue to explain some concepts. Participants commented that sometimes Accounting questions are difficult for learners to understand so at times they are forced to code-switch to the language learners best understand.

The above findings were also confirmed by the Independent-Samples t-test which was conducted to test the following null hypothesis:

- There is no statistically significant difference between male and female Accounting Teachers on PCK.

Results revealed that there is no statistically significant difference between the two groups (females and males) on PCK as sig. (2-tailed) was above .05. This, therefore, confirms that Accounting teachers' knowledge of PCK does not depend on gender. The results are depicted in numerical tables below.

Table 6.2.2 (A) T-test analysis of the group on Pedagogical Content Knowledge

Variables	Gender	N	Mean	Std. Deviation	Std. Error Mean
J2. Pedagogical Content Knowledge	Female	83	17,1446	1,86189	0,20437
	Male	46	17,1087	1,85266	0,27316

Table 6.2.2 (B) Comparison of Male and Female Accounting Teachers on Pedagogical Content Knowledge (n = 83 females, 46 males)

Variable	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>P</i>	<i>MD</i>	<i>CI</i>	<i>d</i>
Pedagogical Content Knowledge			0.11	127	0.92	0.03	-0.64 to 0.71	0.00
Females	17.14	1.86						

	Males	17.11	1.85						

The t-test analysed above on the comprehension of the Accounting teachers group on PCK shows that gender has no impact on Accounting teachers' knowledge of teaching content. This is confirmed by the results that indicate that $t(127) = .11$; $p\text{-value} < 0.92$ and the mean difference was 0.04. The confidence interval scored between -0.64 to 0.71 and 0.00 eta squared was the magnitude of the difference mean between Accounting female teachers and male teachers. Further, female teachers scored $M = 17.14$; $SD = 1.86$ while males scored $M = 17.11$; $SD = 1.85$. Therefore, there is no statistically significant difference of means between the Accounting teachers who participated in this study and the way they teach Accounting content.

ANOVA analysis also confirmed the above findings by conducting a one-way between-groups analysis of variance to compare 14 circuits of Accounting teachers on the understanding of PCK.

Table 6.2.2 (C) Means and Standard Deviations Comparing 14 circuits on Pedagogical Content Knowledge (n= Phumelela 32; Ndukumbane 11; Durban Central 15; Mbumbulu 7; Chatsworth 7; Mngxenge 8; Durban South 11; Amanzimtoti 11; Merewent 5; Umkhumbane 4; Maphundu 8; Umngeni North 4; Folweni 4; Mafa 2)

Circuits	Pedagogical Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Phumelela	32	17.06	1.95
Ndunkumbane	11	17.18	1.72
Durban Central	15	17.33	1.68
Mbumbulu	7	15.86	0.90
Chatsworth	7	17.00	1.91
Mngxenge	8	17.38	2.56
Durban South	11	17.27	2.00
Amanzimtoti	11	17.18	1.72
Merewent	5	17.60	1.67
Umkhumbane	4	17.00	2.58

Maphundu	8	17.13	1.46
Umngeni North	4	17.00	2.00
Folweni	4	18.00	2.31
Mafa	2	17.00	4.24

Table 6.2.2 (D) One-Way Analysis of Variance Summary Table Comparing 14 circuits on Pedagogical Content Knowledge (n= Phumelela 32; Ndukumbane 11; Durban Central 15; Mbumbulu 7; Chatsworth 7; Mngxenge 8; Durban South 11; Amanzimtoti 11; Merewent 5; Umkhumbane 4; Maphundu 8; Umngeni North 4; Folweni 4; Mafa 2)

Source	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Pedagogical Content Knowledge						
Between groups	13	17,290	1,330	0.36	0.98	0.04
Within groups	115	421,470	3,665			
Total	128	438,760				

The above result confirms that there is no statistically significant difference at the $p < .05$ level in the scores comparing 14 circuits: $F=0.36$, $p=.98$. The effect size, calculated using eta squared, was approximately 0.04, which was a relatively small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Phumelela ($M=17.06$, $SD=1.95$); Ndukumbane ($M=17.18$, $SD=1.72$); Durban Central ($M=17.33$, $SD=1.68$); Mbumbulu ($M=15.86$, $SD=0.90$); Chatsworth ($M=17.00$, $SD=1.91$); Mngxenge ($M=17.38$, $SD=2.56$); Durban South ($M=17.27$, $SD=2.00$); Amanzimtoti ($M=17.18$, $SD=1.72$); Merewent ($M=17.60$, $SD=1.67$); Umkhumbane ($M=17.00$, $SD=2.58$); Maphundu ($M=17.13$, $SD=1.46$); Umngeni North ($M=17.00$, $SD=2.00$); Folweni ($M=18.00$, $SD=2.31$) and Mafa ($M=17.00$, $SD=4.24$) did not differ significantly. Thus, the null hypothesis is accepted whereas the research hypothesis is rejected.

In addition, a one-way between-groups analysis of variance was also conducted to compare the four age groups of Accounting teachers on the understanding of PCK.

Table 6.2.2 (E) Means and Standard Deviations Comparing four age groups of Accounting teachers (n= 22-30 years old 28; 31-40 years old 54; 41-50 years old 37; 51-60 years old 10).

Age	Pedagogical Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
22-30 years old	28	17.43	1.85
31-40 years old	54	16.91	1.84
41-50 years old	37	17.43	1.91
51-60 years old	10	16.40	1.58

Table 6.2.2 (F) One-Way Analysis of Variance Summary Table Comparing four age groups of Accounting teachers (n= 22-30 years old 28; 31-40 years old 54; 41-50 years old 37; 51-60 years old 10).

Source	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Pedagogical Content Knowledge						
Between groups	3	13,884	4,628	1.36	0.26	0.03
Within groups	125	424,875	3,399			
Total	128	438,760				

The above tables confirm the findings that there was no statistically significant difference at the $p < .05$ level in the scores comparing the four age groups: $F = 1.36$, $p = .26$. The effect size, calculated using eta squared, was approximately 0.03, which was slightly small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for 20-30 years old ($M = 17.43$, $SD = 1.85$); 31-40 years old ($M = 16.91$, $SD = 1.84$); 41-50 years old ($M = 17.43$, $SD = 1.91$) and 51-60 years old ($M = 16.40$, $SD = 1.58$) did not differ significantly. Thus, the null hypothesis is accepted whereas the research hypothesis is rejected as far as PCK is concerned.

Furthermore, a one-way between-groups analysis of variance was also conducted to compare three qualifications for Accounting teachers on PCK.

Table 6.2.2 (G) Means and Standard Deviations Comparing Teaching Qualifications of Accounting Teachers (n= Bachelors Degree 83; Honours 39; Masters Degree 7)

Teaching Qualifications	Pedagogical Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Bachelors Degree	83	17.20	1.90
Honours Degree	39	16.82	1.70
Masters Degree	7	18.00	2.00

Table 6.2.2 (H) One-Way Analysis of Variance Summary Table Comparing Teaching Qualifications of Accounting Teachers (n= Bachelors Degree 83; Honours 39; Masters Degree 7)

Source	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Pedagogical Content Knowledge						
Between groups	2	9,498	4,749	1.39	0.52	0.02
Within groups	126	429,262	3,407			
Total	128	438,760				

Concerning PCK, findings support that there was no statistically significant difference at the $p < .05$ level in the scores comparing three qualifications of Accounting teachers: $F=1.39$, $p=.52$. The effect size, calculated using eta squared, was approximately 0.02, which was relatively small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Bachelor degree ($M=17.20$, $SD=1.90$); Honours degree ($M=16.82$, $SD=1.70$) and Masters degree ($M=18.00$, $SD=2.00$) did not differ significantly. Therefore, the null hypothesis is accepted whereas the research hypothesis is rejected as far as PCK is concerned.

In addition, a one-way between-groups analysis of variance was also conducted to compare six teaching experiences of Accounting teachers on Pedagogical Content Knowledge.

Table 6.2.2 (I) Means and Standard Deviations Comparing Accounting Teachers' Teaching Experience (n= 1-5 years 3; 6-10 years 26; 11-15 years 46; 16-20 years 33; 21-25 years 14; 26 + years 7)

Teaching Experience	Pedagogical Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
1-5 years	3	16.67	3.06
6-10 years	26	17.42	1.63
11-15 years	46	16.96	1.74
16-20 years	33	17.33	1.98
21-25 years	14	16.79	2.01
26 + years	7	17.14	2.34

Table 6.2.2 (J) One-Way Analysis of Variance Summary Comparing Accounting Teachers Teaching Experience (n= 1-5 years 1; 6-10 years 28; 11-15 years 46; 16-20 years 33; 21-25 years 14; 26 + years 7)

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Pedagogical Content Knowledge						
Between groups	5	7,286	1,457	0.42	0.84	0.02
Within groups	123	431,473	3,508			
Total	128	438,760				

The ANOVA analysis confirms that there is no statistically significant difference at the $p < .05$ level in the scores comparing six categories of teaching experiences of Accounting teachers: $F=0.42$, $p=.84$. The effect size, calculated using eta squared, was approximately 0.02, which was relatively small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores 1-5 years ($M=16.67$, $SD=3.06$); 6-10 years ($M=17.42$, $SD=1.63$); 11-15 years ($M=16.96$, $SD=1.74$); 16-20 years ($M=17.33$, $SD=1.98$); 21-25 years ($M=16.79$, $SD=2.01$) and 26+ years ($M=17.14$, $SD=2.34$) not differ significantly. Thus, the null hypothesis is accepted whereas the research hypothesis is rejected as far as PCK is concerned.

Furthermore, a one-way between-groups analysis of variance was also conducted to compare the four teaching positions of Accounting teachers on PCK.

Table 6.2.2(K) Means and Standard Deviations Comparing Teaching Positions of Accounting teachers (n=Post level 1 86; Departmental head 35; Deputy principal 4; Principal 4)

Teaching positions	Pedagogical Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Post level 1	86	17.16	1.84
Departmental head	35	17.03	1.95
Deputy principal	4	16.75	1.50
Principal	4	17.75	2.06

Table 6.2.2 (L) One-Way Analysis of Variance Summary Table Comparing Teaching Positions of Accounting teachers (n=Post level 1 86; Departmental head 35; Deputy principal 4; Principal 4)

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Pedagogical Content Knowledge						
Between groups	3	2,567	0,856	0.25	0.87	0.01
Within groups	125	436,192	3,490			
Total	128	438,760				

With regard to PCK, there is no statistically significant difference at the $p < .05$ level in the scores comparing four teaching positions of Accounting teachers: $F = 0.25$, $p = .87$. The effect size, calculated using eta squared, was approximately 0.01, which was moderately small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Post level 1 ($M = 17.16$, $SD = 1.84$); Departmental Head ($M = 17.03$, $SD = 1.95$); Deputy Principal ($M = 16.75$, $SD = 1.50$) and Principal ($M = 17.75$, $SD = 2.06$) did not differ significantly. Thus, the null hypothesis is accepted whereas the research hypothesis is rejected as far as PCK is concerned.

In addition, a one-way between-groups analysis of variance was also conducted to compare the three school quintiles of Accounting teachers on PCK.

Table 6.2.2 (M) Means and Standard Deviations Comparing School Quintiles (n= 83 Quintile 3; 21 Quintile 4; 25 Quintile 5)

School quintiles	Pedagogical Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Quintile 3	83	17.07	1.92
Quintile 4	21	17.62	1.75
Quintile 5	25	16.92	1.68

Table 19(N) One-Way Analysis of Variance Summary Table Comparing School Quintiles n= 83 Quintile 3; 21 Quintile 4; 25 Quintile 5)

Source		<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Pedagogical Content Knowledge							
	Between groups	2	6,401	3,201	0.93	0.40	0.01
	Within groups	126	432,359	3,431			
	Total	128	438,760				

With regard to PCK, there is no statistically significant difference at the $p < .05$ level in the scores comparing the three school quintiles: $F=0.93$, $p=.40$. The effect size, calculated using eta squared, was approximately 0.01, which was moderately small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for quintile 3 ($M=17.07$, $SD=1.92$); quintile 4 ($M=17.62$, $SD=1.75$) and quintile 5 ($M=16.92$, $SD=1.68$) did not differ significantly. Therefore, the null hypothesis is accepted whereas the research hypothesis is rejected.

Lastly, a one-way between-groups analysis of variance was also conducted to compare three Accounting FET grades on PCK.

Table 6.2.2 (O) Means and Standard Deviations Comparing for Grades (n= 40 Grade 10; 40 Grade 11; 49 Grade 12)

Grades	Pedagogical Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>

Grade 10	40	17.23	1.90
Grade 11	40	17.33	2.22
Grade 12	49	16.90	1.45

Table 6.2.2 (P) One-Way Analysis of Variance Summary Table Comparing Grades (n= 40 Grade 10; 40 Grade 11; 49 Grade 12)

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>P</i>	<i>Eta squared</i>
Pedagogical Content Knowledge						
Between groups	3	13,884	4,628	0.66	0.52	0.03
Within groups	125	424,875	3,399			
Total	128	438,760				

Regarding PCK, there is no statistically significant difference at the $p < .05$ level in the scores comparing three Accounting FET grades: $F = 0.66$, $p = .52$. The effect size, calculated using eta squared, was approximately 0.03, which was moderately small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Grade 10 ($M = 17.23$, $SD = 1.90$); Grade 11 ($M = 17.33$, $SD = 2.22$) and Grade 12 ($M = 16.90$, $SD = 1.45$) did not differ significantly. Therefore, the null hypothesis is accepted whereas the research hypothesis is rejected as far as PCK is concerned.

The next sub-section presents findings on the third variable measuring teachers' knowledge integrating ICT in teaching Accounting.

6.2.3. Technological Content Knowledge (TCK)

This section depicts findings of TCK which was selected to measure teachers' knowledge of ICT integration in teaching Accounting. This element consists of four items on teachers' knowledge on the new technologies and skills required to integrate ICT into Accounting curriculum. A Likert Scale of strongly disagree, disagree, neither disagree nor agree, agree and strongly agree was also included for Participants to rank their knowledge of technology and

content. Interviews and observations were added to supplement the quantitative results. T-test and ANOVA analysis were also used to confirm the findings.

Table 6.2.3 Technological Content Knowledge (TCK)

		Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
F1	I can learn technology easily.	1.6	19.4	8.5	48.8	21.7
F2	I keep up with important news about technologies.	13.2	60.5	3.9	21.7	0.8
F3	I have the technical skills I need to use technology.	7.8	58.9	4.7	27.9	0.8
F4	I use the technologies to develop learning activities and learners' tasks.	1.6	14.7	9.3	69.8	4.7

Table 6.2.3 above tabulates findings on how participants comprehend technology and content. Over 60% of participants admitted that they can easily learn technology. They believe that exposure to a variety of features and applications is high and they frequently make attempts to use them, practice, and search for information to assist them in learning to use ICTs. However, a moderate percentage of 20.4% denied it. During the interviews, participants affirmed that they would not struggle to learn about technology integration. They further asserted that the world is transforming to technology use and they are adjusting to the changes. The participant who disagreed stated that lack of personal technical gadgets and the lack of ICT support from school management to execute technology skills hindered learning of ICT. Teacher 8 commented:

“I believe I can learn technology easily because we have had technologies such as cell phones and tablets that were introduced to us and we managed to master them then I personally believe we can with more technology we will”.

On the other hand, many participants disagreed that they keep up with important news of technologies (73.7% disagreed). During the interviews, participants affirmed that they wait to be informed about the new technologies or they hear about them via social media. However, a few participants revealed that they are fascinated by technologies, so they do search for new updates and learn about them. Teacher 12 said:

“I am a technical person, so I think it is now always in my mind to keep myself updated about new technologies and software updates. At times I would get notifications from a group of ITs I joined”.

Similarly, a slightly high score of 58.9% of participants denied having the technical skills needed to use technology and only 27.9% of them agreed. Participants disclosed that they have more traditional teaching skills than technical skills to deliver the content of Accounting. Many felt that they have basic technical skills such as typing skills, printing, photocopying and scanning. However, 70% of participants agreed that they use technologies to develop their learning activities and learners’ tasks. This was also affirmed during observations, all learners’ activities showed that technology was used to type and print. Participants also revealed that they combine technology and content through visuals. One participant asserted that in her observations, technologies are mostly used for preparing learning activities and lesson plans. She further stated that in Accounting although the Department provides learners with Accounting exercise books, it is time-consuming for learners to copy the answer sheets to the exercise books; technologies make things easier.

During the interview, participants were asked to share their knowledge of the concept of ICT integration in Accounting. They described it as the ability for teachers to incorporate technology resources to teach Accounting and achieve learning objectives. Teacher 8 defined it as a broad concept that incorporates technology resources, such as laptops, smartphone, sharing of Accounting lessons via WhatsApp, printing material and downloading demonstrations and previous question papers online. Another participant shared a similar definition that ICT integration in Accounting can be referred to the knowledge concerning devices suitable for teaching Accounting classes such as computers to access and capture information or essential records. Learners should also be exposed to devices that facilitate problem-solving and simplifying complex transactions. Teacher 12 added:

“Generally, it means that we start by conditioning learners to technology. We cannot from the word go say we are dealing away with hard copies. Teachers start by having a soft copy of the book and then I share that soft copy with learners so that once we start with the use of technology for example using phones and laptops everyone remains focused and understand. That’s my knowledge on ICT integration”.

The findings above were significant in providing a comprehension regarding teachers’ TCK. T-test and ANOVA results were used to confirm the above findings. The results are reported in tables and accompanied by descriptions.

The t-test depicted the statistics of the groups and provided statistical mean and standard deviation. Independent-Samples t-test was conducted to test the following null hypothesis:

- There is no statistically significant difference between male and female Accounting Teachers in TCK.

The results attest that there is no statistically significant difference between the two groups as sig. (2-tailed) was above .05. This confirms that Accounting teachers’ TCK does not depend on gender.

Table 6.2.3 (A) Group Statistics

A2. Gender		N	Mean	Std. Deviation	Std. Error Mean
I5. Technological Content Knowledge	Female	83	12,1446	2,23679	0,24552
	Male	46	12,3696	2,67797	0,39484

Table 6.2.3 (B) Comparison of Male and Female Accounting Teachers on Technological Content Knowledge (n = 83 females, 46 males)

Variable	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>P</i>	<i>MD</i>	<i>CI</i>	<i>d</i>
Technological Content Knowledge			-0.51	127	0.61	-0.23	-0.10 to 0.65	0.00
Females	12.14	2.24						
Males	12.37	2.68						

In Table 6.2.3 (B) the TCK independent variable indicates no statistically significant difference in the results of female and male Accounting teachers' comprehension. Female teachers reported $M = 12.14$; $SD = 2.24$ and males $M = 12.37$; 2.68 ; for both genders ($df = 127$, $t(127) = -0.51$; $p\text{-value} < 0.61$ and $MD = -0.22$). The Confidence Interval (CI) ranged between -0.10 to 0.65 and eta squared was scored at 0.00 . Since the analysis of the confidence interval reveals that the interval includes 0 (zero), it can be concluded that there was no statistically significant difference between the two groups of Accounting teachers in this study. Further, the null hypothesis is accepted whereas the alternative hypothesis is rejected.

The ANOVA one-way analysis was also conducted to test the following hypotheses:

H_0 : There is no statistically significant difference in the mean of demographic characteristics of Accounting teachers on the understanding of TCK.

H_1 : There is a statistically significant difference in the mean of demographic characteristics of Accounting teachers on the understanding of TCK.

A one-way between-groups analysis of variance was conducted to compare 14 circuits of Accounting teachers on the understanding of TCK. The following results were obtained.

Table 6.2.3 (C) Means and Standard Deviations Comparing 14 circuits on Technological Content Knowledge (n= Phumelela 32; Ndukumbane 11; Durban Central 15; Mbumbulu 7; Chatsworth 7; Mngxenge 8; Durban South 11; Amanzimtoti 11; Merewent 5; Umkhumbane 4; Maphundu 8; Umngeni North 4; Folweni 4; Mafa 2)

Circuits	Technological Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Phumelela	32	12.25	2.27
Ndunkumbane	11	12.36	2.54
Durban Central	15	11.60	2.26
Mbumbulu	7	14.00	2.31
Chatsworth	7	11.29	1.50
Mngxenge	8	12.38	1.69

Durban South	11	13.64	2.16
Amanzimtoti	11	13.36	2.77
Merewent	5	10.20	2.05
Umkhumbane	4	12.50	3.70
Maphundu	8	11.75	1.75
Umnjeni North	4	12.75	2.22
Folweni	4	9.25	1.90
Mafa	2	9.50	0.71

Table 6.2.3 (D) One-Way Analysis of Variance Summary Table Comparing 14 circuits on Technological Content Knowledge (n= Phumelela 32; Ndukumbane 11; Durban Central 15; Mbumbulu 7; Chatsworth 7; Mngxenge 8; Durban South 11; Amanzimtoti 11; Merewent 5; Umkhumbane 4; Maphundu 8; Umnjeni North 4; Folweni 4; Mafa 2)

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Content Knowledge						
Between groups	13	144,641	11,126	2.17	0.02	0.20
Within groups	115	589,840	5,129			
Total	128	734,481				

Concerning TCK results above, there was a statistically significant difference at the $p < .05$ level in the scores comparing 14 circuits: $F = 2.17$, $p = .02$. However, the statistically significant difference does not tell which groups have the difference even after consulting the multiple comparison table (no asterisks). The effect size, calculated using eta squared, was 0.20, which was relatively large effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Mbumbulu ($M = 14.00$, $SD = 2.31$); differed significantly with Durban South ($M = 13.64$, $SD = 2.16$); Amanzimtoti ($M = 13.36$, $SD = 2.77$); Umnjeni North ($M = 12.75$, $SD = 2.22$); Umkhumbane ($M = 12.50$, $SD = 3.70$), Mngxenge ($M = 12.38$, $SD = 1.69$); Ndukumbane ($M = 12.36$, $SD = 2.54$); Phumelela ($M = 12.25$, $SD = 2.27$).

The mean difference was between 0.64 and 1.80. This means that teachers in the above circuits revealed a better understanding of TCK. However, Maphundu ($M = 11.75$, $SD = 1.75$); Durban

Central ($M=11.60$, $SD=2.26$); Chatsworth ($M=11.29$, $SD=1.50$); Merewent ($M=10.20$, $SD=2.05$); Mafa ($M=9.50$, $SD=0.71$) and Folweni ($M=9.50$, $SD=0.71$) did not differ significantly. Thus, the null hypothesis is rejected whereas the research hypothesis is accepted as far as TCK is concerned.

Further, a one-way between-groups analysis of variance was also conducted to compare the four age groups of Accounting teachers on the understanding of TCK. The findings are presented below.

Table 6.2.3 (E) Means and Standard Deviations Comparing four age groups of Accounting teachers (n= 22-30 years old 28; 31-40 years old 54; 41-50 years old 37; 51-60 years old 10).

Age	Technological Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
22-30 years old	28	12.21	2.10
31-40 years old	54	12.07	2.58
41-50 years old	37	12.73	2.40
51-60 years old	10	11.20	1.93

Table 6.2.3 (F) One-Way Analysis of Variance Summary Table Comparing four age groups of Accounting teachers (n= 22-30 years old 28; 31-40 years old 54; 41-50 years old 37; 51-60 years old 10).

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Content Knowledge						
Between groups	3	21,165	7,055	1.24	0.30	0.03
Within groups	125	713,315	5,707			
Total	128	734,481				

Pertaining to the TCK results above, there was no statistically significant difference at the $p<.05$ level in the scores comparing four age groups: $F=1.24$, $p=.30$. The effect size, calculated using eta squared, was approximately 0.03, this was a slightly small effect. Post-hoc

comparisons using Tukey HSD test indicated that the mean scores for 22-30 years old ($M=12.21$, $SD=2.10$); 31-40 years ($M=12.07$, $SD=2.58$); 41-50 years old ($M=12.73$, $SD=2.40$) and 51-60 years old ($M=11.20$, $SD=1.93$) did not differ significantly. Therefore, the null hypothesis is accepted whereas the research hypothesis is rejected as far as TCK is concerned.

In addition, a one-way between-groups analysis of variance was also conducted to compare three qualifications for Accounting teachers on TCK.

Table 6.2.3 (G) Means and Standard Deviations Comparing Teaching Qualifications of Accounting Teachers (n= Bachelors Degree 83; Honours 39; Masters Degree 7)

Teaching Qualifications	Technological Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Bachelors Degree	83	12.27	2.39
Honours Degree	39	11.92	2.33
Masters Degree	7	13.43	2.70

Table 6.2.3 (H) One-Way Analysis of Variance Summary Table Comparing Teaching Qualifications of Accounting Teachers (n= Bachelors Degree 83; Honours 39; Masters Degree 7)

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Content Knowledge						
Between groups	2	13,828	6,914	1.21	0.30	0.02
Within groups	126	720,652	5,719			
Total	128	734,481				

TCK findings confirmed that there was no statistically significant difference at the $p<.05$ level in the scores comparing three qualifications of Accounting teachers: $F=1.21$, $p=.30$. The effect size, calculated using eta squared, was approximately 0.02, which was relatively small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Bachelors degree ($M=12.27$, $SD=2.39$); Honours ($M=11.92$, $SD=2.33$) and Masters degree ($M=13.43$,

$SD=2.70$) did not differ significantly. Thus, the null hypothesis is accepted whereas the research hypothesis is rejected as far as TCK is concerned.

A one-way between-groups analysis of variance was also conducted to compare six teaching experiences of Accounting teachers on TCK.

Table 6.2.3 (I) Means and Standard Deviations Comparing Accounting Teachers Teaching Experience (n= 1-5 years 3; 6-10 years 26; 11-15 years 46; 16-20 years 33; 21-25 years 14; 26 + years 7)

Teaching Experience	Technological Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
1-5 years	3	11.00	1.73
6-10 years	26	11.92	2.45
11-15 years	46	12.09	2.57
16-20 years	33	12.79	2.34
21-25 years	14	12.21	2.39
26 + years	7	12.14	1.46

Table 6.2.3 (J) One-Way Analysis of Variance Summary Table Comparing Table 17a: Means and Standard Deviations Comparing Accounting Teachers Teaching Experience (n= 1-5 years 1; 6-10 years 28; 11-15 years 46; 16-20 years 33; 21-25 years 14; 26 + years 7)

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Content Knowledge						
Between groups	5	18,253	3,651	0.63	0.68	0.02
Within groups	123	716,228	5,823			
Total	128	734,481				

Concerning TCK, analysis shows there is no statistically significant difference at the $p<.05$ level in the scores comparing six categories of teaching experiences of Accounting teachers: $F=0.63$, $p=.68$. The effect size, calculated using eta squared, was approximately 0.02, which

was moderately small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores 1-5 years ($M=11.00$, $SD=1.73$); 6-10 years ($M=11.92$, $SD=2.45$); 11-15 years ($M=12.09$, $SD=2.57$); 16-20 years ($M=12.79$, $SD=2.34$); 21-25 years ($M=12.21$, $SD=2.39$) and 26+ years ($M=12.14$, $SD=1.46$) do not differ significantly. Therefore, the null hypothesis is accepted whereas the research hypothesis is rejected as far as TCK is concerned.

A one-way between-groups analysis of variance was also conducted to compare four teaching positions of Accounting teachers on TCK.

Table 6.2.3 (K) Means and Standard Deviations Comparing Teaching Positions of Accounting teachers (n=Post level 1 86; Departmental head 35; Deputy principal 4; Principal 4)

Teaching positions	Technological Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Post level 1	86	12.20	2.43
Departmental head	35	12.26	2.49
Deputy principal	4	12.75	2.50
Principal	4	12.00	0.82

Table 6.2.3 (M) One-Way Analysis of Variance Summary Table Comparing Teaching Positions of Accounting teachers (n=Post level 1 86; Departmental head 35; Deputy principal 4; Principal 4)

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Content Knowledge						
Between groups	3	1,405	0,468	0.08	0.97	0.01
Within groups	125	733,075	5,865			
Total	128	734,481				

Concerning TCK, there is no statistically significant difference at the $p<.05$ level in the scores comparing four teaching positions of Accounting teachers: $F=0.08$, $p=.97$. The effect size, calculated using eta squared, was approximately 0.01, which was moderately small effect. Post-

hoc comparisons using Tukey HSD test indicated that the mean scores for Post Level 1 ($M=12.20$, $SD=2.43$); Departmental Head ($M=12.26$, $SD=2.49$); Deputy Principal ($M=12.75$, $SD=2.50$) and Principal ($M=12.00$, $SD=0.82$) did not differ significantly. Thus, the null hypothesis is accepted whereas the research hypothesis is rejected as far as TCK is concerned.

A one-way between-groups analysis of variance was also conducted to compare the three school quintiles of Accounting teachers on TCK.

Table 6.2.3 (M) Means and Standard Deviations Comparing School Quintiles (n= 83 Quintile 3; 21 Quintile 4; 25 Quintile 5)

School quintiles	Technological Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Quintile 3	83	12.12	2.32
Quintile 4	21	12.10	2.61
Quintile 5	25	12.68	2.51

Table 6.2.3 (N) One-Way Analysis of Variance Summary Table Comparing School Quintiles n= 83 Quintile 3; 21 Quintile 4; 25 Quintile 5)

Source	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Content Knowledge						
Between groups	2	6,436	3,218	0.56	0.57	0.01
Within groups	126	728,045	5,778			
Total	128	734,481				

The tables above confirm that there is no statistically significant difference at the $p<.05$ level in the scores comparing the three school quintiles: $F=0.56$, $p=.57$. The effect size, calculated using eta squared, was approximately 0.01, which was relatively small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for quintile 3 ($M=12.12$, $SD=2.32$); quintile 4 ($M=12.10$, $SD=2.61$) and quintile 5 ($M=12.68$, $SD=2.51$) did not differ

significantly. Therefore, the null hypothesis is accepted whereas the research hypothesis is rejected.

A one-way between-groups analysis of variance was also conducted to compare three Accounting FET grades on TCK.

Table 6.2.3 (O) Means and Standard Deviations Comparing for Grades (n= 40 Grade 10; 40 Grade 11; 49 Grade 12)

Grades	Technological Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Grade 10	40	12.23	2.02
Grade 11	40	11.80	2.13
Grade 12	49	12.57	2.84

Table 6.2.3 (P) One-Way Analysis of Variance Summary Table Comparing Grades (n= 40 Grade 10; 40 Grade 11; 49 Grade 12)

Source		<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Content Knowledge							
	Between groups	3	21,165	7,055	1.15	0.32	0.03
	Within groups	125	713,315	5,707			
	Total	128	734,481				

Concerning TCK, there is no statistically significant difference at the $p < 05$ level in the scores comparing three Accounting FET grades: $F = 1.15$, $p = .32$. The effect size, calculated using eta squared, was approximately 0.03, which was moderately small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Grade 10 ($M = 12.23$, $SD = 2.02$); Grade 11 ($M = 11.80$, $SD = 2.13$) and Grade 12 ($M = 12.57$, $SD = 2.84$) did not differ significantly. Therefore, the null hypothesis is accepted whereas the research hypothesis is rejected as far as TCK is concerned.

The next section provides findings on the second theme to answer the second research question.

6.3. TEACHERS' PRACTICES OF INTEGRATING ICT IN TEACHING ACCOUNTING

This section presents findings of three elements of TPACK that were selected with the aim of answering the second research question. The question is: How do Accounting teachers integrate ICT in teaching Accounting in Umlazi District? The selected elements are PK, TPK and TPACK. Each of these elements provides information on teachers' practices of integrating ICT in teaching Accounting. In addition, a Likert Scale is used to analyse participants' responses. The findings are presented in numerical tables and qualitative data is used to support the results. Furthermore, T-test and ANOVA analysis are used to confirm the findings.

6.3.1. Pedagogical Knowledge (PK)

This section illustrates findings on Accounting teachers' practices in the instructional process, assessing learners' performance, adapting to teaching styles and multiple ways of learning in Accounting. Seven statements were included, and Participants were requested to indicate their responses on a Likert Scale of strongly disagree, disagree, neither disagree nor agree, agree and strongly agree. Interview responses were used to support the quantitative findings and were confirmed by observations.

Table 6.3.1 Pedagogical Knowledge (PK)

		Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
C1	I know how to assess learners' performance in a classroom.	0	0	0	68.2	31.6
C2	I can adapt my teaching based on what learners currently understand or do not understand.	0	0	0.8	65.1	34.1
C3	I can adapt my teaching style to different learners	0	0	0.8	62.0	37.2
C4	I can assess learner learning in multiple ways.	0	0	0	53.5	46.5
C5	I can use a wide range of teaching approaches in a classroom setting.	0	0	0	61.2	38.8

C6	I am familiar with common learner understanding and misconceptions.	0	0	0	55.8	44.2
C7	I know how to organise and maintain classroom management.	0	0	0	57.4	42.6

The overall findings in Table 6.3.1 give a positive overview of participants' responses on Accounting content and pedagogy. It is revealed that participants have good instructional practice knowledge and skills. This is evident in the fact that on all items of this element participants agreed and none disagreed. All participants agreed that they know how to assess learners' performance in a classroom (100% agree). In the interviews, participants were asked to share how they assess their learners' performance in Accounting. They stated the following, prior knowledge check through questioning or short tests, class activities during their instructional process, homework, assignments, projects, formative and summative assessment. Some participants added that there is a tracking performance tool they use to track learners' performance and it therefore assists them in assessing learners.

All participants announced that Accounting is a practical subject that requires learners to be assessed after every instructional practice. Thus, they fully comprehend various ways to assess learners in Accounting. Participants made it clear that in the avenues of assessing learners' performance, technology plays a huge role. They gave the example of formal and informal tests where they are assisted by technology to access question papers and memoranda and make copies. During the observations, learners in all observed lessons had hard copies of question papers and answer sheets, which confirmed that teachers use technology to assess learners. In another observed lesson, the teacher had a PowerPoint presentation and was able to refer to multiple of documents while teaching. She navigated from slides to question papers to an answer sheet and to a whiteboard at once. This is what the participants announced:

"I know how to assess my learners' performance in Accounting, I first teach them the content and before teaching that content every time I begin a lesson by checking their prior knowledge it helps to assess their level of understanding before I teach. I use class tests every week as it helps them

study and perform better in the exam. I use a laptop and a printer for these tasks". (Teacher 1)

Teacher 8 uses various ways to assess her learners such as role play, class activities, homework and informal tests normally marked the following day and informal tests. She further alluded that she uses technology to search for innovative and creative ideas "to assess my learners". Furthermore, Teacher 6 said:

"In my teaching, I am more focused on the assessment as I believe quality assessment develops learners' understanding and performance. I drill them on content and I use a laptop to show learners certain adjustments and explanations".

Participants were asked why they are using technology to assess learners. Eighty percent (80%) disclosed that Accounting requires a lot of administration and contains massive amounts of content which is time-consuming to write on the chalkboard. Therefore, technology saves them time as they would only have to print papers and assess learners. Some mentioned that printing and photocopying is something they are confident to do every day and they have good access to devices so they assess learners with technology in that manner. Regarding the statement "I can adapt my teaching based on what learners currently understand or do not understand", a positive trend was also reported (over 90% agreed). During the interview, some participants encouraged checking learners' prior knowledge before teaching. This allows a teacher to build on existing knowledge, rectify incorrect information and develop new knowledge. Participants also revealed that the type of learners they are dealing with makes them adaptable since every year they deal with learners with different capabilities. In addition, the use of the internet was reported as an important technique teachers use to adapt their teaching.

Findings further indicate that participants strongly understand various methods of teaching strategies and have the ability to use them for different kinds of learners. These include collaborative learning, problem-based learning, constructive learning, inquiry-based learning and project-based learning. Participants believed peer tutoring and learner collaboration in groups or teams are appropriate strategies to teach Accounting curriculum. As a result, during observations a few teachers grouped learners for a task. Participants stated that the content of Accounting is very dynamic; therefore, in each topic they use various teaching strategies and

they are able to adjust them. Participants can assess learning in multiple ways and they are familiar with common learner understanding and with their misconceptions (100% agreed). During the interview, participants conceded that they are fully aware of topics in the content that learners easily understand, and the misconceptions learners have about the content. They admitted that the Department always provides them with reports of learners' misconceptions of Accounting content and recommendations to mitigate those misconceptions.

Lastly, over 50% of participants indicated that they have the ability to manage their classroom and none disagreed. This was also affirmed during observations. In all observed lessons learners were well-behaved and teachers managed their classrooms well. Participants elaborated that learners in Accounting are manageable; teachers apply class rules and model behaviour as strategies for classroom management. T-test and ANOVA analysis were used to supplement the findings above.

Independent-Samples t-test was conducted to test the following null hypothesis:

- There is no statistically significant difference between male and female Accounting Teachers on PK.

T-test findings indicated that there is no statistically significant difference between the two groups as sig. (2-tailed) was above .05. This confirms that Accounting teachers' PK does not differ between the two groups. The group's statistical mean and standard deviation are depicted below.

Table 6.3.1 (A) Group Statistics

A2. Gender		N	Mean	Std. Deviation	Std. Error Mean
I2. Pedagogical Knowledge	Female	83	30,8313	2,56058	0,28106
	Male	46	30,5652	2,30605	0,34001

Table 6.3.1 (B) Comparison of Male and Female Accounting Teachers on Pedagogical Knowledge (n = 83 females, 46 males)

Variable	<i>M</i>	<i>SD</i>	<i>t</i>	<i>Df</i>	<i>P</i>	<i>MD</i>	<i>CI</i>	<i>d</i>

Pedagogical Knowledge			-0.59	127	0.56	0.26	-0.63 to 1.17	0.00
Females	30.83	2.56						
Males	30.56	2.31						

Based on the PK independent variable the statistics for both genders were still the same (83 females and 46 males). Findings reported the same results of no statistically significant difference between Accounting female teachers and male teachers. Females revealed $M=30.83$, $SD= 2.56$ and males $M= 30.57$, $SD = 2.31$. Further, $t (127) = -0.59$, $p<.56$ (two-tailed). The mean difference (MD)= 0.27 and the Confidence Interval (CI) is between -0.63 to 1.17 since zero is included when counting from -0.63 to 1.17 and there is no statistically significant difference between the two groups. Consequently, the null hypothesis is accepted whilst the research hypothesis is rejected. The calculated eta squared = 0.00 which means that the magnitude of the difference between the two genders of Accounting teachers is very small (eta square= 0.00).

A one-way between-groups analysis of variance was also conducted to compare the demographic characteristics of Accounting teachers on PK. ANOVA was done to test the following hypotheses:

H_0 : There is no statistically significant difference in the mean demographic characteristics of Accounting teachers on PK.

H_1 : There is a statistically significant difference in the mean demographic characteristics of Accounting teachers on PK.

The results revealed the following regarding the 14 circuits:

Table 6.3.1 (C) Means and Standard Deviations Comparing 14 circuits on Pedagogical Knowledge (n= Phumelela 32; Ndukumbane 11; Durban Central 15; Mbumbulu 7; Chatsworth 7; Mngxenge 8; Durban South 11; Amanzimtoti 11; Merewent 5; Umkhumbane 4; Maphundu 8; Umngeni North 4; Folweni 4; Mafa 2)

Circuits	Pedagogical Knowledge

	<i>N</i>	<i>M</i>	<i>SD</i>
Phumelela	32	31.53	2.59
Ndunkumbane	11	30.64	2.01
Durban Central	15	31.00	2.62
Mbumbulu	7	31.00	3.16
Chatsworth	7	30.86	2.85
Mngxenge	8	31.25	1.91
Durban South	11	30.45	2.11
Amanzimtoti	11	29.45	2.30
Merewent	5	30.00	2.12
Umkhumbane	4	29.50	1.73
Maphundu	8	31.00	2.93
Umnjeni North	4	31.25	2.87
Folweni	4	28.75	1.50
Mafa	2	28.00	0.00

Table 6.3.1 (D) One-Way Analysis of Variance Summary Table Comparing 14 circuits on Pedagogical Knowledge (n= Phumelela 32; Ndunkumbane 11; Durban Central 15; Mbumbulu 7; Chatsworth 7; Mngxenge 8; Durban South 11; Amanzimtoti 11; Merewent 5; Umkhumbane 4; Maphundu 8; Umnjeni North 4; Folweni 4; Mafa 2)

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Pedagogical Knowledge						
Between groups	13	84,213	6,478	0.07	0.39	0.11
Within groups	115	694,826	6,042			
Total	128	779,039				

Concerning PK, results confirm that there was no statistically significant difference at the $p < 0.5$ level in the scores comparing the 14 circuits: $F = 0.07$; $p = .39$. The effect size, calculated using eta squared, was approximately 0.11, which was moderate effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Phumelela ($M = 31.53$, $SD = 2.59$); Ndunkumbane ($M = 30.64$, $SD = 2.01$); Durban Central ($M = 31.00$, $SD = 2.62$); Mbumbulu

($M=31.00$, $SD=3.16$); Chatsworth ($M=30.86$, $SD=2.85$); Mngxenge ($M=31.25$, $SD=1.95$); Durban South ($M=30.45$, $SD=2.11$); Amanzimtoti ($M=29.45$, $SD=2.30$); Merewent ($M=30.00$, $SD=2.12$); Umkhumbane ($M=29.50$, $SD=1.73$); Maphundu ($M=31.00$, $SD=2.93$); Umngeni North ($M=31.25$, $SD=2.87$); Folweni ($M=28.75$, $SD=1.50$) and Mafa ($M=28.00$, $SD=0.00$) did not differ significantly. As a result, the null hypothesis is accepted whereas the research hypothesis is rejected concerning PK.

A one-way between-groups analysis of variance was also conducted to compare the four age groups of Accounting teachers on the understanding of PK. The tables provide the findings.

Table 6.3.1 (E) Means and Standard Deviations Comparing four age groups of Accounting teachers (n= 22-30 years old 28; 31-40 years old 54; 41-50 years old 37; 51-60 years old 10).

Age	Pedagogical Knowledge		
	<i>n</i>	<i>M</i>	<i>SD</i>
22-30 years old	28	31.36	2.22
31-40 years old	54	30.61	2.47
41-50 years old	37	30.59	2.70
51-60 years old	10	30.20	1.48

Table 6.3.1 (F) One-Way Analysis of Variance Summary Table Comparing four age groups of Accounting teachers (n= 22-30 years old 28; 31-40 years old 54; 41-50 years old 37; 51-60 years old 10).

Source		<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Pedagogical Knowledge							
	Between groups	3	15,258	5,086	0.83	0.48	0.02
	Within groups	125	763,781	6,110			
	Total	128	779,039				

With regards to PK, results confirmed that there was no statistically significant difference at the $p<.05$ level in the scores comparing the four age groups: $F= 0.83$, $p=.48$. The effect size,

calculated using eta squared, was approximately 0.02, which was a relatively small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for 22-30 years old ($M=31.36$, $SD=2.22$); 31-40 years old ($M=30.61$, $SD=2.47$); 41-50 years old ($M=30.59$, $SD=2.70$); and 51-60 years old ($M=30.20$, $SD=1.48$) did not differ significantly. As a result, the null hypothesis is accepted whereas the research hypothesis is rejected as far as PK is concerned.

In addition, a one-way between-groups analysis of variance was also conducted to compare three qualifications for Accounting teachers on PK.

Table 6.3.1 (G) Means and Standard Deviations Comparing Teaching Qualifications of Accounting Teachers (n= Bachelors Degree 83; Honours 39; Masters Degree 7)

Teaching Qualifications	Pedagogical Knowledge		
	<i>n</i>	<i>M</i>	<i>SD</i>
Bachelors Degree	83	30.60	2.54
Honours Degree	39	30.87	2.23
Masters Degree	7	31.57	2.94

Table 6.3.1 (H) One-Way Analysis of Variance Summary Table Comparing Teaching Qualifications of Accounting Teachers (n= Bachelors Degree 83; Honours 39; Masters Degree 7)

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Pedagogical Knowledge						
Between groups	2	7,086	3,543	0.58	0.56	0.01
Within groups	126	771,953	6,127			
Total	128	779,039				

The above tables confirmed that there was no statistically significant difference at the $p<.05$ level in the scores comparing the three qualifications of Accounting teachers: $F= 0.58$, $p=.56$. The effect size, calculated using eta squared, was approximately 0.01, which was moderately small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for

Bachelors degree ($M=30.60$, $SD=2.54$); Honours ($M=30.87$, $SD=2.23$); and Masters degree ($M=31.57$, $SD=2.94$) did not differ significantly. Thus, the null hypothesis is accepted whereas the research hypothesis is rejected for PK.

Furthermore, a one-way between-groups analysis of variance was also conducted to compare the six teaching experiences of Accounting teachers on PK.

Table 6.3.1 (I) Means and Standard Deviations Comparing Accounting Teachers Teaching Experience (n= 1-5 years 3; 6-10 years 26; 11-15 years 46; 16-20 years 33; 21-25 years 14; 26 + years 7)

Teaching experience	Pedagogical Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
1-5 years	3	31.33	1.53
6-10 years	26	30.85	2.57
11-15 years	46	30.76	2.38
16-20 years	33	30.48	2.75
21-25 years	14	31.00	2.63
26 + years	7	30.57	1.72

Table 6.3.1 (J) One-Way Analysis of Variance Summary Table Comparing Table 17a: Means and Standard Deviations Comparing Accounting Teachers Teaching Experience (n= 1-5 years 1; 6-10 years 28; 11-15 years 46; 16-20 years 33; 21-25 years 14; 26 + years 7)

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Pedagogical Knowledge						
Between groups	5	4,661	0,932	0.15	0.98	0.01
Within groups	123	774,378	6,296			
Total	128	779,039				

With regards to PK, findings indicated that there is no statistically significant difference at the $p<.05$ level in the scores comparing six categories of teaching experiences of Accounting

teachers: $F=0.15$, $p=.98$. The effect size, calculated using eta squared, was approximately 0.01, which was moderately small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for 1-5 years ($M=31.33$, $SD=1.53$); 6-10 years ($M=30.85$, $SD=2.57$); 11-15 years ($M=30.76$, $SD=2.38$); 16-20 years ($M=30.48$, $SD=2.75$); 21-25 years ($M=31.00$, $SD=2.63$) and 26+ years ($M=30.57$, $SD=1.72$) did not differ significantly. Thus, the null hypothesis is accepted whereas the research hypothesis is rejected as far as PK is concerned.

Also, a one-way between-groups analysis of variance was also conducted to compare four teaching positions of Accounting teachers on PK.

Table 6.3.1 (K) Means and Standard Deviations Comparing Teaching Positions of Accounting teachers (n=Post level 1 86; Departmental head 35; Deputy principal 4; Principal 4)

Teaching positions	Pedagogical Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Post level 1	86	30.80	2.51
Departmental head	35	30.48	2.45
Deputy principal	4	30.75	1.50
Principal	4	31.50	3.11

Table 6.3.1 (L) One-Way Analysis of Variance Summary Table Comparing Teaching Positions of Accounting teachers (n=Post level 1 86; Departmental head 35; Deputy principal 4; Principal 4)

Source	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Pedagogical Knowledge						
Between groups	3	4,906	1,635	0.26	0.85	0.01
Within groups	125	774,132	6,193			
Total	128	779,039				

Concerning PK, findings above support that there is no statistically significant difference at the $p<.05$ level in the scores comparing four teaching positions of Accounting teachers: $F=0.26$,

$p=.85$. The effect size, calculated using eta squared, was approximately 0.01, which was relatively small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Post Level 1 ($M=30.80$, $SD=2.51$); Departmental Head ($M=30.48$, $SD=2.45$); Deputy Principal ($M=30.75$, $SD=1.50$) and Principal ($M=31.50$, $SD=3.11$) did not differ significantly. Thus, the null hypothesis is accepted whereas the research hypothesis is rejected as far as PK is concerned.

A one-way between-groups analysis of variance was also conducted to compare three school quintiles of Accounting teachers on PK.

Table 6.3.1 (M) Means and Standard Deviations Comparing School Quintiles (n= 83 Quintile 3; 21 Quintile 4; 25 Quintile 5)

School quintiles	Pedagogical Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Quintile 3	83	30.84	2.49
Quintile 4	21	30.43	2.71
Quintile 5	25	30.64	2.23

Table 6.3.1 (N) One-Way Analysis of Variance Summary Table Comparing School Quintiles n= 83 Quintile 3; 21 Quintile 4; 25 Quintile 5)

Source		<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Pedagogical Knowledge							
	Btween groups	2	3,172	1,586	0.26	0.77	0.00
	Within groups	126	775,867	6,158			
	Total	128	779,039				

The above tables confirms that there is no statistically significant difference at the $p<.05$ level in the scores comparing the three school quintiles: $F=0.26$, $p=.77$. The effect size, calculated using eta squared, was approximately 0.00, which was moderately small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for quintile 3 ($M=30.84$, $SD=2.49$); quintile 4 ($M=30.43$, $SD=2.71$) and quintile 5 ($M=30.64$, $SD= 2.23$) did not differ

significantly. Therefore, the null hypothesis is accepted whereas the research hypothesis is rejected.

Lastly, a one-way between-groups analysis of variance was also conducted to compare three Accounting FET grades on PK.

Table 6.3.1 (O) Means and Standard Deviations Comparing for Grades (n= 40 Grade 10; 40 Grade 11; 49 Grade 12)

Grades	Pedagogical Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Grade 10	40	30.90	2.09
Grade 11	40	30.68	2.67
Grade 12	49	30.65	2.62

Table 6.3.1 (P) One-Way Analysis of Variance Summary Table Comparing Grades (n= 40 Grade 10; 40 Grade 11; 49 Grade 12)

Source		<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Pedagogical Knowledge							
	Between groups	3	15,258	5,086	0.13	0.88	0.01
	Within groups	125	763,781	6,110			
	Total	128	779,039				

Regarding PK, findings also confirm that there is no statistically significant difference at the $p < .05$ level in the scores comparing three Accounting FET grades: $F = 0.13$, $p = .16$. The effect size, calculated using eta squared, was approximately 0.01, which was moderately small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Grade 10 ($M = 30.90$, $SD = 2.09$); Grade 11 ($M = 30.68$, $SD = 2.67$) and Grade 12 ($M = 30.65$, $SD = 2.62$) did not differ significantly. As a result, the null hypothesis is accepted whereas the research hypothesis is rejected as far as PK is concerned.

The sub-section below presents findings of the second TPACK element selected to provide data on teachers' practices of ICT integration in teaching Accounting.

6.3.2. Technological Pedagogical Knowledge (TPK)

This section presents findings on teachers' practices of technologies in instructional practices, adapting to the use of technologies in instructional practices and the use of strategies that combine content, technologies, and instructional approaches. Participants were requested to indicate their responses on a Likert Scale of strongly disagree, disagree, neither disagree nor agree, agree and strongly agree. They were also asked about this during the interview and findings were confirmed during observations. In addition, T-test and ANOVA inferential statistics analysis was used to confirm the findings.

Table 6.3.2 Technological Pedagogical Knowledge (TPK)

		Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
E1	I can choose technologies that enhance the teaching approaches for a lesson.	0.8	30.2	3.9	62.0	3.1
E2	I can choose technologies that enhance learners' learning for a lesson.	0.8	29.5	4.7	60.5	4.7
E3	My teaching profession caused me to think more deeply about how technology could influence the teaching approaches I use in my classroom.	1.6	24.8	5.4	65.1	3.1
E4	I am thinking critically about how to use technology in my classroom.	3.1	30.2	6.2	54.3	6.2
E5	I can adapt the use of the technologies that I am learning about to different teaching activities	0	20.2	3.1	72.1	4.7
E6	I can select technologies to use in my classroom that enhance what I teach, how I teach, and how learners learn.	0	33.3	3.9	58.9	3.9

E7	I can use strategies that combine content, technologies, and teaching approaches that I learn about in my coursework in my classroom	3.1	34.9	7.8	51.9	2.3
E8	I can provide leadership in helping others to coordinate the use of content technologies and teaching approaches at my school and/or district.	14.0	56.6	6.2	22.5	0.8
E9	I can choose technologies that enhance the content of a lesson.	3.1	24.0	4.7	64.3	3.9

The findings above (Table 6.3.2) indicate that there is a high percentage of participants who concur that they can select technologies to enhance teaching approaches in the lesson (62% agreed). Participants were asked how they selected those technologies and how those technologies enhanced their teaching approaches. They alluded that they select technologies according to the topics they are teaching and the availability of the technologies in the school. Participants began by stating some teaching approaches they utilise: collaborative learning, problem-based learning, constructive learning, inquiry-based learning and project-based learning. The technologies they said they most select were calculators, laptops, smartphones, tablets and printers. One teacher commented that he uses TikTok to incorporate technology in his teaching of Accounting.

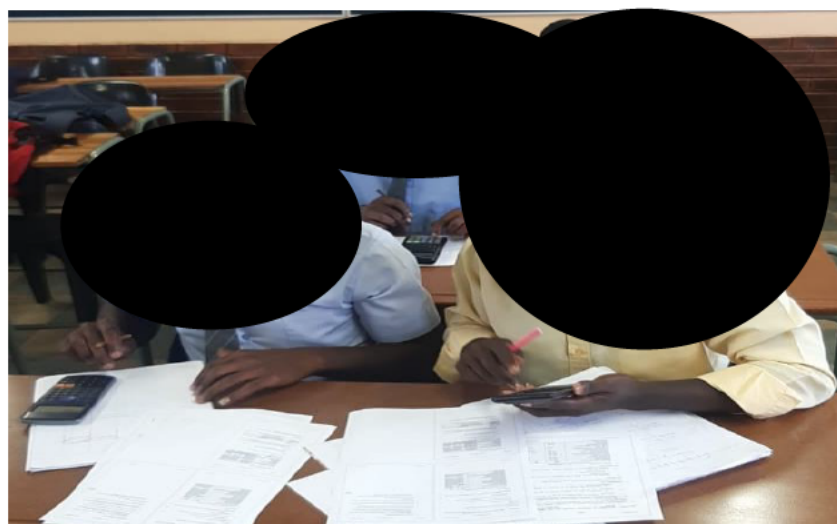
Another participant indicated that she has a small number of 33 learners; therefore, it is easy for her to use collaborative learning using laptops. She explained that she groups learners into groups of six with a laptop whether there is a demonstration she wants learners to watch, or it is a recorded lesson from the internet. She disclosed that learners work well together especially if one uses a unique teaching style. Another participant reported that her technology is a calculator, and she integrates it every day into her teaching in any teaching approach. The participant mentioned that there is a rule that without a calculator, you do not enter the classroom. Teacher 10 had this to say:

“Yes, I can, the approaches I use when teaching Accounting are constructive learning and problem-based learning. This is because of

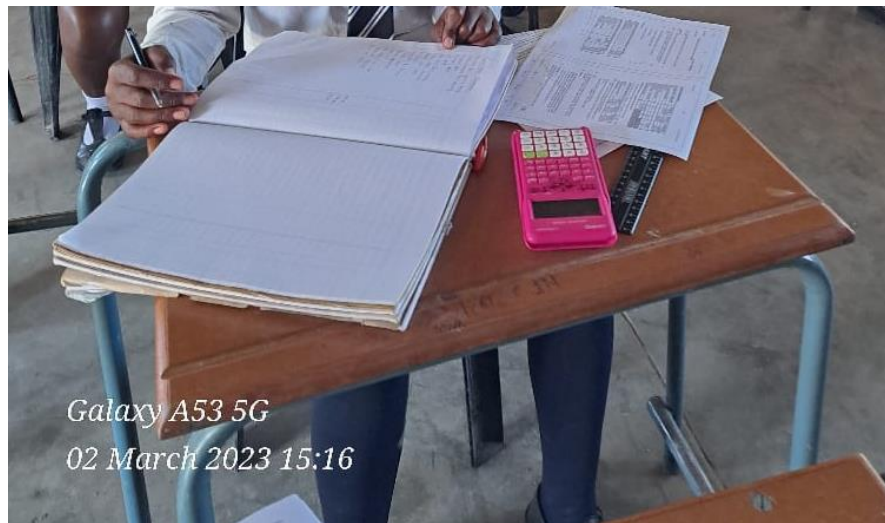
Accounting curriculum always wants learners to construct knowledge on their own and it always presents problems where learners need to recommend solutions through calculations. I use visuals and online documents, especially on topics such as companies and partnerships. These technologies enhance my teaching approaches as learners can relate what is in the textbook with what is currently happening in the real world. In other words, they construct advanced knowledge". (Teacher 10)

During the observations, the technology tool that learners used in all observed lessons was a calculator. In one class the teacher allowed learners to write their corrections on an interactive whiteboard, but this occurred in only one school. PowerPoint presentations were observed as another technology teachers incorporate in their classrooms to enhance their teaching approaches. During the follow-up interviews, they confirmed that Microsoft is what they are more capable of incorporating into teaching of Accounting and they rely on it since no training for other software has been introduced to them. As a result, none of the participants spoke about software technologies to teach Accounting. The pictures below were taken during observations to provide evidence of technology tools teachers use for teaching.

Picture 6.3.2.1 Learners using calculator as a technology tool



Picture 6.3.2.2 learners using calculator as a technology tool



Picture 6.3.2.3 Smartphones used for learning in the classroom



Participants also agreed that they can choose technologies that enhance learners' learning for a lesson (above 60% agreed while less than 30% disagreed). Participants were asked how technologies enhance learners' learning. Smartphones and the internet were highly rated technologies teachers use to enhance learners' learning. Participants alluded that the internet assisted learners to explore additional information on each topic being taught. Some participants mentioned that in teaching difficult topics, they will use the internet to enhance learners' learning by giving them projects and assignments that will require them to search and discover more information on the topic. One participant alluded that there are times when she allows learners to bring smartphones into the classroom especially when they are working on

assignments and on Saturdays when they have extra classes and have no access to the printing room.

During one observation, the teacher did not have sufficient copies of a class activity for distribution so he decided to use his tablets to refer to the activity. Another participant added that he sometimes uses smartphones and a tablet for video conferencing with the learners. She reported that fortunately all her learners have access to smartphones and the school has Wi-Fi therefore on weekends they connect to the school Wi-Fi. A few participants concurred that they have found smartphones to be the best technology to enhance learners' learning. Learners love smartphones and they encourage them to learn instead of a thick textbook. When they were asked how they integrate them, teachers said they are more efficient during weekends and holidays. They reported that they would send learners previous question papers and answer books to work and create timetables for discussion. They added that smartphones facilitate access to the internet where learners can search for concepts which they do not understand instead of waiting for the teacher or the lesson. Moreover, a calculator function is also available on the smartphones. Teacher 1 remarked:

“To enhance learners’ learning, I have given my learners projects several times and asked them to make presentations using PowerPoint I was so amazed they could come up with such wonderful presentations. The internet also assists with videos during teaching and learning to enhance learners understanding”.

Teacher 10 also announced:

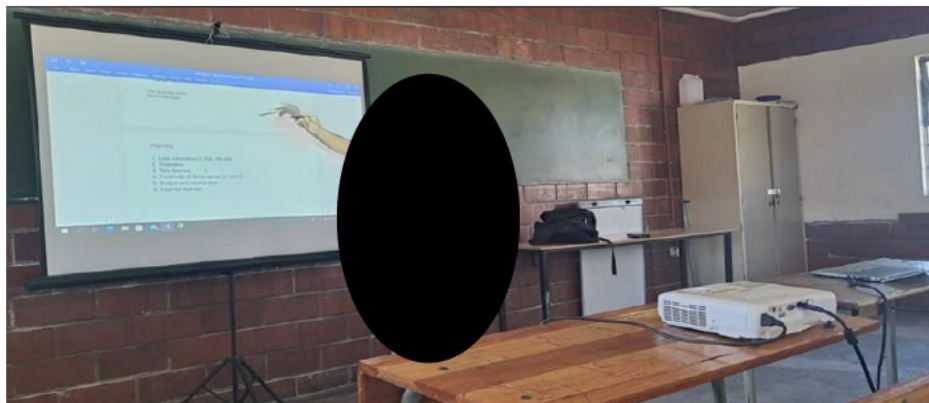
“There is a colleague we used to work with, but he is far so sometimes will make video conferences on certain topics where he would be teaching my learners in that way learners’ learning is enhanced as they see a different method of learning”.

The findings reveal that the teaching profession caused most participants to think more deeply about how technology could influence the teaching approaches they use in their classrooms. This also resulted in participants thinking critically about how to use technology in their classrooms. Participants alluded that the teaching profession is demanding due to the administrative burden, balancing teaching and learning and heavy workloads. Therefore, they

have observed that technology can ease some of their tasks. Furthermore, they commented that the limited experience they have had integrating technology into teaching of Accounting has caused them to think critically about it and how they can integrate it further in the curriculum. Participants admitted that demands of the the 21st century and the 4IR have motivated them to think critically about technology integration in Accounting. One participant added that what made him think more critically about technology in teaching is the benefits software can add to teaching if they were installed and introduced in the curriculum.

During the interviews, participants conceded that they can use strategies that combine content, technologies, and teaching approaches. This was confirmed in the observed lessons; one teacher was teaching a Cash Flow Statement and he used a PowerPoint presentation to make the lesson fascinating. The question paper and answer sheet were projected, and a whiteboard was used to explain the calculations. During that lesson, learners were assessed with a 10-minute task; during corrections the teacher involved learners by allowing them to operate the laptop by navigating to a question paper and asking them to explain their answers on a whiteboard. I observed how learners were motivated by the technology as they all wanted to do the corrections, but time was limited. In another school, the lesson took place in a computer lab that had 12 computers. The teacher was teaching manufacturing. The teacher grouped learners into groups of four since six of the computers were not working. Learners could only refer to a question paper and an answer sheet on the computer. The teacher made the rule that only the group leader could operate the computer. In other schools, some learners functioned as teachers by operating the ICT tools, while learners used their normal exercise books. The few pictures below show how few teachers were using ICT tools in their teaching during observations.

Picture 6.3.2.4 teacher using ICT tools to teach



Picture 6.3.2.5 teachers using ICT tools to teach



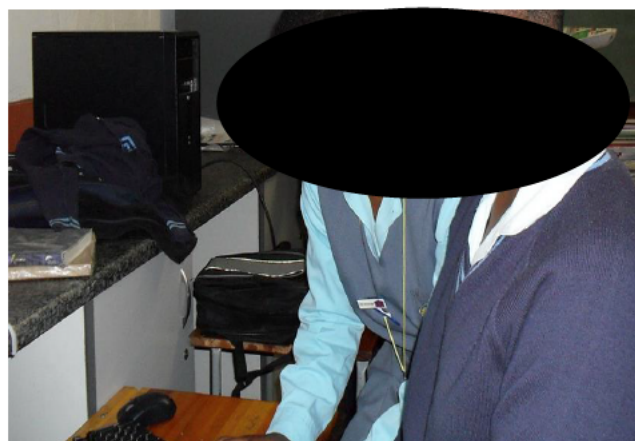
Picture 6.3.2.6 teacher involving learners in teaching and learning through infusing ICT tools



Picture 6.3.2.6 learners learning with OCT tools



Picture 6.3.2.7 learners learning to use computers



Participants in this study indicated that they are unable to provide leadership in helping others to coordinate the use of content technologies and teaching approaches at their school and/or in their district. Nevertheless, it is noteworthy that some participants agreed that they can choose technologies in their teachings and very few disagreed. In addition, 72.1% admitted that they can adapt the use of the technologies that they are learning about to different teaching activities. This indicates that participants can practise the integration of ICT in teaching Accounting to a certain extent.

The findings above were confirmed by T-test and ANOVA analysis which also indicated similar results. Independent-Samples t-test was conducted to test the following null hypothesis:

- There is no statistically significant difference between male and female Accounting Teachers in TCK.

The findings revealed that there is no statistically significant difference between the two groups as sig. (2-tailed) was above .05. The below tables present the t-test analysis.

Table 6.3.2 (A) Group Statistics

A2. Gender		N	Mean	Std. Deviation	Std. Error Mean
I4. Technological Pedagogical Knowledge	Female	83	23,5422	4,94926	0,54325
	Male	46	23,6739	4,82611	0,71157

Table 6.3.2 (B) Comparison of Male and Female Accounting Teachers on Technological Pedagogical Knowledge (n = 83 females, 46 males)

Variable		<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>P</i>	<i>MD</i>	<i>CI</i>	<i>d</i>
Technological Content Knowledge				-0.51	127	0.61	-0.23	-0.1, 0.65	0.00
	Females	12.14	2.24						
	Males	12.37	2.68						

Table 6.3.2 (A) above indicates that the sample consisted of 129 Accounting teachers divided into two groups (females and males). For females, scores were indicated as follows ($M= 23.54$; $SD= 4.95$) while males' scores were ($M=23.69$; $SD= 4.83$). $T=0.88$; p -value scored <0.88 and the mean difference between these teachers was -0.13 . The effect size was very small (eta squared = 0.00). The Confidence Interval and eta squared scores revealed that there is no statistically significant difference between two groups of the Accounting teachers. Therefore, the null hypothesis is accepted whereas the alternative hypothesis is rejected.

A one-way ANOVA analysis between groups of variance was also conducted to compare the demographic characteristics of Accounting teachers on TPK. ANOVA was done to test the following hypotheses:

H_0 : There is no statistically significant difference in the mean on demographic characteristics of Accounting teachers on TPK.

H_1 : There is a statistically significant difference in the mean demographic characteristics of Accounting teachers on TPK.

A one-way ANOVA analysis started by comparing 14 circuits of Accounting teachers on TPK.

Table 6.3.2 (C) Means and Standard Deviations Comparing 14 circuits on Technological Pedagogical Knowledge (n= Phumelela 32; Ndukumbane 11; Durban Central 15; Mbumbulu 7; Chatsworth 7; Mngxenge 8; Durban South 11; Amanzimtoti 11; Merewent 5; Umkhumbane 4; Maphundu 8; Umngeni North 4; Folweni 4; Mafa 2)

Circuits	Technological Pedagogical Knowledge

	<i>N</i>	<i>M</i>	<i>SD</i>
Phumelela	32	23.09	4.57
Ndunkumbane	11	23.37	5.68
Durban Central	15	24.33	5.72
Mbumbulu	7	24.00	5.16
Chatsworth	7	23.29	4.82
Mngxenge	8	24.13	6.06
Durban South	11	24.27	4.71
Amanzimtoti	11	27.27	2.41
Merewent	5	23.00	4.30
Umkhumbane	4	23.50	1.91
Maphundu	8	21.50	3.17
Umnjeni North	4	23.50	5.26
Folweni	4	18.50	6.61
Mafa	2	21.00	9.90

Table 6.3.2 (D) One-Way Analysis of Variance Summary Table Comparing 14 circuits on Technological Content Knowledge (n= Phumelela 32; Ndukumbane 11; Durban Central 15; Mbumbulu 7; Chatsworth 7; Mngxenge 8; Durban South 11; Amanzimtoti 11; Merewent 5; Umkhumbane 4; Maphundu 8; Umnjeni North 4; Folweni 4; Mafa 2)

Source	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Pedagogical Knowledge						
Between groups	13	328,960	25,305	1.07	0.40	0.11
Within groups	115	2728,265	23,724			
Total	128	3057,225				

Findings above confirms that there is no statistically significant difference at the $p < .05$ level in the scores comparing 14 circuits: $F=1.07$, $p=.40$. The effect size, calculated using eta squared, was approximately 0.11, which was moderately medium effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Phumelela ($M=23.09$, $SD=4.57$);

Ndunkumbane ($M=23.37$, $SD=(5.68)$; Durban Central ($M=24.33$, $SD=5.72$); Mbumbulu ($M=24.00$, $SD=5.16$); Chatsworth ($M=23.29$, $SD=4.82$); Mngxenge ($M=24.13$, $SD=6.06$), Durban South ($M=24.27$, $SD=4.71$); Amanzitoti ($M=27.27$, $SD=2.41$); Merewent ($M=23.00$, $SD=4.30$); Umkhumbane ($M=23.50$, $SD=1.91$); Maphundu ($M=21.50$, $SD=3.17$), Umngeni North ($M=23.50$, $SD=5.26$); Folweni ($M=18.50$, $SD=6.61$) and Mafa ($M=21.00$, $SD=9.90$) did not differ significantly. Thus, the null hypothesis is accepted whereas the research hypothesis is rejected as far as TPK is concerned.

In addition, a one-way between-groups analysis of variance was also conducted to compare four age groups of Accounting teachers on TPK.

Table 6.3.2 (E) Means and Standard Deviations Comparing four age groups of Accounting teachers (n= 22-30 years old 28; 31-40 years old 54; 41-50 years old 37; 51-60 years old 10).

Age	Technological Pedagogical Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
22-30 years old	28	24.00	5.92
31-40 years old	54	23.14	5.29
41-50 years old	37	24.14	4.23
51-60 years old	10	22.80	4.71

Table 6.3.2 (F) One-Way Analysis of Variance Summary Table Comparing four age groups of Accounting teachers (n= 22-30 years old 28; 31-40 years old 54; 41-50 years old 37; 51-60 years old 10).

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Pedagogical Knowledge						
Between groups	3	32,486	10,829	0.45	0.72	0.01
Within groups	125	3024,739	24,198			
Total	128	3057,225				

The tables above indicate that there was no statistically significant difference at the $p < .05$ level in the scores comparing the four age groups: $F=0.45$, $p=.72$. The effect size, calculated using eta squared, was approximately 0.01 and which was moderately small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for 22-30 years old ($M=24.00$, $SD=5.92$); 31-40 years old ($M=23.14$, $SD=5.29$); 41-50 years ($M=24.14$, $SD=4.23$) and 51-60 years old ($M=22.80$, $SD=4.71$) did not differ significantly. Thus, the null hypothesis is accepted whereas the research hypothesis is rejected as far as TPK is concerned.

Furthermore, a one-way between-groups analysis of variance was also conducted to compare three qualifications for Accounting teachers on TPK.

Table 6.3.2 (G) Means and Standard Deviations Comparing Teaching Qualifications of Accounting Teachers (n= Bachelors Degree 83; Honours 39; Masters Degree 7)

Teaching Qualifications	Technological Pedagogical Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Bachelors Degree	83	23.02	4.99
Honours Degree	39	24.23	4.50
Masters Degree	7	26.71	4.79

Table 6.3.2 (H) One-Way Analysis of Variance Summary Table Comparing Teaching Qualifications of Accounting Teachers (n= Bachelors Degree 83; Honours 39; Masters Degree 7)

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Pedagogical Knowledge						
Between groups	2	110,921	55,461	2.37	0.10	0.04
Within groups	126	2946,303	23,383			
Total	128	3057,225				

The results above on TPK still affirm that there was no statistically significant difference at the $p < .05$ level in the scores comparing three qualifications of Accounting teachers: $F=2.37$, $p=.10$.

The effect size, calculated using eta squared, was approximately 0.04, which was moderately small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Bachelors degree ($M=23.02$, $SD=4.99$); Honours ($M=24.23$, $SD=4.50$) and Masters degree ($M=26.71$, $SD=4.79$) did not differ significantly. Therefore, the null hypothesis is accepted whereas the research hypothesis is rejected.

A one-way between-groups analysis of variance was also conducted to compare six teaching experiences of Accounting teachers on TPK.

Table 6.3.2 (I) Means and Standard Deviations Comparing Accounting Teachers Teaching Experience (n= 1-5 years 3; 6-10 years 26; 11-15 years 46; 16-20 years 33; 21-25 years 14; 26 + years 7)

Teaching experience	Technological Pedagogical Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
1-5 years	3	28.33	5.13
6-10 years	26	22.85	5.03
11-15 years	46	23.46	4.74
16-20 years	33	23.70	5.41
21-25 years	14	24.36	3.76
26 + years	7	23.14	5.14

Table 6.3.2 (J) One-Way Analysis of Variance Summary Table Comparing Table 17a: Means and Standard Deviations Comparing Accounting Teachers Teaching Experience (n= 1-5 years 1; 6-10 years 28; 11-15 years 46; 16-20 years 33; 21-25 years 14; 26 + years 7)

Source		<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Pedagogical Knowledge							
	Between groups	5	92,719	18,544	0.77	0.57	0.03
	Within groups	123	2964,505	24,102			
	Total	128	3057,225				

The findings above confirm that there is no statistically significant difference at the $p < .05$ level in the scores comparing the six categories of teaching experiences of Accounting teachers: $F = 0.77$, $p = .57$. The effect size, calculated using eta squared, was approximately 0.03, which was relatively small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores 1-5 years ($M = 28.33$, $SD = 5.13$); 6-10 years ($M = 22.85$, $SD = 5.03$); 11-15 years ($M = 23.46$, $SD = 4.74$); 16-20 years ($M = 23.70$, $SD = 5.41$); 21-25 years ($M = 24.36$, $SD = 3.76$) and 26+ years ($M = 23.14$, $SD = 5.14$) did not differ significantly. Hence, the null hypothesis is accepted whereas the research hypothesis is rejected as far as TPK.

A one-way between-groups analysis of variance was also conducted to compare four teaching positions of Accounting teachers on TPK.

Table 6.3.2 (K) Means and Standard Deviations Comparing Teaching Positions of Accounting teachers (n=Post level 1 86; Departmental head 35; Deputy principal 4; Principal 4)

Teaching positions	Technological Pedagogical Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Post level 1	86	23.57	4.69
Departmental head	35	23.94	5.22
Deputy principal	4	22.50	6.81
Principal	4	22.00	5.89

Table 6.3.2 (L) One-Way Analysis of Variance Summary Table Comparing Teaching Positions of Accounting teachers (n=Post level 1 86; Departmental head 35; Deputy principal 4; Principal 4)

Source		<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Pedagogical Knowledge							
	Between groups	3	19,258	6,419	0.26	0.85	0.01
	Within groups	125	3037,967	24,304			
	Total	128	3057,225				

Regarding TPK, findings above there is no statistically significant difference at the $p < .05$ level in the scores comparing the four teaching positions of Accounting teachers: $F = 0.26$, $p = 0.85$. The effect size, calculated using eta squared, was approximately 0.01, which was relatively small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Post Level 1 ($M = 23.57$, $SD = 4.69$); Departmental Head ($M = 23.94$, $SD = 5.22$); Deputy Principal ($M = 22.50$, $SD = 6.81$) and Principal ($M = 22.00$, $SD = 5.89$) did not differ significantly. Therefore, the null hypothesis is accepted whereas the research hypothesis is rejected as far as TPK is concerned.

A one-way between-groups analysis of variance was also conducted to compare three school quintiles of Accounting teachers on TPK.

Table 6.3.2 (M) Means and Standard Deviations Comparing School Quintiles (n= 83 Quintile 3; 21 Quintile 4; 25 Quintile 5)

School quintiles	Technological Pedagogical Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Quintile 3	83	22.76	4.88
Quintile 4	21	23.81	5.10
Quintile 5	25	12.80	1.15

Table 6.3.2 (N) One-Way Analysis of Variance Summary Table Comparing School Quintiles n= 83 Quintile 3; 21 Quintile 4; 25 Quintile 5)

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Pedagogical Knowledge						
Between groups	2	223,446	111,723	4.97	0.01	0.07
Within groups	126	2833,779	22,490			
Total	128	3057,225				

The results depicted above indicate that there is statistically significant difference at the $p < .05$ level in the scores comparing the three school quintiles: $F = 4.97$, $p = .01$. The effect size,

calculated using eta squared, was approximately 0.07, which was moderately large effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for quintile 3 ($M=22.76$, $SD=4.88$) is significantly different from quintile 5 ($M=12.80$, $SD=1.15$). Therefore, the null hypothesis is rejected whereas the research hypothesis is accepted. However, quintile 3 ($M=22.76$, $SD=4.88$) and quintile 4 ($M=23.81$, $SD=5.10$) did not differ significantly.

Lastly, a one-way between-groups analysis of variance was also conducted to compare three Accounting FET grades on TPK.

Table 6.3.2 (O) Means and Standard Deviations Comparing for Grades (n= 40 Grade 10; 40 Grade 11; 49 Grade 12)

Grades	Technological Pedagogical Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Grade 10	40	23.50	5.17
Grade 11	40	22.63	8.82
Grade 12	49	24.45	4.64

Table 6.3.2 (P) One-Way Analysis of Variance Summary Table Comparing Grades (n= 40 Grade 10; 40 Grade 11; 49 Grade 12)

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Pedagogical Knowledge						
Between groups	3	32,486	10,829	1.56	0.22	0.01
Within groups	125	3024,739	24,198			
Total	128	3057,225				

The above results also confirmed that there is no statistically significant difference at the $p < 0.05$ level in the scores comparing the three Accounting FET grades: $F= 1.56$, $p=.22$. The effect size, calculated using eta squared, was approximately 0.01, which was moderately small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for grade 10 ($M=23.50$, $SD=5.17$); grade 11 ($M=22.63$, $SD=8.82$) and ($M=24.45$, $SD=4.64$) did not differ

significantly. Thus, the null hypothesis is accepted whereas the research hypothesis is rejected as far as is TPK concerned.

The next sub-section provides findings of the last element to measure teachers' integration of ICT in teaching Accounting.

6.3.3. Technological Pedagogical and Content Knowledge (TPACK)

This element consisted of three items that were selected to measure teachers' practices on technology, pedagogy, and content to develop appropriate strategies to integrate ICT in Accounting lessons. Participants were requested to indicate their responses on a Likert Scale of strongly disagree, disagree, neither disagree nor agree, agree and strongly agree. Their quantitative findings were supported by interview responses and also confirmed by observations. T-test and ANOVA inferential statistical analysis were also used to confirm the findings.

Table 6.3.3 Technological Pedagogical and Content Knowledge (TPACK)

		Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
H1	I can teach lessons that appropriately combine any Accounting technologies and teaching approaches.	34.1	48.8	3.1	14.0	0
H2	I help my colleagues to understand how to integrate technologies, and teaching approaches in their teaching of Accounting.	36.4	57.4	0.8	5.4	0
H3	I use various approaches with various software to enhance learners' understanding learning of Accounting.	62	36.4	0.8	0	0

The above table (Table 6.3.3) provides an overview that participants' ability to integrate content, pedagogy and Accounting technologies is relatively low. Over 70% denied that they can teach lessons that appropriately combine Accounting technologies and teaching approaches. Similarly, selected participants pronounced that they are unable to assist their colleagues to understand how to integrate technologies, and teaching approaches in their

teaching of Accounting (82.9% disagree). Nevertheless, one participant elaborated that he is part of the Information Technology (IT) committee in his school. Therefore, he assists teachers when they want to use technologies such as laptops and overhead projectors to conduct lessons.

Lastly, the overall findings indicate that all participants disagreed that they have the ability to incorporate various approaches with various software to enhance learners' understanding learning of Accounting (strongly disagree, 62% while disagree 36.4%) and only 0.8% of participants were neutral. During the interview, participants clearly disclosed that they are not exposed to Accounting technologies such as Accounting software. They indicated that they are familiar with the regular technologies; however, they do not incorporate often in teaching of Accounting. During the observations, none of the participants used Accounting software besides PowerPoint. Participants provided clear and creative slides and in another lesson the teacher used a whiteboard when elaborating some transactions. This teacher who also used a YouTube demonstration showed competency in using YouTube applications as the demonstration was short, relevant and very clear to learners who understood the topic.

T-test and ANOVA analysis was also used to support the quantitative and qualitative findings. Independent-Samples t-test was conducted to test the following null hypothesis: there is no statistically significant difference between male and female Accounting Teachers on TPACK. The T-test analysis of the data revealed that there is no statistically significant difference between the two groups as sig. (2-tailed) was above .05. T-test results depicted the statistics of the groups in this study and further provides statistical mean and standard deviation. The results are presented below.

Table 6.3.3 (A) Group Statistics

A2. Gender		N	Mean	Std. Deviation	Std. Error Mean
I7. Technological Pedagogical and Content Knowledge	Female	83	5,1205	1,59571	0,17515
	Male	46	5,0652	1,61110	0,23754

Table 6.3.3 (B) Comparison of Male and Female Accounting Teachers Technological Pedagogical and Content Knowledge (n = 83 females, 46 males)

Variable	<i>M</i>	<i>SD</i>	<i>t</i>	<i>Df</i>	<i>P</i>	<i>MD</i>	<i>CI</i>	<i>d</i>

Technological Pedagogical and Content Knowledge			0.19	127	0.85	0.05	-0.53 to 0.64	0.00
Females	5.12	1.60						
Males	5.07	1.61						

The above tables reveal that females scored $M= 5.12$; SD ; 1.60 and males scored $M= 5.07$; $SD= 1.61$. $t= 0.19$; $MD= 0.06$; $p<0.85$. The degree of the confidence interval was recorded from - 0.53 to 0.64 and the effect size was relatively small at 0.00. After analysing all the seven independent variables with the two groups of females and male teachers in Accounting, it can be concluded that there was no statistically significant difference and the null hypothesis is accepted whereas the alternative hypothesis is rejected.

A one-way ANOVA analysis comparison of demographic characteristics on TPACK obtained similar results when testing the following hypotheses:

H_0 : There is no statistically significant difference in the mean of demographic characteristics of Accounting teachers on the understanding of TPACK.

H_1 : There is a statistically significant difference in the mean of demographic characteristics of Accounting teachers on the understanding of TPACK.

A one-way between-groups analysis of variance first compared 14 circuits of Accounting teachers on the understanding of TPACK. The results of the ANOVA test analysis were reported as follows:

Table 6.3.3 (C) Means and Standard Deviations Comparing 14 circuits on Technological Pedagogical and Content Knowledge (n= Phumelela 32; Ndukumbane 11; Durban Central 15; Mbumbulu 7; Chatsworth 7; Mngxenge 8; Durban South 11; Amanzimtoti 11; Merewent 5; Umkhumbane 4; Maphundu 8; Umngeni North 4; Folweni 4; Mafa 2)

Circuits	Technological Pedagogical and Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Phumelela	32	4.91	1.28

Ndunkumbane	11	6.18	1.99
Durban Central	15	5.00	1.65
Mbumbulu	7	4.71	1.38
Chatsworth	7	5.14	1.68
Mngxenge	8	6.00	2.14
Durban South	11	5.45	2.16
Amanzimtoti	11	5.27	1.68
Merewent	5	3.80	0.45
Umkhumbane	4	4.50	1.29
Maphundu	8	4.63	1.30
Umnjeni North	4	5.25	0.96
Folweni	4	4.50	1.00
Mafa	2	5.00	1.41

Table 6.3.3 (D) One-Way Analysis of Variance Summary Table Comparing 14 circuits on Technological Pedagogical and Content Knowledge (n= Phumelela 32; Ndunkumbane 11; Durban Central 15; Mbumbulu 7; Chatsworth 7; Mngxenge 8; Durban South 11; Amanzimtoti 11; Merewent 5; Umkhumbane 4; Maphundu 8; Umnjeni North 4; Folweni 4; Mafa 2)

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Pedagogical and Content Knowledge						
Between groups	13	36,715	2,824	1.12	0.35	0.11
Within groups	115	288,975	2,513			
Total	128	325,690				

ANOVA results comparing 14 circuits with TPACK confirms that there is no statistically significant difference at the $p < .05$ level in the scores comparing 14 circuits: $F = 1.12$, $p = .35$. The effect size, calculated using eta squared, was approximately 0.11, which was large effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Phumelela ($M = 4.91$, $SD = 1.28$); Ndunkumbane ($M = 6.18$, $SD = 1.99$); Durban Central ($M = 5.00$, $SD = 1.65$); Mbumbulu ($M = 4.71$, $SD = 1.38$); Chatsworth ($M = 5.14$, $SD = 1.68$); Mngxenge ($M = 6.00$, $SD = 2.14$); Durban South ($M = 5.45$, $SD = 2.16$); Amanzimtoti ($M = 5.27$, $SD = 1.68$); Merewent

($M=3.80$, $SD=0.45$); Umkhumbane ($M=4.50$, $SD=1.29$); Maphundu ($M=4.63$, $SD=1.30$); Umngeni North ($M=5.25$, $SD=0.96$); Folweni ($M=4.50$, $SD=1.00$) and Mafa ($M=5.00$, $SD=1.41$) did not differ significantly. Therefore, the null hypothesis is accepted whereas the research hypothesis is rejected as far as TPACK is concerned.

In addition, a one-way between-groups analysis of variance was also conducted to compare the four age groups of Accounting teachers on TPACK.

Table 6.3.3 (E) Means and Standard Deviations Comparing four age groups of Accounting teachers (n= 22-30 years old 28; 31-40 years old 54; 41-50 years old 37; 51-60 years old 10).

Age	Technological Pedagogical and Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
22-30 years old	28	4.68	1.19
31-40 years old	54	5.28	1.72
41-50 years old	37	5.24	1.64
51-60 years old	10	4.80	1.69

Table 6.3.3 (F) One-Way Analysis of Variance Summary Table Comparing four age groups of Accounting teachers (n= 22-30 years old 28; 31-40 years old 54; 41-50 years old 37; 51-60 years old 10).

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Pedagogical and Content Knowledge						
Between groups	3	8,339	2,780	1.10	0.35	0.03
Within groups	125	317,351	2,539			
Total	128	325,690				

The above analysis revealed that there was no statistically significant difference at the $p<.05$ level in the scores comparing four age groups: $F=1.10$, $p=.35$. The effect size, calculated using eta squared, was approximately 0.03 and this was a relatively small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for 22-30 years old ($M=4.68$, $SD=1.19$); 31-40 years old ($M=5.28$, $SD=1.72$); 41-50 years old ($M=5.24$, $SD=1.64$) and 51-60

years ($M=4.80$, $SD=1.69$) did not differ significantly. As a result, the null hypothesis is accepted whereas the research hypothesis is rejected as far as TPACK is concerned

Furthermore, a one-way between-groups analysis of variance was also conducted to compare three qualifications for Accounting teachers on TPACK.

Table 6.3.3 (G) Means and Standard Deviations Comparing Teaching Qualifications of Accounting Teachers (n= Bachelors Degree 83; Honours 39; Masters Degree 7)

Teaching Qualifications	Technological Pedagogical and Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Bachelors Degree	83	5.13	1.64
Honours Degree	39	5.03	1.53
Masters Degree	7	5.14	1.68

Table 6.3.3 (H) One-Way Analysis of Variance Summary Table Comparing Teaching Qualifications of Accounting Teachers (n= Bachelors Degree 83; Honours 39; Masters Degree 7)

Source	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Pedagogical and Content Knowledge						
Between groups	2	0,316	0,158	0.06	0.94	0.00
Within groups	126	325,374	2,582			
Total	128	325,690				

Again the tables above support that there was no statistically significant difference at the $p<.05$ level in the scores comparing the three qualifications of Accounting teachers: $F=0.06$, $p=.94$. The effect size, calculated using eta squared, was approximately 0.00, which was moderately small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Bachelors degree ($M=5.13$, $SD=1.64$), Honours ($M=5.03$, $SD=1.53$) and $M=5.14$, $SD=1.68$) did not differ significantly. Therefore, the null hypothesis is accepted whereas the research hypothesis is rejected as far as TPACK is concerned.

A one-way between-groups analysis of variance was also conducted to compare six teaching experiences of Accounting teachers on TPACK.

Table 6.3.3 (I) Means and Standard Deviations Comparing Accounting Teachers Teaching Experience (n= 1-5 years 3; 6-10 years 26; 11-15 years 46; 16-20 years 33; 21-25 years 14; 26 + years 7)

Teaching Experience	Technological Pedagogical and Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
1-5 years	3	4.00	0.00
6-10 years	26	4.57	1.36
11-15 years	46	5.39	1.76
16-20 years	33	5.39	1.62
21-25 years	14	4.86	1.61
26 + years	7	4.71	0.76

Table 6.3.3 (J) One-Way Analysis of Variance Summary Table Comparing Table 17a: Means and Standard Deviations Comparing Accounting Teachers Teaching Experience (n= 1-5 years 1; 6-10 years 28; 11-15 years 46; 16-20 years 33; 21-25 years 14; 26 + years 7)

Source		<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Pedagogical and Content Knowledge							
	Between groups	5	19,366	3,873	0.56	0.18	0.06
	Within groups	123	306,324	2,490			
	Total	128	325,690				

The above findings on TPACK confirm that there is no statistically significant difference at the $p < .05$ level in the scores comparing six categories of teaching experiences of Accounting teachers: $F=0.56$, $p=.18$. The effect size, calculated using eta squared, was approximately 0.06, which was relatively moderate effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores 1-5 years ($M=4.00$, $SD=0.00$); 6-10 years ($M=4.57$, $SD=1.36$); 11-15 years ($M=5.39$, $SD=1.76$); 16-20 years ($M=5.39$, $SD=1.62$); 21-25 years ($M=4.86$, $SD=1.61$) and 26+

years ($M=4.71$, $SD=0.76$) Therefore, the null hypothesis is accepted whereas the research hypothesis is rejected as far as TPACK is concerned.

A one-way between-groups analysis of variance was also conducted to compare four teaching positions of Accounting teachers on TPACK.

Table 6.3.3 (K) Means and Standard Deviations Comparing Teaching Positions of Accounting teachers (n=Post level 1 86; Departmental head 35; Deputy principal 4; Principal 4)

Teaching positions	Technological Pedagogical and Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Post level 1	86	5.16	1.84
Departmental head	35	4.91	1.95
Deputy principal	4	5.25	1.50
Principal	4	5.25	2.06

Table 6.3.3 (L) One-Way Analysis of Variance Summary Table Comparing Teaching Positions of Accounting teachers (n=Post level 1 86; Departmental head 35; Deputy principal 4; Principal 4)

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Pedagogical and Content Knowledge						
Between groups	3	1,726	0,575	0.22	0.88	0.01
Within groups	125	323,964	2,592			
Total	128	325,690				

Regarding TPACK, results confirm that there is no statistically significant difference at the $p<.05$ level in the scores comparing four teaching positions of Accounting teachers: $F=0.22$, $p=.88$. The effect size, calculated using eta squared, was approximately 0.01, which was moderately small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for Post Level 1 ($M=5.16$, $SD=1.84$); Departmental Head ($M=4.91$, $SD=1.95$); Deputy

Principal ($M=5.25$, $SD=1.50$) and Principal ($M=5.25$, $SD=2.06$) did not differ significantly. Therefore, the null hypothesis is accepted whereas the research hypothesis is rejected.

A one-way between-groups analysis of variance was also conducted to compare three school quintiles of Accounting teachers on TPACK.

Table 6.3.3 (M) Means and Standard Deviations Comparing School Quintiles (n= 83 Quintile 3; 21 Quintile 4; 25 Quintile 5)

School quintiles	Technological Pedagogical and Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Quintile 3	83	5.06	1.43
Quintile 4	21	5.14	1.98
Quintile 5	25	5.20	1.83

Table 6.3.3 (N) One-Way Analysis of Variance Summary Table Comparing School Quintiles n= 83 Quintile 3; 21 Quintile 4; 25 Quintile 5)

Source		<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Pedagogical and Content Knowledge							
	Between groups	2	0,420	0,210	0.08	0.92	0.00
	Within groups	126	325,270	2,582			
	Total	128	325,690				

The above results confirm that there is no statistically significant difference at the $p<.05$ level in the scores comparing the three school quintiles: $F=0.08$, $p=.92$. The effect size, calculated using eta squared, was approximately 0.00 which was relatively small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for quintile 3 ($M=5.06$, $SD=1.43$); quintile 4 ($M=5.14$, $SD=1.98$) and quintile 5 ($M=5.20$ and $SD=1.83$) did not differ significantly. Thus, the null hypothesis is accepted whereas the research hypothesis is rejected.

A one-way between-groups analysis of variance was also conducted to compare three Accounting FET grades on TPACK.

Table 6.3.3 (O) Means and Standard Deviations Comparing for Grades (n= 40 Grade 10; 40 Grade 11; 49 Grade 12)

Grades	Technological Pedagogical and Content Knowledge		
	<i>N</i>	<i>M</i>	<i>SD</i>
Grade 10	40	5.15	1.64
Grade 11	40	4.68	1.44
Grade 12	49	5.41	1.63

Table 6.3.3 (P) One-Way Analysis of Variance Summary Table Comparing Grades (n= 40 Grade 10; 40 Grade 11; 49 Grade 12)

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Eta squared</i>
Technological Pedagogical and Content Knowledge						
Between groups	3	8,339	2,780	2.41	0.09	0.03
Within groups	125	317,351	2,539			
Total	128	325,690				

The above tables confirm that there is no statistically significant difference at the $p < .05$ level in the scores comparing three Accounting FET grades: $F = 0.66$, $p = .52$. The effect size, calculated using eta squared, was approximately 0.03, which was moderately small effect. Post-hoc comparisons using Tukey HSD test indicated that the mean scores for grade 10 ($M = 17.23$, $SD = 1.90$); grade 11 ($M = 17.33$, $SD = 2.22$) and grade 12 ($M = 16.90$, $SD = 1.45$) did not differ significantly. Therefore, the null hypothesis is accepted whereas the research hypothesis is rejected as far as TPACK is concerned.

The above-discussed results reveal that Accounting teachers understand and integrate ICT in teaching Accounting in various techniques. T-test and ANOVA confirmed the results as findings confirm that there was there is no statistically significant difference which means their knowledge and practices do not differ or impact their knowledge and practices. Lastly, the section below presents an analysis of results obtained while measuring the reliability and validity of TPACK. The reliability was measured through the correlation of variables.

6.4. CORRELATION OF VARIABLES

Table 6.4 Correlation of variables

Means, Standard Deviation and Intercorrelations for Pedagogical Knowledge, Content Knowledge, Technological Pedagogical Knowledge, Technological Content Knowledge, Pedagogical Content Knowledge and Technological Pedagogical and Content Knowledge variables (N = 129)

Variable	M	SD	Pedagogical Knowledge	Content Knowledge	Technological Pedagogical Knowledge	Technological Content Knowledge	Pedagogical Content Knowledge	Technological Pedagogical and Content Knowledge
Pedagogical Knowledge	30.74	2.47	--	.237*	0,107	0,027	0,015	-0,141
Content Knowledge	19.96	1.50	.237*	--	0,056	0,026	0,133	-0,029
Technological Pedagogical Knowledge	23.59	4.89	0,107	0,056	--	.305*	0,003	.195*
Technological Content Knowledge	12.22	2.40	0,027	0,026	.305*	--	0,019	0,094
Pedagogical Content Knowledge	17.13	1.85	0,015	0,133	0,003	0,019	--	0,014
Technological Pedagogical and Content Knowledge	5.10	1.60	-0,141	-0,029	.195*	0,094	0,014	--

*. Correlation is significant at the 0.05 level (2-tailed).

The table above (6.4) labelled Means, Standard Deviation and Intercorrelations for PK, CK, TPK, TCK, PCK and TPACK variables. Spearman's rho was utilised since the questionnaire consisted of Likert Scale questions. According to the descriptive statistics *N* is 129 which is

the number of participants in all these seven variables. Table 6.4 above shows that six of the seven ICT variables were significantly correlated ($r = .2$.) which is a small strength according to Cohen's (1988) guidelines. The moderate positive correlation which can be considered a medium according to Cohen (1988) was between TPK and TCK, $r = .31$, $p < .001$. This means that Accounting teachers who have a better understanding of TPK also understand better TCK.

6.5. CHAPTER CONCLUSION

This chapter presented and analysed findings obtained with the aim of answering the second research question. Two themes were presented with an aim to answer the research question, namely, teachers' knowledge of integrating ICT in teaching Accounting and teachers' practices of integrating ICT in teaching Accounting. These themes addressed three subthemes under each theme. Data were presented quantitatively and supplemented by qualitative data and lastly T-test and ANOVA inferential statistics analysis were used to confirm the results. This chapter concluded by presenting correlations of variables.

CHAPTER SEVEN

7. FACTORS INFLUENCING TEACHERS TO INTEGRATE TECHNOLOGIES IN TEACHING ACCOUNTING

7.1. INTRODUCTION

The previous chapter presented, interpreted and analysed findings of data on the second research question using the TPACK elements and inferential statistical analysis. This chapter presents findings obtained with the aim of answering the third research question which is:

- Why do Accounting teachers understand and practice integration of ICT in teaching Accounting the way they do?

It is believed that various factors influence teachers to understand and integrate ICT in teaching Accounting. The model was used to answer this research question as discussed in Chapter four. The UTAUT model provides an understanding of users' intentions and attitudes in adopting and rejecting technologies. Further, it provides four constructs to understand why users decide to use or reject technologies. The four constructs are Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions. As mentioned in Chapters 5 and 6, data analysed and interpreted in this study evolved from the questionnaire (quantitative data) that was designed and utilised to collect data. The questionnaire included 23 items to understand Accounting teachers' intentions, attitudes and influences toward technology usage. The 23 items were grouped under each construct according to their relatedness. Further, the numbering of items in each construct below are according to the questionnaire and how they are populated in SPSS software. Participants were requested to indicate their responses on a Likert Scale of strongly disagree, disagree, neutral, agree, and strongly agree. In addition, qualitative data were used to supplement the quantitative responses. The factors influencing teachers are presented in the discussion of each construct below according to their relatedness. The findings are as follows:

7.1.1. Performance Expectancy

This section presents the findings of the first construct that examined the degree to which an individual believes that using ICTs will improve job performance (teaching and learning). The construct consists of four items that are related to performance expectancy. Participants were

requested to indicate their feelings on a Likert Scale of strongly disagree, disagree, neutral, agree, and strongly agree. In addition, qualitative data were used to supplement the quantitative responses.

Table 7.1.1 Performance Expectancy

NO.	STATEMENT	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
B2	I am glad there are more ICTs these days.	0.8	0.8	0	61.2	37.2
B12	I would like to learn more about ICT.	0	0	5.4	34.9	59.7
B10	If I had spare money, I would buy ICT tools.	11.6	6.2	0.8	45.0	36.4

The table above (7.1.1) depicts findings on teachers' beliefs on the degree to which ICT can improve their job performance in teaching Accounting. Over 95% of Participants are delighted that there are more ICTs these days. Upon the follow-up on these findings via individual interviews, participants admitted their minor integration of technology into teaching has raised their performance in the instructional practice and they believe that greater performance can be attained if ICT is more incorporated into their work. The majority of participants indicated that infusing ICT in the classroom improves the quality of education and offers more opportunities to use more educational media in teaching. Further, they added that ICT facilitates learning better than the traditional teaching method. One participant further alluded that they are glad there are more ICTs to assist in speeding up the progress of teaching the subject since the teacher does not have to write everything on the chalkboard but saves time by projecting work on the screen. As a result, they attempt to incorporate technology with the limited resources they have, in most cases a PowerPoint presentation. Other participants indicated that they are very pleased there are more ICTs these days to lighten some work burdens. They further pronounced that technology makes the subject less theoretical and more practical. Teachers indicated that ICTs are needed in the Accounting classroom since the Accounting profession is based on digitals. Teacher 1 alluded:

“I am glad there are more ICTs to be incorporated into teaching these days, especially in the subject of Accounting. Accounting teachers and learners should understand how to teach and learn Accounting using digitals because in the industries Accounting activities are administered in digitals such as computers or laptops. For instance, in banks Auditing is administered in technology resources, tellers, auditors, and consultants just capture data on the system and work everything on their own, so, yes integration of ICTs in teaching Accounting can increase the performance in teaching”.

In addition, during the interviews, participants mentioned factors that influence them positively to integrate ICT in their teaching of Accounting, namely, improvement of quality of teaching, enhancing creative teaching, creating innovative learning environments, broadening learners' understanding of the content and reducing administrative duties in Accounting instruction. This further improves teachers' performance in teaching and it is useful for teachers to keep abreast of any content changes concerning instruction, assessment, and policy changes in Accounting. Participants alluded that technology brings creativity in learning from the lesson plan to the delivery of the lesson which broadens learners' understanding of the topic. One participant gave an example of Fixed Asset and Manufacturing topics in Accounting, where he described how technology can demonstrate these topics explicitly to learners and that improves the quality of learning. Another participant commended ICT tools for bringing creativity to the subject of Accounting. She pronounced:

“I'm glad there are more technologies these days because I have learned to develop my lesson in a way that will interest learners and even the internet provides ideas on how difficult topics can be made easy for learners.”

(Teacher 6)

The findings reported that Accounting teachers are eager to learn more about ICT (94.6% agreed). During the interviews, they disclosed that they are interested in learning more about ICT as they have found it to be effective in teaching and learning. Similarly, the majority of Participants feel that if they had extra money they would buy ICT tools for themselves (45.0% agree & 36.4% strongly agree): a few disagreed (17.8%). All participants asserted that technology has a positive impact on teaching Accounting and they believe it is an efficient

system to use in teaching Accounting. However, some participants indicated that insufficient ICT resources in their schools impacts negatively on the way they integrate ICT in teaching Accounting. Quantitative data recorded a high percentage (61.3%) on this factor and interviews confirmed the above findings. All participants who were interviewed shared a similar sentiment that in their schools ICT resources are available; however, they are very limited. One participant alluded that in his school they have three laptops, two printing or photocopying machines, one scanner, one overhead projector and one whiteboard. Further, he disclosed that there are no computers or computer labs in his school, which makes it impossible for teachers to integrate ICT into their teaching. On the contrary, another participant commented that in her school ICT tools are available; however, they are not working. This is what the teacher said:

“In my school we have technology resources, we have laptops and tablets which can be enough for one class of 40 learners the problem is 80% of the tablets are not working, they are just in the storeroom and the laptops which were donated for learners are only used by teachers for typing only since many software are not installed on those laptops besides word. So, it is bad.”
(Teacher 8)

Teacher 11 added:

“I think there are a lot of factors that influence us from using ICT in teaching Accounting but in the whole province insufficient resources prevent every teacher from attempting to cooperate with ICT in teaching. Speaking for the Accounting department in my school, we are not using technology because resources are not enough. Having one computer lab with few computers and without a network is impossible to use ICT in my teaching”.

Some participants added that the inaccessibility of ICT tools in schools is also a related factor. Participants admitted that there is limited access to technology resources in their schools. They explained that there are tools they are not allowed to use and the reason they have always been given for limited access is that they cannot operate the resources properly, resulting in their malfunctioning most of the time. Secondly, they are told that they waste resources and thus can only access them through administrative clerks. Further, limited access to Wi-Fi or the internet is a factor participants alluded to under inadequate ICT resources. Participants have restricted

access to the school's Wi-Fi, or the internet password. These facilities are only used by the administrators and School Management Team. Some participants added that in marginalised schools (quintile 2 & 3 schools) scarce resources hinder ICT integration.

Furthermore, on Performance Expectancy, participants added that the content of Accounting in the curriculum does not encourage the integration of technology. The curriculum still refers teachers to textbooks and traditional teaching. Further, activities and instructions on teaching Accounting still limit the incorporation of ICT as they are not updated to infuse technology. One participant disclosed that the content provides teachers with teaching strategies and materials which are contained in a textbook.

The next subsection presents findings on the second construct.

7.1.2. Effort Expectancy

The section below presents findings on the degree of ease associated with the implementation of ICT integration in teaching Accounting. Nine items were provided in this construct and Participants were asked to rank their responses on a Likert Scale of strongly disagree, disagree, neutral, agree, and strongly agree. In addition, interviews and observations were used to confirm the quantitative findings.

Table 7.1.2 Effort Expectancy

NO.	STATEMENT	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
B1	ICTs do not scare me at all.	2.3	3.9	0.8	65.1	27.9
B3	I do not like talking with others about ICT.	64.3	33.3	0	2.3	0
B4	I dislike using ICTs in teaching.	62.0	34.9	0	3.1	0
B8	I do not think I would ever need an ICTs in my classroom.	47.3	51.9	0.8	0	0

B9	I would rather do things by hand than with an ICT.	47.3	40.3	0.8	7.0	4.7
B11	I would avoid ICTs as much as possible.	53.5	36.4	0	3.9	6.2
B13	I have no intention to use ICT in the near future.	51.9	42.6	0	3.9	1.6
B23	I have no difficulty understanding the basic functions of ICT tools.	12.4	14.7	1.65	52.7	18.6
B21	It would be difficult for me to learn to use the ICT in teaching.	38.0	41.9	0.8	14.0	5.4

In the table above (7.1.2) results revealed that the majority of Participants (65.1%) feel that ICTs do not scare them. A small group (6.2%) disagreed. During the interviews, participants claimed that ICTs are significant in the transformation of the curriculum, therefore, they are not afraid of them. Instead every time they get an opportunity to use them, they become more motivated. However, they mentioned that the inability to incorporate ICTs in their teaching is frustrating. A few participants pronounced that ICT logistics sometimes scare them as they are not highly equipped for their operation. However, during observations, all participants who were observed seemed to be comfortable with ICT tools. Two teachers said:

“As someone who has been exposed to technologies at a tender age, I mean in the schools I was schooling at and when I got to varsity used to enjoy presenting lessons using the ICTs hence, I am not scared of ICTs in the curriculum instead I am very fascinated about their introduction in the curriculum”. (Teacher 12)

“I am a bit old, but these ICTs do not scare me those tools are good in the curriculum”. (Teacher 3)

Participants disagreed with all the statements that assessed their degree of dislike of ICT in teaching. As a result, a high score of strongly disagree was illustrated by the statement “I do

not like talking with others about ICT” (97.6% disagree and only 2.3% agreed). On the statement “I dislike using ICTs in teaching” 94.6% chose strongly disagree and 3.1% of the Participants agreed. Participants supported their quantitative responses during the interviews by disclosing that they like using ICT in their Accounting teaching as it provides them with benefits. Further, they advocated that they always share information on ICT with their colleagues as they want to see its use expanding. Participants revealed that the benefits of ICTs has also been confirmed by their usefulness in other provinces and countries. The few who indicated they dislike talking about ICT explained that the incorporation of ICTs in teaching reveals inequality between schools and it is time-consuming. One participant stated they she has never incorporated ICTs in her teaching, therefore, and this is the root of her dislike of ICTs.

Furthermore, findings indicated that Participants strongly disagree with the statements, “I do not think I would ever need ICTs in my classroom”, and “I would rather do things by hand than with an ICT”. During the interviews, all participants confirmed that they need ICT integration in teaching Accounting. They emphasised that technology integration is greatly needed in the 4IR to maximise the teaching of the Accounting curriculum. Teacher 6 commented:

“Learning about ICT benefits both the teacher and learners since it helps content understanding. What I have observed in my class, is when I have brought ICT gadgets such as laptops and PowerPoint presentation learners concentrate more and seems to comprehend the content better”.

On the other hand, participants remarked that inadequate knowledge and skills lead them to abandon ICTs in teaching Accounting and do things by hand (traditional teaching). Quantitative findings confirmed that the majority of participants lack adequate knowledge and skills to integrate ICT in teaching Accounting (48.3%). During the interviews, participants remarked that as much as they have an understanding of the ICT tools, they have insufficient knowledge and skills on how to incorporate them into their teaching. During the observations, teachers were observed using only PowerPoint presentations. When following up on these findings, participants were asked how they were informed about ICT. They responded that circulars were sent to schools, documents such as the White Paper were made available in schools and various broadcasts and media statements informed all education stakeholders; however, training was never given.

Participants blamed the DBE for not rolling out ICT training programmes to equip them with skills. They further elaborated that even within the school parameters and in the district, there is no skilled manpower to develop teachers' ICT skills and knowledge. Furthermore, participants mentioned that even subject advisors are not equipped sufficiently to use ICT since the latter would arrange workshops but still request teachers to use charts in presentations instead of infusing ICT to upskill teachers. In the individual interviews, some participants announced that they have not received any professional training regarding the acquisition of ICT integration skills. Participants were just thrown in at the deep end. On the other hand, Teacher 5 received professional training on the SASAMS as he was part of the IT committee. Participants made the following claims on professional training:

"No mina (me) as an individual I did not in such a way that I went to the extent of registering in one of the FET colleagues close to me to do a computer course on its own because I felt a gap that in the system a lot is changing and the department is doing anything to capacitate us on ICT. In the entire school, I think none of us receive training besides the admin clerks and ICT coordinators who attended workshops on things such as SASAMS for marks and data capturing but a teacher was never trained on how to use such gadgets in teaching Accounting". (Teacher 6)

In addition, teacher 10 announced:

"To add, in our school, we have been fortunate that there is a company Sanlan who came just to formally inform us that we are now moving to ICT technology. They gave us materials explaining where to start and how. They also gave us resources such as projectors and modern ones to use. They just capacitated us on the basics but on behalf of DOE nothing. We just learn as we go". (Teacher 10)

Teacher 3 shared a similar sentiment:

"Yes, GAMMA project was introduced in our school as a project that emphasises the use of computers during teaching and learning. It brought

computers with content for some subjects, I haven't tried it with my learners due to the fact that the computer room is not spacious and mostly used for Mathematics". (Teacher 3)

Participants' responses indicated that the lack of professional training impacts negatively on their competence and confidence in using ICT tools in teaching. Even during the interviews, participants explained they are not using ICT because they lack the necessary competencies. Others lack confidence and thus do not infuse technology in their teachings.

Similarly, quantitative data findings reveal that about 90% of participants maintained that they lack technical support in schools. They require support with software failure, hardware problems, printing issues, and addressing virus threats. Participants commented that they do not receive any professional support from the School Management to incorporate ICT in their teaching. One participant added that they are discouraged by the School Management's resistance to technology use in the classroom. Some said they are not supported in their attempts to integrate technology instead technology is highly rated in administrative work. Other participants affirmed that there is no technical support in schools as there are no IT specialists stationed at the schools to assist teachers with any problems they encounter with the integration of ICT in teaching Accounting. Further, they disclosed that computers and laptops are not maintained. Teacher 4 commented:

"For me, technical support is demotivating us to integrate ICT into our teaching. For instance, in my schools, we do have few technology resources and we try to enhance our teachings sometimes by using them in our teaching however at times we find that they are not working and will have to wait for a technician to come and solve the problem so you see we can't rely on it."

Participants totally disagreed with the statement "I have no intention to use ICT in the near future". A few participants indicated that they will soon be retiring and thus do not need ICT. Teacher 11 commented:

"I selected, I won't need ICT in the near future because I am retiring soon and since I know the basics I am fine I can't frustrate myself with it in my old age".

As a result, some participants commented that they have observed that age has an influence on how teachers infuse ICTs in teaching Accounting. They also disclosed that older teachers are resistant to using ICT in their teaching and some do not even want to come near it. One participant mentioned that in schools teachers who have been in the system for a long time tend to resist ICT integration in the classroom and others fear it. Teacher 3 had this to say:

“I’m still new in the field of teaching but I have observed that teachers who are a bit old do not have confidence in integrating ICT. Ever since I came there are teachers who will always ask administrators or young teachers to type for them or capture marks on their behalf and they keep saying they are slow, and some will say keyboards contain small letters”.

The majority of participants believed that they have no difficulty understanding the basic functions of ICT tools (over 70% agreed) Participants maintained that they understand the basic functions of ICT tools such as typing, downloading, printing and making copies. As a result, some participants during the interviews acknowledged that they have integrated ICT in teaching Accounting. Two teachers elaborated:

“We do integrate but it depends on the number that you have because of limited resources. At times you may want to do it but having a large number of learners makes it to be impossible. E.g. if you have 6 learners in Accounting it is easy to incorporate technology because they can sit around you and you open a video using your own data of course since the school does not provide us with Wi-Fi. Even if the Wi-Fi is there the code is not accessible to everyone”. (Teacher 4)

“I’ve used a cell phone for homework and submissions while we are not at school”. (Teacher 8)

Similarly, over 70% of participants have no difficulty in learning how to operate ICT in teaching. Participants are willing to learn ICT integration; however, certain constraints hinder such a practice. The participants who indicated they are not willing to learn ICT complained about the nature of ICT integration in their environment.

The next section reports on the findings of the third construct.

7.1.3. Social influence

This section provides findings on the degree to which Accounting teachers perceive the importance of ICT integration. Seven statements were used to measure this construct and participants were requested to rank their responses on the Likert Scale of strongly disagree, disagree, neutral, agree, and strongly agree. Participants were also asked during the interviews to confirm the findings.

Table 7.1.3 Social Influence

NO.	STATEMENT	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
B5	Schools would be better placed without ICT.	67.4	32.6	0	0	0
B6	Learners should use ICT in all subject matters.	0	0	0	34.1	65.9
B19	ICT should be a priority in education.	0	0	0	40.3	59.7
B22	Everyone can easily learn to operate ICT tools.	34.9	31.8	2.3	21.7	9.3
B7	Learning about ICT is a waste of time.	56.6	43.4	0	0	0
B14	ICT technology cannot improve the quality of a learners' learning.	52.7	47.3	0	0	0
B18	ICTs will not make any difference in our classrooms, schools, or lives.	48.1	51.2	0.8	0	0

The above results reveal that all Accounting teachers perceive that ICT integration is an important system in education and in the classroom. Qualitative findings supported the above

findings by reporting that teachers believe that ICT integration is important to build knowledge in society. All Participants (129) disagreed with the statement that schools would be a better place without ICTs (100%). During the interviews participants maintained that school functioning generally requires technology; therefore, they disagreed that schools would be better places without ICTs. Participants also mentioned that their instructional practice relies on technology as books become outdated in content. One participant further commented that the current technology era has overemphasised the importance of technology in school. As a result, all Participants concurred with the idea that ICT should be prioritised in education (100% agreed). Participants stated that education leadership is like the umbrella in a school therefore, all transformations should start at the top and filter down. Teacher 8 added:

“Technology has been introduced globally in various sectors and education decided to adopt technology through ICTs therefore, they should prioritise its systems of implementation in schools to achieve its vision in the education sector”.

During the observations, the above findings were confirmed as almost all the activities that were taking place incorporated technology. This was confirmed during my observation visits to schools and the time spent in the administration buildings. However, during the interviews, participants mentioned that it has been difficult to integrate ICT in schools because of the risk of theft. Technology devices are stolen by outsiders, in particular, laptops, computers and printers. Participants noted the lack of security in all the township schools of Umlazi. Some schools only have one security personnel during the day only and no alarm systems. The fear of theft has a powerful negative impact on using ICT tools. Some participants admitted that even should they want to bring their own personal laptops to school, they fear that they might be stolen or thugs may attack them; this makes integration impossible. Teacher 10 added:

“In our school, we had 28 laptops but because the community who do not consider our learners’ needs, they were all stolen including the printers. Therefore, we are struggling now, and adding technology gadgets will be a waste again since security is still lacking”.

Further, over 60% of participants in this study believe that not everyone can easily learn to operate ICT tools. Participants during the interviews agreed that not everyone is capable of

operating ICT tools; therefore, rigorous training is necessary. However, participants disagreed that learning about ICT is a waste of time and that technology cannot improve the quality of learners' learning. During the interviews, participants admitted that they recognise the potential of ICTs in improving learners' learning. In addition, they stated that ICT technology increases and advances the level of learners' learning. One participant commented that learners' learning does not refer only to books and the curriculum but also the exposure to technology. Over 90% of Participants acknowledge that ICT makes a difference in their classrooms, schools, and lives. Teacher 2 had this to say:

“For me, I believe the statement is not true, ICT technology is making a significant difference in our lives, work, studies, and economy, therefore, whatever we do needs technology in this 21st century”.

Still on teachers' perceptions, during the interviews, participants were somewhat ambivalent about the wisdom of the Department's decision in introducing ICT in the curriculum. All participants agreed that it was a good idea although they had concerns. A similar question dealt with the government's intention in crafting a policy on ICT integration. Participants remarked that the government wants to align South Africa with the international community. However, the country cannot afford all the resources necessary to be in tread with the 4IR. Some participants admitted the following:

“It's not about that DoE wanted us to move from a traditional method to ICT or to integration of technology but it was the circumstance adapting to the forever changes that pushed us to be like other countries while we are far behind with technology. It was introduced now, I think DoE introduced it to themselves and again the world where the government cannot provide us all with resources and again the vulnerability of our societies who may come and take this away from us, therefore, I am neutral on whether they made a good decision or not because of the mentioned factors and the government was pushed by the circumstance”. (Teacher 6)

“Another thing is, it was a correct decision to introduce this ICT however they did not consider the factor that it is viable or not. Because seemingly it is not viable we don't have enough resources to do this. E.g. system of admitting

learners at school. We are far behind with resources. We still have a lot to learn". (Teacher 4)

"Just to add the intention of DOE was very good as it wanted us to also be on par with technology. We are challenged by the administration as the department initially gave schools tables and laptops but the administration in us as KZN differs from other provinces. In some provinces, they receive secure places first, trainings. They are infusing technology as soon as possible in such as primary". (Teacher 12)

"DOEs intention does not serve us the ICT is not infused in teaching and learning of Accounting. Good decision however the administration is lacking". (Teacher 11)

Participants felt overall that the government's intention was good. However, ICT integration requires intensive planning and massive investments to achieve its purpose.

The next subsection presents findings on the last construct.

7.1.4. Facilitating conditions

This section presents findings regarding the organisational and technical sub-structure support necessary for ICT integration. Four statements were presented with a Likert Scale of strongly disagree, disagree, neutral, agree, and strongly agree. Participants were asked to rank their feelings on this Likert Scale and qualitative data were used to supplement the findings.

Table 7.1.4 Facilitating conditions

NO.	STATEMENT	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
B15	I have never seen ICT tools at work.	48.1	51.9	0	0	0
B16	I have never seen ICT tools used as an educational tool.	40.3	59.7	0	0	0

B17	I have seen some Accounting teachers use ICTs for educational purposes.	0	27.9	3.9	49.6	18.6
B20	Class time is too limited for ICT use.	5.4	6.2	0	40.3	48.1

Table 4.1.4 indicates that all participants have observed certain ICT tools in their workplaces and used them for educational purposes. In the interviews, participants mentioned printers, computers, laptops, photocopying machines, scanners, overhead projectors and whiteboards as the ICT tools they have seen. During the classroom observations, one teacher conducted a lesson in the computer lab where a photocopying machine was available but it was never incorporated in the teaching of the lesson. The majority of participants disclosed that they most frequently use three ICT tools for educational purposes: photocopying machines, laptops and printers. The availability of these resources gave an idea of why teachers integrate ICT tools in teaching Accounting the way they do. Teacher 1 said:

“As an Accounting teacher, I have seen ICT tools in my schools and we use them for educational purposes, such as downloading previous question papers, scanning them at times, making copies so that is how I regard it as serving the purpose of education”.

However, Teacher 2 disagreed with Teacher 1 as he stated that he has seen ICT tools in his school. However, he has never seen teachers integrating them into teaching. He normally sees them teaching with textbooks and the chalkboard. Teacher 3 added:

“In my school, I have seen a few ICT tools however we do not have access to them. Our admin clerk does everything for us such as making copies and printing. I have seen Accounting teachers typing tests and examinations”.

In addition, not all participants have seen Accounting teachers using ICT tools in teaching Accounting (70% agreed; 30% disagreed). During the interviews, participants emphasised the importance of ICT use in Accounting since practising the use of ICT tools while learning will assist learners with ICT in their future careers or tertiary studies. Some mentioned that

integrating ICT is crucial in times of civil unrest because teaching and learning will not be interrupted and learners may use diverse platforms to communicate. Lastly, 90% of the participants agreed that class time is too limited to use ICT in their teaching. Participants complained that using ICT tools in teaching requires extra time as one needs to connect and project the lesson. Class periods range between 45 to 55 minutes, which is very limited when teaching a practical subject like Accounting using ICT tools. One participant commented by saying that the length of a class period should be revised and adjusted to accommodate ICT integration.

The quantitative findings reported that the majority of participants feel that time to integrate ICT in teaching is insufficient; in any case, regular class periods were too short. Participants maintained that when they conduct technology-enhanced lessons, learners have to move to the computer lab or to a venue with technology resources. They find the class period does not accommodate the time taken up by moving and the time required for teaching. Other participants elaborated that preparing for a lesson that incorporates technology requires more time. Teacher 3 commented:

“To infuse technology into teaching needs time, I find it difficult to integrate ICT in teaching and I have observed that it is not only me almost all teachers have experienced the same factor. We have five classes to prepare a day so there is really no time to use more ICT in teaching”.

Teacher 10 concurred that time allocated for teaching and learning does not reckon with teachers’ planning time when ICT has to be integrated.

During the interviews, participants shared mixed emotions about why they integrate ICT in teaching Accounting the way they do. Participants explained that it enhances the quality of teaching and it makes instructional activities, such as curriculum administrative duties, efficient and effective. They all agreed that ICT in Accounting makes the lesson more spontaneous than the traditional teaching method of chalk and talk. In addition, ICT enhances teaching and learning as learners engage more in their learning, making the financial information easier and more practical to comprehend. The majority added that ICT integration should be emphasised in teaching Accounting as the world is changing and learners should be

prepared for the future. They further commented that ICT integration in Accounting creates opportunities for effective communication in the teaching of a subject. Teacher 12 pronounced:

“From my view, ICTs enhance and can enhance teaching and learning in Accounting as they make learning more effective and efficient, secondly, we as teachers get digital literacy and it reduces the burden of printing all these question papers, answer sheets and memorandums. Remember Accounting needs a lot of administration before class so for me, yes, it will enhance both on the teachers’ side and for learners”.

Participants reported that the unavailability of electricity hinders ICT integration in teaching Accounting way, even in the limited sense. The majority of the participants indicated that their schools have no electricity, which is a significant factor that prevents incorporating ICT in their teaching. During the interviews, participants said no power is a major barrier. When participants were observed, I noticed that in most classes there was no power. However, I noted that electricity had been previously installed but had been removed. One participant explained to me that the power has been installed several times in the classrooms by the Department; however, due to vandalism it was scrapped . Teacher 4 had this to say:

“Limited access to power in our school is a contributing factor to integration of ICT. Can you believe that only had power in the administration section and in one Grade 12 classroom which is more like a hall? So, even if you want to bring your own personal gadgets still there is no access to power. All activities that need to be administered with power are done at the administration block in my school. Even if you charge a laptop.”

Regarding the issue of power, participants added that the current energy-saving strategy of load shedding by Eskom negatively impacts the integration of ICT in their teaching. Power outages occur during the school day when they need to use technology resources and schools do not have backups such as generators. In addition, participants noted the negative influence of outages on the network system resulting in minimal access to some websites.

Furthermore, participants indicated that the subject of Accounting is dynamic and it affected by the constant changes in the economy. Therefore, they are motivated to integrate ICT into

teaching to keep up with relevant content and changes. Some stated that ICTs create opportunities for teachers to be creative and innovative in lesson planning. Participants even commented that technology assists them in teaching difficult topics and facilitates understanding of complex Accounting topics. Participants added:

“Some topics that are taught in a content which encourage the incorporation of technology and they grab learners’ attention, so we always seek a way for their interest so since they are more interested in technology and the gadgets we, therefore, the current method of technology makes them to love the subject, so they are a motivation to learners as well” (Teacher 7)

“Traditional methods bore learners because of narrow tasks, textbooks insufficient and ICTs support teaching and learners, so these are the reasons that motivate me to integrate ICTs in teaching Accounting”.
(Teacher 12)

Lastly, during the interviews, participants were asked to share their overall impression of how facilitating conditions influence their integration of ICT in teaching Accounting. A few participants explained that incorporating ICT in teaching is affected by the mismanagement of funds resulting in poor maintenance of existing ICT tools.

7.2. CHAPTER CONCLUSION

This chapter presented and analysed data intended to answer the third research question of this study. Data analysed presented findings on why teachers integrate ICT in teaching Accounting the way they do. The findings were presented under the four constructs of the UTUAT model.

The next chapter will focus on a discussion of the findings.

CHAPTER EIGHT: DISCUSSION OF FINDINGS

8. ACCOUNTING TEACHERS' UNDERSTANDING AND USE OF ICT IN TEACHING ACCOUNTING

8.1. INTRODUCTION

The main purpose of this research study was to gain insight into Accounting teachers' understanding and practices of integrating ICT in teaching Accounting. To achieve this purpose, the findings of the mixed method case study were presented in Chapters 5, 6 and 7. Chapter 5 presented data on Accounting teachers' understanding of integrating ICT in teaching Accounting in Umlazi South District. Chapter 6 presented data on how Accounting teachers understand and practice integrating ICT in teaching Accounting. Chapter 7 presented data on why Accounting teachers integrate ICT in teaching Accounting the way they do. The findings of these three chapters were presented under three main themes that emerged from data which was collected through questionnaires, focus group discussions, observations, and interviews. Further, the themes contributed to addressing the critical research questions which are as follows:

- What are Accounting teachers' understanding of integrating ICT in teaching Accounting in Umlazi District?
- How do Accounting teachers integrate ICT in teaching Accounting in Umlazi District?
- Why do Accounting teachers understand and practice integrating ICT in teaching Accounting the way they do?

Briefly, the findings highlighted that Accounting teachers are well-informed and fascinated by ICTs that can be integrated into the teaching of Accounting. It also appeared that Accounting teachers integrate ICT in teaching Accounting through downloading teaching materials, printing, scanning, photocopying, databases, communicating with learners, using Microsoft Word, Excel, presentation software, and the internet. In addition, findings outlined that a number of factors influence Accounting teachers' understanding and practices of integrating ICT in teaching Accounting the way they do.

In this chapter, I intend to focus on an in-depth discussion of findings of the three main themes of this research study that were presented in Chapters 5, 6, and 7. In addition, the previous literature reviewed in Chapter 2 will be used to confirm or refute the findings of this research study. I will also apply the theoretical as well as conceptual framework elucidated in Chapter 3 to discuss the main findings emerging from the three previous chapters. In other words, this chapter moves to the second level of data analysis where themes will be rigorously discussed based on what participants said in relation to theory and extant scholarship. The findings that emerged are discussed under the three main themes:

- Technologies teachers used in Accounting teaching and learning;
- Teachers' knowledge and practices of integrating ICT in teaching Accounting;
- Factors influencing teachers to integrate technologies in teaching Accounting the way they do.

Each main theme consists of sub-themes that emerged from the findings and literature to extend the discussion. The first main theme's findings are discussed in detail in the ensuing section.

8.2. TECHNOLOGIES TEACHERS USED IN ACCOUNTING TEACHING AND LEARNING

This section discusses the findings on technologies teachers use in Accounting teaching and learning. The section is divided into four sub-sections, namely, technologies teachers use in teaching Accounting, the extent to which technologies are used in teaching Accounting, teachers' proficiency in these technologies and the purposes of using technology (internet) and the frequency of use.

8.3. TECHNOLOGY TOOLS TEACHERS USE IN TEACHING ACCOUNTING

The literature indicated that technologies began decades ago with a computer in an effort to improve instructional procedures and their use have significantly increased in the classroom globally (Benmarrakchi et al., 2017; Gunzo, 2020; Kirschner, 2015; Msila, 2015; Siyaya, 2023). These technologies in the classroom have been introduced and adopted by encouraging teachers to integrate them into their teaching and learning process. Kiru (2018) concurs that technologies such as laptops, chrome books, iPads, iPods, and interactive devices such as interactive whiteboards are used by teachers in a classroom to teach. In addition, Gumbo

(2016); Msila (2015) and Siyaya (2023) emphasise that hardware and software such as radio, TV, cellular phones, computers and network, digital cameras, copiers, and CDs are the technologies used by teachers in schools. In this study, participants affirmed their familiarity with selected technological tools such as tablets, laptops, computers, digital cameras, scanners, LCD panels and or data projectors, and video conferencing systems. They also acknowledged that these tools are beneficial in teaching Accounting although some of them have never used them in their teaching.

The participants indicated that they were conversant with tablets, laptops, and computers as they frequently incorporate these tools in their teaching. The efficacy of the use of tablets, laptops, and computers in teaching is also confirmed by numerous studies (Buabeng-Andoh, 2019; Ghavifekr & Rosdy, 2015; Gunzo, 2020; Mahlo, 2020; Makwela, 2019; Manhibi, 2019; Mukhari, 2016; Rambrij, 2018). Qualitative data of this study indicated that besides the technology tools that were selected, participants are also using smartphones, printers, photocopier machines, and calculators as technology resources in teaching Accounting. The studies of Rambrij (2018) and Siyaya (2023) supported the above findings by outlining that teachers in schools in Ilembe District, KZN primarily used laptops, computers, the internet, printers, and copier machines for teaching and learning. The findings are also confirmed by Ngougouo (2017) who commented that technologies mostly found in South African schools are tablets, laptops, desktop computers, calculators, smartphones, data storage devices, printers, fax machines, copier machines cameras, overhead projectors, interactive whiteboards, web technologies, and other peripheral devices.

Although the above-mentioned studies show that technologies like interactive whiteboards are mostly used in South Africa, the findings of this study revealed that very few teachers use this kind of technology tool. It was also observed that very few schools had these technologies installed in the classrooms. In most schools, teachers had to move with the tools to classes or venues where there was access to electrical power when they wanted to use them. Amory et al. (2015); Mereku and Mereku (2015) and Mooketsi and Chigona (2014) assert that numerous technologies are used in the classroom; however, more comprehension is required on how they can best facilitate teaching and learning. This sentiment is also in congruence with the findings of Nkula and Krauss (2014) and Padayachee (2017) who opine that few teachers effectively make use of the above-mentioned technologies in schools. Ndlovu (2022) found that teachers

in the Zululand District, KZN did not use any software or hardware in teaching and were ignorant about how it may assist teaching and learning.

Cuban and Jandrić (2015) advocate that although studies show that since 2010, laptops, tablets, interactive whiteboards, smartphones, and a cornucopia of software have become ubiquitous in schools, some teachers are not using them in the classroom. The majority of participants described smartphones as the most valuable tool that is always available and usable anywhere to teach Accounting. Buabeng-Andoh (2019) supports the above findings by outlining that mobile phones work at a great advantage for teachers as they allow teaching and learning to take place anyhow and anywhere. Further, the advent of the COVID-19 pandemic compelled Accounting teachers to rely on smartphones more than any other device as teachers were mandated to proceed with remote teaching and learning. Even though the restrictions of the COVID-19 lockdown have ended, teachers are still observed to be heavily reliant on smartphones. The use of smartphones as a beneficial device in teaching is confirmed by Gunzo (2020) who found that mobile smartphones have become the popular technology tool in schools due to their easy accessibility and flexibility in teaching and learning. Gunzo (2020) further posits that mobile phones are more often used than computers in schools. Amory et al. (2015) maintained that in sub-Saharan Africa mobile phones are more often used than technologies such as laptops and computers in schools.

Nevertheless, Gunzo (2020) argues that although smartphones are increasingly used in schools in South Africa, there are still no policies guiding their use in schools beside in the Western Cape where an official policy document has been issued in this regard (Nelwamondo & Njenga, 2021). During the lockdown, teachers relied on smartphones in spite of the absence of a policy or formal guidance to date. Accounting teachers mentioned that although smartphones are prohibited in the classroom, be it used by a teacher or a learner, they proceed to use them since they are an efficient tool in teaching. Similarly, Manhibi (2019) argues that in some schools teachers are discouraged from using smartphones in teaching rather than computers as their use hinders the acquisition of computer knowledge and skills. Mukhari (2016) comments that in Gauteng the most dominant technology tool is the tablet for both teachers and learners.

The next session elucidates the findings of the extent Accounting teachers are using these technologies in their instructional practice.

8.4. THE EXTENT TO WHICH TECHNOLOGIES ARE USED IN TEACHING ACCOUNTING

The previous literature on teachers' experiences of integrating ICT in teaching provides insight into the extent of teachers' use of the above-mentioned technologies and its relationship to teacher competency and attitudes (Ghavifekr et al., 2016; Ghavifekr et al., 2014; Makwela, 2019; Manhibi, 2019; Peter, 2019; Winter et al., 2021). Further, the frequency with which teachers use technology reveals their grasp of the technology tool and its impact in the classroom. Teachers' level of use of technology also depends on their enthusiasm (Mahlo, 2020). The current study's findings show that the extent with which Accounting teachers use technologies varies for each technology tool, its application, and web application in terms of frequency and proficiency. Therefore, the findings below discuss teachers' frequency and proficiency in using technology in depth.

8.4.1. Frequency of use of technology in teaching Accounting

This section discusses findings on how frequently Accounting teachers used technology tools, technology applications and web applications.

8.4.1.1. The frequency level of the use of technology tool

It has been evident in this study that the availability of technology tools, accessibility, ability to use, and costs contribute to the extent to which teachers use the tools. Furthermore, schools' quintile status and location contribute to the frequency of technology tool usage in teaching. Umlazi South District schools are situated in different geographical areas, some in urban areas, some in townships, and others in rural areas such as Imbumbulu. Therefore, the frequency of teachers using technology tools in their Accounting classrooms differs. Furthermore, the district consists of schools that come from different quintiles where the allocation of resources is not the same. It was apparent that teachers in quintiles 4 and 5 in Umlazi frequently use a variety of technology tools on a daily basis. Schools in quintile 3 reported a small number of teachers who use technology tools frequently in the classroom.

Participants indicated that they frequently use technology tools such as tablets, laptops, computers, copier machines and printers. Laptops, copier machines, and printers are indispensable tools in teaching, for instance, to download and store information on laptops, print information using printers, and make multiple copies using copier machines. These are essential basic technology tools in all schools that drive teaching and learning hence they are

used regularly. Winter et al. (2021) confirm the findings of this study by stating that laptops, tablets, copiers, and printing machines are frequently used technology tools in teaching throughout the globe. Similarly, Kaarakainen and Saikkonen (2021) assert that in Finland, the most common types of devices used regularly by teachers are desktop and laptop computers used on a daily basis or once a week. The greater extent of the use of the above tools is because they offer more diverse platforms for working with new ideas in teaching and learning. Many of these tools also allow the teacher to garner data in real-time, which not only saves time but also offers more critically effective teaching and learning.

From the lessons observed, I found that teachers often use the above-mentioned technology tools in their teaching. Nevertheless, studies conducted by Mafuraga and Moremi (2017) and Manhibi (2019) in Zimbabwe on ICT integration in schools differed from the findings of this study. They found a high number of teachers who indicated they have never used technology tools such as a computer (desktop/ laptop) for any tasks related to teaching and learning and the lowest number was recorded for those who use it on a “daily” basis. In South Africa, Rambrij (2018) and Siyaya (2023) found that Accounting teachers in the Ilembe District rarely use technologies such as laptops, tablets, projectors, and interactive whiteboards in teaching. Participants acknowledge that very few schools still have desktop computers in use for teaching thus they are seldom used. The Department has upgraded technology tools in schools by introducing more laptops and tablets rather than outdated desktop computers. Laptops and tablets are more affordable and portable for classroom use. Some scholars (Blankley et al., 2018; Szyszka et al., 2022) point out that computers are still the most popular and commonly used technology tool in schools.

Tablets are now commonly used within our daily lives and the education sector. Tablets have many uses in schools; the most common is a replacement for notebooks and textbooks. Tablets allows teachers to store their work on one device and schools can cut down on paper. Tablets digitalise the subject content which is preferable to heavy hard-copy textbooks. Learners are also more engaged when using tablets as they are easier to use and do not require a computer room or computer trolleys. Most participants in this study were using their personal tablets since most of the sponsored tablets were dysfunctional. This resulted in greater home use of tablets to prepare lessons and they were seldom brought into the classroom. Kolobe and Mihai (2021) and Mafuraga and Moremi (2017) confirmed the above findings by indicating that marginalised schools in South Africa usually found in quintiles 1 to 3 suffer from the unequal

distribution of resources. As a result, teachers from these quintiles seldom incorporate technology tools in teaching. However, literature shows that teachers in urban schools are provided with tablets that they use in teaching. Mukhari (2016) found that teachers in Gauteng frequently use tablets inside and outside the classroom.

Findings revealed that smartphones were the most frequently used technology tool by Accounting teachers in their teaching and learning. The majority of participants used smartphones every day in instructional practice as they serve multiple purposes. Participants felt that smartphones are the most affordable, convenient and available technology tools to be used in teaching, hence they are more likely to be used. Conversely, Kaarakainen and Saikkonen (2021) found that in Finland mobile devices such as smartphones are only used occasionally in teaching and learning. Szyszka et al. (2022) concurs by reporting that in Poland cell phones were banned in teaching and learning which made the way for the adoption of other digital devices. The high frequency of smartphone usage by Accounting teachers was increasingly significant during the lockdown where the intention was to reach learners through WhatsApp, Messenger, Facebook and TikTok.

The extensive use of personal smartphones is believed to benefit both Accounting teachers and learners since they are used to access online teaching and learning resources, send learning materials to learners, and provide an abundance of possibilities to access education. In this era of technology, learners are more attached to smartphones than textbooks. The heavy reliance on and high frequency of smartphone usage in teaching and learning is confirmed by various scholars (Govender & Govender, 2014; Mahlo, 2020; Mooketsi & Chigona, 2014; Mukhari, 2016; Ndlovu, 2022; Rambrij, 2018). Sutton and DeSantis (2017) opined that teachers frequently choose the technology tools they know best and can easily access. Accounting teachers are also using calculators to a greater extent to ensure accurate content articulation and demonstrate understanding.

It appeared that the least frequently used technology tools by Accounting teachers were scanners, digital cameras, LCD panels, projectors, scanners and video conferencing systems. Participants felt that these are unpopular technology tools in their schools. Only former model C schools have the capacity to use these technology tools, thus the results indicate low-frequency usage. Teachers felt that scanners are unsuitable in Accounting as the subject requires several documents which are cumbersome and time-consuming to scan. Participants

normally download scanner apps on smartphones and use them to scan and store documents. Correspondingly, participants frequently use cameras on their smartphones, not digital cameras in teaching Accounting. Cameras on the smartphone are reliable and efficient in teaching and learning. Teachers can easily take pictures and send them to learners or colleagues anywhere and at anytime. Furthermore, many laptops come equipped with internal cameras that are adequate to use for videos. However, participants scarcely use them to support their instructional purposes.

The frequent use of video conferencing systems has been observed globally (Kaarakainen & Saikkonen, 2021; Winter et al., 2021; Wood, 2021). However, participants in this study are not yet exposed to the use of video conferencing systems in teaching and learning. Few teachers use video conferencing systems frequently for teaching, meetings and communication. Video conferencing platforms such as Zoom, WhatsApp Video, Google Meets, Skype, Teams and FaceTime became popular during the COVID-19 pandemic when most teachers used video conferencing for interaction with colleagues and to replicate the in-class experience as much as possible for learners. Participants of this study were accustomed to WhatsApp Video Conferencing and Zoom. However, video conferencing platforms are the key to a truly synchronous learning environment.

The literature also shows that data projectors are very effective technology tools to use in teaching and learning since they draw learners' attention (Buabeng-Andoh, 2019; Gunzo, 2020; Mahlo, 2020; Ndlovu, 2022; Padayachee, 2017). Participants in this study seldom use data projectors in teaching as confirmed by the lesson observations.

The next section discusses deeper findings on the frequency of technology tools application.

8.4.1.2. Frequency analysis of the use of technology tool applications

The nature of teaching the subject of Accounting requires extensive technology tools applications since the content is very detailed and a vast number of teaching materials such as information sheets, answer books, and memorandums are used in the instructional process. Teachers normally use the following ICT applications: word processors, Excel, PowerPoint spreadsheets, search engines, databases, e-mail, blogs, videos, instant messaging, podcasts, simulations, animations, and e-books (Amory et al., 2015; Govender & Govender, 2014;

Kaarakainen & Saikkonen, 2021; Makwela, 2019; Mereku & Mereku, 2015; Mooketsi & Chigona, 2014; Siyaya, 2023).

In this study participants acknowledged that the word-processing application is commonly used for various Accounting teaching and learning activities. They further frequently access word-processing applications on different technology tools, namely, laptops, tablets, or smartphones.

Smartphones and tablets provide appropriate word applications as a result, participants frequently type out their teaching and learning activities (formal and informal) including lesson plans, tests, tasks, and notes. Word processing applications on smartphones and tablets are accessible anywhere and anytime (Kimosop & Chemwei, 2016; Szyszka et al., 2022). Further, participants felt that the word-processing application made it easy to share and access teaching documents; hence it is frequently used. Some participants use it on a daily basis as it enables them to present clear Accounting work. The above findings are confirmed by Blankley et al. (2018); Buabeng-Andoh (2019); Mahlo (2020); Padayachee (2017) and Winter et al. (2021) who found that Microsoft Word was the most frequently used technology application in schools for both teaching, administration and management.

Software applications are used for teaching to provide teachers with opportunities to present lessons visually and audibly, making concepts clear, relevant to learners' lived experiences, and enriching their learning experience (Adagideli & Ozsevgec, 2019). In the context of this study, nearly all participants commonly use YouTube videos for instructional purposes in Accounting. Participants believed that YouTube videos play a significant role in practical subjects such as Accounting that need some visualisation and demonstrations. Accounting is a dynamic subject that is affected by global changes in the profession of Accounting. In addition, the subject has its own unique concepts and terminology that require additional information to clarify the misconceptions. Therefore, findings of this study are that YouTube has a wide use in Accounting teaching. Findings revealed that the use of YouTube videos was extended during lockdown since teachers frequently used them to simplify complex topics and assist learners in absorbing the content. The easy accessibility of YouTube on any device also increases the frequency of usage.

The above findings are supported by Kaarakainen and Saikkonen (2021) and Peter (2019) who indicate that YouTube videos are powerful teaching resources in the classroom. Further, these scholars agree that teachers are using YouTube applications more often in their instructional practices to provide additional information on the curriculum. YouTube provides creative videos that also help teachers create their own personal instruction videos for their classrooms or to compile collected clips into subject-matter playlists.

The South African ICT policy on education is intended to ensure that all teachers of individual subjects are capable of using all ICT applications in order to sufficiently incorporate ICT in teaching (DoE, 2004). This study found that databases, spreadsheets (Excel), graphics programs and presentation software (PowerPoint) are barely used by Accounting teachers. These findings are in line with the findings of Nwokike and Uwaneze (2018) who found that spreadsheets, presentation software, and graphics programmes are used by fewer subject-matter teachers than word processing. Although the content of Accounting and related learning materials such as answer books frequently use Excel, participants acknowledge that they make copies of already completed documents instead of designing and preparing them on Excel. In addition, the Excel spreadsheet allows teachers to use formulas to calculate data (Bawa et al., 2021) but participants indicated they use manual calculations in Accounting teaching. The few participants who mentioned frequently using the above applications were participants with IT backgrounds and some are teaching technical and CAT subjects.

Literature alluded that Microsoft Excel is mostly used for the administration and management of educational institutions which is the reason for a narrower use in teaching (Verma et al., 2016). Furthermore, Excel spreadsheets especially appeal to teachers at specific times of the year when it is used for exam grading and term reports or full reports. Participants mentioned that they rarely use Excel to capture marks after the formal assessment has been undertaken, normally towards the end of each term. With regard to PowerPoint, some scholars found that PowerPoint was frequently used in technology applications in teaching and learning to create educational or informational presentations (Bawa et al., 2021). This study turned out to differ as participants rarely use PowerPoint to teach Accounting. Siyaya (2023) supported the above finding by maintaining that Accounting teachers are not skilled in ICT applications such as PowerPoint. PowerPoint was frequently used by only a few schools, in particular urban and former model C schools that are well-resourced and have enough space to accommodate all learners. In a few township schools, PowerPoint presentations are used only when there are

classroom visit or visits from education officials. Some participants believed that PowerPoint applications are effective and frequently used in online lessons, not face-to-face. In contrast, Kaarakainen and Saikkonen (2021) and Winter et al. (2021) found that Excel spreadsheets and PowerPoint applications are regularly incorporated into daily teaching and learning. According to Kaarakainen and Saikkonen (2021), teachers in Denmark, Estonia, Latvia, Lithuania, and Norway most often used the above technology-based applications in the classroom.

The majority of Accounting teachers in schools across the world teach without the assistance of Accounting software (Daher et al., 2018). Participants in this study acknowledged that they have never used software applications in teaching Accounting and they are not aware of any. Previous literature has supported the above finding by indicating that there is a lack of use of software applications in all school subjects (Buabeng-Andoh, 2019; Mukhari, 2016). Further, Rhodes (2019) posited that in Accounting education software applications were introduced in higher education only; none have been observed in secondary schools. In other teaching environments, such as in architecture, engineering, software development, graphics and videos, the situation is completely different; teachers frequently use the most recent versions of software.

The next session discusses findings on frequency analysis of the use of web applications.

8.4.1.3. Frequency analysis of the use of web applications

The study revealed that most Accounting teachers are not well acquainted with most web applications. Participants acknowledge that they do not use website development, electronic references (e.g., Encarta, World Book), discussion groups, list servers and assistive technologies (for the disabled e.g., deaf, no arms). The above findings are supported by Lu et al. (2017); Mafuraga and Moremi (2017) and Mwapwele et al. (2019) who state that teachers struggle with web applications in their teaching and as a result most of them do not use them. However, the study findings revealed that almost all teachers used social media applications to teach Accounting. This use was extended during lockdown when the use of WhatsApp for sharing teaching and learning materials with learners and other teachers increased among the Accounting teachers.

It was evident from the views of the participants that the ease with which Accounting teachers, especially in rural schools, sent activities to learners and communicated with learners through WhatsApp promoted this contemporary approach to teaching. The study conducted by Skhephe and Matashu (2021) in the Eastern Cape supports the above findings. They found Accounting teachers viewed teaching via WhatsApp as a new creative learning platform that encouraged learners to learn Accounting. Similarly, Siyaya (2023) asserts that Accounting teachers in most rural areas of Ilembe District adopted the incorporation of WhatsApp software in teaching very well as it was a valuable mode of communication within the district.

Nevertheless, e-mail and the internet (WWW) are the most frequently used web applications by Accounting teachers. E-mails were most commonly used for personal communication rather than teaching and learning. The School Management Team are normally the most frequent users of e-mails as they normally receive important communiques from the Department. The frequent use of e-mails is overshadowed by the use of WhatsApp in schools where documents are mostly sent via WhatsApp. According to Winter et al. (2021), the use of e-mail software and browsing software significantly increased during the COVID-19 pandemic. The internet was frequently used on a “daily basis” by the Accounting teachers for browsing. Participants felt that textbooks consisted of outdated information, therefore the internet is used frequently to ensure recent information is used in teaching and learning. These findings concur with the findings of Blankley et al. (2018); Kaarakainen and Saikkonen (2021) and Szyszka et al. (2022) who found that the top technology software used more frequently in teaching is web browsing software.

Accounting is a subject with international standards therefore the internet helps teachers to keep up with the international standards. Participants acknowledged that they mostly browse the internet for lesson planning and ideas to deliver effective lessons. Nevertheless, it was evident that rural school teachers barely used the internet in teaching and learning Accounting. The studies of Mafuraga and Moremi (2017); Mwapwele et al. (2019) and Siyaya (2023) also concur that districts in rural areas rarely use the internet in teaching. The lessons showed that Accounting teachers depended on the internet and the browsers for their teaching and learning.

The next section outlines the detailed findings on teachers' level of proficiency of technology use.

8.4.2. Teachers' level of proficiency in technology use

The above discussion elucidated the frequency of teachers using technology tools in teaching Accounting. Their proficiency in the technology tools is also imperative to determine whether the teachers were competent enough to integrate technology tools in teaching Accounting. Examining teachers' level of proficiency in using technology tools assists in identifying areas where support is required in their teaching. Scholars confirm that when teachers are competent in using technology tools, they become more productive in integrating them into their instructional practice (Ghavifekr & Rosdy, 2015; Mukhari, 2016; Saad & Sankaran, 2020). When teachers are less competent, they appear ignorant, resistant, and less confident in using technology in the classroom. Amory et al. (2015) posit that the success of achieving the DBE's intention of technology integration in the classroom depends on teachers' competencies in technology tools. Various studies have highlighted that teachers' proficiency is influenced by characteristics such as age, experience in teaching and beliefs (Guggemos & Seufert, 2021; Kaarakainen & Saikkonen, 2021). Findings of this current study on teachers' level of proficiency in using technology tools are discussed in-depth in three subsections: proficiency in using technology tools, proficiency in technology tools applications, and proficiency in technology tools web applications.

8.4.2.1. Proficiency analysis in using technology tools

As it has been reported in the preceding section smartphones, tablets, laptops, and computers were the most frequently used technology tools. The high frequency of usage is an indication of extensive knowledge, skills and familiarity with these tools, particularly concerning their specific functions. Participants are highly competent with tablets and smartphones while with laptops and computers, they hold moderate competence. Tablets and smartphones were regarded as tools with less complicated features than laptops and computers, hence the ability to integrate them into teaching Accounting is high. These findings are supported by Guggemos and Seufert (2021); Kimosop and Chemwei (2016) and Saad and Sankaran (2020) who assert that the functions of laptops and computers can be replicated by smartphones and tablets nowadays because of their varied functions. Further, Mahlo (2020) and Mukhari (2016) held that teachers in schools have moderate to high ICT competencies in their teaching and learning.

All participants felt that they have basic skills required to operate technology tools such as switching on and shutting down the tool to opening and closing a programme, file management, and file search. The above findings are in line with Kaarakainen and Saikkonen (2021) and

Winter et al. (2021) who opine that teachers' basic proficiency in technology tools is vital to communicate electronically, organise activities and information, and create documents in schools. In addition, teachers' exposure to technology tools plays a huge role in stimulating their skills and knowledge required to use the tools. According to Islam et al. (2019), teachers' exposure to technology in the classroom and at home increases their competency in using them in subject areas, and in supporting their instruction. Proficiency in using a wide variety of technology tools is particularly relevant for the integration of technology in teaching.

In this study, participants with fewer years of teaching experience were generally more likely than teachers with more experience to report high abilities in using technology tools. In addition, the older generation of teachers felt that they had limited proficiency in using technology tools. Basargekar and Singhavi (2017); Padayachee (2017) and Winter et al. (2021) support the above findings by maintaining that the younger generation of teachers in school are more capable and enthusiastic about integrating technology tools in their teaching. Scholars confirm that proficiency in using technology tools can be achieved through experience, for instance, lesson preparation and teaching materials development.

Studies showed that in order to integrate technology into teaching, teachers first need to be able to use technologies and understand how they work (Karakainen & Saikkonen, 2021; Saad & Sankaran, 2020). In this study, the fact that participants rarely used digital cameras, scanners, LCD panels and/or data projectors and video conferencing systems showed that they have low competency skills. Although they were not competent in using video conferencing, teaching Accounting during lockdown compelled teachers to use WhatsApp conference calls which stimulated their skills in video conferencing systems. According to Karakainen and Saikkonen (2021) and Siyaya (2023), due to COVID-19 the desire to stay connected to colleagues and learners while remaining at a safe distance resulted in an influx of video conferencing platforms in teaching. The most popular platforms that were used for remote and hybrid teaching and learning were WhatsApp, videos and Zoom. The next section discusses findings on proficiency in using technology tools applications.

8.4.2.2. Proficiency analysis in using technology applications

The level of proficiency in manipulating and executing fundamental guidelines on technology applications allows teachers to complete their teaching-related duties. The findings of this study were that participants have high levels of proficiency in Microsoft Word applications.

Their proficiency is indicated in word processing skills such as typing, editing, checking spelling, creating tables, inserting hyperlinks into Word documents and completing written communications. Participants believed that the word processing skill is one of the basic skills for every teacher in education. The requirement of ensuring quality work was a motive for teachers to develop their own skills and knowledge of Microsoft Word application in Accounting. As a result, some participants had to enrol in computer training programmes to improve their competence in using word processing applications. The studies of Makwela (2019) and Siyaya (2023) concur that teachers are highly proficient with the word processing application as it is used for various tasks in schools including writing reports, computing grades, and developing instructional materials, which allows them to present lessons and assess students more effectively. Word processing was regarded as an effortless application in Microsoft.

The subject of Accounting does not demand much on the usage of Excel as teachers are mostly provided with material such as answer books and information sheets. Teachers normally use the materials provided rather than developing new materials, particularly answer books. The outcome is that participants are less competent in using the Excel application. Literature proves that PowerPoint presentations encourage learner attention during the process of teaching and learning (Basargekar & Singhavi, 2017; Munyengabe et al., 2019). In this study, although most Accounting teachers do not use PowerPoint presentations in their teaching, they were found to have moderate proficiency. Proficiency in PowerPoint allows learners to access the subject matter visually and encourages active involvement. Saad and Sankaran (2020) found that teachers have the ability to use ICT applications such as MS Word, Excel and PowerPoint to facilitate teaching and learning processes in secondary schools.

Considering the benefit of YouTube videos in teaching and learning, particularly during lockdown, findings revealed that participants possess high levels of skills in operating and incorporating YouTube videos for teaching and learning in Accounting. The increased competency of using YouTube videos in teaching during remote teaching and learning has been emphasised (Ndlovu, 2022; Siyaya, 2023; Skhephe & Matashu, 2021). Zulu (2020) comments that teachers are competent with YouTube because it is a technology tool that is more accessible through smartphones and WhatsApp which is familiar to teachers and learners. Participants regarded themselves as having low competencies in database applications and they have never

used applications such as graphics programmes and software (specific to your subject e.g., GIS, CAD, PASTEL).

The next section presents a deeper discussion of the findings of proficiency in the use of web applications.

8.4.2.3. Proficiency analysis in using web applications

What emerges from this study is that Accounting teachers have no skills in web applications. Less than 10% of participants were aware of electronic references and the list of servers in technology tools. Onwuagboke (2015) argues that teachers' incompetency in web applications is sometimes a result of a lack of computer laboratories and computer applications which makes it difficult to practise practical applications. Nevertheless, participants are very competent with e-mail and the internet. The fact that e-mail and the internet are used for social communication increased proficiency participants' skills. E-mail was used similarly to other social media platforms. Since it is a common method of professional communication, teachers' ability to use e-mail is very high.

Furthermore, the internet has a massive impact on society, politics, and the economy throughout the globe. Therefore, skills and knowledge related to it are acquired quickly and at very high levels. Participants felt they were mostly competent in using search engines such as Google which they had to access frequently to download YouTube videos and other learning materials available online. Mooketsi and Chigona (2014); Ndlovu (2022); Padayachee (2017) and Kaarakainen and Saikkonen (2021) assert that teachers' navigation skills on the internet is generally good as they are able to search for precise information related to teaching and learning materials they need. They further opine that since the internet generates an enormous variety of information, teachers have advanced their basic searching skills. According to Mukhari (2016), the use of the internet in teaching and learning creates opportunities for teachers to develop competence in skills such as retrieving, identifying, analysing, distributing, sharing and collaborating on information and using it for online participation in social communication. Literature reviewed shows that most teachers in schools are skilled in browsing the internet; thus, it is a significant technology application in teaching and learning (Batchelor & Olakanmi, 2015; Govender & Govender, 2014; Mahlo, 2020; Manhibi, 2019; Mereku & Mereku, 2015; Mooketsi & Chigona, 2014; Ndlovu, 2022; Tan & Wong, 2020).

The next section provides a detailed understanding of what Accounting teachers in this study use the internet for.

8.5. PURPOSES OF USING TECHNOLOGY (INTERNET) AND THE FREQUENCY

Research in education confirms that technology serves a variety of purposes including communicating learning, generating massive information related to instruction, updating subject information, encouraging constructive and collaborative learning, and generally supporting teaching and learning (Gunzo, 2020; Mahlo, 2020; Makwela, 2019; Manhibi, 2019; Ndlovu, 2022; Pima, 2019; Rambrij, 2018; Siyaya, 2023; Winter et al., 2021). Hence there is an increase in the frequency of technology and its adoption in schools since it allows produces information. In addition, classrooms have evolved from traditional teaching to online teaching and learning or hybrid learning, online textbooks, and media interactions such as WhatsApp, Facebook, TikTok, and Instant messages. With smartphones, tablets, and laptops becoming more widely available, more people have been observed using technology frequently for different activities or purposes (Kaarakainen & Saikkonen, 2021).

What emerged from the findings is that Accounting teachers frequently use technology for communication (chats), teaching, and educational materials. Further, at least once or twice per week, they frequently retrieve teaching materials and use them to teach in the classroom since Accounting textbooks are outdated and do not provide teachers with adequate information they need to clarify new topics. Teachers explained that during lockdown, they used the internet to access information and updates as well as guidance on teaching and learning that was uploaded on Google. Gunzo (2020); Makwela (2019) and Saad and Sankaran (2020) support the above findings by stating that technology has become a significant tool in education since it possesses the power to vastly influence and change the nature of teaching and learning in schools. Furthermore, Mooketsi and Chigona (2014) assert that technology is mostly used to assist teachers in getting more advanced information which has helped them to be more confident and informative in their teaching. Findings revealed that participants normally use the internet to search for existing information on subject activities such as projects or assignments. They use the internet most frequently to conduct research.

Literature confirms that technology makes it possible to conduct research and investigate information which enables deeper comprehension and discovery of new data related to the topic to be taught (Ghavifekr & Rosdy, 2015; Mahlo, 2020; Manhibi, 2019; Mukhari, 2016;

Ndlovu, 2022). In this study, teachers who frequently use technology, use it to do research for their studies. Kaarakainen and Saikkonen (2021) confirmed that teachers are more likely to use technology in the classroom than elsewhere in the school. Similarly, Winter et al. (2021) found that teachers use technology regularly in teaching and are skilled in using a wide variety of programmes and apps. While literature emphasises the benefits of constant integration of technology in teaching, in this study, Accounting teachers frequently used technology to chat almost daily. Teachers communicated with peers for educational purposes through social media. They mostly used e-mail for personal purposes. This finding contradicts the findings by Mlilo (2019) who found that most teachers in Mathematics use e-mail to communicate with colleagues and parents. However, teachers are poorly prepared to use it effectively with their colleagues and parents (Kisirkoi, 2015). Karki (2019) states challenges exist because of a lack of training in e-mail literacy.

Nevertheless, the advent of the COVID-19 pandemic forced schools to increase the frequency of technology utilisation by emphasising digital learning systems (Skhephe & Matashu, 2021). As a result, during lockdown, teachers were compelled to use social media to communicate with peers, parents, and learners; before they had rarely used e-mail. This study discovered that Accounting teachers use technology moderately to research information related to projects and assignments. Siyaya (2023) argues that every teacher should know how to use technology, understand how it works, and have some grasp of how to find information on the internet.

The next section discusses the findings of the second main theme of this study.

8.6. TEACHERS' KNOWLEDGE AND PRACTICES OF INTEGRATING ICT IN TEACHING ACCOUNTING

The previous section signalled that teachers are using various technologies in teaching Accounting and the extent of use varies from each technology tool. This section extends to a deeper deliberation on the second research question which is: How do Accounting teachers integrate ICT in teaching Accounting in Umlazi District? Two central themes emerged from the data collected to respond to this research question as follows:

- Teachers' knowledge of integrating ICT in teaching Accounting
- Teachers' practices of integrating ICT in teaching Accounting

TPACK theoretical framework was used to present and discuss the findings of these themes rigorously. As stated Chapters 4 and 6 of this study used six elements of TPACK instead of seven because, on the reliability check of the questionnaire after the pilot study, the element of Technological Knowledge had poor internal consistency with a Cronbach's alpha coefficient reported below .5. This meant that most items did not correlate, therefore, the construct was removed although there is a certain order of these elements in the TPACK framework, namely, CK, PK, TK, TCK, TPK and TPACK(Koehler & Mishra, 2009). This study has grouped the elements in the way that best elucidates each central theme. In other words, types of knowledges will not be arranged as Mishra and Koehler put them, but they will be adapted according to their relatedness in addressing the themes of this study. For instance, under the theme of teachers' knowledge, the only types of knowledge discussed are related to comprehending teachers' CK in Accounting. On the second theme, teachers' practices, only the types of knowledge that are related to the actual practices (teaching) are discussed. Each central theme consisted of three types of knowledge.

In addition, previous literature, T-test, and ANOVA statistical analysis were used to support, confirm, or refute the findings of these themes. To remind the reader, a T-test was conducted between two groups (males and females) of this study and the independent samples (TPACK elements) to test the following null hypothesis:

- There is no statistically significant difference between male and female Accounting Teachers on TPACK elements.

The ANOVA one-way analysis was also conducted to determine if there are any mean difference between demographic characteristics (circuits, age, teaching qualification, teaching experience, teaching position, school quintile, and grade) of the participants of this study with TPACK elements, testing the following null and research hypotheses:

H_0 : There is no statistically significant difference in the mean of demographic characteristics of Accounting teachers on TPACK elements.

H_1 : There is a statistically significant difference in the mean of demographic characteristics of Accounting teachers on TPACK elements.

On both the T-test and ANOVA hypothesis each TPACK element had to be tested on its own. The findings are discussed in greater detail below.

8.7. TEACHERS' KNOWLEDGE OF INTEGRATING ICT IN TEACHING ACCOUNTING

Teachers' knowledge in teaching and learning is a major component as teachers are responsible for knowledge transmission. Knowledge provides teachers an opportunity to demonstrate the theory and practice of the content to meet curriculum aims and learning objectives (Koehler et al., 2014). Teachers' knowledge of ICT integration contributes to the success of the adoption and implementation of ICT in schools. The DBE's intention of introducing ICT integration in teaching and learning is believed to be attainable through teachers' knowledge of ICT. Therefore, the below section seeks to discuss the findings of Accounting teachers' knowledge of integrating ICT. The findings are outlined under three types of knowledge presented by the TPACK theoretical framework, namely, CK, PCK and TCK. These types of knowledge are adapted based on the fact that they provide comprehension of teachers' knowledge.

8.7.1. Content Knowledge (CK)

The core element of effective and quality teaching is to have accurate content knowledge of the subject. CK represents the comprehension of the concrete knowledge of the subject matter to be learned. According to Koehler and Mishra (2009), CK guides teachers on what should be taught and each subject's content knowledge consists of concepts, theories, evidence of knowledge and provides teaching methods to deliver the subject knowledge. Accounting as a subject is very broad and complex with many unique concepts and ideas to be taught or learned. It requires teachers to possess a deep understanding to be able to present a clear understanding of the subject contents to the learners (Messina et al., 2018). Ndlovu (2022) adds that teachers cannot select appropriate teaching strategies and learning activities if they lack CK of the subject. It has been observed that Accounting teachers' preparation and competency to deliver quality education depends on their CK (Kwarteng, 2019). The more knowledgeable teachers are in terms of content, the higher the chances of achieving Accounting curriculum goals and learning objectives.

The findings of this study from quantitative data and interviews displayed that Accounting teachers have sufficient CK on the subject. Teachers obtain CK from CAPS Accounting Grades 10-12, the Annual Teaching Plan (ATP), textbooks, and other content documents such as study

guides. These documents provided teachers with content topics, concepts, time allocation, methods, and theories to deeply understand and present the subject matter. The above findings are supported by Kwarteng (2019); Letshwene (2014) and Siyaya (2023) who concur that Accounting teachers do not lack curriculum content and the subject knowledge since they have the ability to demonstrate vast knowledge of various topics. However, the findings are contrary to the other studies which postulate that most Accounting teachers lack content knowledge due to recurring curriculum changes (Hlophe, 2020; King, 2020; Ndlovu, 2022; Ngwenya, 2014; Skhephe & Caga, 2019). These scholars further outlined that constant curriculum changes in the subject have an impact on teachers' CK as it takes them time to adjust and master the changes. The findings of this study show that as much as Accounting teachers end up successfully adopting and implementing content changes, it takes them time to fully master the changed topics. During the COVID-19 pandemic, the content was trimmed and shortened due to the limited time that was available for teaching and learning. Teachers mentioned that such changes were confusing but never disrupted their understanding of the content of the subject.

Further, it appeared that teachers are fully aware of the changes in Accounting content topics, for instance, from Income Statement to Statement of Comprehensive Income and from Balance Sheet to Statement of Financial position, etc. From the lessons observed teachers showed a sound understanding of the content since they had confidence, and their lessons were well-detailed. Darkwa and Agyei (2021) confirm the above findings by maintaining that mastery of the Accounting subject matter means teachers are explaining clearly and applying theories, principles and concepts that involve Accounting. Manhibi (2019); Rambrij (2018) and Siyaya (2023) emphasise that teachers' knowledge of the subject matter should be revealed in their instructional process. Teachers outlined that regular content-orientated workshops by the Department increase their content knowledge. Further, Accounting teachers are involved in various Accounting groups where they share content resources and information. These groups were perceived as very helpful to refine and enhance teachers' CK. Teachers also use a variety of textbooks and content-designed documents from the Department when preparing lessons to ensure a good understanding of the subject matter.

The findings above are confirmed by the Independent Sample T-test which found that there is no statistically significant difference between male and female Accounting teachers on CK as sig. (2-tailed) was above .05. This means that Accounting teachers' mastery of CK does not depend on gender. An ANOVA one-way between-groups analysis of variance was also

conducted to compare the demographic characteristics of Accounting teachers on CK. The analysis confirmed that there is no statistically significant difference at the $p < .05$ level in the scores comparing Accounting teachers' demographic characteristics with CK. The effect sizes, calculated using eta squared, were relatively small effects. Post-hoc comparisons using the Tukey HSD test indicated that the mean scores did not differ significantly. For that reason, the null hypothesis is accepted whereas the research hypothesis is rejected as far as CK is concerned. The next section discusses the findings of the second type of knowledge.

8.7.2. Pedagogical Content Knowledge (PCK)

Once teachers' CK was examined, their pedagogical skills become the second essential element to be evaluated. PCK is the process of transforming subject matter into teaching. This transformation happens when teachers interpret the subject matter from the curriculum, devise various strategies to deliver it to learners, and develop multiple instructional materials to alternative conceptions and students' prior knowledge (Koehler & Mishra, 2009). Therefore, when Accounting teachers combine pedagogy and content knowledge, they are manifesting PCK which makes Accounting instructional delivery successful. Constant Accounting curriculum changes also impact teachers' PCK. Teachers end up frustrated with devising new effective teaching approaches and strategies to achieve PCK. However, Kwarteng (2018) argued that constant Accounting curriculum changes are necessary to improve the instruction delivery of the subject matter.

The findings of the current study indicate that Accounting teachers have good mastery of the instructional practices of the subject content. Teachers acknowledge that they are capable of selecting appropriate teaching approaches and strategies to deliver effective lessons. Accounting teachers use teaching approaches such as questioning and answering method, writing, problem solving and collaborative learning. For instance, teachers believe in checking learners' prior knowledge through questions and short tests which allows them to select appropriate teaching strategies. Although teachers further mentioned that they use teaching strategies such as case studies, peer tutoring, demonstration, and constructive learning to teach Accounting effectively. During the observations, a few were observed using such strategies. In almost all lessons teachers started by asking questions, then explaining the topic, grouping learners for a class activity, and marking those activities together. The rest of the mentioned strategies were not practiced in their instructional practices. Kwarteng (2019) and Letshwene (2014) assert that the nature of Accounting subject requires teachers to use case studies,

simulations, games, and group work teaching strategies to teach the subject content interactively. The scholars further assert that these teaching strategies achieve the aim of the Accounting subject which is to combine subject content with real-world experiences.

Teachers felt that not all teaching approaches are suitable for all the curriculum content of Accounting. Therefore, they select teaching approaches and strategies according to the complexity and depth of topics. For instance, a strategy they normally use to teach concepts is short tests, while for financial statements and indicators, problem-solving is used, that is, collaborative and constructive methods where learners are given tasks or projects to search for information and present findings in the classroom were appropriate. This is in line with Darkwa and Agyei (2021) who advocate that Accounting teachers can use a variety of teaching methods since there is no one generally accepted method of teaching Accounting. Koehler et al. (2014) confirm that in any subject, PCK mandates a teacher to go beyond understanding the content subject but offers an opportunity to restructure the subject content and present it in a form suited to the diverse interests and abilities of the learners in the classroom. From the lessons observed all Accounting teachers conveyed and articulated content carefully to an extent that learners were able to grasp it. This was noted when teachers were explaining topics, transactions, and addressing misconceptions, what and why were very clear to learners. Learners also engaged productively with the teacher and peers during class tasks and most of their responses upon marking the activities were accurate. Various examples were used during the teaching to provide learners with adequate knowledge of the subject in their learning. Shing et al. (2018) assert that PCK means that teachers are using the most useful forms to present topics and the most powerful illustrations, examples, explanations, and demonstrations to explain the content to learners.

The essence of Accounting content calls for innovative and creative techniques to prepare and deliver it to learners. In this study, it appeared that teachers have the ability to design their own creative lesson plans and make difficult lessons easier for learners to understand through incorporating innovative teaching ideas, such as field trips, engaging physical resources namely charts, models, and documents (newspapers and bank statements), TikTok, games and PowerPoint presentations. Nonetheless, the above innovative ideas were stated by a minority of teachers, particularly those in well-resourced schools. Letshwene (2014) suggests that more attention needs to be given to critical thinking, and decision-making skills in teaching Accounting content. These skills assist learners in gaining skills of thinking critically and

creatively when dealing with Accounting learning and prepare them for skills needed in the job market. According to Koehler et al. (2014) and Shing et al. (2018), teachers with good PCK understand what makes the learning of a specific topic easy or difficult and they are able to prepare their lessons with suitable strategies and effective elaboration which lead to learners' conceptual understanding. Ghavifekr et al. (2014) also add that a lesson plan that is properly planned is one that takes into consideration learners' learning characteristics such as their prior knowledge and abilities to learn. When that lesson is presented, it produces meaningful and effective teaching and learning.

In Accounting, some topics give rise to misconceptions such as cash flow (Umalusi, 2019) PCK is regarded as the solution to such misconceptions as it provides knowledge of instructional strategies. Kwarteng (2019) and Letshwene (2014) support the above findings as they outlined that Accounting teachers' quality teaching skills and knowledge are matched by their abilities to incorporate new methods of teaching that will make learning easier. Teachers who have been teaching Accounting for a long period showed sound understanding of pedagogical strategies to deliver the subject content. Teachers felt that long experience in teaching made them more knowledgeable about various instructional techniques. Shing et al. (2018) confirm that PCK expands and grows with teaching experience, meaning experienced teachers tend to have richer instructional strategies for the content. However, Kwarteng (2019) argues that although some Accounting teachers are subject specialists, they struggle to deliver the content.

The above findings are also confirmed by the Independent-Samples T-test which revealed that there is no statistically significant difference between the two groups (females and males) on PCK as sig. (2-tailed) was above .05. This, therefore, confirms that Accounting teachers' knowledge mastery of PCK does not depend on gender. ANOVA analysis also confirmed the above findings by conducting a one-way between-groups analysis of variance to compare the demographic characteristics of Accounting teachers on the understanding of PCK. The analysis confirms that there is no statistically significant difference at the $p < .05$ level in the scores. The effect sizes, calculated using eta squared, were relatively small effects. Post-hoc comparisons using Tukey HSD test indicated that the mean scores did not differ significantly. Thus, the null hypothesis is accepted whereas the research hypothesis is rejected.

The next section outlines findings on the third type of knowledge.

8.7.3. Technological Content Knowledge (TCK)

In the modern era technological knowledge is inevitable and plays an important role in the subject matter. Technology stimulates teachers' CK, and even the curriculum encourages teachers to be technologically literate. According to Koehler and Mishra (2009), TCK works together as various sectors have adopted the developments in technology. In addition, technology works closely with content to formulate changes and updates where there is a need. Teachers in Accounting require deep technical knowledge and skills that can enable them to use ICT effectively in teaching and learning. Teachers' ability to use ICT to multi-task Accounting with diverse learners will show their competencies in TCK.

Shing et al. (2018) assert that Accounting is a subject that is constantly developing therefore it necessitates teachers to keep abreast with knowledge through technology. However, the findings of this study show that Accounting teachers possess moderate TCK. Teachers combine technology and content through using technology (internet) to browse for additional information on the subject matter, update content knowledge, add visuals to their lessons, develop learners' learning activities and tasks and manipulate information. Darkwa and Agyei (2021) confirm the above findings by stating that Accounting teachers can use pictures, animations, videos and projectors in their lessons to demonstrate a particular content to learners and enhance teaching and learning. These scholars further note that audiovisuals in the Accounting curriculum make information in the classroom more comprehensible through watching and hearing. The purpose of TCK is to convey learning material differently using technology. In addition, it helps teachers with knowledge of how technology can create new presentations for certain content. According to Koehler et al. (2014), teachers who have knowledge of technology and content understand that by using certain technology, they can change the way learners understand the content of lessons.

Accounting teachers in this study felt that they could learn technology easily if they could be provided with appropriate resources to frequently practise and get exposure. The main barrier of inadequate resources and lack of professional support hinders teachers from quickly learning ICT integration. Evidently, during the outbreak of the COVID-19 pandemic, teachers had to learn and master technology and subject matter in order to continue teaching. Teachers used various technologies to support the content understanding and delivery during this time. Even now teachers continue to learn to master technology within the subject since technology in

teaching has become a need for effective and quality teaching. Koehler et al. (2013); Shing et al. (2018) and Siyaya (2023) posit that Accounting teachers know that technology tools enhance learners' understanding of Accounting content in changing times. Teachers mentioned that they do not keep up with important technology news since they are not integrating ICT effectively in the classroom. In other words, they are failing to be updated with the innovations which are not practically implementable in their schools.

Although Accounting teachers combine technology and content by using the technologies to develop learning activities and learners' tasks, they mentioned that they lack numerous skills related to TCK. Mukhari (2016); Ndlovu (2022) and Siyaya (2023) confirm that teachers' TCK is lacking, hence professional training should focus on enabling teachers to combine technology and content knowledge. Rambrij (2018) outlined that a lack of TCK is problematic since this knowledge can create new representations for specific content. The latter found that that even teachers who teach Technology as a school subject lack technical knowledge. The intention is to train teachers so that they know what technologies to use with certain pedagogical strategies.

The T-test and ANOVA statistical analysis supports the above findings and literature. The results attest that there is no statistically significant difference between the two groups as sig. (2-tailed) was above .05. This confirms that Accounting teachers' TCK does not depend on gender. The ANOVA one-way analysis was also conducted to compare Accounting teachers' demographic characteristics on the understanding of TCK. Findings revealed that there was a statistically significant difference between circuits in the Umlazi District which means that Accounting teachers' understanding of TCK differs with circuits. Therefore, the null hypothesis is rejected whereas the research hypothesis is accepted. However, other demographic characteristics maintained that there was no statistically significant difference at the $p < .05$ level in the scores. The effect sizes calculated using eta squared were slightly small effects. Post-hoc comparisons using Tukey HSD test indicated that the mean scores did not differ significantly. Therefore, the null hypothesis is accepted whereas the research hypothesis is rejected for other demographic characteristics.

The next section discusses findings broadly on the second theme of this study.

8.8. TEACHERS' PRACTICES OF INTEGRATING ICT IN TEACHING ACCOUNTING

The DoE's White Paper on e-Education proposed that every teacher in South Africa should have the necessary knowledge and skills on ICT integration by 2013 (DoE, 2004). To have achieved this goal teachers' practices of integrating ICT into the instructional processes should have been up to standard. Further, teachers' practices of integrating ICT in teaching have the power to influence and increase learners' knowledge and skills of the subject. According to Saad and Sankaran (2020), teachers' practices of ICT integration in the classroom can be measured by their proficiency, confidence, and self-efficacy in the delivery of the lesson. In addition, Hero (2020) contends that practices of integrating ICT into teaching and learning is a complex process that requires preparation to make learning more meaningful and fruitful. The technical skills possessed by teachers in integrating ICT become an important factor in determining the quality of learning which will later affect the quality of learners' learning outcomes. The findings on Accounting teachers' practices of integrating ICT are discussed under three elements of TPACK, namely, PK, TPK, and TPACK. These types of knowledge were selected for their relatedness to clearly outline the findings on practices (teaching).

8.8.1. Pedagogical Knowledge (PK)

Teaching is the most significant mechanism of knowledge production hence literature in the education sector concentrates more on teaching skills. PK can be described as teachers' knowledge of various instructional practices, strategies, and methods to promote learners' learning (Koehler et al., 2014). Koehler and Mishra (2009) and Makwela (2019) add that PK focuses on the understanding of how learners learn, general classroom management skills, lesson planning, learners' assessment, knowledge about techniques or methods used in the classroom, the nature of the target audience, and strategies for evaluating learners' understanding. Makwela (2019) asserts that PK allows teachers to teach learners in any context or environment. The overall findings of this current study pointed out that all Accounting teachers are adequately informed in creating and facilitating effective teaching and learning environments.

Qualitative data showed that Accounting teachers believe they possess good knowledge of methods and processes of teaching used for different learners. They mentioned approaches such as collaborative learning approach, constructivist approach, questioning and answer method, written work, demonstrations, discussions and explanation of concepts, particularly when

introducing topics. However, from the observed lessons all teachers used the questioning and answer method to introduce topics; only two teachers used something different - one used a play introducing companies as a topic in Grade 11 and the other used a demonstration from Google to introduce manufacturing. During teaching, teachers used more explanation; the writing and collaboration approach was minor since it was only observed during class activities' sessions, where learners were grouped or paired, and the corrections were administered together as a class. Constructivist approach was not observed in any classroom, but teachers claimed to be familiar with it. The above findings are supported by Letshwene (2014) who asserts that in Accounting, collaborative teaching strategies such as question-and-answer are the most appropriate teaching strategies because they develop the involvement of the learner in the teaching and learning process.

Teachers felt that they were knowledgeable about the learner-centred approach. However, in view of the type of learners they come across, it is sometimes difficult to use the approach effectively and the learners are not willing to learn independently to the extent that teachers end up doing most of the teaching instead of facilitation. The above findings are supported by various scholars including (Hlongwane, 2020; Koehler et al., 2014; Letshwene, 2014; Mwapwele et al., 2019; Ndlovu, 2022) who posit that teachers in schools are obliged to use a learner-centred approach for vivid content understanding. These scholars further emphasise the importance of adopting suitable and effective teaching strategies to make sure that learners are actively involved in teaching and learning. From the qualitative data, teachers are informed about the learner-centred approach, however they lack the skills to implement the approach in the classroom. During observations, teachers provided information and learners received information and asked questions most of the time.

It also appeared that teachers are well-informed about various assessment strategies to assess learners' learning and performance. Informal and formal tests, a variety of learning tasks, assignments, projects and database responses are some of the assessment strategies teachers understand well in Accounting. Learners' understanding and their misconceptions have made teachers consider other assessment strategies. Accounting teachers reported that they understand that learners learn differently, therefore, they use a variety of teaching skills to develop lessons that will accommodate all types of learners in the classroom. According to Letshwene (2014) and Ngwenya (2014), the nature of Accounting subject is practical therefore

teachers should be knowledgeable on different assessment strategies needed to assess learners' understanding of Accounting knowledge sufficiently.

From qualitative data, teachers are knowledgeable about teaching approaches, teaching strategies, and various assessment methods to the extent that they were able to mention and elaborate on them. However, they lack skills to incorporate these teaching and assessment strategies effectively because of numerous reasons. Accounting teachers showed appropriate classroom management skills as all learners were well-behaved and followed the teacher's instructions. Some teachers demonstrated the management skills to discipline learners who were talking and borrowing stationery while the teacher was teaching. Hlophe (2020) asserts that teachers should be well informed of the PK skills, namely creating, enriching, maintaining, and adapting to achieve Accounting goals. However, continuous development is required for teachers to produce quality teaching. Rambrij (2018) agrees with this sentiment by maintaining that PK cannot be overemphasised as it drives the teaching and learning process.

T-test findings supported this study's findings by indicating that there is no statistically significant difference between male and female Accounting teachers as sig. (2-tailed) was above .05. This confirms that Accounting teachers' PK does not differ between the two groups (male and female teachers). Furthermore, a one-way between-groups analysis of variance was also conducted to compare the demographic characteristics of Accounting teachers on the PK. The results confirm that there was no statistically significant difference at the $p < 0.5$ level in the scores comparing demographic characteristics of Accounting teachers with PK. The effect sizes, calculated using eta squared, were moderate effects and post-hoc comparisons using the Tukey HSD test indicated that the mean scores did not differ significantly. As a result, the null hypothesis is accepted whereas the research hypothesis is rejected as far as PK is concerned.

The next section discusses the findings of the second sub-theme under teachers' practices of integrating ICT.

8.8.2. Technological Pedagogical Knowledge (TPK)

In pedagogy, technical knowledge has become a requirement for teachers to effectively conduct teaching and learning. TPK intends to ensure that teachers are knowledgeable about combining technology and teaching strategies in instructional practices. In addition, TPK has been perceived as a valuable cornerstone or engine of education to make learners acquire, share, and

distribute knowledge (Mukhari, 2016). In Accounting, TPK enables teachers to understand what technology can be used in achieving learning objectives and to understand the selection of a tool that is most appropriate in the pedagogical approach (Mudrikah et al., 2021).

Although in this study findings showed that teachers in Accounting are moderately knowledgeable about combining technology and teaching strategies to influence teaching and learning, it appeared that half of teachers have the ability to choose technologies to enhance their teaching and improve learners' learning. Teachers mentioned that their choices are dependent on technologies that are available and accessible to them in schools. Mudrikah et al. (2021) supported the above findings by indicating that TPK concentrates on how various technologies can be selected in teaching and learning and understanding that using technology can change the way teachers teach. Teachers normally select technologies such as smartphones, laptops, tablets, computers, printers, and copier machines to enhance the teaching and learning in their lessons. In addition, WhatsApp social media was the most frequently used to support Accounting teaching. Teachers downloaded WhatsApp application on their smartphones and tablets. A few teachers acknowledged that they also use technology platforms such as Facebook, Messenger, YouTube, electronic books, and TikTok to improve the instructional practice. From the lesson observed, in one school teachers and learners had textbooks on their smartphones, and they used them during teaching and learning. In one instance, a teacher grouped learners to watch a video on manufacturing using a smartphone. According to Kaarakainen and Saikkonen (2021) and Verma et al. (2016), digital devices help increase the accessibility of educational applications and downloadable mobile applications provide an abundance of possibilities for educators and learners.

Kaarakainen and Saikkonen (2021); Ndlovu (2022); Skhephe and Caga (2019) and Winter et al. (2021) support the above findings by explaining that COVID-19 enabled teachers to become competent in the integration of technology and pedagogy as it compelled teachers to teach using technologies. Teachers had to align digital devices with teaching approaches to enhance what they were teaching, how they were teaching and how learners had to learn. Social media platforms were the first options for teachers to connect with learners during the pandemic. Darkwa and Agyei (2021) also confirm the above findings by maintaining that the introduction of technologies in teaching has provided platforms for teachers to improve the way they teach and also facilitate the learning process. Further, teachers are required to be abreast with how

new technologies can be used to facilitate the teaching and learning process to make learning more meaningful for learners.

Technology innovation in education has resulted in Accounting teachers being more considerate of technology in the classroom. Teachers felt that combination of technology and appropriate teaching strategies could lessen the burden of content delivery. The interview responses pointed out that some teachers combine technology and pedagogy through using the internet for various activities and it stimulates their teaching. Fu and Hou (2015) and Orlando (2015) support the above findings by maintaining that when teachers employ technology during an instructional session, it provides opportunities for students to share learning resources and spaces and also enhances the critical thinking and problem-solving skills of students. The major emphasis of integrating ICT in teaching should be on its potential to improve learning, engage learners, and also promote collaboration among learners in the classroom (Kisirkoi, 2015).

Teachers mentioned that the moderate TPK is due to various factors embedded in their regular practices which could enhance their knowledge and skills. As a result, a few participants were knowledgeable about selecting the most popular presentation tool which is PowerPoint. Ndlovu (2022) and Rambrij (2018) argue that teachers' knowledge in combining technology and teaching practice remains limited since they have an understanding but do not manifest it. In schools where there is high accessibility to technology resources, such as free Wi-Fi, teachers are better informed about TPK since they are exposed to these tools. It is evident that very few frequently integrate technology in their teaching by giving learners technology-based activities, monitoring their progress, accomplishing curriculum content, and bringing collaboration in teaching and learning.

The findings above were confirmed by T-test and ANOVA analysis which also indicated similar results. T-test findings revealed that there is no statistically significant difference between the two groups as sig. (2-tailed) was above .05. ANOVA analysis also confirmed that there is no statistically significant difference at the $p < .05$ level in the scores comparing demographic characteristics with TPK. The effect sizes calculated using eta squared were moderately medium and small effects. Post-hoc comparisons using Tukey HSD test indicated that the mean scores did not differ significantly. Thus, the null hypothesis is accepted whereas the research hypothesis is rejected as far as TPK is concerned.

The next sub-theme discusses the overall findings of teachers' practices of integrating ICT in teaching.

8.8.3. Technological Pedagogical and Content Knowledge (TPACK)

The evolution of technology information globally has increased the adoption and utilisation of the TPACK framework in teaching and learning. TPACK provides a combined comprehension of three types of knowledge, namely TK, PK and CK to be understood by teachers in integrating technology effectively into instructional practices. In addition, TPACK is regarded as knowledge itself that is very complex, multifaceted, integrative, and transformative (Kisirkoi, 2015). According to Koehler et al. (2014), TPACK is complex knowledge of technology, pedagogy, and content that enables teachers to develop appropriate and context-specific teaching strategies. In addition, teachers need to have a deep understanding of each of the above types of knowledge to produce quality technology-enhanced teaching and learning. The South African e-Education policy maintains that content, pedagogy, and technology complete the process of teaching and hence teachers should be knowledgeable about using ICTs in classroom settings.

Teachers mentioned that they are not informed about technologies that are directly designed for teaching Accounting subject matter such as software. Evidently, they cannot integrate various Accounting software to enhance their teaching and learners' learning. In fact, they have never done it before. These findings are supported by King (2020); Kwarteng (2019) and Siyaya (2023) who allude that in South Africa there is no Accounting software available in secondary schools even Accounting courses in higher education have limited software. Amory et al. (2015) confirm the above findings by indicating that the majority of Accounting schools, across the world, continue to teach without the assistance of Accounting software. Further, teachers and learners continue to practice with pen and paper which results in limited understanding and practice of relevant Accounting software. Findings of the study are contrary to the view of Waghid and Waghid (2016) who explain that by using relevant computer software and technology in Accounting classrooms a new type of learning environment is created, which offers an alternative platform for teaching and learning. Teachers indicated that they can only attempt to integrate content, pedagogy, and technology with the digital resources they have such as smartphones, tablets, laptops, printers and photocopier machines. This type of integration is minor since it involves only the basics of searching, downloading, typing,

printing, and making copies. However, the use of social media to support teaching and learning as a result of the lockdown has made teachers realise that integration of content, pedagogy, and technology is effective with smartphones, particularly, WhatsApp.

Most teachers cannot assist or develop each other in combining Accounting technologies with teaching approaches to teach the subject content since their ability to integrate content, pedagogy and Accounting technologies is relatively low. The few who disclosed they have abilities were three teachers who have IT qualifications. According to Siyaya (2023), in TPACK teachers should not be trained only in technological pedagogy but should be provided with technology resources.

The T-test analysis of the data supported the above findings by indicating that there is no statistically significant difference between the two groups as sig. (2-tailed) was above .05. A one-way ANOVA analysis comparison of demographic characteristics on TPACK obtained similar results. ANOVA results comparing demographic characteristics with TPACK confirm that there is no statistically significant difference at the $p < .05$ level in the scores comparing demographic characteristics with TPACK. The effect sizes, calculated using eta squared, were relatively medium to large effects. Post-hoc comparisons using Tukey HSD test indicated that the mean scores did not differ significantly. Therefore, the null hypothesis is accepted whereas the research hypothesis is rejected as far as TPACK. Lastly, a correlation between these six types of knowledge was analysed and the results are discussed below.

8.9. CORRELATION OF VARIABLES

The correlation measured the Means, Standard Deviation, and Intercorrelations for PK, CK, TPK, TCK and TPACK variables. In all variables, a total number of 129 participants were involved. It was found that variables were significantly correlated ($r = .2$) which is a small strength according to Cohen's (1988) guidelines.

The next section discusses the findings of the third central theme of this study.

8.10. FACTORS INFLUENCING TEACHERS TO INTEGRATE ICT IN TEACHING ACCOUNTING

The preceding section showed that although Accounting teachers believed that they are informed with content and pedagogy approaches, their technology integration comprehension

is still lacking. As a result, the integration of ICT in their instructional practices is not effective and sufficient. For the above reasons, the continuation of this section presents an in-depth discussion of why Accounting teachers understand and practice integrating ICT in teaching Accounting the way they do. To remind the reader, this was the third research question of this study and the UTAUT model was employed to critically answer this question. UTAUT was adopted because it provides valuable insights into understanding the factors influencing technology acceptance and usage. Data collected revealed that there are factors influencing teachers to integrate ICT in teaching Accounting the way they do. Some of these influential factors are motivating while others are hindering teachers in the integration of ICT. In the previous chapter of data analysis for this research question (Chapter 7), UTAUT constructs were employed to present factors influencing teachers. However, in this discussion of findings section, the factors are outlined separately on their own to ensure that they are clearly understood, and the research question is well answered. Therefore, the findings below articulate an in-depth discussion of factors motivating and hindering Accounting teachers to integrate ICT. This study used Venkatesh et al. (2003)'s version of UTAUT.

8.10.1. Factors motivating Accounting teachers to integrate ICT

This section discusses factors that hampered teachers in Accounting to integrate ICT in teaching Accounting.

8.10.1.1. ICT Improves teaching performance

The findings of this study revealed that Accounting teachers share positive beliefs about using ICTs to teach Accounting. Teachers strongly believed that integrating ICT in teaching Accounting improves their job performance which is to convey quality curriculum content to learners. Considering the nature of Accounting where the teaching should be more practical than theory-based, the ICT system can enable productive instruction to teach skills and provide knowledge to prepare learners for the job market. The above findings are supported by scholars including Mafuraga and Moremi (2017) and Manhibi (2019) who emphasise that the more individuals believe that technology improves their productivity, the more likely they will adopt it in the classroom. Lawrence and Tar (2018) add that teachers' positive attitudes towards technology influences the successful integration of ICT into teaching.

Teachers mentioned that using ICT systems in teaching Accounting brings innovation and creativity and improves the quality of instructional practices broadening learners'

understanding of the topic. In addition, the ICT system is useful to keep teachers abreast of any content changes be it for teaching and learning, assessment, or policy changes. Accounting as a subject involves an international standard, therefore, ICT assists teachers in adhering to the international standard. In Accounting the ICT system enhances teaching and learning through mobile apps such as smartphones, tablets, laptops, copier machines, and printers and web-based applications such as the internet. However, smartphones and the internet were highly rated for working more quickly in Accounting.

8.10.1.2. Creating excitement in teaching and learning

Accounting teachers' excitement about ICTs is motivated by the fact that it harnesses teaching and learning. Makwela (2019) and Siyaya (2023) indicate that the ICT system in education has brought joy to both teachers and learners as it infuses liveliness and accommodates various learning styles to improve pedagogical dimensions, stimulate learners' learning experience and deepen learners' understanding of concepts. Teachers are motivated to use the ICT system since it facilitates teaching and learning, provides teaching materials, encourages constructive learning and promotes quick and in-depth understanding of different types of learners in the classroom. Teachers perceived the ICT system as saving teaching time and making lessons enjoyable for learners.

8.10.1.3. Promoting transformation in the classroom

Accounting teachers acknowledged that ICT integration in the classroom transforms presenting and how learners are learning. They felt that the transformation motivates them to integrate ICT in the classroom. Mooketsi and Chigona (2014) support the above sentiments by indicating that ICT systems impact end users and those impacts bring transformation. These scholars further assert that the system of ICT is a success in the classroom based on the intangible benefits teachers derive from the implementation. The benefits of the ICT system in teaching and learning inspire teachers to be eager to learn more about ICT. Further, findings reported that the majority disclosed that they wished they had more money to purchase ICTs. The traditional way of writing everything on the chalkboard is time-consuming for Accounting teachers as the subject consists of detailed information, particularly the answer book. Therefore, the ICT system was perceived as a strategy to address such impediments. Lawrence and Tar (2018) supports the above findings by indicating that the change that has been brought about by ICT in teaching and learning inside and outside of the classroom has significantly contributed to positive teachers' beliefs of the system.

8.10.1.4. Reduce teaching burden

Accounting teachers felt that the ICT system enables them to achieve teaching tasks faster, they can reach the objectives of their lessons, increase their work performance in terms of administration duties and obtain better academic performance from learners. In addition, the ICT system in Accounting is regarded as making the lessons spontaneous since learners are used to the traditional teaching method of chalk and talk, learners engage more in their learning and opportunities for effective communication in the teaching of the subject are created. These findings are supported by various education documents and research including the DoE White Paper which states that ICT creates access to learning opportunities, redresses inequalities, improves the quality of learning and teaching, and delivers lifelong learning (Aksal & Gazi, 2015; Education, 2004; Meyer & Gent, 2016). Mwapwele et al. (2019) and Kızıl (2014) add that ICT in teaching reduces work stress and frustration and eases the delivery of difficult topics. An ICT system can accommodate differences in learning styles and remove barriers to learning by providing expanded opportunities and individualised learning experiences. According to Lawrence and Tar (2018); Makwela (2019) and Manhibi (2019), the ICT system is perceived as useful due to its support of student-centred and self-directed learning. The authors further posit that it produces a creative learning environment and promotes collaborative learning in a distance learning environment. It also offers more opportunities to develop critical (higher-order) thinking skills and improves the teaching and learning quality.

8.10.1.5. Age and gender

According to Venkatesh et al. (2003), users' beliefs are influenced by gender and age. In this study, it was observed that the younger generation of teachers strongly believed in the use of technology or ICT to enhance teaching. For instance, during lesson observations and interviews, they were able to fluently elaborate on ICT usage in the classroom and they showed enthusiasm. Quantitative findings also reported that the younger generation of teachers understand and integrate ICT better in schools. This finding is supported by Padayachee (2017) and Mooketsi and Chigona (2014) who assert that the younger generation of teachers believes in integrating ICT in schools while the older generation of teachers tends to be more resistant to ICT integration in instructional practice. Peter (2019) and Siyaya (2023) argue that the younger generation of Accounting teachers in secondary schools has been more fortunate to understand ICTs in teaching since they have had greater exposure to technology tools in their

training. Adarkwah (2021) affirm that older teachers who did not use technology in their education training cannot adopt and integrate ICT into their teachings quickly.

8.10.2. Factors hindering Accounting teachers to integrate ICT in teaching Accounting

This section discusses factors that negatively affect Accounting teachers to integrate ICT in teaching Accounting.

8.10.2.1. Lack of professional training

Although Accounting teachers felt that they were not scared of the ICT system, they liked talking about it to other colleagues, they enjoyed using it in their teaching and they understood the basic functioning of ICT tools. The majority mentioned that the degree of ease with which they use the system is still low due lack of professional training. Padayachee (2017) supports the above findings by asserting that due to existing contextual challenges, ICT integration in some South African schools remains low and contributes to some educators' questioning of the usefulness of the Department's e-Education policy. Since many teachers in South African schools are computer illiterate (Padayachee, 2017), they choose to do things manually instead of using ICT tools. Accounting teachers acknowledge that they have not received professional training on utilising ICT in their teaching. Even in so-called workshops, teachers have observed limited use of ICT tools by officials such as subject advisors which indicates a lack of skilled manpower to facilitate or train teachers on ICT system usage. The issue of skilled manpower is also severe in schools where there are no teachers who are qualified to offer training or development to others. Teachers indicated they cannot train each other within their schools. The above findings are confirmed by scholars including Ghavifekr et al. (2016); Manhibi (2019); Mashile (2017); Padayachee (2017) and Pirtheepal (2019) who assert that poor professional training on ICT integration is the main barrier in schools for teachers to implement or use ICT in the classrooms effectively.

Although a few teachers indicated that they have attended recent training, the training was once-off with no follow-up on the implementation of skills acquired. The skills and knowledge they acquired were not executed as they did not practice the use of ICT in the classrooms. The training course was on basic skills of using ICT tools such as turning on the computer, opening documents, typing, and shutting it down not on how to develop teaching and learning using ICTs. In relation to Accounting subject, teachers need more integration skills than the basic in order to grasp ICT within the subject. Ghavifekr et al. (2016) argues that inappropriate

professional training does not equip teachers to use ICT in their classrooms and in preparing lessons. Further, in those workshops, teachers were not provided with guidelines such as manuals to assist them use the ICT system. For instance, there are training sessions such as SASAMS workshops where teachers were inducted in navigating the SASAMS software.

Most Accounting teachers disclosed that due to the lack of proper training, they have seen and learned from media how to integrate ICT in the classroom; others observed the training offered in other provinces and endeavoured to develop themselves. Some teachers indicated they have enrolled in computer training courses on their own to obtain basic skills in using the ICT system. Lack of professional training has resulted in Accounting teachers having inadequate knowledge and skills to use ICT systems in their instructional practice. In addition, teachers lack the competency and confidence to infuse technology. Lack of competency and confidence forces teachers to depend on themselves to adopt and accept ICT in pedagogy. Teachers felt that software was the hardest tool for them to use since they had never used it in the teaching of Accounting. Software to teach Accounting is not available at all in schools; hence teachers believe it is very complicated. Ndlovu (2022) and Siyaya (2023) opine that in secondary schools it is difficult for teachers to infuse technology in their teaching as have not been professionally equipped.

8.10.2.2. Safety issues, burglary and theft

Accounting teachers outlined that there are social factors that negatively influence the integration of ICT in teaching Accounting. To begin with, the security is poor on the school premises. Teachers acknowledge that they are often reluctant to bring their gadgets to school because of safety issues. In townships theft and robbery can take place during school hours therefore teachers fear for their safety. Criminal elements in the community tend to steal the gadgets used for teaching and learning and the schools fail to replace the stolen gadgets. This has shown that the same community that the government intends to develop does not prioritise education development. However, the blame should also be put on the Department that provides technical resources without planning for a secure environment, tight security measures and a budget for funds to improve and pay for security in schools. Zulu (2020) confirms the above findings by mentioning the high rate of theft in township schools which prevents teachers from infusing technology into their teaching.

In South Africa, theft and vandalism in schools has been thoroughly reported because of ongoing security challenges, which has negative implications for ICT integration in the classroom (Buzuzi & Chigona, 2021; Mokou, 2021; Ngqakamba, 2020). This challenge is, however, not limited to South Africa. According to Hussain et al. (2021) and Mutisya and Mwanja (2017), in Kenya security barriers and ICT integration impact negatively on teaching and learning. Consequently, Ramorola (2017) emphasises the importance of providing physical protection to schools with computer facilities, a suggested move that can assist the government in achieving its goal of quality education for all. Some teachers mentioned that they once had computers in schools and they were stolen, hence, the implementation procedures are affected. In most developing countries, public schools do not have high security to safeguard resources.

8.10.2.3. Inadequate technical resources

Accounting teachers acknowledge that ICT resources are available in their schools however they are not adequate. Very few schools were observed to be well-resourced with ICT tools in this study. In some schools staff had to share two laptops, one printer, and one copier machine for the entire functioning of the school, which is an impediment when teachers intend to integrate ICT in their teaching. Some schools designed a policy of booking laptops a day before for a maximum of three days to facilitate sharing within the departments. This became a huge barrier and a demotivation to teachers to use ICT. Technical resources such as overhead projectors, whiteboards, and computers were not available at all in some schools while others indicated that they were old, slow, and malfunctioning. Others had at least one projector, but it had never been used.

The majority of township schools have no computer laboratories, while the few who have them have no adequate resources for the full functioning of the labs. The shortage of resources has caused teachers in this study to fail to adopt technology successfully. The above findings are supported by numerous scholars including Ghavifekr and Rosdy (2015); Manhibi (2019); Ndlovu (2022); Padayachee (2017); Rambrij (2018) and Winter et al. (2021). These scholars posit that inadequate resources in schools is a serious challenge for effectively integrating ICT in teaching and learning.

8.10.2.4. Inaccessibility of resources

Accounting teachers mentioned that accessibility to the resources is poor. For instance, only the School Management Team and administrators had access to Wi-Fi passwords, and they were the only ones who may take laptops home. In some schools, teachers are not allowed to use printers and copier machines without assistance from administration clerks since it is believed they will damage the resources because they are untrained to operate them. This has caused teachers to be discouraged from using ICT tools since they are accountable for damage. These findings are in line with Gunzo (2020); Mahlo (2020); Mooketsi and Chigona (2014); Mukhari (2016); Siyaya (2023) and Buzuzi and Chigona (2021), who indicated that the type of technologies teachers use in teaching and learning is very limited due to lack of accessibility to technology resources, which is a huge impediment. Zulu (2020) adds by commenting that teachers are deprived of access to technology resources and only certain people are allowed to use them in schools.

8.10.2.5. Unreliable internet

Unreliable access to the internet hinders teachers from facilitating their teaching with internet resources. According to Kaarakainen and Saikkonen (2021), internet accessibility is the most significant predictor of adopting and using technology in schools. Accounting teachers often struggle with connectivity issues in the classroom due to network problems. There are a few schools that indicated that sometimes even smartphones will not work because of the network and the Department does not support schools to boost the network functioning. Network issues make it difficult for Accounting teachers to network with others.

8.10.2.6. Power outages

Power outages in the classroom and load shedding were identified as negative factors in facilitating the use of ICTs in the classroom. When there is load shedding, teachers cannot use technology tools for teaching since the schools have no backup plans. They also cannot prepare and present lessons using technical resources. From the lessons observed most schools do not have power in the classrooms, it is normally the administration block, staffroom, Grade 12 classes, and computer laboratories that have electricity. In some schools electricity was once installed; however due to theft power cables were stripped. Mukhari (2016) and Zulu (2020) indicate that in South Africa shortage of power in schools does not allow teachers to integrate ICT into their teaching.

8.10.2.7. Lack of technical support

This study found that Accounting teachers do not receive enough technical support from the government, education department and School Management Team on utilising the ICT. Teachers experience technical barriers such as the failure to fix an ICT tool if it breaks down, printers not printing, failure to fix viruses on devices, storage issues, loss of data issues, installation of applications, failure to open the website and connect to the internet and security level of the system such as creating and changing passwords to safeguard data. Further, teachers struggle on their own without proper assistance. Literature shows that without support from the top management, any innovation is less likely to be adopted (Arshad, 2020; Blankley et al., 2018; Szyszka et al., 2022). Further, lack of technical support generates technical problems that affect smooth lesson delivery (Ghavifekr et al., 2016). In all the schools there are no technicians or IT specialists stationed on-site to support teachers when they encounter difficulties with the system. When machines break down or any other technology resource, teachers wait for the technician to be called which denies teachers an opportunity to use the resources freely. Consequently, some schools have donated tablets but do not use them because there is a lack of trained manpower to fix them. Teachers further mentioned that ICT policy documents do not support the implementation of the system as they are not updated and do not provide clear guidelines on using ICTs to teach.

Teachers outlined that Vodacom, Telkom and GAMMA projects have tried to support them with resources such as laptops, tablets and Wi-Fi. However, these were short-term projects where schools and the department were anticipated to proceed with the project but were unsuccessful. These companies also offered teachers training to use ICT tools. From the observations, poor maintenance was a cause of the failure of projects in South Africa (Padayachee, 2017). Schools could not afford maintenance of the resource such as tablets. Others had donated laptops but they were not functioning since the software to operate the laptops were not installed. Maintenance of resources only takes place when certain resources break down. Batucan et al. (2022) support the above findings as they allude that the lack of technically qualified staff and inadequate human resources training has been a constant problem for years in developing countries as teachers cannot get assistance within the school. This is a result of insufficient financial resources where the department cannot afford to train and develop teachers professionally on technology initiatives such as ICT implementation programmes. Shadreck (2015) also affirms that teachers lack technical support to integrate ICTs into teaching and learning.

8.10.2.8. Insufficient teaching time

Teachers acknowledge that ICT integration necessitates time to become familiar with the hardware and software, to prepare and present a lesson. When teachers integrate ICT into their lessons they need time to connect devices, search for the internet, explore various sites for information, deal with technical problems, project presentations, and deal with learners. Currently, limited time makes it difficult for teachers to present effective lessons and often they do not even complete the planned lesson. Limited teaching times cause teachers to lose interest in technology-planned lessons. These findings are supported by Ghavifekr and Rosdy (2015) and Rambrij (2018) who state that schools suffer from insufficient teaching time to incorporate technology in a classroom as connecting resources alone demands time.

8.11. CHAPTER SUMMARY

This chapter concentrated on an in-depth discussion of the findings of this study. The discussion focused in detail on the technologies teachers use in teaching Accounting and the extent to which technologies are used in teaching Accounting. Teachers' extent of using technologies was measured by their frequency and proficiency levels. Both the frequency and proficiency measured the level of using technology tools, their applications and web applications. The chapter went on to discuss teachers' purposes of using technology (internet), and the frequency. Findings on teachers' knowledge of ICT integration were also broadly discussed under types of knowledge from the TPACK theoretical framework, namely, CK, PCK and TCK. The findings on Accounting teachers' practices of integrating ICT were discussed under three elements of TPACK, namely PK, TPK and TPACK. Later the chapter outlined the factors motivating and hindering teachers from integrating ICT in teaching Accounting.

CHAPTER NINE

9. DISCUSSION, RECOMMENDATION, AND CONCLUSION

9.1. INTRODUCTION

Chapter 8 outlined an in-depth discussion of findings that emerged from data presentation and data analysis (Chapters 5, 6 & 7). This chapter serves as a concluding chapter for the entire study. In this chapter, I present a brief overview of this research study by summarising what was covered in each chapter. Thereafter, I highlight the summary of key findings in line with the research questions, the proposed theory of the study, implications of the findings, suggestions for future research, limitations of the study, and present concluding remarks. This study explored Accounting teachers' understanding and practices of integration of ICT in teaching Accounting guided by the following aims:

- To explore Accounting teachers' understanding and practices of integration of ICT in teaching Accounting in Umlazi District.
- To examine how Accounting teachers understand and practice integration of ICT in teaching Accounting in Umlazi District.
- To determine why Accounting teachers understand and practice integration of ICT in teaching Accounting the way they do in Umlazi District.

In addition, the three critical research questions driving this study were:

- What are Accounting teachers' understanding of integration of ICT in teaching Accounting in Umlazi District?
 - What technologies are being used in Accounting in Umlazi District?
 - To what extent do teachers use ICT tools in teaching and learning in the classroom?
- How do Accounting teachers integrate ICT in teaching Accounting in Umlazi District?
 - What knowledge do Accounting teachers have in terms of TPACK in teaching and learning of Accounting?
 - How do Accounting teachers use TPACK to practice ICT integration in Accounting?

- Why do Accounting teachers understand and practice integration of ICT in teaching Accounting the way they do?
 - What factors influence or motivating and hindering teachers in integration of ICT in teaching Accounting?

I attempted to respond to these critical research questions rigorously by collecting data using a quantitative method (a questionnaire) and qualitative methods (focus group discussions, observations, and individual interviews). Therefore, data were analysed statistically and qualitatively.

9.2. OVERVIEW OF CHAPTERS

This research study consists of nine chapters, and it was conducted in KZN province, in Umlazi Durban South district. Chapter 1 provided an insight into the study's introduction, background, problem statement, rationale, and research significance. The study background provided information on the context of the study, which provided insights into the significance of utilising technology to advance instructional practice. Further, the chapter presented the study's critical research questions, objectives, brief methodology employed, brief literature, and a chapter summary.

Chapter 2 discussed the literature related to teachers' understanding and practices of ICT integration in teaching Accounting. The review provided a deeper conceptualisation of the phenomenon and further outlined literature on the following subheadings: ICT policy in South Africa, ICT policies in other countries, technology utilisation in education, and the need for ICT integration in education. Furthermore, technology integration in teaching and learning of Accounting education, the level of ICT integration in South African schools, and the importance of ICT during the COVID-19 lockdown. Lastly, factors influencing teachers to integrate ICT in teaching Accounting were discussed.

To gain a theoretical understanding of how teachers understand and practice ICT integration in teaching Accounting, I drew on TPACK and UTUAT which are discussed in Chapter 3 as the theoretical and conceptual framework underpinning this study. TPACK theoretical framework was selected based on providing comprehension of knowledge necessitated for teachers to integrate ICT into the instructional practice. The UTAUT conceptual framework assisted me

by providing an understanding of factors influencing teachers' acceptance and use of technology.

I presented a detailed discussion of the research methodology of this study in Chapter 4. The research methodology chapter comprises: the research approach, research paradigm, research design, sampling method, data collection methods, data analysis methods, validity and reliability, ethical considerations, and the study's limitations.

The findings of the study were presented in three separate chapters (Chapters 5, 6 and 7):

Chapter 5 presented and analysed findings on the first research question: What is Accounting teachers' understanding of the integration of ICT in teaching Accounting in Umlazi District? To answer this question, four themes were developed: firstly, technologies teachers use in teaching Accounting; secondly, the extent to which technologies are used in teaching Accounting; thirdly, teachers' level of proficiency in technology use; and lastly, findings on teachers' purposes for utilising technology.

Chapter 6 presented, interpreted, and analysed the findings of the second research question which was how Accounting teachers integrate ICT in teaching Accounting in Umlazi District. The findings were outlined under the TPACK elements and qualitative findings, T-test, and ANOVA statistical analysis were used to support or refute the findings.

Chapter 7 also presented, interpreted, and analysed findings on the third research question which was why Accounting teachers understand and practice integration of ICT in teaching Accounting the way they do. The UTAUT conceptual framework was employed to present findings. In other words, the findings were presented under the elements of UTAUT since they indicate factors influencing Accounting teachers to integrate ICT.

Chapter 8 outlined an in-depth discussion of the findings of this research study in relation to the literature reviewed in Chapter 2 and the theoretical and conceptual framework discussed in Chapter 3.

The final chapter, Chapter 9, presents the conclusions from the study by summarising and providing the synthesis of the study findings. The following section summarises the study findings.

9.3. SUMMARY OF THE KEY FINDINGS

In this section, I synthesise the key findings that emerged from the data presentation chapters. The purpose of this section is to demonstrate how the research questions have been answered in this study. Having chosen to use a thematic approach to analyse my data, three themes emerged from the data. The following themes were the dominant concerns that emerged from the participants' discourses about their understanding and practices of integration of ICT:

- Accounting teachers' understanding and practices of integration of ICT in teaching Accounting in Umlazi District.
- How Accounting teachers understand and practice integration of ICT in teaching Accounting in Umlazi District.
- Factors influencing Accounting teachers' understanding and practices of integration of ICT in teaching Accounting the way they do in Umlazi District.

The synthesis process was guided by the three main research questions underpinning the study. In view of this, the key research questions are restated in the next three sub-sections for summarising the findings.

9.3.1. What are Accounting teachers' understanding of integration of ICT in teaching Accounting in Umlazi District?

Findings of this study revealed that there are technology tools that teachers use in teaching Accounting, however, the extent of use varies according to the type of technology tool and its accessibility. Further, Accounting teachers possess different proficiency in technology tools, and they use technology (internet) for a variety of purposes. Accounting teachers know that technology tools such as tablets, laptops, computers, printers, photocopier machines calculators, scanners, digital cameras, LCD panels and or data projectors, and video conferencing systems exist. Furthermore, they are informed about the benefits of the above tools in teaching Accounting. However, they possess a limited understanding of how they can be used in teaching and some teachers have never used them in their teaching. In addition, teachers are well informed about smartphones in teaching Accounting.

The lockdown which was a result of COVID-19 pandemic catalysed teachers' understanding of smartphones in teaching since they were the most available tools for both teachers and learners. During the lockdown phase, teachers were obliged to be conversant with smartphones in order to be in contact with the learners and colleagues especially in remote areas. As a result, smartphones are regarded as advantageous for teaching and learning to date. Nevertheless, the fact that there is no policy guiding the use of smartphones in schools is a concern.

In this study, schools' quintile and location contributed to the frequency of technology tools usage in teaching. It was therefore evident that the frequency of teachers using technology tools in their Accounting classrooms differed. Teachers indicated that they frequently use technology tools such as tablets, laptops, computers, copier machines, and printers. These tools were regarded as the engine of teaching and learning, particularly during preparation of the lessons. Teachers use these tools frequently because they are inseparable - laptops and computers need printers and copier machines to successfully complete the task and vice versa. The entire functioning of the school relies on these tools hence they are commonly used.

The fact that smartphones serve multiple purposes in teaching made teachers use them on a daily basis for instruction in Accounting. Smartphones were regarded as the most affordable, convenient, and available technology tools to be used in teaching, hence they are more likely to be used. In addition, the frequency of using smartphones increased drastically during the pandemic when Accounting teachers had to reach learners and colleagues through social media. The least frequently used technology tools by Accounting teachers were scanners, digital cameras, LCD panels, projectors, scanners, and video conferencing systems.

Word-processing application is commonly used for various Accounting teaching and learning activities. Since word-processing applications are accessible on different technology tools namely laptops, tablets, or smartphones, teachers use them often. Half of the teachers commonly use YouTube videos for instructional purposes in Accounting because YouTube is easily accessible on any gadgets teachers frequently use (smartphones and tablets). Databases, spreadsheets (Excel), graphics programmes and presentation software (PowerPoint) are barely used by Accounting teachers. Teachers also mentioned that they have never used software applications in teaching Accounting and they are not aware of any.

The majority of teachers do not use website development, electronic references (e.g., Encarta., World Book), discussion groups, list servers, and assistive technologies (for the disabled e.g., deaf, no arms). However, teachers frequently use e-mail and the internet (WWW). It was indicated that e-mail was commonly used for personal communication rather than teaching and learning. Teachers rely heavily on the World Wide Web for a variety of activities; as a result, they use it daily.

Teachers indicate a high competency in using tablets and smartphones while their competence with laptops and computers remains moderate. Tablets and smartphones were regarded as tools with less complicated features than laptops and computers. Most teachers are competent with basic skills to operate technology tools such as turning on the tool to shutting it down, opening and closing a programme, file management, and file search. Due to the fact that Accounting teachers do not frequently use digital cameras, scanners, LCD panels, and, or data projectors and video conferencing systems, their proficiency is therefore low. Teachers acknowledged that they are competent with cameras and scanners they have downloaded on their smartphones. Similarly, some teachers indicated that they were more competent with WhatsApp conference calls than video conferencing systems.

Most teachers revealed that they are highly proficient in using Microsoft Word applications in the instructional practice. They mentioned that they have word processing skills such as typing, editing, checking spelling, creating tables, inserting hyperlinks into Word documents, and completing all written communications. Nevertheless, Accounting teachers' competency in Microsoft Excel is low, and their proficiency in using PowerPoint presentations is low to moderate. Concerning database applications, graphics programmes and software (specific to your subject e.g., GIS, CAD, PASTEL) teachers possess low skills and knowledge to operate them and the majority have never used them. Teachers indicate high skills in operating and incorporating YouTube videos for teaching and learning in Accounting and they are very competent in operating e-mail and the internet.

In Accounting, teachers frequently use technology for teaching, educational material, and communication (chats). Teachers frequently retrieve teaching materials and use them to teach in the classroom since Accounting textbooks are outdated and do not provide teachers with adequate information they need to clarify new topics. When preparing lessons, teachers would

search for lesson plan ideas and ideas to enhance the lesson. Teachers further search for information on subject activities such as projects or assignments. Accounting teachers also use technology on a daily basis for chats on platforms such as WhatsApp. There are a few who indicated that they also use Facebook, Messenger, and TikTok. Teachers frequently chat with colleagues and learners regarding instructional practices. Although teachers also frequently use e-mail for communication, it is normally for personal e-mail not related to teaching and learning. The COVID-19 pandemic increased the use of technology in teaching and learning since teachers communicated virtually with colleagues, parents and learners almost daily. Although teachers are aware of technologies in teaching Accounting, it is also crucial to comprehend how they are integrating them.

9.3.2 How do Accounting teachers integrate ICT in teaching Accounting in Umlazi District?

The CK element findings advocated that teachers have adequate Accounting CK. Teachers' knowledge of the subject emerges from the CAPS Accounting Grades 10-12, ATPs, textbooks, and other content documents such as study guides. These documents guided teachers with content topics, concepts, and theories to deeply understand and present the subject matter. In addition, teachers are empowered with Accounting content through workshops, media, and social groups. However, constant changes in some content topics impact teachers' knowledge as they take time to master them. This was also observed during the lockdown where teachers had to familiarise themselves with the trimmed content. Although they adopted the shortened content, it was a huge task to master the changes; in fact, it confused teachers' content knowledge. T-test and ANOVA confirmed the findings by reporting that there is no statistically significant difference between Accounting teachers and CK.

Regarding PCK, Accounting teachers seemed to have good knowledge of teaching Accounting content. Teachers mentioned teaching approaches and strategies such as questioning and answering methods, writing, problem-solving, and collaborative learning to teach Accounting. Qualitative data indicated that teachers also employ case studies, role plays, digital videos, demonstrations, and peer tutoring to teach Accounting. However, during observations only a few teachers used video and demonstrations, the rest were not used. Teachers are knowledgeable that teaching approaches and strategies are not a one size fit all approach; therefore, they are aware that the choice of teaching approaches and strategies is according to the complexity of the content or topics. Findings showed that seasoned teachers or teachers

with long experience in teaching Accounting have more teaching skills to teach the content. T-test and ANOVA analysis confirmed the above findings by revealing that there is no statistically significant difference between Accounting teachers and PCK.

On the contrary, findings showed that Accounting teachers have average knowledge of TCK. Accounting teachers do not have adequate technical skills they need to integrate ICT into the content besides the basics of browsing on the internet, downloading materials, saving and printing material. It was also noted that teachers believe that they can learn technology easily if they can be provided with resources. Others mentioned that certain barriers may not hinder them from learning ICT tools. Nevertheless, the lockdown offered teachers an opportunity to show their technology and content combination knowledge and it was proven that teachers are informed on infusing technology with content with the limited skills they have. T-test and ANOVA supported the above statement by indicating that there is no statistically significant difference between Accounting teachers and TCK. The key findings on the second main theme are discussed below.

PK indicated that teachers know about selecting accurate teaching approaches, assessing learners in different ways, and managing their classrooms. The approaches include collaborative learning, constructive, question and answer methods, written work, demonstrations, discussions and explanations of concepts, particularly when introducing topics. Accounting teachers reported that they understand that learners learn differently, therefore, they use a variety of teaching skills to develop lessons that will accommodate all types of learners using the learner-centred approach, although observations did not support teachers' sentiments of saying they use all the above strategies. Teachers were observed to have good knowledge of only common strategies such as the lecture method and question and answer. Teachers in Accounting assess learners through informal and formal tests, such as a variety of learning tasks, assignments, projects, and database responses. In addition, T-test and ANOVA statistical analysis confirmed the above finding by revealing that there is no statistically significant difference between Accounting teachers and PK.

Concerning TPK, most teachers explained that they can moderately understand the use of technologies to teach Accounting. Qualitative findings indicated that teachers on average can choose technologies to enhance their instructional practice in the classroom. Teachers select technologies according to their availability and teaching approaches. Although it was apparent

that laptops, tablets, computers, printers, and copier machines were partially available and accessible to teachers, smartphones were the most available resources that teachers could select to enhance the teaching approaches for a lesson. In addition, WhatsApp applications were mostly used to enhance and improve the delivery of the lessons. From the lesson observed in some schools, teachers as well as learners had textbooks on their smartphones, and they used them during teaching and learning. The dissemination of smartphones and the above platforms was popular during the pandemic; as a result, they are commonly used to date. Teachers make attempts to combine technology and pedagogy through using the internet for various activities and it stimulates their teaching. T-test and ANOVA analysis confirmed the findings by indicating that there is no statistically significant difference between Accounting teachers and TPK.

Findings indicated that Accounting teachers have limited knowledge and practices of combining all three types of knowledge (technological, pedagogical, and content) since they hardly practice the task of incorporating all. Most of the time they do it without being fully informed that they are doing it. The majority of teachers cannot integrate Accounting technologies and software in teaching Accounting. In fact, Accounting teachers are not aware of any Accounting technologies or software. From the observed lessons, none of the teachers used Accounting software besides PowerPoint. Teachers indicated that they can only attempt to integrate content, pedagogy, and technology with the digital resources they have, such as smartphones and tablets; however, they felt that this type of integration is not adequate. The rise of use of social media to support teaching and learning during and after the lockdown has made teachers believe that integration of content, pedagogy, and technology is effective with smartphones and social media, particularly, WhatsApp. T-test and ANOVA analysis supported these findings by revealing that there is no statistically significant difference between Accounting teachers on TPACK. Teachers' level of knowledge and practices were thus addressed by the study. It is also significant to explore why they practice the way they do as is seen in the ensuing section.

9.3.3 Why do Accounting teachers understand and practice integration of ICT in teaching Accounting the way they do?

Teachers demonstrated positive perceptions regarding the ICT system in teaching Accounting because of its benefits in teaching and learning, ICT improving the quality of teaching,

enhancing creative teaching, creating innovative learning environments, broadening learners' understanding of the content and reducing administrative duties in Accounting instruction. Further, it improves their performance in teaching and it is useful to keep teachers abreast of any content changes concerning instruction, assessment, and policy changes in Accounting. Accounting as a subject should uphold international standards; therefore, ICT was perceived as a technique to ensure international standards within subject teaching. The ICT system further helps teachers achieve teaching tasks faster, reach the objectives of their lessons, and create spontaneous lessons. Teachers are able to move from the traditional method of teaching of chalk and talk to more advanced technology-based teaching through adoption of ICT. More collaborative methods of teaching in the classroom have been noted.

However, teachers have never been properly trained to integrate ICT systems into their instructional practices. The few who indicated that they once attended training mentioned that it was once-off, with no monitoring of implementation after the training and they were instructed only in basic skills such as turning the devices on and off, opening applications such as Word, typing, and saving. Teachers were not provided with guidelines such as manuals to develop their understanding of using an ICT system. Consequently, teachers lack the competency, skills and confidence to integrate ICT into their teaching and become resilient in adopting and accepting ICT in pedagogy. There is also a lack of skilled manpower who are qualified to assist and train teachers on using the ICT system.

In some township schools, teachers cannot bring their gadgets such as laptops because the security is not tight. Criminals may steal them even during school hours. Most schools had ICT tools; however, they were stolen, and the schools do not have money to replace them. Findings indicate that there was no budget for building secure rooms to keep tools safe and to improve security personnel in schools. It was revealed that all township schools lack surveillance cameras and security staff are only present in the day.

Teachers acknowledge that the ICT resources are not adequate in schools which is the main barrier to facilitating ICT integration in Accounting successfully. There are schools with two laptops, one printer and one copier machine for the entire functioning of the school. Teachers also share resources within the departments and need to reserve items. The majority of township schools have no computer laboratories and the few who have them are not functioning or resourced. In certain schools only the School Management Team and administrators have

access to Wi-Fi passwords and may take laptops home. An unreliable internet and network issues hinder teachers from facilitating their teaching and networking with others. Accounting teachers do not receive enough technical support which includes support to resolve technical barriers. The School Management Team does not support Accounting teachers in ICT integration in schools and this demotivates teachers.

Most classrooms in the schools that were selected in this study have no electricity. Electricity that was installed has been stripped due to vandalism. Load shedding was indicated as a negative factor in facilitating the use of ICTs in the classroom. Teachers showed that the time that is allocated for teaching is not adequate to integrate ICT into their teaching. Preparation and presentation of ICT integrated lessons need more time and, in some schools, teachers have to move to classes where there is power which is also time-consuming. Findings indicated that the older generation of teachers in Accounting were resistant to adopting technology in their teaching. It was also noted that male teachers are more fascinated by technology and they attempt to integrate it more in their teaching when compared to females.

9.4. A MODEL FOR EFFECTIVE INTEGRATION OF ICT IN TEACHING ACCOUNTING

Since the findings of this study revealed that Accounting teachers are relying on smartphones to connect with content, to improve teaching and connect with learners and colleagues, a suggested model for teachers' understanding and practices of integration of ICT in teaching Accounting is a connection model. A connection model will continue to keep teachers connected and communicating effectively. The findings conceded that teachers' understanding and practices of integration of ICT in teaching Accounting vary based on the availability of tools, accessibility, and how frequently the tools are used. Furthermore, teachers' competency with the tools, how the tools improve instructional practice, the degree of ease of use of the tools, and how informed and skilled teachers are about the tools influence their understanding and practice. It was found that teachers possess low to moderate knowledge, have limited access, and least frequently incorporated the many tools that were selected for this study during data collection. Nonetheless, over 90% of teachers acknowledged that they have high access to smartphones, and they are the most dominant tool incorporated in Accounting teaching. As a result, teachers used smartphones to enhance and keep connection with learners and colleagues in Accounting teaching.

Smartphones offer teachers an opportunity to connect with the ICT systems, with content, with learners, with colleagues, and manage their teaching. This was notable in interviews and observations where teachers reported that, although their knowledge and practices were limited regarding ICT integration in Accounting instruction, they maintained connection in teaching through smartphones, and the WhatsApp application. Therefore, this study suggests a connection model for Accounting teachers. The purpose of the connection model is to show the efficiency and effectiveness of smartphones and WhatsApp in maintaining connections in Accounting teaching and learning. In addition, connection through the above-mentioned tool and its application is increasing immensely in pedagogy today. The diagram below shows connection model followed by its descriptions.

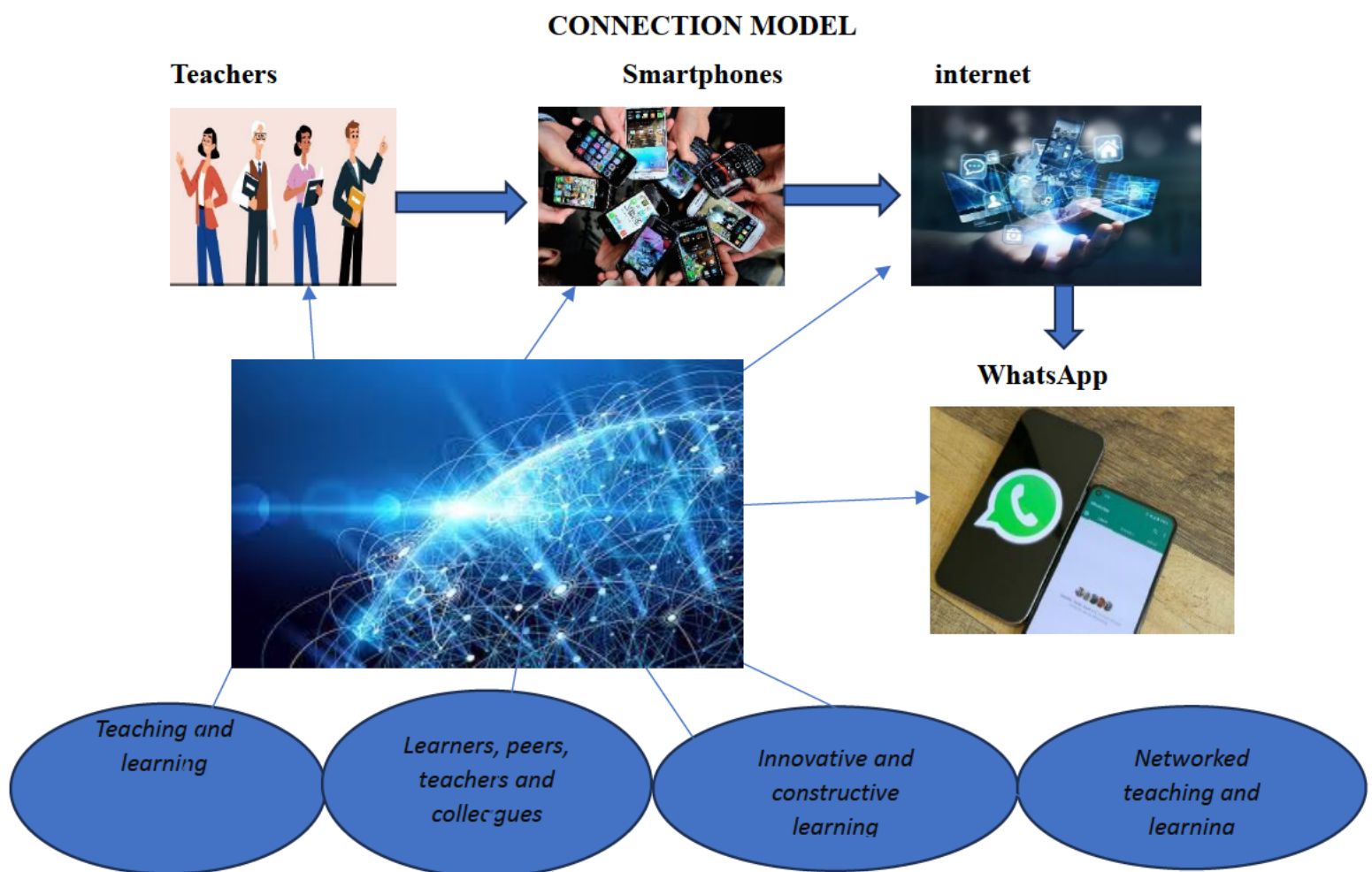


Figure 9.4 Connection model

The findings of this study indicated that connection model is achievable with digital devices and social networks. Accounting teachers implemented a connection model through adopting

smartphones. Smartphones were the most available tools to connect teachers with their teaching, to complement and to strengthen learning. Teachers' connection to smartphones created exposure and motivation to use them in the classroom. Further, teachers used smartphones to communicate curriculum knowledge to learners, be it in the physical setting or remote areas. As much as smartphones were infrequently used before for various connections, the degree of connection between pedagogy and teachers has increased drastically in the digital era. Similarly, the recent pandemic lockdown demonstrated that smartphones powerfully connected teachers with teaching and learning. Use of smartphones clearly illustrate the connection model since they are portable, save time, are affordable and easy to maintain.

The key success factor to the connection model is the internet. In addition, the connection model stresses the importance of a good stable network to facilitate teaching and learning. Teachers connect smartphones to the internet to use them in their teaching. Smartphones and the internet are interrelated since they are interdependent to perform tasks. Teachers indicated that they connect smartphones to the internet by browsing, and downloading teaching materials such as previous question papers, memorandums, answer books, and YouTube videos for demonstrations on some topics. They also search for information related to Accounting such as images and recent case studies and store this data on their smartphone. Since smartphones are accessible anywhere, the internet connects learners with their learning in any location as they are able to complete tasks or homework by navigating the internet. Some teachers reported that they use website links when they refer learners to content information that will clarify difficult topics in Accounting. During the lockdown pandemic, teachers used the internet widely by sending learners website links for teaching resources and videos for clarity on uncertainties and complex topics.

In Accounting, the connection model was also demonstrated by the use of a social media platform (WhatsApp). Teachers' connection to smartphones and the internet created an opportunity to use the WhatsApp application to connect teaching and learning, manage content, and network. Teachers created WhatsApp groups to connect themselves with learners and the content. In the WhatsApp group teachers would share information, engage learners through voice note discussion, videos, images, announce homework and tasks, send feedback, and receive responses and queries. This connection boosted class engagement and opened lines of connection among teachers and learners. WhatsApp also allowed learners to connect with peers by sharing audios, text messages, arranging meetings and sharing documents. Smartphones

have recently been observed to motivate learners since they can easily access online content and do not have to use cumbersome textbooks. WhatsApp is also advantageous to connect teachers and learners after school hours. Teachers acknowledge that during the weekends and holidays, they connect with learners through WhatsApp. Currently, information is easily accessed and distributed through WhatsApp. Further, teachers communicate with colleagues within the district and parents through the WhatsApp application. Teachers mentioned that they have learned to navigate social media for teaching through this platform and learners have also benefited by learning to navigate social networks for learning. It has been noted in this study that WhatsApp is the most effective technology tool teachers use for connection in rural areas since other resources are not available.

It was revealed that smartphones promote teaching and learning by giving access to ideas for lessons and to add additional information to enhance lesson presentation. For instance, teachers search for additional materials by using the internet, use Microsoft Word to type lesson plans and disseminate information or tasks to learners. Teachers found teaching with smartphones is convenient as they can send information to learners anywhere and anytime. Some learners downloaded textbooks, study guides, question papers, and memorandums on their smartphones which makes learning more efficient and effective. Sharing information via smartphones was perceived as very cost-saving as it saves on printing and photocopying. Considering the nature of Accounting, teachers and learners are expected to keep abreast with changes using digital devices. Therefore, smartphones assist both teachers and learners with achieving the above and teach them how to work with digital devices. Smartphones can even connect to printers to print the information downloaded.

The connection model suggested in this study promotes knowledge sharing and distribution across a network of connections. Smartphones helped Accounting teachers stay connected to each other to lessen the content burden. Teachers connected with each other for discussion of content delivery strategies, assessments, resolving challenges such as misconceptions, solving complex problems, building and distributing knowledge, and making decisions. Further, teachers' connection via social networks extended the interaction possibilities and created a strong development environment. This model was observed as improving the development of technology in the classroom and the creation of teaching innovations in the learning environment. Learners learn a unique method rather than the traditional chalk and talk.

Teachers commended smartphones for providing various teaching and learning methods to make lessons spontaneous. For instance, teachers believed that smartphones promoted innovative and constructivist methods of learning. Teachers indicated that as learners searched for a better understanding of the content, they were afforded the opportunity to learn Accounting innovatively. It was noted that learners were more productive and engaged when teachers used smartphones. Teachers mentioned that even reserved learners who were always shy to comment in the classroom would send queries and participate when smartphones are used. Learners collaborated through group discussions which extended content understanding. Teachers felt that they could practice constructive teaching and learning via smartphones whereby learners were given tasks, projects or assignments to research which gave them more opportunity to construct knowledge. Through smartphones, learners learn independently as they have all resources digitalised. The connection model gives learners a sense of freedom and ownership of their learning whereby they are liberated to discover information on their own through the features of the smartphone and discuss that information with peers. This increases collaboration and better teamwork in the class.

The use of smartphones and WhatsApp applications in teaching Accounting created a platform for teachers and learners to network teaching and learning. Teachers used various search engines such as Google and various social network platforms on their smartphones and observed how the content was delivered, enhanced and taught. The connection model ensured that teaching and learning show networked knowledge creation and growth through connecting both with people and with network resources. When learners networked their learning, they are able to access various solutions and additional information. The majority of teachers disclosed that today most learners have smartphones and those who do not have them are assisted by relatives at home. Since schools lack technology resources, teachers should continue to infuse technology through smartphones in teaching Accounting. However, although the connection model can keep teachers connected, there are also shortcomings that might be experienced by teachers.

9.4.1 Connection model shortcomings

Accounting teachers are using smartphones and WhatsApp applications to stay connected and practice ICT integration. However, the findings indicate that it is the younger generation of teachers who use this tool and its application and they are deeply connected and fascinated by its use in teaching. The older generation of teachers were observed to seldom connect to

WhatsApp for teaching purposes apart from personal communication. It was also evident that some teachers with smartphones did not connect with learners using social media since they did not see how it could bring about effective learning. Further, their privacy was a concern. This indicates that not all Accounting teachers have sufficient knowledge about the advantages of connecting to smartphones in their teaching.

In addition, the connection model might not be successful in all schools, particularly those that are situated in rural areas where there are network challenges, connectivity issues, affordability of smartphones, data, and poor access to the internet. In this study, only a few schools from a rural area were involved. However, teachers from these schools stressed these problems during interviews. They also maintained that even the application of WhatsApp on which they are mostly dependent sometimes does not work because of the network. The current load shedding also affects the purpose of connection model. The connection model can reveal social inequalities since not all learners can afford smartphones, data, and maintenance to connect frequently. Further, the connection model relies on the use of digital communication and social networks where the only language used is the medium of instruction and code-switching is not possible, learners with a language barrier may find it difficult to understand information, particularly, videos or audios.

The connection model largely believes in learners using digitals to learn independently; however, learners might select incorrect information that might cause greater misconceptions in the content of Accounting since on the internet every user has a right to add his or her information or content. The findings of this study indicated that smartphones are prohibited for learners in schools and there are no policies guiding their use in schools. Therefore, connection model might be challenging since it stresses the adoption of digital devices and social networks. There is also the criticism that smartphones and WhatsApp interrupt or cause distractions in the classroom. Learners tend to concentrate on other features of smartphones or other social platforms for the purpose of entertainment, not education.

Suggestions for the model shortcomings

The older generation of teachers can be encouraged to adopt the model by outlining the benefits of the model and providing professional, and personal training and support because one reason they could be reluctant is a lack of understanding of the model and confidence to use it. WhatsApp as the most convenient method of communication should be sold out to teachers on

how it can enhance teaching and learning. Further teachers need to be supported in ensuring privacy while using WhatsApp with learners. Schools situated in rural schools need to be provided at least with stations or settings where they can connect to the internet. This can be introduced maybe by taking learners to that station once a week (over weekends). In cases where social inequalities are observed because other learners cannot access or afford smartphones, teachers and the school need to improvise. For instance, having one laptop for a class where they can download WhatsApp to communicate with others. In addition, if in a household one member has a smartphone learners and parents should be encouraged to share the gadgets for learning. Again, the school should look for sponsors who shall assist learners with a few data a month for learning purposes, advisable is to get WIFI for the school and learners can only connect on the school premises. Concerning the language issue, learners can improve through code-switching and interpretation by others. Teachers can also couch learners on accurate information to learn relating to the subject. I also recommend that some applications needs to be disabled so that learners can focus on the real purpose of using this model for learning. Learners need to be trained in its purpose and what they are expected and some regulations must be developed and shared with learners.

9.5. IMPLICATIONS OF FINDINGS

The key finding of this study is that Accounting teachers' knowledge in combining technology and teaching practices remains insufficient since they are aware of ICT integration in schools but do not implement it due to various reasons which hinder their understanding and effective practice of ICT integration in Accounting. Thus, this study identifies certain implications for ICT integration in Accounting.

Primarily teachers' understanding and practices of any transformation in the education sector depend on how well teachers are continuously being empowered. For Accounting teachers to be well informed and to successfully implement ICT integration within the subject the DBE should initiate professional development programmes. Programmes should concentrate on training teachers on the practical ICT integration knowledge and skills. In other words, programmes should be more practical than theoretical. Teachers should be developed on how ICT tools are used to deliver the Accounting curriculum, not the basic skills that teachers currently possess. The focus should be on ensuring teachers are digitally literate in the classroom, not when they are preparing lessons. The current digital era, globalisation, 4IR, nature of Accounting subject and the profession mandate the government to prioritise teachers'

development in infusing ICT in the classroom in order to equip learners. The argument is professional development should occur urgently for teachers to develop professional competence with ICT integration.

It is suggested that the DBE should recruit and deploy at least one IT specialist or technician in each school to develop and assist teachers with technical barriers. The school needs to form partnerships with technology institutions to allow IT interns to serve schools with their skills and knowledge to assist teachers and skill teachers on IT issues. It was evident that education officials such as subject advisors and circuit managers who stress the use of technology in the classroom during meetings also had inadequate skills in ICT integration. Therefore, the DBE should develop these officials. Thorough training will address the lack of support that teachers are concerned about. Teachers maintain that even those who should give support are not fully competent in ICT integration. This study suggests that development programmes should be monitored and evaluated in terms of progress in order to see results. Certain professional development endeavours have failed because of financial problems; therefore, a sound budget for and auditing of training funds are suggested.

Again, DBE should prioritise the issue of inadequate resources in schools to teach Accounting. This requires increasing the budget for schools and it is the responsibility of the DBE to allocate more funds to the provision of ICT resources in schools. Donated tools are not the solution since teachers complained that donated tools are defective because of poor maintenance. Principals and the Department should address the need for repairs and maintenance. The limited resources given to all teachers should be assessed, for instance, Wi-Fi passwords should be shared with all teachers at the school. It is suggested that the Department and schools should collaborate in partnership with network providers to assist with affordable and better network contracts or deals. These network providers can even recommend appropriate networks for schools in rural areas that struggle with connectivity issues. Some network providers could donate resources to poor communities. Principals should seek and motivate donations from community businesses to promote technology in schools. In townships, small growing businesses can be encouraged to donate what they can. The study further recommends that schools should not wait to have computer laboratories built, but should construct them on own initiative. Single classrooms with power can be identified and secured to store devices safely. A safer environment will encourage teachers to bring devices to school during the day.

In an attempt to infuse ICT in teaching Accounting or improvise for ICT integration, teachers have adopted smartphones. Therefore, this study suggests a smartphone policy framework that will permit teachers and learners to use smartphones freely since it was revealed that smartphones are prohibited in schools. The policy framework will also guide teachers and learners on how they can use smartphones in the classroom to enhance instructional practices. The policy should also include guidelines for practical social media platforms that teachers can use to teach Accounting. Teachers should be allowed and encouraged to use any easily accessible technology gadget to improve their ability to combine teaching strategies with technology. The implications of this study outline that the current ICT policy should be reviewed since it is observed as ineffective. The existing policy on digitalisation of curriculum should be updated. In order to introduce Accounting software or educate teachers about software related to Accounting curriculum it is suggested that partnerships should be formed with Accounting tertiary institutions and Accounting firms to understand which software are they using and how. Heads of Department should invite Accounting firms to visit teachers to share how digitals are used, give teachers ideas and motivate them to infuse ICT in their teaching. The study suggests that those teachers who integrate the limited ICT in their instruction should be recognised and incentivised, for instance, with a certificate of good practice.

Contextual issues negatively influence and demotivating teachers in Accounting to integrate ICT into their teaching. It is suggested that the community should take charge of owning the school by protecting the assets and equipment of the school. The community should come together with education stakeholders and fight theft, crime and burglary. The Department needs to educate and make society aware of the importance of ICT tools in a school. Community forums should be requested to prioritise schools' safety. It is the responsibility of the department to improve security levels in schools. This can be accomplished by improving the budget for security or building secure storage places for the digitals. Learners should also educate their community on how important it is to safeguard these tools for the benefit of their education. It is suggested that the DBE and schools invest in solar panels to generate electricity for at least the administration block as a backup during load shedding. This study further recommends that Accounting lesson times be adjusted to at least a full hour, to cover lesson plans. Younger generations who are more familiar with ICT and who have been recently trained in higher education where there is greater technology integration should support the older generation who has had limited exposure to ICTs in teaching and learning. In this study, the

implications for teachers to understand and practice ICT integration in Accounting point to the crucial role that the DBE has in this regard.

9.6. SUGGESTIONS FOR FUTURE RESEARCH

This research study explored Accounting teachers' understanding and practices of integrating ICT in teaching Accounting. The main finding indicated that teachers have smartphones, and they frequently use them to teach content, connect, and communicate with colleagues and learners. They further use the WhatsApp application, which is easy to operate, efficient, convenient, and accessible for Accounting instructional practice. This study therefore recommends further research on hinderances teachers might encounter when using smartphones, and WhatsApp applications to teach Accounting and how they can be overcome. Since this study was only focused on teachers, future research is recommended to understand the availability of smartphones to learners and how they integrate or perceive smartphone incorporation in the learning process.

In this research study, Accounting teachers' competence in understanding and practicing ICT integration in teaching Accounting has been influenced negatively by various factors. However, lack of professional training was overrated as the highest factor that has a negative influence on how teachers integrate ICT in teaching Accounting. This is observed from teachers' responses which indicated that technologies are available in schools even though they are limited and they also disclosed that they have their personal technology gadgets but they are hindered by insufficient knowledge and skills to integrate them into their teaching. Therefore, I recommend further research into what professional training the DBE and its stakeholders are providing to teachers regarding ICT in education, how are they training them and how are they monitoring the training and implementation. In addition, if there are any programmes in place, they should be audited and reviewed in order to determine their value to teachers.

In this study, teachers acknowledged that they use various innovative and creative teaching strategies to teach Accounting content including a teacher-centred approach. However, during the observations, teachers were observed dealing with one or two teaching strategies. Thus, future studies are encouraged to research the innovative strategies teachers use and a deeper understanding of how they use them.

9.7. LIMITATIONS OF THE STUDY

This study has certain limitations. Firstly, it was conducted in one province (KZN) out of nine provinces in South Africa and within one district which is Umlazi Durban South District. Therefore, findings may not be generalised to other provinces and other districts. In addition, only teachers from three FET grades participated in this study, while ICT integration is significant for all grades in schools. Therefore, findings may be implied or centred only in the FET phase. Furthermore, this research was only conducted in one FET subject, which is Accounting, excluding other school subjects which might yield completely unique results. For instance, a study in Science might yield different results from the ones attained in an Accounting study. Lastly, this study's population involves more township schools than urban schools; rural schools were excluded so findings obtained in this study are limited to schools only in township and urban areas. Although the above limitations have been identified, this research study addressed the research questions and achieved its objectives through a mixed-method approach used in collecting, analysing and interpreting data.

9.8. CONCLUDING REMARKS

This study found that teachers of Accounting understand ICT in teaching Accounting however their practices are still at a low level as teachers only rely on the basic practices of ICT in teaching Accounting. Some factors have been reported by the findings which indicate that influence teachers' integration of ICT in teaching Accounting. Technology in teaching Accounting has been strongly commended for assisting teachers in their teaching. Further, ICTs in Accounting assist in rethinking the curriculum, content, teaching strategies, assessment strategies, innovative learning and processes to best deliver the content. However, Accounting teachers urgently need technical support, professional training, monitoring, provision of technology resources, digital literacy, and secure environments for ICTs. This study found that teachers are using smartphones and WhatsApp social media to communicate, connect and teach. Smartphones are reliable, serve various teaching practices, are easily accessible, affordable, and are easy to use. Therefore, a connection model has been introduced to Accounting teachers since it was observed that even though resources were inadequate and knowledge was insufficient, teachers made successful connections with smartphones. This study concludes by stating that smartphones should be officially allowed in schools, and a policy document or framework should be developed and endorsed for smartphones. Lastly, with quality support and more investment in ICT in schools from the DBE a worthwhile long-term investment in the education sector and society will be realized.

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11 APPENDICES

APPENDIX A: ETHICAL CLEARANCE



23 April 2022

Nosihle Veronica Sithole (211517576)
School Of Education
Edgewood Campus

Dear NV Sithole,

Protocol reference number: HSSREC/00004068/2022

Project title: Exploring teachers' understanding and practices of integration of Information and Communication Technology in teaching Accounting.

Degree: PhD

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 03 April 2022 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted FULL APPROVAL.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

This approval is valid until 23 April 2023.

To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

All research conducted during the COVID-19 period must adhere to the national and UKZN guidelines.

HSSREC is registered with the South African National Research Ethics Council (REC-040414-040).

Yours sincerely,



Professor Dipane Hlalele (Chair)

/dd

Humanities and Social Sciences Research Ethics Committee

Postal Address: Private Bag X54001, Durban, 4000, South Africa

Telephone: +27 (0)31 260 8350/4557/3587 Email: hssrec@ukzn.ac.za Website: <http://research.ukzn.ac.za/Research-Ethics>

Founding Campuses: ■ Edgewood ■ Howard College ■ Medical School ■ Pietermaritzburg ■ Westville

INSPIRING GREATNESS

APPENDIX B: PERMISSION FROM THE KZN DoE



KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

OFFICE OF THE HEAD OF DEPARTMENT

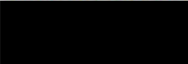
Private Bag X9137, PIETERMARITZBURG, 3200
Anton Lembede Building, 247 Burger Street, Pietermaritzburg, 3201
Tel: 033 392 1051

Email: buyi.ntuli@kzndoe.gov.za

Enquiries: Buyi Ntuli

Ref.:2/4/8/7216

Miss Noshile Veronica Sithole



Dear Miss Sithole

PERMISSION TO CONDUCT RESEARCH IN THE KZN DoE INSTITUTIONS

Your application to conduct research entitled: "EXPLORING TEACHERS' UNDERSTANDING AND PRACTICES OF INTEGRATING INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN TEACHING ACCOUNTING:", in the KwaZulu-Natal Department of Education Institutions has been approved. The conditions of the approval are as follows:

1. The researcher will make all the arrangements concerning the research and interviews.
2. The researcher must ensure that Educator and learning programmes are not interrupted.
3. Interviews are not conducted during the time of writing examinations in schools.
4. Learners, Educators, Schools and Institutions are not identifiable in any way from the results of the research.
5. A copy of this letter is submitted to District Managers, Principals and Heads of Institutions where the intended research and interviews are to be conducted.
6. The period of investigation is limited to the period from 28th December 2021 to 31st December 2023.
7. Your research and interviews will be limited to the schools you have proposed and approved by the Head of Department. Please note that Principals, Educators, Departmental Officials and Learners are under no obligation to participate or assist you in your investigation.
8. Should you wish to extend the period of your survey at the school(s), please contact Miss Phindile Duma at the contact numbers above.
9. Upon completion of the research, a brief summary of the findings, recommendations or a full report/dissertation/thesis must be submitted to the research office of the Department. Please address it to The Office of the HOD, Private Bag X9137, Pietermaritzburg, 3200.
10. Please note that your research and interviews will be limited to schools and institutions in KwaZulu-Natal Department of Education.



Dr M.J.B. Mthembu
Acting Head of Department: Education
Date: 28th December 2021

GROWING KWAZULU-NATAL TOGETHER

APPENDIX C: INFORMED CONSENT LETTER TO THE SCHOOL PRINCIPAL



University of KwaZulu-Natal
Edgewood Campus
School of Education
Ashwood
3605

19 January 2022

The school principal
Dear Sir/Madam

INFORMED CONSENT LETTER

My name is Nosihle Veronica Sithole, I am a Doctor of Philosophy (PhD) student at the University of KwaZulu-Natal (Faculty of Humanities) in Edgewood campus under Social Science Education Department. I am conducting research on teachers' understanding and practices of integration of ICT in teaching Accounting. The purpose of this research is to obtain in-depth information on what teachers comprehend about ICT integration in Accounting and why they integrate ICT the way they do in teaching Accounting.

Since this research study seeks to obtain deeper information and add knowledge to the body of literature, I have selected Umlazi District secondary schools offering Accounting and Accounting teachers to be part of this research study. Various methods to generate data will be utilised namely, questionnaires, focus group discussions, observations, and individual interviews. All discussions, interviews and conversations with participants will be audiotaped using audio records instruments and thereafter transcribed verbatim to produce transcriptions. The data obtained in this research is required for the analysis of data, recommendations and the write up of the thesis.

Questionnaires will be distributed to participants online and on a hard copy, depending on which method the participant prefer. Focus group discussions and individual interviews will take place in the comfort setting of the participants and the participants will have a choice of virtual or face to face. Focus group discussions and individual interviews will not be more than 60 minutes long. Times and dates of the meeting will be discussed and arranged the participants at a later stage. Observations will take place in the school premises of course with your permission. The length of observations is 30 minutes. In an attempt to avoid any disruptions during lessons, observations will take place after school hours or during break times.

Having articulated the above, I humbly request the schools and teachers to be part of this research study.

Please note that:

- Confidentiality and anonymity will be guaranteed as the inputs of the schools and participants will not be attributed them in person but reported only as a population member opinion.
- The identity of the school and all participants will not be revealed at any time, as pseudonyms will be used to protect everyone's right to privacy.
- Any information given by school and the participants will not be used against them but for the purposes of this research only.
- The school and participants have a choice to participate or not participate in this research and they will not be penalised for taking such an action.
- The school and participants are at liberty to withdraw from this research should they feel too much pressure and they will not be penalised for that.
- The participation of a school and participants is purely for academic purposes only, and there are no financial benefits involved.
- Focus group discussions will be audiotaped for accurate transcribing. No pictures or videos will be taken during this activity.
- After the research has been completed, a report of the findings will be provided to you as a school principal and to participants.
- Data will be stored in secure storage and destroyed after 5 years.
- All schools and participants will be handed letters of consent which they will have to carefully read and sign, before I begin data collection.

Thank you in advance for considering my request and your contribution to this study.

Should you wish to contact me or have any queries, I can be contacted at

[REDACTED]

Email: nochlev4@gmail.com / 211517576@stu.ukzn.ac.za.

My supervisor is Dr. J.C. Ngwenya. She is based University of Kwa-Zulu Natal, School of Education,

Email: Ngwenyaj@ukzn.ac.za,

Phone: 031 260 3621.

You may also contact the Research Office through:

HSSREC Research Office,

E-mail: Hssrec@ukzn.ac.za

Yours faithful
Nosihle Sithole

[REDACTED]

If you grant permission for me to conduct this research with your school, please complete and return the form below.

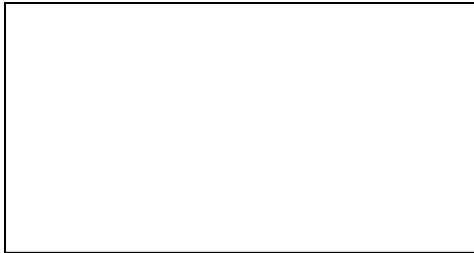
DECLARATION

I (Full name/s of the school principal) of
..... (Name of the school), hereby confirm that
I understand the contents of this document and nature of this research project. **I consent / do not consent** to the school and teachers participating in this project. I also grant permission for the school to be used as the research site, **YES / NO**. I understand that the school and the teachers are free to withdraw from the research project at any time, **YES NO**.

Signature of the school principal _____

Date _____

SCHOOL STAMP



APPENDIX D: INFORMED CONSENT LETTER TO ACCOUNTING TEACHERS



University of KwaZulu-Natal
Edgewood Campus
School of Education
Ashwood
3605

19 January 2022

Dear Sir/Madam

INFORMED CONSENT LETTER

My name is Nosihle Veronica Sithole, I am a Doctor of Philosophy (PhD) student at the University of KwaZulu-Natal (Faculty of Humanities), Edgewood campus, in the Social Science Education Department. I am conducting research on teachers' understanding and practices of integration of ICT in teaching Accounting. The purpose of this research is to obtain in-depth information on what teachers understand about ICT integration in Accounting and why they integrate ICT the way they do in teaching Accounting.

Since this research study seeks to obtain deeper information and add knowledge to the body of literature, I have selected Umlazi District secondary schools offering Accounting and Accounting teachers to be part of this research study. Furthermore, various methods to generate data will be utilized. These include questionnaires, focus group discussions, individual interviews, and observations. Therefore, I have selected you and your school to be part of this research because of the belief that you will add much value to this research.

By writing this letter, I humbly request your acceptance to be part of this research study. Your activities will be, to be involved in focus group discussion. Focus group discussions will not be more than 60 minutes each session and will take place virtual and in participants' comfortable settings.

Please note that:

- Your confidentiality is guaranteed as your inputs will not be attributed to you in person but reported only as a population member opinion.
- Any information given by you cannot be used against you, and the collected data will be used for purposes of this research only.
- You have a choice to participate or not participate in this research and you will not be penalized for taking such an action.
- You are at liberty to withdraw from this research should feel too much pressure and you will not be penalized for that.

- Your involvement is purely for academic purposes only, and there are no financial benefits involved.
- Focus group discussions audiotaped for accurate transcribing. No pictures or videos will be taken during this activity.
- After the research has been completed, a report of the findings will be provided to you.
- Data will be stored in secure storage and destroyed after 5 years.

Thank you in advance for considering my request and your contribution to this study.

Should you wish to contact me or have any queries, I can be contacted at:

Email: nochlev4@gmail.com / 211517576@stu.ukzn.ac.za.

██████████

My supervisor is Dr. J.C. Ngwenya. She is based at University of KZN, School of Education,

Email: Ngwenyaj@ukzn.ac.za,

Phone: 031 260 3621.

You may also contact the Research Office through:

HSSREC Research Office,

E-mail: Hssrec@ukzn.ac.za

Yours faithful
Nosihle Sithole

Should you accept my request and be willing to take part in this research, kindly complete the following consent form.

DECLARATION (To be completed by teachers who will be involved in focus group discussions)

I..... (full names of participants) hereby confirm that I understand the nature of this research study, and I consent to participate in the research study.

I understand that I am at liberty to withdraw from the research at any time, should I so desire.

I hereby provide consent to:

	YES	NO
Audio-record my interview / focus group discussion		

Signature of participant

.....

Date

.....

APPENDIX E: INFORMED CONSENT LETTER TO TEACHERS FOR INTERVIEWS



University of KwaZulu-Natal
Edgewood Campus
School of Education
Ashwood
3605

19 January 2022

Dear Sir/Madam

INFORMED CONSENT LETTER

My name is Nosihle Veronica Sithole, I am a Doctor of Philosophy (PhD) student at the University of KZN (Faculty of Humanities) in Edgewood campus under Social Science Education Department. I am conducting research on teachers' understanding and practices of integration of ICT in teaching Accounting. The purpose of this research is to obtain in-depth information on what teachers understand about ICT integration in Accounting and why they integrate ICT the way they do in teaching Accounting.

Since this research study seeks to obtain deeper information and add knowledge to the body of literature, I have selected Umlazi District secondary schools offering Accounting and Accounting teachers to be part of this research study. Various methods to generate data will be utilised namely, questionnaires, focus group discussions, individual interviews, and observations. Therefore, I have selected you and your school to be part of this research because of the belief that you will add much value to this research.

By writing this letter, I humbly request your acceptance to be part of this research study. Your activities will be, to be engaged in the individual interview which will take place virtual or in any comfortable setting of your choice. The interview will not be more than 60 minutes per session.

Please note that:

- Your confidentiality is guaranteed as your inputs will not be attributed to you in person but reported only as a population member opinion.
- Any information given by you cannot be used against you, and the collected data will be used for purposes of this research only.
- You have a choice to participate or not participate in this research and you will not be penalised for taking such an action.
- You are at liberty to withdraw from this research should feel too much pressure and you will not be penalised for that.

- Your involvement is purely for academic purposes only, and there are no financial benefits involved.
- Focus group discussions audiotaped for accurate transcribing. No pictures or videos will be taken during this activity.
- After the research has been completed, a report of the findings will be provided to you.
- Data will be stored in secure storage and destroyed after 5 years.

Thank you in advance for considering my request and your contribution to this study.

Should you wish to contact me or have any queries, I can be contacted at

[REDACTED]

Email: nochlev4@gmail.com / 211517576@stu.ukzn.ac.za.

My supervisor is Dr. J.C. Ngwenya. She is based University of KZN, School of Education,

Email: Ngwenyaj@ukzn.ac.za,

Phone: 031 260 3621.

You may also contact the Research Office through:

HSSREC Research Office,

E-mail: Hssrec@ukzn.ac.za

Yours faithful

Nosihle Sithole

[REDACTED]

Should you accept my request and be willing to take part in this research, kindly complete the following consent form.

DECLARATION (to be completed by teachers who will be involved in individual interviews)

I..... (full names of participants) hereby confirm that I understand the nature of this research study, and I consent to participate in the research study.

I understand that I am at liberty to withdraw from the research at any time, should I so desire.

I hereby provide consent to:

	YES	NO
Audio-record my interview / individual interview		

Signature of participant

.....

Date

.....

APPENDIX F: INFORMED CONSENT LETTER TO TEACHERS FOR OBSERVATION



University of KwaZulu-Natal
Edgewood Campus
School of Education
Ashwood
3605

13 March 2023

Dear Sir/Madam

INFORMED CONSENT LETTER

My name is Nosihle Veronica Sithole, I am a Doctor of Philosophy (PhD) student at the University of Kwa-Zulu Natal (Faculty of Humanities), Edgewood campus, in the Social Science Education Department. I am conducting research on teachers' understanding and practices of integration of ICT (ICT) in teaching Accounting. The purpose of this research is to obtain in-depth information on what teachers understand about ICT integration in Accounting and why they integrate ICT the way they do in teaching Accounting.

Since this research study seeks to obtain deeper information and add knowledge to the body of literature, I have selected Umlazi District secondary schools offering Accounting and Accounting teachers to be part of this research study. Furthermore, various methods to generate data will be utilized. These include questionnaires, focus group discussions, individual interviews, and observations. Therefore, I have selected you and your school to be part of this research because of the belief that you will add much value to this research.

By writing this letter I humbly request your permission to observe you in one lesson of teaching Accounting in any grade in the FET phase. I assure you my presence in the classroom will not interfere with your teaching and learning process. I will not comment or take part in the classroom. I will take field notes and audiotape the session for accurate transcribing.

Please note that:

- Your confidentiality is guaranteed as your inputs will not be attributed to you in person but reported only as a population member opinion.
- The name of the school will remain anonymous.
- Any information given by you cannot be used against you, and the collected data will be used for purposes of this research only.
- You have a choice to participate or not participate in this research and you will not be penalized for taking such an action.

- You are at liberty to withdraw from this research should feel too much pressure and you will not be penalized for that.
- Your involvement is purely for academic purposes only, and there are no financial benefits involved.
- After the research has been completed, a report of the findings will be provided to you.
- Data will be stored in secure storage and destroyed after 5 years.

Thank you in advance for considering my request and your contribution to this study.

Should you wish to contact me or have any queries, I can be contacted at:

Email: nochlev4@gmail.com / 211517576@stu.ukzn.ac.za.

[REDACTED]

My supervisor is Dr. J.C. Ngwenya. She is based at University of KZN, School of Education,

Email: Ngwenyaji@ukzn.ac.za,

Phone: 031 260 3621.

You may also contact the Research Office through:

HSSREC Research Office,

E-mail: Hssrec@ukzn.ac.za

Yours faithful
Nosihle Sithole

[REDACTED]

Should you accept my request and be willing to take part in this research, kindly complete the following consent form.

DECLARATION (To be completed by teachers who will be observed)

I..... (full names of participants) hereby confirm that I understand the nature of this research study, and I consent to participate in the research study.

I understand that I am at liberty to withdraw from the research at any time, should I so desire.

I hereby provide consent to:

	YES	NO
Observe my lesson		
Audio-record my lesson		

Signature of participant

.....

Date

.....

APPENDIX G: INFORMED CONSENT LETTER FOR LEARNERS



University of Kwa-Zulu Natal
Edgewood Campus
School of Education
Ashwood
3605

19 January 2022

Dear Learner

INFORMED CONSENT LETTER

My name is Nosihle Veronica Sithole, I am a Doctor of Philosophy (PhD) student at the University of Kwa-Zulu Natal (Faculty of Humanities), Edgewood campus, in the Social Science Education Department. I am conducting research on teachers' understanding and practices of integration of ICT in teaching Accounting. The purpose of this research is to obtain in-depth information on what teachers understand about ICT integration in Accounting and why they integrate ICT the way they do in teaching Accounting.

Since this research study seeks to obtain deeper information and add knowledge to the body of literature, I have selected Umlazi District secondary schools offering Accounting and Accounting teachers to be part of this research study. Furthermore, various methods to generate data will be utilized. These include questionnaires, focus group discussions, individual interviews, and observations. Therefore, I have selected your teacher and your school to be part of this research because of the belief that they will add much value to this research. I need to observe your teacher teaching Accounting for one period. Since you will also be in the classroom learning may I humbly request you to be part of this research by permitting me to observe you in your Accounting learning. I assure you my presence in the classroom will not interfere with your learning process. I will not comment or take part in the classroom. I will take field notes and audiotape the session for accurate transcribing. No pictures or videos will be taken during the observation.

Please note that:

- Your confidentiality is guaranteed as your inputs will not be attributed to you in person but reported only as a population member opinion.
- The name of the school will remain anonymous.
- Any information given by you cannot be used against you, and the collected data will be used for purposes of this research only.
- You have a choice to participate or not participate in this research and you will not be penalized for taking such an action.

- You are at liberty to withdraw from this research should feel too much pressure and you will not be penalized for that.
- Your involvement is purely for academic purposes only, and there are no financial benefits involved.
- After the research has been completed, a report of the findings will be provided to you.
- Data will be stored in secure storage and destroyed after 5 years.

Thank you in advance for considering my request and your contribution to this study.

Should you wish to contact me or have any queries, I can be contacted at:

Email: nochlev4@gmail.com / 211517576@stu.ukzn.ac.za.

██████████

My supervisor is Dr. J.C. Ngwenya. She is based at University of KwaZulu-Natal, School of Education,

Email: Ngwenyaj@ukzn.ac.za,

Phone: 031 260 3621.

You may also contact the Research Office through:

HSSREC Research Office,

E-mail: Hssrec@ukzn.ac.za

Yours faithful
Nosihle Sithole

Should you accept my request and be willing to take part in this research, kindly complete the following consent form.

DECLARATION

I..... (full names of the learner) hereby confirm that I understand the nature of this research study, and I give the researcher permission to observe (p ☐ ck) or not to o ☐ me during my learning.

I understand that I am at liberty to withdraw from the research at any time, should I so desire.

Signature of learner

Date

APPENDIX H: INFORMED CONSENT LETTER FOR PARENTS



University of KwaZulu-Natal
Edgewood Campus
School of Education
Ashwood
3605

19 January 2022

Dear Parent/ Gaudian

INFORMED CONSENT LETTER

My name is Nosihle Veronica Sithole, I am a Doctor of Philosophy (PhD) student at the University of KwaZulu-Natal (Faculty of Humanities), Edgewood campus, in the Social Science Education Department. I am conducting research on teachers' understanding and practices of integration of ICT in teaching Accounting. The purpose of this research is to obtain in-depth information on what teachers understand about ICT integration in Accounting and why they integrate ICT the way they do in teaching Accounting.

Since this research study seeks to obtain deeper information and add knowledge to the body of literature, I have selected Umlazi District secondary schools offering Accounting and Accounting teachers to be part of this research study. Furthermore, various methods to generate data will be utilized. These include questionnaires, focus group discussions, individual interviews, and observations. Therefore, I have selected your child's teacher and the school of your child to be part of this research because of the belief that they will add much value to this research. I need to observe the teacher of your child teaching Accounting for one period. Since your child will also be in the classroom learning may I humbly request you to grant me permission to observe your child's learning in Accounting. I assure you my presence in the classroom will not interfere with child's learning process. I will not comment or take part in the classroom. I will take field notes and audiotape the session for accurate transcribing. No pictures or videos will be taken during the observation.

Please note that:

- Your child's confidentiality is practiced as the name of learners and schools will remain anonymous.
- Participation in the research is voluntary and the learner may withdraw from the research anytime without any penalties.
- Learners' involvement is purely for academic purposes only, and there are no financial benefits involved.
- Whatever information your child shares in the classroom will not be used again him or her.

- After the research has been completed, a report of the findings will be provided to you and the learners.
- Once again, after completing this research, data will be stored in secure storage and destroyed after 5 years.

Thank you in advance for considering my request and for your child's contribution to this study. Should you wish to contact me or have any queries, I can be contacted at:
Email: nochlev4@gmail.com / 211517576@stu.ukzn.ac.za.

██████████

My supervisor is Dr. J.C. Ngwenya. She is based at University of KwaZulu-Natal, School of Education,
Email: Ngwenyaj@ukzn.ac.za,
Phone: 031 260 3621.

You may also contact the Research Office through:
HSSREC Research Office,
E-mail: Hssrec@ukzn.ac.za

Yours faithful
Nosihle Sithole

Should you accept my request and allow your child to take part in this research, kindly complete the following consent form.

DECLARATION

I..... (full names of parent or guardian) hereby confirm that I understand the nature of this research study. I grant the researcher permission to observe (please tick) ☐ or not to observe ☐ my child's learning.

I understand that my child is at liberty to withdraw from the research at any time, should they so desire.

Signature of parent/ guardian

Date

.....

.....

CONSENT LETTER FOR PARENTS (ISIZULU VERSION)

INCWADI YOMZALI - IKHONSENTI YOKUBA YINGXENYE YOCWANINGO



University of KwaZulu-Natal
Edgewood Campus
School of Education
Ashwood
3605

19 kuMasingana 2022

Mzali

IKHONSENTI YOKUBA YINGXENYE YOCWANINGO

Igama lami ngingu Nosihle Veronica Sithole ngingumfundi owenza iziqu zobuDokotela (PhD) eNyuvesi yaKwaZulu-Natal, eKhempasini yase- Edgewood ngaphansi komnyango we-Social Science Education. Ngenza ucwaningo ngokuqonda nokwenza kothisha ekuhlenganiseni ubuxhakaxhaka besimanje ekufundiseni izifundo zezimali (Accounting) emabangeni aphezulu. Injongo yokwenza locwaningo ukufuna ulwazi olunjulile ekutheni bakuqonda kahle yin ukuxhumaniswa bobuxhakaxhaka besimanje nokuthi indlela abenza ngayo bayenziswa yini.

Njengoba lolucwaningo lufisa ukuthola ulwazi olunjulile futhi luphinde lwandise ulwazi kosekubhaliwe, ngiye ngakhetha izikole sesikhungo sase-Umlazi ezenzisa izifundo zemali (Accounting) kanye nothisha abafundisa sona lesi sifundo sezemali ukuba babe ingxenye yalolu cwaningo. Locwaningo luzobuye lusebenzise izinsiza eziningi zokucwaninga ezifana nohlu lwemibuzo, I gxoxo yeqembu eligxilile, izigxoxo kanye okubhekwayo. Ngakhoke okubhekwayo kuzobe kweziwa esikoleni somntwana wakho nothisha womntwana wakho owenza lesifundo sezemali (Accounting) ukufundwa okukodwa. Ngesimo sokuthi umntwana wakho uzobe efunda ekilasini lalothisha okhethiwe ngicela ngokuzithoba imvume yakho yokuthi ngivumekele ukuyovakashela uthisha ofundisa ingane yakho ngesikhathi efundisa ekilasini.

Ngenkathi efundisa ngizobuye ngibhale phansi ezinye zezinto ezenzeka ekilasini ngesikhathi kufundwa, lokhu ngizobe ngikwenza ngenhloso yokuthi ngithole ulwazi olugcwele, olujulile lokuthi uthisha uzihlanganisa kanjani izihloko ekumele zifundiswe ngokuhlenganiswa

esifundweni sezimali. Ngiyathembisa ukuthi ukuba khona kwami ekilasini ngeke kuphazamise ukufunda nokufundiswa komntwana wakho.

Uyaziswa ukuthi luqala lize liyophela ucwaningi ilokhu okuzokwenzeka:

- Akukho zithombe noma ividiyo (video) ezoqoshwa ezoveza umntwana wakho.
- Umntwana wakho akaphoqiwe ukuba yingxenye yocwaningo.
- Umntwana unelungelo lokuyeka ukuqhubeka nocwaningo noma inini uma efisa, akukho zingqinamba azobhekana nazo.
- Imininingwane yomntwana wakho nothisha wakhe kanye nesikole ayiyodalulwa noma ngayiphi indlela.
- Okutholakale ngocwaningo akuyikushicilelwa ngendlela eyodalula imininingwane yababebambe iqhaza.
- Imininingwane etholakele izovalelwa ehhovisi ukuze ngiqiniseke ukuphepha kwako.
- akukho nzuzo eyimali etholakalayo ngokuhlanganyela, kodwa ukuhlanganyela komfundi wakho kuyosiza ekufundeni kuphela.
- Uma ucwaningo seluphelile kuyophinde kuvalelwe endaweni ephephile iminyaka emihlanu emnyangweni wezemfundo enyunivesi

Uma kukhona imibuzo ungangithinta ku [REDACTED] [REDACTED] nochlev4@gmail.com / 211517576@stu.ukzn.ac.za.

Noma ungathintana nongibhekileyo (supervisor) Dokotela. J.C. Ngwenya ose Nyuvesi yakwaZulu-Natal ku Ngwenyaj@ukzn.ac.za, Phone: 031 260 3621.

Ungaxhumana ne Research Office ku:
HSSREC Research Office,
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Ozithobayo

Nosihle Sithole

Ngicela ugqwalise lefomu elandelayo lapho uvuma noma ungavumeli ukuthi ngizovakasha ngibukele umntwana wakho uma efundiswa uthisha.

IMVUME (EKUMELE IGCWALISWE UMZALI)

Mina (Amagama agcwele omzali)
Ngiyaqinisekisa lapha ukuthi ngiyakuqonda okuqukethwe kule ncwadi kanye nohlobo lwalolu cwaningo. Ngiyifundile futhi ngayizwa ukuthi incwadi ithini, nokuthi lumayelana nani ucwaningo.

NGIYAVUMA ukuthi umntwana wami abukelwe ngesikhathi efunda futhi efundiswa.	
ANGIVUMI ukuthi umntwana wami abukelwe ngesikhathi efunda futhi efundiswa.	

Igama lomfundi _____ Ibanga _____

Ukusayina (Mzali) _____ Usuku _____

APPENDIX I: QUESTIONNAIRE

For office use only		

Research Topic: Exploring Teachers' Understanding and Practices of Integration of Information and Communications Technology in Teaching Accounting.

Greetings, thank you for accepting this questionnaire. This questionnaire is confidential and will not be used to identify you as an individual. The response obtained in this questionnaire will be utilized to comprehend teachers' demographic information and their understanding of ICT integration in Accounting in secondary schools. Hence, this questionnaire is divided into two parts, part one is the teacher profile and part two will be on teachers' understanding of the Technological Pedagogical and Content Knowledge. Please be honest when answering this questionnaire. You are required to only tick the appropriate answer to yourself.

PART ONE

A1. Name of the circuit:

1	Phumelela	1
2	Ndunkumbane	2
3	Durban Central	3
4	Mbumbulu	4
5	Chartsworth	5
6	Mnxenge	6
7	Durban South	7
8	Amanzimtoti	8

9	Merewent	9
10	Umkhumbane	10
11	Maphundu	11
12	Umgeni North	12
13	Folweni	14
14	Mafa	15

A2. Gender:

Female	1	Male	2

A3. Age: (Please tick the appropriate)

21 or younger	22-30	31-40	41-50	51-60	61 or older
1	2	3	4	5	6

A4. Please indicate your tertiary qualification(s).

Diploma	Bachelors Degree	Honours Degree	Masters Degree	Doctoral Degree	Other, please specify
1	2	3	4	5	6

A5. No of years teaching (Please tick the appropriate)

1-5 years	6-10 years	11-15 years	16-20 years	21-25 years	26 years and above
1	2	3	4	5	6

A6 What is your current position at school?

Post level 1 teacher	Departmental head	Deputy Principal	Principal
1	2	3	4

A7. School Quintile (Please tick the appropriate)

One	Two	Three	Four	Five
1	2	3	4	5

A8. Please indicate the highest grade you teach.

	A8. GRADE	
1	Grade 10	1
2	Grade 11	2
3	Grade 12	3

A9. For what purpose do you use the internet and how often?

	PURPOSE	Never	Daily	Once or twice a Week	Less than once a month	Once or twice a month
A9.1	Teaching	1	2	3	4	5
A9.2	Online Banking	1	2	3	4	5
A9.3	Online Shopping	1	2	3	4	5
A9.4	Research	1	2	3	4	5
A9.5	News	1	2	3	4	5
A9.6	Educational material	1	2	3	4	5

A9.7	Games	1	2	3	4	5
A9.8	Vacation Planning	1	2	3	4	5
A9.9	Communication e.g. E-mail & Chat	1	2	3	4	5
A9.10	Download music, movies, etc.	1	2	3	4	5

A10. Please indicate the most significant factors preventing you from using ICT.

FACTORS	TICK
I cannot use a digital device	1
No ICT resources	2
No adequate skills	3
No time	4
Not interested	5
No need	6

A11. In the table below please indicate the ICT tools you have USED, or you commonly used by ticking the appropriate column.

NO.		FREQUENCY			
	ICT TOOLS:	NEVER	EVERY DAY	TWICE A WEEK	MONTHLY
A11.1.1	Tablets	1	2	3	4
A11.1.2	Laptop	1	2	3	4
A11.1.3	Computer	1	2	3	4
A11.1.4	Digital Camera	1	2	3	4
A11.1.5	Scanner	1	2	3	4
A11.1.6	LCD Panel and or Data Projector	1	2	3	4
A11.1.7	Video Conferencing System	1	2	3	4

	APPLICATIONS:				
A11.2.1	Word Processing	1	2	3	4
A11.2.2	Database	1	2	3	4
A11.2.3	Spreadsheet (Excel)	1	2	3	4
A11.2.4	Graphics Program	1	2	3	4
A11.2.5	Presentation Software (PowerPoint)	1	2	3	4
A11.2.6	YouTube videos	1	2	3	4
A11.2.7	Software (specific to your subject e.g. GIS, CAD, PASTEL)	1	2	3	4
	WEB APPLICATIONS:				
A11.3.1	Website Development	1	2	3	4
A11.3.2	Electronic References (e.g., Encarta., World Book)	1	2	3	4
A11.3.3	Discussion Groups, List servers	1	2	3	4
A11.3.4	Email	1	2	3	4
A11.3.5	internet (WWW)	1	2	3	4
A11.3.6	Assistive Technologies (for the disabled e.g., deaf, no arms)	1	2	3	4

A12. In the table below please indicate your level of proficiency for each of the following ICT tools and/or applications by ticking the appropriate column.

NO.	TOOL / APPLICATION	PROFICIENCY			
		NONE	LITTLE	Moderate	HIGH
	ICT TOOLS:				
A12.1.1	Tablets	1	2	3	4
A12.1.2	Laptop	1	2	3	4
A12.1.3	Computer	1	2	3	4

A12.1.4	Digital Camera	1	2	3	4
A12.1.5	Scanner	1	2	3	4
A12.1.6	LCD Panel and or Data Projector	1	2	3	4
A12.1.7	Video Conferencing System	1	2	3	4
	APPLICATIONS:				
A12.2.1	Word Processing	1	2	3	4
A12.2.2	Database	1	2	3	4
A12.2.3	Spreadsheet	1	2	3	4
A12.2.4	Graphics Program	1	2	3	4
A12.2.5	Presentation Software (PowerPoint)	1	2	3	4
A12.2.6	YouTube videos	1	2	3	4
A12.2.7	Software (specific to your subject e.g., GIS, CAD, PASTEL)	1	2	3	4
	WEB APPLICATIONS:				
A12.3.1	Website Development	1	2	3	4
A12.3.2	Electronic References (e.g., Encarta., World Book)	1	2	3	4
A12.3.3	Discussion Groups, List servers	1	2	3	4
A12.3.4	Email	1	2	3	4
A12.3.5	internet (WWW)	1	2	3	4
A12.3.6	Assistive Technologies (for the disabled e.g., deaf, no arms)	1	2	3	4

B. Please indicate your feelings on the following questions on factors influencing ICT integration. You are required to tick either strongly disagree, disagree, neutral, agree, or strongly agree.

Performance Expectancy

NO.	STATEMENT	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
B2	I am glad there are more ICTs these days.	1	2	3	4	5
B12	I would like to learn more about ICT.	1	2	3	4	5
B10	If I had spare money, I would buy ICT tools.	1	2	3	4	5

Effort Expectancy

NO.	STATEMENT	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
B1	ICTs do not scare me at all.	1	2	3	4	5
B3	I do not like talking with others about ICT.	1	2	3	4	5
B4	I dislike using ICTs in teaching.	1	2	3	4	5
B8	I do not think I would ever need an ICTs in my classroom.	1	2	3	4	5
B9	I would rather do things by hand than with an ICT.	1	2	3	4	5
B11	I would avoid ICTs as much as possible.	1	2	3	4	5
B13	I have no intention to use ICT in the near future.	1	2	3	4	5
B23	I have no difficulty understanding the basic functions of ICT tools.	1	2	3	4	5
B21	It would be difficult for me to learn to use the ICT in teaching.	1	2	3	4	5

Social Influence

NO.	STATEMENT	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
B5	Schools would be better placed without ICT.	1	2	3	4	5
B6	Learners should use ICT in all subject matters.	1	2	3	4	5
B19	ICT should be a priority in education.	1	2	3	4	5
B22	Everyone can easily learn to operate ICT tools.	1	2	3	4	5
B7	Learning about ICT is a waste of time.	1	2	3	4	5
B14	ICT technology cannot improve the quality of a learners' learning.	1	2	3	4	5
B18	ICTs will not make any difference in our classrooms, schools, or lives.	1	2	3	4	5

Facilitating Conditions

NO.	STATEMENT	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
B15	I have never seen ICT tools at work	1	2	3	4	5
B16	I have never seen ICT tools used as an educational tool.	1	2	3	4	5
B17	I have seen some Accounting teachers use ICTs for educational purposes	1	2	3	4	5
B20	Class time is too limited for ICT use.	1	2	3	4	5

PART TWO**QUESTIONNAIRE ABOUT TECHNOLOGICAL PEDAGOGY AND CONTENT KNOWLEDGE.****C. Questionnaire for Pedagogical Knowledge (PK)**

		Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
C1	I know how to assess learners' performance in a classroom.	1	2	3	4	5
C2	I can adapt my teaching based on what learners currently understand or do not understand.	1	2	3	4	5
C3	I can adapt my teaching style to different learners	1	2	3	4	5
C4	I can assess learner learning in multiple ways.	1	2	3	4	5
C5	I can use a wide range of teaching approaches in a classroom setting.	1	2	3	4	5
C6	I am familiar with common learner understanding and misconceptions.	1	2	3	4	5
C7	I know how to organize and maintain classroom management.	1	2	3	4	5

D. Questionnaire for Content Knowledge (CK)

		Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
D1	I have sufficient knowledge about Accounting.	1	2	3	4	5

D2	I have various ways and strategies for developing my understanding of Accounting.	1	2	3	4	5
D3	I keep developing my knowledge collection in Accounting.	1	2	3	4	5

E. Questionnaire for Technological Pedagogical Knowledge (TPK)

		Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
E1	I can choose technologies that enhance the teaching approaches for a lesson.	1	2	3	4	5
E2	I can choose technologies that enhance learners' learning for a lesson.	1	2	3	4	5
E3	My teaching profession caused me to think more deeply about how technology could influence the teaching approaches I use in my classroom.	1	2	3	4	5
E4	I am thinking critically about how to use technology in my classroom.	1	2	3	4	5
E5	I can adapt the use of the technologies that I am learning about to different teaching activities	1	2	3	4	5
E6	I can select technologies to use in my classroom that enhance what I teach, how I teach, and how learners learn.	1	2	3	4	5

E7	I can use strategies that combine content, technologies, and teaching approaches that I learn about in my coursework in my classroom	1	2	3	4	5
E8	I can provide leadership in helping others to coordinate the use of content technologies and teaching approaches at my school and/or district.	1	2	3	4	5
E9	I can choose technologies that enhance the content of a lesson.	1	2	3	4	5

F. Questionnaire for Technological Content Knowledge (TCK)

Please answer the following questions by ticking the appropriate answer.

		Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
F1	I can learn technology easily.	1	2	3	4	5
F2	I keep up with important news about technologies.	1	2	3	4	5
F3	I have the technical skills I need to use technology.	1	2	3	4	5
F4	I use the technologies to develop learning activities and learners' tasks.	1	2	3	4	5

G. Questionnaire for Pedagogical Content Knowledge (PCK)

		Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
G1	I can select effective teaching approaches to guide learners' thinking and learning in Accounting.	1	2	3	4	5
G2	I make my own lesson plan.	1	2	3	4	5
G3	I can make the difficult lesson easier for learners to understand.	1	2	3	4	5
G4	I make questions on my own to measure my learners' understanding towards the lesson.	1	2	3	4	5

H Questionnaire for Technological Pedagogical and Content Knowledge (TPACK)

		Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
H1	I can teach lessons that appropriately combine any Accounting technologies, and teaching approaches.	1	2	3	4	5
H2	I help my colleagues to understand how to integrate technologies, and teaching approaches in their teaching of Accounting.	1	2	3	4	5
H3	I use various approaches with various software to enhance learners' understanding learning of Accounting.	1	2	3	4	5

THANK YOU AND REMAIN BLESSED!



Topic: Teachers' Understanding and Practices of Integration of ICT in Teaching Accounting.

Greetings All,

Thank you very much for agreeing to be part of this focus group discussion and for taking the time to join me today. I will be facilitating this discussion, please feel free to answer the questions and provide any information you may like to share with us today regarding the teachers' understanding and practices of ICT integration in teaching Accounting. Please note, that this is a discussion, therefore, there will be no wrong or right answer. This focus group discussion aims to obtain in-depth information on teachers' understanding and practices of ICT integration. You are at liberty to add any information that might assist the researcher on the research problem.

SECTION A

1. Name of the school:
2. Name of the circuit:

SECTION B.

1. What is your general understanding of ICT?
2. What competencies do you have in technology/ in ICT?
3. What is your understanding of ICT in teaching Accounting?
4. Do you think the DBE made the right decision of introducing ICT in schools? Please elaborate.
5. Have you received any professional training on ICT integration? If so, how?
6. Do you think it is important to use ICT in teaching Accounting, why?
7. Do you or have you integrated ICT in teaching Accounting? Please elaborate.
8. Which resources did you normally utilize in your integration of ICT in Accounting? And how?
9. Did you receive any guidance or support from the school and DBE? Please elaborate.

10. What factors encouraged you to integrate ICT in teaching Accounting?
11. What factors hindered you from integrating ICT in Accounting teaching and learning?
12. What do you think is the government's intention in crafting a policy on ICT integration?
13. Can you please tell me about your overall understanding and practices of integrating ICT in Accounting or your school?

Section C: Generals

1. What advice can you give to Accounting teachers in terms of integrating pedagogy, content, and technology in the classroom?
2. What is the future of ICT in your school? (Any programmes to support teachers, any encouragements from DBE stakeholders, any technology resource provisions)
3. Have you noticed any improvements in Accounting after integrating ICT? Please elaborate.
4. Before we conclude is there anything you want to share with me regarding ICT integration in Accounting and schools?



APPENDIX K: OBSERVATION SCHEDULE

TOPIC: Exploring Teachers' Understanding and Practices of integration of Information and Communication Technology (ICT) in teaching Accounting.

Name of the school:

Name of the cluster:

Date and time :

Grade :

Period no. :

Thank you for allowing me to observe your teaching in Accounting today. I will observe you from the beginning of the lesson until the end. I will not participate in your teaching, I'll take fieldnotes while the lesson is proceeding. Confidentiality will be kept through the utilization of synonyms of schools and teachers and information obtained here will be used for the research only.

1) List of technology-based tools being integrated into Accounting lessons.

.....

2) What kind of ICT devices are installed/found in this classroom? (Hardware and software, e.g. projectors, laptops, radios, etc.)?

.....

2) Which Accounting topic is being taught?

.....

3) Are any rules governing the use of technology-based tools.

.....

4) How is the teacher integrating technology-based tools in teaching Accounting?

.....

5) How long does the use of tools take place in each lesson?

.....

6) Is there any participation from learners?

.....
7) Do the tasks given to learners allows learners to utilize technology-based tools? If yes, how did they utilize them?
.....

8) Do the learners have relevant technology-based tools? If yes, name them.
.....

9) Do the teacher shows content and technology understanding in the Accounting teaching lesson?
.....

10) Did learners understand the topic being taught?
.....

11) How is the learners' reaction in utilizing technology-based tools?
.....

12) Was the teacher able to use the tools effectively?
.....

13) Are there any obstacles identified?
.....

14) Any impacts observed during the integration of ICT in teaching Accounting?
.....

15) Is the teacher able to manage learners' behaviour?
.....

The End! Thank you.

APPENDIX L: INDIVIDUAL INTERVIEW QUESTIONS

TOPIC: Exploring teachers' Understanding and Practices of integration of Information and Communication Technology (ICT) in teaching Accounting.

Greetings, I would like to appreciate you for allowing me to engage with you in this face-to-face interview. In this procedure, I would be asking you a few questions to gather in-depth information regarding teachers' understanding and practices of integration of ICT in teaching Accounting. I assure you, your responses will be utilized for the research purpose only and your name will not be mentioned in any of the reports of this research. Please be honest when responding and you are at liberty to ask for clarity if you did not understand the question.

Name of the school:

Name of the circuit:

1. What do you understand about ICT? Please elaborate.
2. Have you ever been informed about integrating ICT in teaching Accounting? How?
3. What ICT tools do you use in teaching Accounting? (e.g. Interactive Whiteboards, Computer, Microsoft PowerPoint, etc.)
4. How do you integrate those ICT tools mentioned above in your teaching of Accounting?
5. Why do you practice the integration of ICT tools in teaching Accounting the way they do?
6. Do you think ICT integration enhances teaching and learning in Accounting in secondary schools? Please elaborate.
7. Do you think ICT integration should be emphasized in Accounting teaching in secondary schools? And why?
8. What factors encourage you as an Accounting teacher to integrate ICT in your teaching? And how?
9. What factors hinder you from integrating ICT in Accounting teaching? Please elaborate.
10. Was there any endeavor to resolve such hindrances? If yes, how?

11. Considering all the factors discussed above, what support do you receive from your school and the Department when integrating ICT in teaching Accounting?
12. Did you receive any professional development about ICT integration in Accounting? Please elaborate.
13. Are the ICT devices (computers, laptops, whiteboards, etc.) installed in your classroom or they are movable? And how quick is the access to them?
14. How did you manage to integrate Accounting content and technology in your teaching?
15. From your experience, do you think it is easy for you to integrate ICT in teaching Accounting?
16. What recommendations can you make regarding the integration of ICT in the Accounting classrooms in secondary schools?

Thank you very much for your time.

Appendix M

Turnitin report

01/02/2024, 18:13

Turnitin - Originality Report - Exploring Teachers' Understanding and Practic...

Turnitin Originality Report

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Eleanor M Lemmer (Professor Emeritus, UNISA) D Ed (Comparative
Education), UNISA

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