AN EXPLORATION OF MOBILE LEARNING IN SOUTH AFRICAN ACCOUNTING CLASSROOMS: A CASE STUDY

by

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DEDICATION

To:

William, Kaitlyn and Emma,

for you are the reason.

DECLARATION

I, hereby, declare that this dissertation submitted by me for the **Magister Educationis (MEd)** degree at the University of the Free State is my own work and that is has not previously been submitted by me at any other university. I further relinquish copyright of this dissertation to the University of the Free State.

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Martelize Faber

Date: 26 June 2019

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ABSTRACT

In this digital age, where mobile learning is being incorporated into teaching and learning, this research tries to explore the perceptions and experiences of teachers and learners on the use of mobile learning in South African high school accounting classrooms. Such a study is significant in order to see how mobile learning can enhance and improve the delivery of accounting so that learners will find the subject more enjoyable, develop their critical thinking abilities and understand the benefits of learning accounting at school level.

The study is a case study of three high schools where the delivery of accounting as a school subject incorporates mobile learning. The main findings from the research provide evidence of the following: teachers and learners still do not realise the benefits of mobile learning; although mobile learning has the power to transform teaching and learning, many still think it is only a substitute for the traditional ways; although these learners are the generation that grew up with technology, one should not assume they know how to use it effectively for academic purposes; what will determine how effective mobile learning will be adopted into an accounting teacher's teaching methods depends on the teacher's attitude and willingness to adopt; and the resources and software available to high school accounting are not effectively being used. This contributes to both teachers' and learners' acceptance of mobile technology in accounting being low, mobile learning currently hindering the understanding of the subject and both learners and teachers not feeling confident in using mobile learning.

This dissertation recommends that for mobile learning to have an impact on the teaching and learning practices of accounting, extensive and in-depth training for both teachers and learners are needed. More research on the use of mobile learning in high school accounting should be carried out. A great need for a more practical and relevant digitally enhanced curriculum exists. Such a curriculum should incorporate the appropriate software that is currently being used in the accounting workplace.

Keywords: accounting, accounting teacher, accounting learner, information and communications technology (ICT), mobile learning, mobile technology, high school subject.

LIST OF ABBREVIATIONS

CA	Chartered Accountant
EdTech	Educational Technology
FET	Further Education and Training
ICT	Information and Communication Technology
IQ	Intelligence Quotient
ITSI	IT School Innovation (Company)
SAICA	South African Institute of Chartered Accountants
SAMR	Substitute, Augmentation, Modification and Redefinition

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CHAPTER 1

INTRODUCTION AND ORIENTATION TO THE STUDY

1.1 INTRODUCTION, BACKGROUND AND RELEVANT LITERATURE REVIEW

In today's digital age, "online or e-learning" is a concept that is quite familiar in the sphere of teaching and learning. E-learning has now evolved to incorporate the new phenomenon called "mobile or m-learning" (Romrell, Kidder & Wood, 2014). The term "mobile learning" is applied to the use of small, handheld, lightweight, portable electronic devices to provide and obtain educational content to support, enhance and deliver learning in classrooms, at home, at work, in fieldwork and when travelling (Traxler & Leach, 2006). Cheon, Lee, Crooks and Song (2012) state that the benefits and features of mobile devices include portability, allowing them to be taken to different locations, connectivity, providing instant access to a wide variety of information from almost anywhere, at any time, and context sensitivity, which aids in the discovery and accumulation of real or simulated data.

The benefits of using mobile devices in the classroom are well documented (cf. Hesser & Schwartz, 2013; Hussin, Manap, Amir & Krish, 2012; Ingle & Moorehead, 2016; Passey, 2010; Rosman, 2008; Shih, Chuang & Hwang, 2010; Traxler & Leach, 2006; West, 2013). In a study on the use of iPads in the classroom conducted by Clark and Luckin (2013), they found that learners were overall positive about the use of handheld devices and even found them necessary for their learning experience. These handheld devices are being used not only for support in drill and practice exercises but also to deliver personalised learning experiences, to enhance and expand deep learning, to support collaborative learning and as universal, distributed and connected learning tools. iPads are furthermore being used to assist digitally enhanced monitoring and assessment.

Locally, the South African government has also turned to modern technology to strengthen teaching and learning and to help amend inequalities in its schools.

However, the literature shows that little or no improvement has been made despite the availability of information and communication technologies (ICTs) in these establishments (Ndlovu & Lawrence, 2012). According to Ndlovu and Lawrence (2012), it is not always a lack of resources that causes the problem but rather how teachers use the available educational tools in their teaching. Jantjies and Joy (2016) agree that even though teaching and learning through technology has become a significant aspect globally, some unique challenges exist in the South African context which need to be considered for the implementation of mobile technology to be sustainable. These challenges include a wide variety of cultural and linguistic differences, the lack of appropriate technological infrastructure and support and the skills and perspectives of the teachers.

The literature indicates that most research on mobile learning is in subjects such as science, technology, engineering and mathematics (Hesser & Schwartz, 2013; Hu, 2011; Nithia, Yusop & Rafiza, 2015) as well as in foreign languages, as demonstrated in the study by Burston (2016). However, due to the current variety of mobile technology available, this is also true in a subject such as accounting, where students are adopting mobile devices for learning purposes (Kutluk, Donmez, Gulmez & Terzioglu, 2015). Integrating mobile devices into the accounting classroom comes with several challenges that need to be addressed. These challenges involve institutional guidance, technological support and students' attitudes, not to mention the numerous challenges faced by teachers in implementing new technology into their teaching practices (Staples, Collum & McFry, 2016).

1.2 RESEARCH INTEREST AND FOCUS

As an accounting teacher, I was interested to see how mobile learning could enhance and improve the delivery of accounting lessons so that learners would find the subject more enjoyable, develop their critical thinking abilities and understand the benefits of learning accounting at school level. I believe the accounting curriculum should be aligned with the skills and demands of the 21st century and that mobile learning and ICT

knowledge are essential improvements necessary to provide these skills and meet these demands.

1.3 RESEARCH PROBLEM

While considering the literature available on mobile learning and accounting, it became apparent that the majority of the research conducted on the subject focus on accounting at tertiary level (cf. Kutluk, Donmez, Gulmez & Terzioglu, 2015; Kutluk & Gülmez, 2014; Richardson, Dellaportas, Perera & Richardson, 2013; Staples et al., 2016). The problem is that there is a lack of literature on mobile learning in accounting at high school level and more specifically within the South African context, that is, accounting in the Further Education and Training (FET) phase (Grades 10-12). The impact of mobile learning in the South African accounting classroom remains unclear and unexplored.

It was, therefore, my intention to investigate teachers' and learners' perceptions on and experiences of current mobile learning practices in the accounting classroom in a developing country such as South Africa. These perceptions would provide a starting point to bring about change in the way accounting is being delivered at high school level in South Africa, thereby benefiting not only learners and teachers but other stakeholders as well.

1.4 PARADIGMATIC, DISCIPLINARY AND THEORETICAL FRAMEWORK FOR THE STUDY

The theoretical framework of the study is based on the interpretive paradigm, which argues that reality is socially constructed, focusing on how to interpret the way people understand their experiences and the world in which they live, so to describe the phenomenon in terms of the meaning it has for the participants (Nieuwenhuis, 2013). Interpretivism postulates that knowledge and reality reside in the mind of individuals and may be uncovered by unpacking individual experiences (Savin-Baden & Major, 2013). Thus knowledge will always be subjective as it is perceived and described through subjective observations made by different individuals or groups of people (Nieuwenhuis,

2013). As interpretivism assumes that human life can only be understood from within, the researcher and the subject are interactively linked, which suggests that the findings are being created as the research proceeds (Lincoln, Lynham & Guba, 2011).

The ultimate aim of this approach is to offer a perspective on and understanding of the use of mobile learning in accounting by providing insight into the way the participants make sense of this new phenomenon in teaching and learning. I propose no hypothesis or theory, as the teachers' and learners' views, experiences and perceptions were used to create a tentative inductive but explanatory narrative regarding mobile learning in South African accounting classrooms (cf. Lacey, 2010).

1.5 RESEARCH QUESTION

The research problem indicated that there is a lack of literature on mobile learning in accounting at high school level and that the impact of mobile learning in the South African accounting classroom remains unclear and unexplored.

Therefore the main research question that this study wants to address is: "How can mobile learning improve the delivery of accounting as a school subject, according to teachers and learners?"

Specifically, within the context of mobile learning in the accounting classroom, the intentions of this research are to answer the following subsidiary questions:

1. What are the practices and benefits of using mobile learning as an educational medium in teaching and learning?
2. What are the current practices and benefits of using mobile learning in a few selected South African accounting classrooms?
3. What are the perceptions and experiences of a few selected teachers and learners regarding mobile learning in accounting as a school subject?
4. What observations regarding the research findings could enhance the implementation of mobile learning in an accounting classroom?

1.6 RESEARCH AIM AND OBJECTIVES

To answer the research question the overall aim of this research is to explore the perceptions of teachers and learners on the use of mobile learning in South African accounting classrooms.

The objectives of this study are:

1. to discuss the practices and benefits of using mobile learning as an educational medium in teaching and learning;
2. to review the literature on the practices and benefits of using mobile learning in South Africa and in the accounting classroom;
3. to explore the perceptions and experiences of a few selected teachers and learners regarding mobile learning in accounting as a school subject; and
4. to provide insights and make suggestions that could enhance the implementation of mobile learning in an accounting classroom.

1.7 RESEARCH DESIGN AND METHODOLOGY

The study was conducted using a qualitative research design to determine the perceptions and experiences of teachers and learners on the use of mobile learning in the accounting classroom. This research design is based on the interpretive, naturalistic approach that seeks to understand the particular situation in a real-world setting, where I will not attempt to manipulate the specific research situation (Biggam, 2008; Nieuwenhuis, 2013).

The study is a case study at three high schools where the delivery of accounting as a school subject has incorporated mobile learning. It is possible to gain greater insight into and understanding of the dynamics of the specific situation with case study research, and it offers a multi-perspective analysis for me to consider the voice, perspective and views of the different groups under research and the interaction among them (Biggam, 2008; Nieuwenhuis, 2013; Savin-Baden & Major, 2013).

The research objectives will be resonded to by collecting data in the following ways:

Objective 1 – A literature review will be conducted. This will be done in Chapter 2.

Objective 2 – A literature review will be conducted, and the Department of Education's persprective will be summarised. This will happen in Chapter 3.

Objective 3 – Focus group discussions and individual interviews will be carried out. See Chapter 5 for these discussions and interviews.

The study will conclude with Objective 4, in Chapter 6, by providing insights and making suggestions that could enhance the implementation of mobile learning in an accounting classroom.

1.8 DATA COLLECTION

The data collection was completed using the following techniques:

Interactive focus group discussions with accounting learners at three different schools were conducted, concentrating on current practices, the learners' perspectives on and experiences of mobile learning and how it affects their understanding of the subject. The focus group format would encourage these learners to share and discuss their views in such a way that would allow me access to a large number of possible views and a replication of naturalistic social influence and consensus processes (cf. Elliott & Timulak, 2005).

Secondly, I conducted individual semi-structured interviews with accounting teachers at the abovementioned schools. These interviews focused on the use of mobile learning in the classroom and how the teachers perceived and experienced its influence on student learning. According to Nieuwenhuis (2013), an interview is a conversation between two persons where the interviewer asks the interviewee questions as a way of collecting

information and to learn more about the ideas, beliefs, views, opinions and behaviours of the interviewee.

With the permission of the participants, the conversations were recorded for data analysis later.

1.9 SELECTION OF RESEARCH PARTICIPANTS

Due to the qualitative nature of the research, it was conducted using a purposeful participant selection. The target population includes all high school accounting teachers, who have been teaching accounting with the integration of mobile learning to enhance and enrich the delivery of the subject, and their learners. Schools that were contacted and agreed to be part of the study were included in the study. 18 learners in Grade 10 and Grade 11 from three purposely identified schools took part in the focus group discussions and six selected teachers from the same schools were interviewed to obtain answers broad enough and to interview deep enough to capture all the essential aspects and variations of the studied area (cf. Elliott & Timulak, 2005).

The study is limited to Grade 10 and 11 learners and their teachers, where the implementation of mobile technology in the accounting classroom has already happened. Due to pressure on the learners' time and workload, no Grade 12 learners were used for the study.

1.10 DATA ANALYSIS, INTERPRETATION AND REPORTING

Qualitative data analysis is aimed at examining meaningful and symbolic content of gathered data, which is best achieved through an inductive process where the main aim is to let the research findings emerge from important themes inherent in the raw data, which would not have been possible with a more structured theoretical orientation (Nieuwenhuis, 2013). These interrelated themes will reflect the overall aim and objectives of the research and restate the main topics arising from the literature review (Biggam, 2008).

An essential part of this research was to analyse the case study data through a thematic analysis where the data from the interviews and focus group discussions were broken down into easily identified themed subsets. These were compared and contrasted to determine if the results support or contradict one another, and to report on the case study results concerning the findings in the literature review.

1.11 VALUE OF THE PROPOSED RESEARCH

This research will contribute to the knowledge of the discipline regarding mobile learning:

- by providing a critical review on matters relevant to the implementation of mobile learning with a specific focus on a developing country;
- by critically examining the issues pertinent to the implementation of mobile learning in a subject such as accounting;
- by obtaining the views and perceptions of teachers and learners on existing practices regarding mobile learning in the accounting classroom to form a well-rounded picture, allowing a meaningful comparison between practice and theory that will contribute towards informed decision making by implementers of mobile technology in high schools in general, but more specifically in accounting; and
- by drawing attention to some fundamental issues that arise from the study.

1.12 ETHICAL CONSIDERATIONS

It is my responsibility to take into account the effects of the research on participants and to act in such a manner as to preserve their dignity as human beings (Cohen, Manion & Morrison, 2007). I intended to conduct the research in an ethical manner. Participation was voluntary; therefore the participants were asked to complete consent forms indicating their willingness to participate in the study. Any information that might be seen as an invasion of the participants' privacy would not be disclosed. Permission was sought from the different educational institutions before the research commenced. Permission was also requested for the recording of the interviews and focus group discussions.

Ethical clearance was obtained from the university. My ethical clearance number for the research is UFS-HSD2017/0532.

1.13 STRUCTURE OF THE DISSERTATION

The study consists of the following six chapters:

Chapter 1: Orientation and background information

Chapter 2: Review of related literature on mobile learning

Chapter 3: Literature concerning mobile learning in South Africa and accounting

Chapter 4: Research design and methodology

Chapter 5: Description, analysis and synthesis of results

Chapter 6: Summary, conclusion, implications and limitations of the study

1.14 CONCEPT CLARIFICATION

Throughout the study, some terms, concepts and keywords are used. The following definitions are provided for ease of clarification. Most of the following terms or definitions have been taken from the National Curriculum Statement for the FET phase for Grades 10 to 12, which forms the foundation of high school education in South Africa.

This section also explains other concepts that need clarification as these concepts arise as the study progresses.

- **Accounting**

  The focus of the subject accounting for Grade 10 to 12 in South Africa is on:

  > … measuring performance, and processing and communicating financial information about economic sectors. This discipline

ensures that principles such as ethical behaviour, transparency and accountability are adhered to. It deals with the logical, systematic and accurate selection and recording of financial information and transactions, as well as the compilation, analysis, interpretation and communication of financial statements and managerial reports for use by interested parties. The subject encompasses accounting knowledge, skills and values that focus on the financial accounting, managerial accounting and auditing fields. These fields cover a broad spectrum of accounting concepts and skills to prepare learners for a variety of career opportunities. The three main topics and corresponding topics in the grade 10 – 12 accounting curriculum are Financial Accounting (50% to 60%), Managerial Accounting (20% to 25%) and Managing Resources (20% to 25%). (Department of Basic Education, 2011)

- **Curriculum and Assessment Policy Statement**

  The National Curriculum Statement Grades R-12 (NCS) stipulates policy on curriculum and assessment in the schooling sector. To improve implementation, the National Curriculum Statement was amended, with the amendments coming into effect in January 2012. A single comprehensive Curriculum and Assessment Policy document were developed for each subject to replace Subject Statements, Learning Programme Guidelines and Subject Assessment Guidelines in Grades R-12. (Department of Basic Education, 2011)

- **FET phase**

  The FET phase focuses on Grades 10 to 12 in South Africa.

- **Tablet**

  A tablet is a mobile computer, typically in a slate format with a touchscreen display, circuit board and a battery, as an all-in-one, single device.

- **Use**

  The “use” of tablets in this research refers to employing the tablet in the deliverance, obtainment and enhancement of knowledge in the specific subject area.

1.15 CONCLUDING COMMENTS

In this chapter, I focused on stating the reasons and central issues for the need for the research and how I aimed to reach the desired outcome. Most previous research studies focused on the implementation and use of tablets in schools in general or in accounting courses at universities. Can the perceptions of accounting learners and their teachers provide new insight into the successful implementation of tablets in a challenging FET school subject such as accounting?

Chapter 2 will concentrate on the implementation, use and benefits of tablets as an educational medium in teaching and learning, internationally as well as nationally.

CHAPTER 2

MOBILE DEVICES AS AN EDUCATIONAL MEDIUM IN TEACHING AND LEARNING

2.1 INTRODUCTION

In this chapter, the emphasis is on establishing a background for this study by focussing on mobile learning in general. It will try to address the first research objective of the study, namely to discuss the practices and benefits of using mobile learning as an educational medium in teaching and learning. To understand what will determine the perspective and experiences of teachers and learners on mobile learning in the accounting classroom, it is crucial to first understand the nature, benefits, drawbacks and opportunities of mobile devices in the classroom. Secondly, before the study is continued, it would help if an understanding of the way teachers and learners perceive this type of technology could be arrived at.

Therefore, this chapter emphasises:

- understanding what mobile learning is and is not, by looking at some definitions concerning the topic and placing them in the context of e-learning and blended learning;
- looking at what is happening in classrooms and how classroom practices are changing;
- determining what the pedagogical implications of this type of learning for learners, teachers and other stakeholders are;
- what the advantages and disadvantages of mobile learning are;
- considering guidelines that need to be followed to ensure that mobile learning initiatives are a success without costing more than they should;
- determining how sustainable a venture, such as mobile learning in learning institutions, is; and
- looking at what teachers and learners are thinking and feeling about mobile technology in their classrooms.

Chapter 2, with the focus on mobile learning in general is a prerequisite to the discussion on mobile learning in South Africa and further mobile learning in the South African accounting classroom in Chapter 3. It lays the foundation to understand what mobile learning is, before moving on to more specific situations, such as a developing country, such as South Africa, and then to the specific subject, namely accounting.

The following section attempts to determine what mobile learning is.

2.2 WHAT IS MOBILE LEARNING?

2.2.1 E-learning

In today's digital age, "online or e-learning" is a familiar concept in the sphere of teaching and learning. The benefits and positive effects of e-learning and ICT have been repeatedly documented (Bizi & Shittu, 2014; Cheng, 2011; Chen & Mo, 2015; Cox, Cox & Preston, 1999; Fatma, 2013; Lewis, Whiteside & Dikkers, 2014; Ruiz, Mintzer & Leipzig, 2006; Watson, 2001; Zhang & Nunamaker, 2003). E-learning, also known as "online learning", is generally known as the use of media such as radio, internet and television in the acquisition of knowledge and understanding. It involves both formal and non-formal learning at all levels and uses an information network such as the internet, an extranet (WAN) or an intranet (LAN). This information network is used either partially or entirely for course delivery, evaluation, interaction and facilitation.

A subcategory of e-learning is web-based learning, which refers to learning by using an internet browser (such as Internet Explorer, Firefox or Chrome) (Bizi & Shittu, 2014). It can also be seen as learning through making use of electronic devices. In a study conducted by Sangrà, Vlachopoulos and Cabrera (2012) on a functional and up-to-date definition of e-learning, they established that because the requirements of learning change so rapidly, it is important that the concept and functions of e-learning are continuously adapted to meet these requirements. According to their research, an inclusive definition of e-learning is:

> … an approach to teaching and learning, representing all or part of the educational model applied, that is based on the use of electronic media and devices as tools for improving access to training, communication and interaction and that facilitates the adoption of new ways of understanding and developing learning. (Sangrà et al., 2012, p. 152)

They concluded that because e-learning shares the new dynamic that characterises educational systems in the 21st century with the merging of different disciplines such as communication technology, computer science and pedagogy, it is probable that the concept and definition of e-learning will continue to develop and change for a long time to come.

2.2.2 Mobile learning

E-learning has now evolved to incorporate the use of mobile or handheld devices such as laptops, smartphones, tablets and other wireless devices and has thus also become known as “mobile or m-learning” (Romrell et al., 2014). People have been trying to define mobile learning for several years, but researchers are still not agreeing on a single definition. This section includes a number of these definitions to provide a starting point and create a picture of what people believe mobile learning to be.

When claiming something is mobile, it is “able to move or be moved freely or easily” according to the English Oxford Living Dictionary (2017, online). So when the term “mobile learning” or “m-learning” is used in teaching, learning and training, it refers to the use of information technology devices that are handheld or mobile, such as tablets, smart or mobile phones, personal digital assistants and laptops. This is because the delivery of learning can take place in several locations, at different timeframes and addressing several content areas (Sarrab, Elgamel & Aldabbas, 2012).

Taxler and Leach (2006) indicate that the term “mobile learning” is increasingly being applied to the use of small, handheld, lightweight and portable electronic devices to provide and obtain educational content to support, enhance and deliver learning in classrooms, at home, at work, in fieldwork and when travelling. Mobile phones (or cell

phones), tablets, personal computers and personal digital assistants are all typical examples of these devices. Mobile learning can now also include the use of personal media players such as iPods, digital cameras and personal navigation systems. This has taken the learning experience to a whole new dimension as anyone can learn anything, anytime, anywhere. Laptop computers are sometimes included, but due to their weight and size, they are not always easy to carry. Also, their start-up time excludes the kind of spontaneity that the other devices possess. Thus Franklin (2011) states that it is also possible to differentiate between different types of mobile devices:

- **Highly mobile devices**: devices that can fit into a pocket, such as cell phones, smartphones or cell phone-sized device.
- **Very mobile devices**: these include tablets, iPads and netbooks.
- **Mobile devices**: larger devices, but still mobile, like laptops.

This degree of mobility can be the difference between a device being a liability or an indispensable learning aid in specific situations.

As far back as 2003, Lehner, Nösekabel and Lehmann predicted that this new model of "anytime, anywhere" learning would contribute to more efficient education and would improve learning results. Cheon et al. (2012) state that the benefits and features of mobile devices include portability, which allows for use in various locations, instant connectivity, providing access to a wide variety of information from almost anywhere at any time, and context sensitivity, which allows for use in finding and gathering real or simulated data.

According to Rosman (2008), mobile learning can be seen as an alternative option for those who learn or want to stay connected with their learning environments by using a mobile device. He describes the difference between e-learning and m-learning as follows:

> While e-learning takes learning away from the classroom or campus, m-learning is taking learning away from a fixed point. Where e-learning is an alternative to classroom learning, m-learning is a complementary activity to both e-learning and traditional learning. M-learning respects that a user would like to interact with educational resources whilst

> away from their normal place of learning – classroom or computer. (Rosman, 2008, p. 121)

Mobile learning can take learning to the next level as it works and reaches places other learning practices cannot. It can empower and engage learners, and this engagement and the motivation combined will continue far beyond the initial gadget craze (Hlodan, 2010). Franklin (2011) simply states that mobile learning is learning that happens anywhere, at any time. Martin and Ertzberger (2013) take this definition further by adding that mobile technology gives rise to a new type of learning – here and now learning. This new type of learning happens when learners have access to information anytime, anywhere, which allows them to perform authentic activities in the context of their learning. Chu (2014) defines a mobile learning environment as a situation where students can learn indoors and outdoors while having continuous access to online resources.

It is significant that numerous studies have researched the use of iPads in the classroom due to the popularity and user-friendliness of these devices. However, for this study, there will be no distinction made between iPads and other tablets. The iPad is thus included in Rouse's (2016, online) definition of a tablet, namely:

> A tablet is a wireless, portable personal computer with a touchscreen interface. The tablet form factor is typically smaller than a notebook computer but larger than a smartphone … [and] the most common type of tablet is the slate style, like Apple's iPad, Microsoft's Surface or Amazon's Kindle Fire. External keyboards are available for most slate-style tablets, and some keyboards also function as docking stations for the devices.

The same author also says that "technological advances in battery life, display resolution, handwriting recognition software, memory and wireless internet access have since made tablets a viable computing option" (Rouse, 2016, online). Therefore, any research concerning iPads will be classified under tablets for this study as a mobile device that can be used for mobile learning. Another device that can be used for mobile learning and will therefore also be included when mobile devices are being referred to is the new game changer, the so-called "phablet". The word "phablet" is a combination of the words "phone" and "tablet" and is "a smartphone having a screen which is

intermediate in size between that of a typical smartphone and a tablet computer" (English Oxford Living Dictionary, 2017, online). The phablet typically has a touchscreen ranging in size between five inches (12,7 cm) and six inches (15,2 cm). An example of a phablet is the Samsung Galaxy Note series. The phablet is now a very popular device that is rapidly gaining ground as users realise they do not need a phone and a tablet any more, as the phablet can do almost everything these devices were designed to do (Peckham, 2014).

2.2.3 Blended learning

Recent studies have shown that doing away with the teacher-student relationship is not always beneficial for the learning experience. Instead, the positive benefits of e-learning must be combined with traditional classroom instructions. At present, this is termed "blended learning".

> Blended learning, also referred to as hybrid learning, combines the best features of traditional schooling with the advantages of online learning to deliver personalised, differentiated instruction across a group of learners. Students in formal blended learning educational programs learn online part of the time, yet have the benefit of face-to-face instruction and supervision to maximise their learning and to best fit, their own needs. (Watson et al., 2015, p. 5).

Blended learning can also be defined as:

> … a formal education program in which a student learns at least in part at a supervised brick-and-mortar location away from home and at least in part through online delivery of content and instruction with some element of student control over time, place, path, and/or pace. (Horn & Staker, 2011, p. 5)

It is important to note that this "student's perspective" definition has two vital points that distinguish it from other types of learning:

- There must be a **physical location** away from home. It is also essential that a **supervisor** must be physically present to oversee the learning.
- The student has an **online delivery experience** and should be able to **control**, to some extent, **the time, place, path and pace** of learning. It is this "student

> control element" that distinguishes blended learning from other technology-enhanced learning forms.

The above research states that technology-enhanced learning activities include the use of a laptop and projector to stream online material to the learners, broad access to internet devices, digital textbooks or using an electronic whiteboard to make face-to-face sessions more exciting. The internet, however, is not used to deliver the content and instruction, or the student does not have control over the time, place, path and pace of learning. Also important to note is that although mobile learning can be part of a blended learning programme, it is not to say that all blended learning can be classified as mobile learning.

In the blended learning classroom, teachers are incorporating the use of technology such as software and applications on computers or handheld devices, such as tablets, with the current curriculum to enhance the learners' educational experiences. This use of technology makes a difference because learning is no longer restricted to a specific school day or school year or even the walls of the classroom or the pedagogy used by the teacher. Instead, with the help of interactive and adaptive software, students can now learn with a method that is customised according to their needs and which is no longer restricted to the pace of a whole classroom of students (Roadmap for Reform, cited by Staker & Horn, 2012).

Researcher's definition

For the sake of completeness I, therefore, propose my definition of mobile learning at this stage as:

> Learning that can happen at any time and at any place with the aid of a mobile device that has instant access to a variety of online and educational resources.

With a better understanding of the definition and origin of mobile learning, we can progress to the next point, namely how this new way of learning is being used in the classroom.

2.3 CLASSROOM PRACTICES

As each sector shows how rapidly mobile technology is developing, it is no wonder that education is also showing abundant growth, especially as it is so easy to obtain the required information with the use of mobile phones and handheld computers (Kutluk & Gülmez, 2014). While promoters and sceptics are engrossed in their heated discussions over the value of mobile devices for learning, iPads and other handheld digital devices are securing their place in educational institutions (Mango, 2015).

Much has happened since 2011, when Pollara and Kee Broussard (cited by Hussin et al., 2012) felt that mobile learning could still be at its beginning phase, as a number of studies and projects are focusing on the theory, design, establishing foundation and what type of mobile learning should be used, as well as the activities that are supported by mobile technologies. Considering that the first iPad was launched only nine years ago in April 2010, and just as the late Steve Jobs (Chief Executive Officer of Apple at the time) predicted, it was a game changer. The iPad defined the future of mobile media and computing devices as we know it today (Apple Inc., 2010).

According to Wagner (cited by Hussin et al., 2012), it seems both self-evident and unavoidable that there is value in deploying mobile technologies in the service of teaching and learning. This can be seen in the following contributions that mobile learning brings to the classroom.

2.3.1 New capabilities

With mobile technology, learning has become more attractive, as handheld digital devices not only have communication facilities but are also capable of creating documents, reading data files and accessing the internet. It can help users receive emails, instant messages in text form or multimedia formats, lecture notes and files in 3G formats for audio and video, all in a more convenient way. Students are no longer confined to the four walls of a classroom or even the internet environment, as they can now search for information on the internet, synthesise the information and then

reconstruct the information into knowledge that they find meaningful (Hussin et al., 2012), with the extra advantage that most of this can be done in real time.

2.3.2 Availability of mobile devices

Sarrab, Elgamel and Aldabbas (2012) feel that something that counts very highly in favour of mobile technologies is the availability of these devices. Although a vast number of households have an installed desktop computer at home, which can be shared between family members, mobile devices are much easier to access. Another factor is that learners are away from home most of the day. While away from home, these learners have their mobile devices with them, using them to communicate, do research, look at videos and take pictures between classes or during other waiting periods. This makes learning much more portable, as educators can use these popular mobile devices to make information more readily available and in formats more easily accessible for learners than ever before (Hussin et al., 2012). It is evident from the above that mobile devices are thus more accessible and offer ample support for standard internet technologies (Sarrab et al., 2012). With mobile learning, learning becomes more engaging, interactive, widely available and flexible. Sarrab et al. (2012) believe that mobile learning is more cost-efficient and that this will help learners learn without the traditional restrictions. With mobile devices, classes and activities can take place inside and outside classrooms and will no longer be limited to a few assignments done in rarely used computer classes.

As mobile technology makes it possible for learners to both access information and produce information through their observations, it is possible for teachers to assign learners with out-of-class, location-based activities that were never possible before (Martin & Ertzberger, 2013).

2.3.3 Learning enhancement

According to Clark and Luckin (2013), in a study conducted on the use of iPads in the classroom, learners are overall positive about the use of handheld devices and even

find them necessary for their learning experience. iPads are being used not only for support in drill and practice exercises but also to deliver personalised learning experiences, to enhance and expand deep learning, to support collaborative learning and as universal, distributed and connected learning tools. iPads are furthermore being used to assist digitally enhanced monitoring and assessment. A few other findings of Clark and Luckin's (2013) research are as follows: Firstly, iPads help learners to take control of their learning and support uninterrupted learning by allowing them to switch effortlessly from formal to informal or personal to social learning contexts. Secondly, iPads engage and motivate learners by keeping them focused on content for longer and permit interaction of groups with the device at the same time and utilising the same item, which is simply not possible with the use of, for example, personal computers. Thirdly, because iPads can be used inside as well as outside the classroom, it allows learners to enhance and expand their learning in ways that were previously not as easy to do or even impossible. Fourthly, due to the multiple communication features, accessibility and availability of iPads, communication among different stakeholders, such as teachers, learners and parents, is made more natural and more routine. Lastly, not only do iPad and iPad-like devices offer efficient network connectivity and Cloud storage, but their ever-growing capacity to store and collect data regarding the learning activity contributes to the analysis and representation of the data. This, in return, helps with the assessment, self-assessment, evaluation and reflection of the learning activity.

It is clear to see how classroom practices are changing with the new abilities, availability and enhanced learning that mobile learning brings to the classroom. However, it is also necessary to look at the pedagogical impact mobile learning is having, which is interwoven with the abovementioned practices.

2.4 PEDAGOGICAL EFFECTS OF MOBILE LEARNING

Although mobile learning has great potential to become a useful tool for learning, some people are wondering what the pedagogical effects of integrating mobile learning into traditional courses are, as was indicated in the study done by Hussin et al. (2012). According to this study, learning can be seen as the process where a learner must

achieve a particular learning outcome in a specified timeframe. In order to ensure that the learning has indeed occurred, the specific learning outcome must be measured. With the help of a teacher who can act as a guide or facilitator, as well as the use of additional learning resources such as books and other learning materials and communication tools, learning can become more stimulating, substantial and productive. Speaking about mobile learning, it is essential to remember that it is only a mode of learning, with a mobile phone or a tablet as only a tool with which the process of learning is enriched. It is imperative to note that with mobile learning, the main focus is the learning itself and not the technology that is being used to achieve this. Using a particular mobile device in mobile learning does not necessarily mean that learning has occurred. The effectiveness of the learning depends more on how the learning process has been conducted than on which mobile device has been used.

One of the most significant advantages of mobile technology is the high value that young people place on this technology as it is the primary portal for social communication at present. It is when these young individuals find it relevant for them – when there is a social aspect connected to it and when they have a personal interest – that learning happens at its best (Schoology, 2016).

Franklin (2011), on the other hand, believes that it is not learning that is changing, but rather the way that learning is being delivered. According to Franklin (2011), for learning to occur, it is vital to take the following three E's of education into consideration: enabling, engaging and empowering.

- **Enabling**: Learners must be enabled to reach their full potential. This is possible by increasing their access to educational resources and experts, so to extend their learning beyond the capabilities or limitations of their school or community.
- **Engaging**: Learners should be engaged in productive, compelling learning experiences. This will develop more in-depth knowledge and skills development, such as problem-solving, creativity and critical thinking skills.

- **Empowering**: Learners should become lifelong learners, which is only possible if they take responsibility for their educational destinies while exploring knowledge with unbound curiosity.

In a study by Romrell et al. (2014), the authors state that because of the increasingly significant role that mobile devices are playing in our everyday lives, it naturally follows that educators are wondering how these devices can be used to support learning. During their research, Romrell et al. (2014) realised that there were many factors to consider when implementing the use of mobile devices within the educational context, such as what mobile device would be the most appropriate for the specific learning activity at hand. However, of even greater importance is that educators and designers should focus on how these devices could be used to enhance learning. It is not enough for mobile devices to simply replace previous methods that were used without these devices; it must also transform learning. By presenting their definition of mobile learning and combining it with the substitution, augmentation, modification and redefinition (SAMR) framework developed by Puentedura (2013), Romrell et al. (2014) attempt to evaluate mobile learning, facilitate the design of mobile learning activities and assist educators and designers in constructing ideal learning experiences using mobile devices in education. Although mobile devices are at the centre of mobile learning, it is what these devices allow educators and learners to do that truly defines mobile learning. Their proposed definition of mobile learning is derived from the several unique characteristics of mobile learning, which distinguish it from any other type of e-learning (Romrell et al., 2014):

- **Personal and personalised**: According to their research, mobile devices are personal and personalised. Devices that are owned and not borrowed reflect the personality and preferences of individuals and influence their actions. However, when the devices are borrowed, they are unfamiliar to the user, which results in making the use of the device more difficult and the learning feeling impersonal. It is not only the mobile device that can be personalised, but also the learning that happens on the device.

- **Situated**: The next characteristic is that mobile devices are situated across contexts and time. Learners have access to just-in-time information daily as they are moving through their everyday routines that are situated in the context of their lives. It is through mobile learning that a bridge is built between the formal learning environment and the informal learning environment, which creates these unique, situated contexts.
- **Connected**: Lastly, mobile devices are connected to information, people and practices. With these devices, users have instant connectivity that allows them to access the internet, watch videos, make calls or send messages. It is this access to people, practice and information that creates a community of learners.

Consequently, Romrell et al. (2014, p. 1) conclude that the definition of mobile learning should be “learning that is personalised, situated, and connected through the use of a mobile device”. Although this definition of mobile learning is helpful, it is only when combined with the SAMR model, developed by Puentedura (2006) for the use of technology in general and adapted by Hockly (2013) as a framework to classify and evaluate mobile learning activities, that the true potential of how technology can transform learning is realised. This model can help to determine how well mobile learning activities meet the objective of transforming learning through the use of a mobile device.

With regard to learning activities, the four categories of technology use, according to the SAMR model, are as follows:

- **Substitution:** According to Hockly (2013), this is the simplest way to implement mobile learning, where technology provides a substitute for other learning activities without functional change, meaning that the learning activity could have been done without the use of a mobile device.
- **Augmentation:** With augmentation, mobile learning activities go beyond the substitution level, as they provide some form of functional improvement over what could have been accomplished with traditional tools.

- **Modification:** The learning activity is redesigned through the use of technology, for example during a simulation where the learners have to make decisions in real time. As this real-time decision making increases the realism of the virtual reality project, it increases the educational worth of the activity.
- **Redefinition:** Here, learners can participate in learning activities that could not have been done without the use of technology, as it creates innovative tasks that would not have been possible without a mobile device. An example is where Chinese students can learn English with the help of their phones' global positioning system (GPS) and camera by giving English descriptions of the items they see around them (Liu & Tsai, 2013).

Puentedura (2014) notes that learning activities that fall within the substitution and augmentation classification can enhance learning, while learning activities that fall within the modification and redefinition classification have the potential to transform learning. Puentedura (2014) further claims that by coupling the SAMR model with Bloom's taxonomy, it is possible to give an outline for a clear set of steps that can help guide the introduction of technology in the classroom and help the beginner practitioner with this introduction.

It will be just as important to look at the curriculum and determine if it must be adapted or if new lessons should be written to accommodate this new method of teaching (Schoology, 2016). It is also necessary to search for existing applications of resources that may help with the creation of these revised lessons (Schoology, 2016).

Kutluk and Gülmez (2014) mention that mobile learning can provide university students with more opportunities than traditional classroom lectures to apply investigative and critical thinking abilities and increase students' learning methods positively and effectively. By letting students access meaningful and just-in-time resources, they are constructing their knowledge. With mobile device applications, students' motivation, learning success and effectiveness can be improved.

It is also important that educators and other stakeholders, as well as learners, must be ready to implement mobile learning. When looking at pedagogical techniques, teachers have to be able to use mobile phones with innovation but still in an appropriate way in this new mobile learning context, while developing new ways to communicate and effectively manage their time (Hussin et al., 2012).

It is, therefore, possible to say that the pedagogical benefits of mobile learning include promoting self-directed and personalised learning and learners developing crucial critical thinking skills, collaboration, curiosity and engagement in learning. Mobile learning empowers learners and can enhance and transform learning. At this stage, it is the ideal time to look at more of the advantages of mobile learning.

2.5 ADVANTAGES OF MOBILE LEARNING

The following can be summarised as the advantages of mobile learning.

2.5.1 Benefits

Many people see mobile learning as a way of going beyond the traditional classroom as these devices give both the teacher and learner more flexibility and offer more interaction opportunities than ever before. Benefits of mobile learning are as follows (Schoology, 2016): Improved student productivity; Anytime and anywhere access to information and content; Self-motivated, self-disciplined study; Distance learning support; Enhancing student-centred learning; Having a more effective manner of working with special needs learners; Supporting personalised learning; Addressing different learning requirements and diverse student learning needs; Supporting different learning speeds; Allowing education to be customised to a great extent for individual needs (with mobile devices being embedded into learners' own personal learning and personal contexts).

Mobile learning also has the potential, according to Sarrab, Elgamel and Aldabbas (2012), to improve when, where and how learners learn and perform in other aspects of

their life too. Likewise, it helps learners who are facing financial, family or health problems, when they have difficulty attending formal classes.

2.5.2 Improved classroom learning

According to Ingle and Moorehead (2016), a mobile device, such as an iPad, can improve classroom learning. This is not because it is an iPad but mainly because teachers who do integrate mobile technology into their lessons, make more use of a project-based learning approach, which has been shown to improve learning. “Project-based learning is a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an engaging and complex question, problem, or challenge,” (Buck Institute for Education, n.d.). Project-based learning can also be seen as “a dynamic approach to teaching in which students explore real-world problems and challenges. With this type of active and engaged learning, students are inspired to obtain a deeper knowledge of the subjects they’re studying” (Edutopia, n.d.). In the study by Edutopia (n.d.), it became clear that using the iPad as a tool to be more innovative as teachers led to improved classroom learning.

A study done by Hlodan (2010) revealed that the positive impact of mobile learning extends further than the classroom. During the study, it became apparent that these devices had an enormous impact on mathematics learner achievement and that two thirds of these learners were taking additional mathematics classes due to the use of smartphones. Interestingly, more than half of the learners considered a mathematics-related career path after participating in this particular project (Hlodan, 2010).

2.5.3 Positive effect for diverse learner needs

In a study by Ingle and Moorehead (2016) that focused on iPads in the classroom, they reported that iPads could improve learner engagement. They found proof that when hard-to-reach learners, learners experiencing home or learning challenges or who displayed disruptive or opposing behaviour or learners who, in general, were reluctant to work or read, were introduced to the opportunities that the iPad gave them, they all

became more engaged in learning. For these learners, the iPad was therapeutic, as it calmed them down and allowed the teachers to work with them in a much more productive way. Many of them found it easier to read on the iPad; they were more willing to research projects and were able to write and edit on the iPad through plug-in keyboards.

Another finding was that iPads have the potential of levelling the playing field for all learners. All their classes were inclusive and included learners with some of the following:

- **Individualised education programmes:** an individualised education programme is a "written statement for a child with a disability that is developed, reviewed, and revised in a meeting in keeping with certain requirements of law and regulations" (Center for Parent Information and Resources, 2010).
- **504 plans**: These, much like an individualised education programme, can "help students with learning and attention issues learn and participate in the general education curriculum. A 504 plan outlines how a child's specific needs are met with accommodations, modifications and other services" (Stanberry, 2014).
- **Autism spectrum disorders**.
- **English language learners.**
- Children who are seen as **reluctant learners**.
- **Gifted and talented learners** who consistently performed above the grade level.

It was clear that all of these learners could access the iPads eagerly and quickly. According to Ingle and Moorehead (2016), the explicit intention of using iPads is to reach this diverse set of learners as the teachers can, by making use of a project-based learning framework, assist learners in long-term projects as well as in daily core subjects. The iPad was used for research, reading, practising exercises, creating videos, podcasts and slide shows and writing assignments, to name but a few (Ingle & Moorehead, 2016).

When all of the advantages, benefits and positive effects mobile learning has for and on learning and learners are taken into account, it shows why so many believe it to be an

effective way of improving and transforming learning and equipping learners with vital 21st-century skills.

2.6 DISADVANTAGES OF MOBILE LEARNING

As with all aspects of life, it is also important to look at the disadvantages of using mobile devices in learning. The following section looks into the technical aspects and financial implications of mobile learning, the effect mobile learners has on learners and the challenges it poses as negatives to using mobile learning in the classroom.

2.6.1 Technical aspects

Kutluk and Gülmez (2014) state that some of the disadvantages of mobile learning are the small screen of the device, disconnection at times, limited memory space and low battery life. Some of the complexities of mobile learning include the cost of the device, familiarisation of the learners or students and the teachers, their readiness to use it, their perception of how efficient mobile learning is going to be, their understanding of how to implement it and the technical limitations thereof.

The rapid growth of mobile applications has outpaced traditional software applications. This creates a problem as these traditional applications cannot directly function in mobile devices due to the following reasons (Sarrab, Elgamel & Aldabbas, 2012):

- Mobile device user interfaces with all the new mechanisms, such as multi-touch interfaces, image recognition and code scanning, are so new that no established guidelines for these user interfaces exist.
- Several different mobile platforms, such as iOS, Android and Windows 7, exist.
- There are different hardware manufacturers for platforms, such as HTC, Google, Samsung and Apple.

Several public schools cannot take advantage of the latest developments in mobile networks due to insufficient information technology staffing, and many have to rely on a “bring-your-own-device” approach. This can complicate matters greatly for these schools, as they end up with numerous devices and operating systems, making it nearly

impossible to link hardware and connect learners with one another due to incompatibility and poor communication among these devices (West, 2013). If the school or head of the department does not make sure that someone with the proper information technology knowledge or experience can oversee this venture, it will certainly cost the institution much money or result in unnecessary charges. This brings us to the next point, namely financial implications.

2.6.2 Financial implications

When an institution decides to implement a mobile learning strategy, it should realise that it will have a significant financial impact. If this approach is not planned correctly, thought through and executed correctly, it could have a significant impact on both initial and follow-up costs (Clark & Luckin, 2013).

From a study conducted by Hussin et al. (2012), which focused on basic, skills, psychological and budget readiness in relation to mobile learning, it became clear that learners welcomed the idea of integrating mobile learning into education, but there was some uncertainty about the financial implications for the learners. Financial implications should be taken into consideration as finances can be one of the biggest obstacles a school must overcome for a mobile learning strategy to be successful. This matter was also brought to the fore in a study by Taxler and Leach (2006). In this study, two of the concerns when implementing mobile learning in education were as follows: Firstly, how could secure and sustainable funding and support for these mobile device projects be provided and found? Secondly, how would mobile learning educators stay up to date in understanding, integrating and optimising mobile technologies within the larger system of educational delivery and provision, taking into account the rapid change in the platforms, systems and devices?

2.6.3 The effect on learners and teachers

The study by Luckin and Clark (2012) suggests that it is possible with mobile learning to develop technology-rich learning experiences with and for teachers and learners, taking

into account the context of learning. Luckin and Clark (2012) define this context of learning as the circumstances in which learning takes place. However, some researchers (e.g. Chu, 2014) are questioning the benefits of these new learning scenarios that combine real-world contexts with the digital-world resources concerning the learners. In Chu's (2014) study, the aim was to investigate the possible negative effects of mobile learning by studying the learner's cognitive load and learning achievement. The researcher found that if not correctly handled, the performance of learners using online learning strategies could be disappointing or affect their learning achievements negatively. It was also stated that the negative effect of cognitive overload could be caused by improper learning design.

With mobile learning, learners can interact with authentic contexts through words, pictures, sounds, animations and images. If this is compared to traditional class practices, it is possible to see how much more complex mobile or ubiquitous learning scenarios can be, as they need to deal with learning in both the real world and the digital world, simultaneously. Even if learners are eager to complete learning tasks, if the learning content and instructional strategies have been improperly designed, it is probable that learners will experience a cognitive overload of their working memory and the learning burden of individual learners will exceed their coping capability.

A poll conducted by Common Sense Media revealed that half of the teenagers felt that they were addicted to their mobile devices and that affected their daily lives (Devaney, 2016). When learners are socialising while doing homework, multitasking and toggling between screens and people, it impairs their ability to lay down memories, to learn and to work effectively (Devaney, 2016).

It must be taken into account that even if learners seem ready to make use of mobile learning, it does not mean that teachers are ready as well. Teachers must be ready to use pedagogical techniques that are innovative but appropriate for mobile learning and to have new sets of work cultures or work ethics that will influence the way that they communicate and effectively manage their time in the mobile learning environment (Hussin et al., 2012). In addition, to make a mobile learning initiative a reality, not only

the teachers and the learners will have to play a vital role but also valued partners, such as technology-savvy information technology staff and curriculum developers (Schoology, 2016).

MacCallum and Jeffrey (2013) feel that before learners are being exposed to mobile learning, they must have mastered a few basic ICT skills beforehand, and the ability to effectively complete these activities on a computer might be beneficial before progressing to a mobile environment. They think that if a learner is familiar and comfortable with performing such tasks on a computer, it may be less daunting to complete these tasks using a smaller mobile device (MacCallum & Jeffrey, 2013). Devaney (2016) is of the opinion, though, that because the children of today are familiar and comfortable with smartphones and tablets in their everyday lives, they will be able to work with these mobile devices for learning as well. More and more digital media, focusing on early learning, are being developed to be educationally of high quality and developmentally appropriate (Devaney, 2016).

In a study by Falloon (2014) on iPads in primary schools in New Zealand, several issues related to application design and content as well as difficulties with monitoring learners' progress, assessing and recording progress were found. But that was not all. It became apparent that teachers also needed to intentionally teach learners to have the necessary knowledge and skills to use chosen applications successfully (Falloon, 2014). Falloon (2014) believes that this will contribute to higher learner motivation that will have an impact on the learning engagement of learners when using the devices. He also believes that mobile learning can play a significant role in New Zealand's educational future, but advises teachers to be thoroughly diligent in monitoring learners' interaction with these mobile devices and to be extremely critical in selecting applications.

Another concern is that teachers tend to think children will pick up digital skills by themselves or that these skills should be learnt at home (Park, 2016). Unfortunately, with Generation Z being the first to grow up in the era of smartphones and social media, neither parents nor teachers know how to adequately equip children with these digital

skills, due to the digital generation gap. All too often, young children are being exposed to cyber risks such as technology addiction, cyberbullying and grooming. Their ability to interact with others can be affected by absorbing toxic behavioural norms. Most children encounter these challenges, but vulnerable children, such as those with special needs, the economically disadvantaged and minorities, are more severely exposed to these risks and also face more severe outcomes. This shows how crucial it is for proper investigation, planning and timing in considering a mobile learning approach, as the negative effects can have enormous consequences on how learners and teachers use or perceive this type of learning.

2.6.4 Challenges

It is vital to be aware of the following challenges that are faced in mobile learning (Martin & Ertzberger, 2013; Sarrab, Elgamel & Aldabbas, 2012):

- It can make it easier to cheat.
- Finding the best infrastructures is difficult.
- Creating a universal user interface can be a challenge.
- Designing effective, context-aware mobile applications can be problematic.
- Learners may have a problem with trusting the wireless network.
- It may be difficult to keep learner information safe while working on the network.
- There may be an additional learning curve for non-technical learners.
- Making use of mobile learning applications across mobile platforms is a challenge.
- It could create a feeling of isolation, separation or of being “out of the loop”.
- Some content may be quickly outdated because of rapid advancements in the field.
- Technology-savvy learners can have an advantage over non-technical learners.
- The novelty of mobile technologies can distract users from the task at hand, and some feel that in particular situations, computer-based instruction could still be useful to counter this problem.

After considering the advantages and disadvantages of mobile learning, it is still my opinion that the benefits and positive effects far outweigh the negative. Therefore, I feel that with correct guidelines, it would be possible to reap benefits when implementing and using a mobile learning approach.

2.7 CONSIDERATIONS FOR IMPLEMENTATION OR USE

Falloon (2014) claims that it is possible that mobile devices can be a powerful and effective learning tool in the hands of learners when working together with skilful and diligent teachers. It is consequently essential that proper guidelines must be set and followed to make sure mobile learning in the classroom can reach its full potential.

2.7.1 Reasons for implementing a mobile learning approach

When implementing a mobile learning approach is considered, it is crucial to have a clear understanding of the reasons behind the implementation. When adopting mobile learning strategies that are different from traditional methods, it is crucial to take the following into account for the best results (Puentedura, 2014):

- There must be a clear reason for the implementation – it is when a teacher gives a strong reason for changing existing practices that the best results are obtained.
- There must be a specific application flow – moving through the tasks should be as simple as possible without unnecessary complications.

The findings of Clark and Luckin (2013) on the implementation of tablets can also be considered when schools are thinking of integrating mobile devices for learning. There should be a clear rationale for adopting this technology:

> Successful implementation of tablet technologies in schools requires careful, long-term planning before, during and after the event. Such planning involves consideration of existing technical networks, ownership models, the technology lifecycle, broad stakeholder preparation and on-going engagement (parents, teachers, learners, technical managers, to name a few) as well as plans for capturing progress and evaluation. (Clark & Luckin, 2013, p. 3)

I agrees with Sarrab, Elgamel and Aldabbas (2012), who state that mobile learning might aid in solving some of the problems of the traditional learning system. Learners, teachers and instructors must be prepared for the next generation of learning and training. By developing a mobile infrastructure that meets the need for nomadic learning, this becomes possible and opens up new scenarios for developing e-learning and telecommunication industries. Teachers and learners both need a suitable and convenient system that can interact with each other and facilitate the learning experience. The aim of mobile learning systems should never be to replace traditional classrooms but to complement the learning process.

Adopting mobile technology for learning is significantly different from the adoption of other school-based technologies. For instance, these mobile devices move around, going home and outside of school and places chosen by the learner and have specific resources or materials on the mobile devices, and so they interact directly with several stakeholders. This proves that the focus of use needs to reside with the individual learner, as these devices move with the learner, and therefore ownership tends to be established with the individual rather than with the teacher, school, parent or family. Taking this into account, although implementation practices should look at the roles of all the stakeholders involved, the learner must be at the centre of the implementation and the focus should not be placed on the school or the teacher as implementers (Passey, 2010).

2.7.2 The effect on learning

According to Lenny Schad, Chief Information Officer in the Katy Independent School District, it is imperative with mobile learning for teachers to change instruction. He thinks that if the instruction does not change, it will do nothing to allow learners to use mobile devices (Schoology, 2016).

It is essential for teachers to realise that for learning to be intellectually engaging and to interact with the context of the learning outcomes, so to enable, engage and empower their learners, they need to move away from the idea of lessons that are mere exercises

in sitting, listening or reading. Teachers need to build mobile learning lessons that provide the following (Franklin, 2011):

- **Personalised experiences:** Content and instruction must be designed to meet the needs of each specific learner. By carefully adapting individualised instruction, it is possible to meet the needs of the learners who need more practice in a particular subject area while allowing learners who have mastered a particular area to move on to the next learning stage.
- **Free to make mistakes:** When using mobile learning, the space that is used to learn must be seen as a safe place where learners can make mistakes, as every single interaction that a learner makes will be judged, scored and reported by the device or the website being used.
- **Constant access:** It should be possible for a learner to return to specific content to relearn a particular skill or review information for knowledge building and to review, reference and relearn as he or she desires.
- **Transforming and transcending the current learning model** by using Wi-Fi and 3G or 4G to do internet research untethered to a network or the physical space of the school.
- **Communicating and collaboration** with teachers, peers and several experts.
- **Creating and sharing documents.**
- **Recording lectures or experiments to review later.**

As Chu (2014) suggests, it is not to say that using mobile devices to learn in an authentic learning environment will always be successful, even if those learning strategies have been adopted from another well-recognised web-based learning environment that has been described as being effective. For these traditional computer systems or web-based learning environments to work in a mobile or ubiquitous learning setting, it is important that proper investigation will be done for it to work effectively. Developing new or modifying existing learning design strategies specially designed with the unique features of mobile and ubiquitous learning in mind is equally important. Chu (2014) concludes that with proper learning design and guidance procedures or tools, it

is possible that mobile and ubiquitous learning can have a much better effect on learners' learning than the traditional approach.

It is also essential to take into account with whom the ownership of the mobile device resides, as a variety of ownership models are being used, such as the following:

- **Device carts**: This is where a group of learners can check out a device from a cart in class to use on a project and return it to the cart when they are finished. In some cases, learners are allowed to take signed-out devices home to finish homework or projects and bring them back afterwards. This is also a way to see how teachers and learners will adapt to a more integrated mobile programme.
- **1:1:** In this context, there is one device per learner. This initiative utilises more diverse technology, which makes it more costly, but guarantees full-time access to mobile devices to all learners.
- **Bring your own device:** This option refers to where learners bring their own mobile devices to school and make use of them in the classroom. As this is a more affordable option and ownership of these devices stays with the learners, more schools are opting for this popular approach (Schoology, 2016). However, a disadvantage of this ownership model is that it does not benefit those learners who do not have their own mobile devices (West, 2013).

The type of ownership model that is chosen will have an impact on the way in which learners' learning will be organised, continued access to learners' work and learning data, as well as the management, maintenance and security of the devices. The technical support implications, as stated above, will be significant. Not only will the network provision be more difficult, but the integration process can become challenging if the devices are not the property of the school but belong to the learners and are of different makes and types and use different operating systems (Clark & Luckin, 2013).

2.7.3 The effect on learners

Learners need to realise that the jobs of the future will go to the free agent learner who is self-directed in his or her learning, being agile and thriving in this new mobile

environment to meet the demands of the learning environment and workplace. They will need the ability to learn and self-monitor, to improve their learning progress across all subjects, to collaborate with others and to identify and complete meaningful projects and other learning experiences with the help of research, mentors or experts (Franklin, 2011). Mobile learning can do just that. However, for mobile learning to be successful, the contents of mobile learning must be of a high quality that can comply with learners' future targets (Liu, Li & Carlsson, 2010).

Another point to consider is that it may be necessary to decrease learners' cognitive load in a mobile learning environment, as proposed by Chu (2014). He points out that most web-based learning studies are focused on building virtual reality tools or learning materials to help learners construct knowledge. In a mobile learning environment, it is, however, important to remember that learners are already in a more complex learning situation that combines real-world resources with a digital-world resource. Chu (2014) suggests that there is a need for new learning strategies or reconsidering existing approaches so that learners will be able to learn with reasonable cognitive loads.

2.7.4 Pedagogical implications

Factors that have been identified as critical to the success of a mobile learning scenario are (Cochrane, 2010):

- the inclusion of the pedagogical integration of the technology into the course assessment.
- the need for lecturers to model the pedagogical use of the tools;
- regular formative feedback from the lecturer to the learner; and
- choosing the appropriate mobile device and software to support the pedagogical model underlying the course.

2.7.5 Technology considerations

Just as important as the method an institution chooses for its learning programmes are the applications and Cloud-based software on the devices responsible for learning and

collaboration. It is best to choose applications that can be used on any brand of device that will also have a web platform as the cornerstone for the mobile learning programme. This will make it possible for educators to work on the classroom computer leading assignments while students participate on their own devices (Schoology, 2016).

2.7.6 User acceptance

Decisions to introduce new technology, such as mobile learning, should include learner perspectives, the risk of wasting effort and resources, and the risk of failing to realise the full implication of the proposed introduction of new technology. This is because the investment in new technology is an expensive and time-consuming proposition, and the possibility of failure is genuine if it is not adequately thought through. Therefore it is essential to look at user acceptance in determining the adoption of mobile learning, as the success of mobile learning depends on learner acceptance of technology. If a learner has prior skill and experience of mobile technology, it will affect his or her perception of mobile technology. Learners with strong basic ICT skills exhibit a relatively high intention to adopt mobile learning, and learners with advanced mobile technology skills are more likely to perceive mobile learning as easy to use and useful. It is therefore important to anticipate learners' negative attitudes stemming from low ICT self-efficacy. This shows that with support and guidance, it is possible to support the ease and willingness of learners to test and adopt mobile learning (MacCallum & Jeffrey, 2013). This will also be true of the teachers who are supposed to use these mobile devices to teach.

2.7.7 Digital citizenship

Information technology and digital media skills are now core competency skills one needs to be able to succeed in most careers today. This makes it essential for digital skills to form part of a comprehensive education programme. If there is no digital educational framework, the knowledge and access to technology will be unevenly distributed, enlarging the socio-economic gap and worsening inequality. Educators need to develop learners' ability and confidence to excel both online and offline in a world

where digital media is everywhere. Just like the intelligence quotient (IQ) or emotional intelligence, digital intelligence is an individual's ability to competency to use and command digital media in a competent way (Park, 2016).

One level of digital intelligence is digital citizenship, namely the ability to use digital technology and media in safe, responsible and effective ways. Educators and leaders need to take digital citizenship more seriously as children should start learning this ability as early as possible, ideally when they start actively using games, social media or any digital device.

Learners need to be taught eight skills as part of their digital citizenship. These skills are depicted in the figure below.

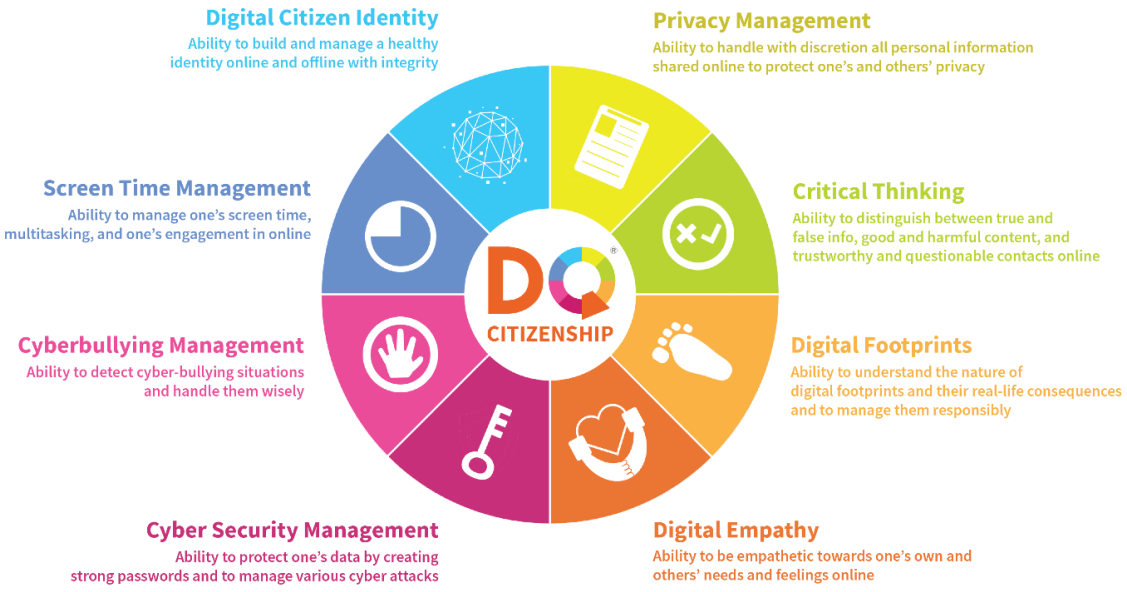

Figure 2.1: Digital citizenship skills (Park, 2016)

In short, the eight digital citizenship skills are as follows (Park, 2016):

- **Digital citizen identity:** the ability to build and manage a healthy identity online and offline with integrity.
- **Screen time management:** the ability to manage one's screen time, multitasking and one's engagement in online games and social media with self-control.
- **Cyberbullying management:** the ability to detect situations of cyberbullying and handle them wisely.
- **Cybersecurity management:** the ability to protect one's data by creating strong passwords and to manage various cyber attacks.
- **Privacy management:** the ability to handle with discretion all personal information shared online to protect one's own privacy and the privacy of others.
- **Critical thinking:** the ability to distinguish between true and false information, good and harmful content and trustworthy and questionable contacts online.
- **Digital footprints:** the ability to understand the nature of digital footprints and their real-life consequences and to manage them responsibly.
- **Digital empathy:** the ability to show empathy towards one's own and others' needs and feelings online.

A quality digital citizenship education should include assessment and feedback opportunities (Park, 2016). Comprehensive and adaptive assessment tools should be used in order to evaluate not only hard but also soft skills of digital intelligence. These assessments should serve as a means of providing feedback that gives children a better understanding of their strengths and weaknesses, so as to help them shape their own learning paths. It is essential that national leaders should understand that digital citizenship is the foundation of digital intelligence and that they have to implement digital citizenship programmes as part of a digital intelligence education plan. This is crucial, as children are already functioning in the digital world and are influencing how the future will look. It is up to stakeholders such as national leaders, educators and parents to equip children with the skills and support to make the world a place in which they can thrive (Park, 2016).

2.8 THE QUESTION OF SUSTAINABILITY

One fundamental question that arises is whether mobile learning can be sustainable. According to Ng and Nicholas (2013), effective integration into a school programme will depend on how successful the interactions among the various affected parties are. The following human-related fundamental issues need to be addressed:

- Developing positive attitudes in learners and teachers towards the programme and providing the necessary support for the maintenance of the programme.
- Ensuring effective communication between the key players, in particular consulting and providing feedback, so that intentions are clearly stated and misunderstandings quickly alleviated.
- Delegating responsibilities with trust among the members of the management team and between management and the teachers as well as between teachers and their students. Trust is imperative so that everyone involved has some form of ownership of the programme.

Another key to mobile learning sustainability is to develop an institutional culture and a strategic shift to support and facilitate an alteration in a lecturer's ontological view from pedagogy to heutagogy or self-determined learning and to assist in learners reconceptualising learning experiences which have previously been teacher-directed (Cochrane, 2010).

2.9 PERCEPTIONS AND EXPERIENCES

As stated above, any mobile device or wireless technology that is being used for teaching and learning must always be seen as a tool for learning; therefore it is essential to remember that the success factors for mobile learning will rest with humans. Several stakeholders are involved when it comes to the implementation, management and use of mobile technology in the classroom, and all of their perceptions and experiences are important if one wants to determine the sustainability and benefits of this new phenomenon. These stakeholders include, but are not limited to, school heads, institutional decision-makers, implementers, teachers, learners and their parents (Clark

& Luckin, 2013; Ng & Nicholas, 2013). Although I acknowledge that the perceptions and experiences of all the mentioned stakeholders are essential for the successful implementation and maintenance of a mobile learning initiative, for this study, I will only focus on the perceptions on and experiences of mobile learning of the immediate stakeholders, namely the learners and teachers.

In order to make more use of today's technological developments, people's habits are changing to integrate these new technologies into their lives. It is therefore vital to understand the reasons why people accept or resist mobile learning and the ways to improve this acceptance. It is here where taking people's perceptions into account should be the first step in implementing mobile learning into a course or class (Cheon et al., 2012).

2.9.1 Learners

Several studies show the positive effects, perceptions and experiences as well as advantages that mobile learning holds for learners, as is discussed in this section.

Looking at the perceptions of learners towards mobile learning, it was found that they enjoyed using handheld devices such as iPads and they saw it as an effective learning tool (Mango, 2015). Because of their perception of the positive effect it had on their learning, they were more satisfied with their learning experience and were keener to engage in classroom activities, collaborating with other learners; it therefore contributed to their academic success (Mango, 2015). The learners found the iPad attractive and easy to use. Not only did the research show that the use of iPads had a positive effect on learners' engagement with learning, but it also contributed to their productivity, creativity, motivation, interest, independence, self-regulation and enthusiasm (Clark & Luckin, 2013). Key factors that influence learners' attitudes towards the use of e-learning as a useful learning tool have been found to include self-paced, teacher-led and multimedia instruction (Liaw, Huang & Chen, 2007).

In a study conducted by Martin and Ertzberger (2013), it was found that mobile learning can motivate learners to be enthusiastic, focused and engaged students. The group of learners that were given iPads had more positive attitudes than those that did not receive devices, underpinning that the learners who were using these technologies were more excited and motivated by and engaged with the new technology than those who used the computer-based treatment. Martin and Ertzberger's (2013) study also showed that learners enjoyed the authentic learning environments that mobile learning allowed them to access.

In several previous studies, evidence was found that students had a very positive perception of mobile learning. The findings show that learners are very interested in the content of mobile learning, but for mobile learning to be accepted, the service must also be of a high standard. Students have a positive attitude towards mobile learning and find it convenient. Because they always have their smartphones with them, they permanently have access to information. Students feel that they are competent in using their mobile devices and express feelings and perceptions of high self-efficacy. If mobile learning is convenient, easy to use, reliable and easy to navigate, students believe that mobile learning could be useful and intent on using the mobile application (Kutluk & Gülmez, 2014).

In a study by Gikas and Grant (2013) that focused on students' perspectives on learning with cell phones and smartphones, the students named several advantages where mobile devices assisted in their learning:

- **Accessing information quickly:** As mobile devices are always accessible and within the students' reach, the students felt positive about the fact that the devices allowed them to retrieve course content, discussion boards, course readings, relevant information and video clips they needed for class immediately. They valued the convenience of constant connectivity very highly. They could also upload and post content to their course sites and appreciated that the lecturers could share relevant information with them quickly and efficiently by sending the necessary documentation to them via email at the beginning of the

session. The actual mobility of the device was found to be convenient, as opposed to taking a larger device, such as a laptop, to class to work on. These findings support Gikas and Grant's (2013, p. 19) working definition of mobile learning adopted from Taxler (2006), namely: "Mobile learning should allow for the access of information anywhere, on a device that learners are used to carrying everywhere with them, and that they regard as friendly and personal."

- **Communication:** Because of the constant connectivity, the students saw the ability to communicate and interact with their classmates and the teacher as an advantage. They felt that the constant communication contributed to their success and allowed them to be fully productive. Learning could take place outside the classroom, while still getting instruction from their professor. Learning also happened informally through small group collaboration, and the students found that they were communicating more through applications, such as video conferencing or text messaging, social networking or the course website, whichever worked the best to accomplish the task, because of the mobile devices. The students observed that they found the communication that was shared more often and in smaller amounts to be more effective and efficient. They also felt that it was better and, more critical, immediately to use social media than the password-protected course discussion board. That way, the course was intermingled with their everyday lives and the exchange of ideas happened faster than the time-consuming pace of the course discussion board.
- **Variety of ways to learn:** The students interacted with the content of the course in several different ways due to the mobile devices. They were able to record video or voice memos, upload these to the course site and then have a class group discussion. They had the opportunity to enhance their understanding of the course material by being able to participate in polls, answer questions anonymously and then discuss the answers thoroughly in their class sessions. By discussing some concepts anonymously, the students were able to engage with the discussion at a deeper level with the focus always on the content, rather than on the fear of answering incorrectly. The immediate feedback also reinforced content focus – the students were able to research particular

information or watch videos to enhance discussions further. In some cases, a backchannel discussion was even used and employed in addition to the live presentation. The students were also able to create connections and interact informally with researchers whose work they were interested in or to follow through social media, which contributed to their learning and was not possible without the mobile devices.

- **Situated learning:** Mobile devices allowed interaction with the course content and other classmates to be highly situated and contextualised. Learning can be seen as a social process situated in a specific context and embedded within a particular environment. This means social interactions and learning in the natural setting are critical components of situated learning. So, to be seen as situated, learning activities — whether formal or informal — should embed authentic problems with contexts. The students were able to collect information as they were going through their everyday lives, whether by taking a picture, writing a post or a tweet, or sending themselves a reminder about something, no matter where they were. By immediately capturing information that they could use, the students were able to make vital connections between their theoretical course content and authentic contexts.

It has been found that learners and teachers will adopt mobile learning if they can see how it will benefit their particular needs. Several complex processes and factors have been found to influence the decision to adopt mobile learning. A study by MacCallum and Jeffrey (2013) looked specifically at learners' ICT skills and experiences and found that for learners to adopt mobile learning, they must perceive it as being easy to use and that it will offer significant benefits for their learning experience over existing practices. MacCallum and Jeffrey's (2013) findings showed that learners who had some level of experience in mobile technology were more comfortable to use it for learning and realised the benefits it offered in supporting their learning. If they were familiar with a specific technology, it helped them to extend to and experiment with other related forms of technology, which led to their seeing more ways in which it could be used. This showed that as a user becomes more skilled in using mobile technology, the better the

chances are that they would explore how to use the technology in new ways. If someone uses mobile technology seldom or has a low level of technology skills, this person is less likely to experiment or deviate from existing use and would probably not see mobile learning as being easy to use. Confident users are more likely to experiment with the device, learn new tricks and find ways to improve the efficiency of the device. This shows that the intention to adopt new technology is enhanced by a minimum ability in a range of necessary computing skills. This, therefore, confirms that it is vital that learners need some exposure to basic ICT skills before a new technology can just be adopted for learning.

2.9.2 Teachers

The same holds true for teachers. Just as it is important for learners to have some exposure to basic ICT skills before mobile technology can be adopted for learning, teachers also need exposure to basic ICT skills to be able to adopt this technology in their teaching strategies. According to Hlodan (2010), some people feel that it is now mandatory for teachers to learn how to use mobile technology and learn how to add educational value through it, as most learners know how to use these tools.

Although the research on teacher integration of handheld devices in the classroom and the results of such research are more limited (Ingle & Moorehead 2016), it is essential to take the perceptions of teachers into account as well. This is because these teachers are not only one of the primary users of this technology, but they also have the ability to influence learners in encouraging the usage of this platform (Alrasheedi & Capretz, 2015). Overall, research suggests that teachers are very positive about using e-learning as a teaching-assisted tool, and the intention to use it is influenced by the apparent usefulness and self-efficacy that e-learning holds (Liaw et al., 2007). In a study conducted on Indonesian teachers by Yusri, Goodwina and Moon (2015), it was found that these teachers have a good perception towards mobile learning and even though their knowledge of mobile learning was average, they were eager to learn more about this type of technology. Interestingly, Yusri et al. (2015) found that device and financial issues were not a big problem for the teachers with regard to participating in a mobile

learning environment. On the other hand, it has been pointed out that the less a teacher is willing to use technology in the classroom, the less the teacher will be comfortable with technology, and this is related neither to age nor to years of teaching experience (Ingle & Moorehead, 2016).

To assume that younger teachers and learners today know how to use technology appropriately and how to integrate mobile technology in teaching effectively, is a wrong assumption, as the study by Ingle and Moorehead (2016) revealed. Just because people know how to use specific applications, such as Instagram or Twitter, it does not mean they are ready to use these for educational purposes. In Ingle and Moorehead's (2016) study, it became apparent that millennial teachers, as well as learners, need appropriate training and support to be able to get the most out of the technological advantages mobile devices bring to the learning experience.

In taking the professional development of teachers into consideration, it is essential to ask the following questions (Schoology, 2016):

- What is expected from teachers who participate in a specific mobile programme?
- How much training will the teachers need?
- How will this training be delivered?
- What guidelines will the teachers be given with regard to aligning their teaching strategies with mobile learning?

In a study by Clark and Luckin (2013), they found evidence that, for teachers, mobile devices can enhance learning experiences and transform teaching practices. It is now possible to have a broader range of learning activities happen routinely in the classroom due to the mobility, portability and general ease of use as well as the rapid one-touch access of these mobile tools. Teachers can now explore different activities and forms of assessment with the availability of a wide range of applications and connectivity to Cloud computing and the immediacy of communication with students. The teachers participating in Clark and Luckin's (2013) study also felt enabled through these devices to promote independent learning, to distinguish learning more easily for diverse learner needs and to share resources with both learners and other teachers more easily. They

stated that teacher training and development were essential and that there were definitely recognisable phases of teacher familiarisation with these devices and their integration into a classroom activity, such as the following:

- Initial familiarisation with the tablet device – its features, functionality and resources (including storage and in-device tools, such as camera, audio, video and communication functions, as well as its potential for teaching and learning).
- Locating and understanding applications and the application marketplace, including understanding and negotiating issues around the use of free applications (e.g. inappropriate advertising).
- Identifying, installing and using appropriate and relevant applications that support teaching and learning in general, and curricular (subject) content more specifically.
- Identifying applications that support personalised and collaborative learning, including those that can cater to learners with additional needs (e.g. autism and dyslexia).
- Identifying ways that tablet devices can be used beyond basic teaching and learning, for example for distributed learning, monitoring and assessment, pastoral care, data management, facilitating student voice (e.g. voting, surveys and noticeboards), virtual exchanges or tours and engaging with the wider learning community (other schools, external experts, etc.).
- Creating, uploading and sharing teaching resources (for students and peers).

Starting with educational technology (EdTech), teachers may feel overwhelmed by the task at hand. Even with tools such as the SAMR model that teachers can use to help them with this undertaking, the abundance of options to choose from can be paralysing. This can lead to substitutive uses of this type of technology, which may hinder rather than enable more aspiring, transformative learning (Puentedura, 2014). By combining training with support, it is possible to create a successful and innovative mobile learning experience for teachers as well as learners (Ingle & Moorehead, 2016). In their study, Ingle and Moorehead (2016) conclude that it is not the age of the teacher or years of teaching experience that determine if teachers will use technology in their classrooms,

but more how willing the teachers are to learn how to use the technology that will determine how comfortable he or she is. If the teacher is willing to be taught or receive professional development, it is possible for even senior teachers to embrace the latest technology in their classroom.

In Ingle and Moorehead's (2016) study on the controlled integration of iPad technology in the classroom with the help of teachers and university students, they came to realise that while many teachers would like to use the iPad in their classrooms in a meaningful way, they could not, due to time, access and training issues. Numerous studies on the use of iPads in the classroom are subjective and specialist-driven, with poor results on how the student feels concerning the use of an iPad. However, Mango (2015) reports that in surveys on student use of iPads, it was found that students believed that they stayed more focused when they were using the device and that they very much enjoyed their learning experience. Unfortunately, studies on teacher integration of iPads in the classroom and the results thereof are more limited. The reason for this could be that due to constraints on time and training, teachers are often resistant to integrating iPads in their classrooms (Clark & Luckin, 2013). According to Mango (2015), many teachers are eager to use iPads in their classrooms, as they enjoy the versatility, connectivity, mobility and potential benefits educational applications bring with them. However, is is also true that some teachers remain sceptical and are afraid that educational applications can become the centre of the classroom. Mango (2015) agrees with other authors, such as Clark and Luckin (2013) that the iPad must always be seen as a tool and the learners must always remain the centre of the classroom.

It becomes clear that for mobile learning to be successful, both the learner and the teacher must have a positive perception of and positive experiences regarding mobile technology in the classroom. It is thus the purpose of this study to gain insight into the perceptions and experiences of these two stakeholders.

2.10 CONCLUSION

In order to promote the use and integration of mobile learning in the accounting classroom, it is essential to understand what mobile learning is and where it comes from. It helps to know how classroom practices, as well as teaching strategies and methods, have to change or adapt in order to harvest the best potential of this type of learning. By looking at the advantages of mobile devices in the classroom, it becomes clear how able mobile learning is to improve learning, without ignoring the disadvantages that should be kept in mind, so as to be prepared to deal with these obstacles when they arrive.

It is also vital to consider the perceptions of the primary stakeholders – the teachers and the learners – as these individuals are the principal users of these devices. This is because for them to embrace this type of learning and not see it as a hindrance, their needs and preferences must be taken into consideration when educational hardware and software for these devices are developed and chosen.

This is, in general, what mobile learning entails, but to be able to determine what the South African accounting teacher and learner believes and experience, it becomes clear there is more information needed, as there are more diverse and financial challenges and problems a developing country such as South Africa faces, which should be taken into consideration. Another essential aspect to look at is the uniqueness of the subject accounting and what is important, so that mobile devices will not just be used as a substitute for other resources but to be able to improve and transform the way accounting is being delivered in South African high school classrooms.

In the next chapter, the focus will be on how mobile learning is currently being used in South Africa, as well as the unique challenges and obstacles this entails. There will also be a section that will focus on accounting as a higher education subject and the integration of mobile learning into its curriculum and what is currently happening in the South African high school accounting classroom.

CHAPTER 3

MOBILE LEARNING AND ACCOUNTING IN THE SOUTH AFRICAN CONTEXT

3.1 INTRODUCTION

Chapter 2 focused on the general characteristics of mobile learning. However, to be able to determine what the South African accounting teacher and learner believe and experience, it is essential to gather additional information, as there are diverse socio-economic or financial challenges and problems a developing country such as South Africa faces, which also have an impact on the issue. Another vital aspect to look at is the uniqueness of the subject accounting and what is explicitly significant to the subject so that mobile devices will not simply be a substitute for other traditional resources but will be able to improve and transform the way accounting is being delivered in the South African classroom.

This chapter will try to address the second research objective 2: to review the literature on the practices and benefits of using mobile learning in South Africa and in the accounting classroom. In this chapter the focus is on how South Africa, as a developing country, is using mobile learning, as well as the unique challenges and obstacles this entails. Another section focuses on accounting as a subject and the integration of mobile learning into its curriculum. In addition, the resources that are currently available to the South African accounting classroom are discussed. When speaking of accounting, the focus will not just be on accounting as a high school subject but also on higher education accounting and accounting in practice to see how these different areas are integrated in order to gain a well-informed and well-rounded picture of the situation. This will be done due to the fact that accounting at high school level is the basis for higher education accounting and accounting in practice and the way that accounting is being taught at school will also have a direct impact on the other two areas.

As mentioned earlier, the abbreviation “ICT” stands for “information communications technology”, meaning all the equipment, including mobile technology, which is used and

networked together to allow communication with others on the network and the outside world via email and the internet. E-learning is the application of information technology or ICT in education. One crucial aspect to keep in mind is that in South Africa, an enormous move is being made towards the use of ICT in teaching and learning, although it might not necessarily be mobile learning. Therefore, through this chapter, the reference will not only be to mobile learning but to other forms of technology-enhanced learning as well, as pertained by the relevant research that was referred to. After this, the study will turn back towards mobile learning.

Although a magnitude of initiatives and programmes are currently being implemented and used, only a few of these are discussed in this chapter. The initiatives that are discussed are mainly those that are relevant to the research.

3.2 ICT AND E-LEARNING IN SOUTH AFRICA

In the following section, ICT and e-learning are discussed. This time, the focus is on South Africa, by starting at the African continent, zooming in on what is currently happening in South Africa by looking at tendencies in Africa, the initiatives of the Department of Basic Education, followed by a more specific focus on accounting by looking at the current ruling primary accountancy body in South African initiatives. The chapter is ended with a discussion on educational technology, which is the primary force for this specific case study.

3.2.1 Tendencies in ICT and e-learning on the African continent

As early as 2011, the advantages of mobile technology and the influence it has on developing countries such as those in sub-Saharan Africa have been documented (Ali, 2011). Due to the unique challenges developing countries face, mobile technology is seen as a way to assist and improve teaching, for example by downloading videos to smartphones and showing these videos to the learners during specific lessons to make understanding the work much easier. Some classes can have 70 learners, and with these technologies to assist teachers, it becomes easier to stimulate interest and keep

the learners' attention as they enjoy learning much more. It is also possible for distance learners to use the internet to access study materials that support their studies. In countries where the delivery of mail in rural areas is unreliable and slow, the immediacy and benefits of communication with cell phones are immeasurable. With a simple text message, it is possible to increase learner participation and engagement, while at the same time providing support and making it easier for learners to complete their studies.

As more people increasingly see computers and the internet as essential educational tools, modern technologies are becoming more operational, portable and easy to use. Another positive point in favour of mobile devices for developing countries like South Africa is the fact that they are more reasonably priced than desktop computers and a less expensive way of accessing the internet (Sarrab, Elgamel & Aldabbas, 2012).

According to Martin and Ertzberger (2013), the International Telecommunication Union found that most people in developing countries access the internet from their mobile devices. In 2012, Canalys reported that in 2011, the number of clients who used smartphones overtook the number of clients who used personal computers.

Statistics indicate that the number of mobile phone users worldwide is predicted to pass the five billion mark by 2019 (Statista, 2018). The Statista site claims that the number of smartphone users is expected to grow from 2,1 billion in 2016 to around 2,5 billion in 2019, with smartphone penetration rates increasing as well. The site speculates that over 36% of the world population will be using a smartphone by 2018, which is a huge rise from approximately 10% in 2011.

The mobile internet traffic as a percentage of the total web traffic as of January 2018, by country, according to Statista (2018), is shown in Figure 3.1. It is interesting to note that in South Africa, 71% of the total web traffic consists of mobile internet traffic, showing how much the people of South Africa rely on mobile technology in their everyday lives (Statista, 2018).

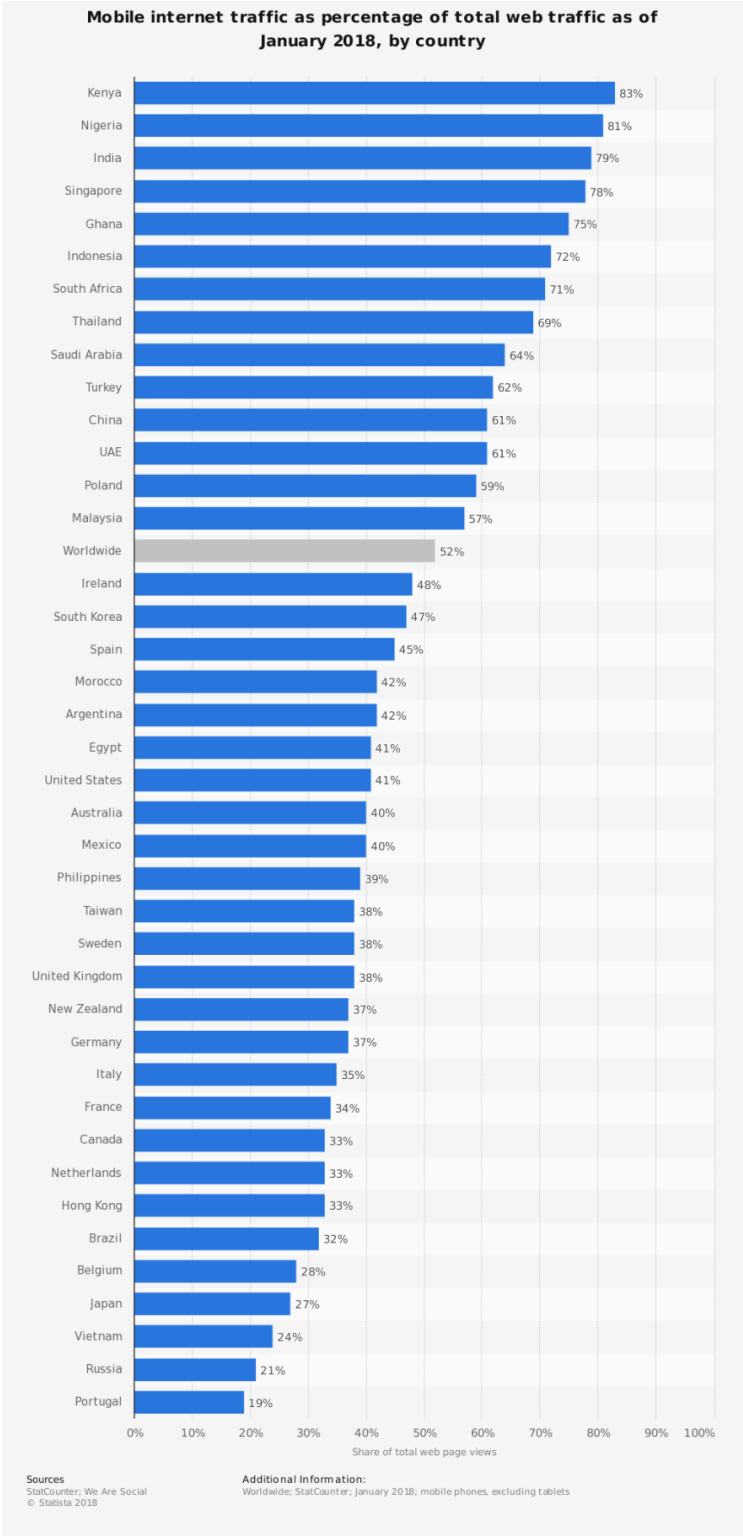

Figure 3.1: Mobile internet traffic, as a percentage of total web traffic as of January 2018 (Statista, 2018)

Like many other countries, South Africa strives to give all learners an equal chance by incorporating an inclusive educational view. In a study by Makoelle and Van der Merwe (2014) that focused on ICTs and inclusion in South Africa, the following findings were made:

- Several factors can hinder the use of ICTs to enhance inclusion. For it to work, educational contents, appropriateness, structures and strategies need to change and be modified. Teachers and learners should be able to access the use of ICTs, and both parties should be empowered with the skills to utilise them, although it should be kept in mind that it is not to say that mobile technology will be able to function effectively in an inclusive environment, as not all tools will work in all contexts.
- The use of ICTs can improve learners' ability to retain and retrieve new knowledge learnt; using the internet can enhance the depth and knowledge breadth of the subjects learnt, and by using software such as Blackboard and Dropbox, learners' accessibility and self-assessment are improved.
- It is crucial that both teachers and learners receive the necessary training to take full advantage of the appropriate and relevant use of ICTs for enhancing inclusive teaching. It will allow sustainable change, which is fundamental to a paradigm shift towards practising an inclusive pedagogy.
- The use of ICTs improves collaboration between learners and teachers. They also foster networking and interconnectedness. Learning becomes a self-driven process when learners have access to the skills and use of ICTs.

Another unique problem in South Africa is the fact that most learners do not receive education in their first language. According to Jantjies and Joy (2015), many of these learners have to switch between their first and second language to seek words that will help them understand the topic under study. In a developing country such as South Africa, multilingual classrooms are challenged by the lack of digital resources and appropriate and affordable technology to support these learners' multilingual learning processes. In Jantjies and Joy's (2015) study, a mobile learning system was developed to help mathematics learners who switch between their first and second language while

learning mathematics. The mobile learning system also provided them with additional digital resources. The results showed the significant role mobile phones could play as alternative digital learning resources, not to mention the critical role mobile learning can play in reducing the resource shortages in low-income communities (considering the unlimited access of mobile phones in all South African communities). With access to portable technologies such as mobile phones, learners from low-income communities can enhance their learning process by using free online and offline resources to help them learn.

In another study by Jantjies and Joy (2016), which focused on lessons learnt from South African teachers' perspectives on mobile learning, it became apparent that although teachers were using different methods to support multilingual learning, they were still struggling to integrate technology into their subjects to support the process of teaching and learning. The reasons included the diverse challenges they faced, which prevented them from realising the possibilities that the assistance of technology would bring to their teaching objectives, such as the lack of both knowledge and teacher training in ICT use. Jantjies and Joy's (2016) study showed that there was a need for adequate training and support to facilitate teaching through technology in both rural and urban schools, as well as a need for technology that would support the different multilingual techniques in South Africa, especially in the science, technology, engineering and mathematics subjects. Overall, the teachers were enthusiastic about the potential mobile technology can bring to the classrooms to support teaching. According to this study, mobile technology can realise its full potential if the content-creating developers of learning technologies take into consideration the significance that teachers, context, technology and language play in the use of technology to support the teaching and learning process.

Chigona, Chigona and Davids (2014) tried to determine what the motivational factors for South African teachers were to use ICT for teaching in disadvantaged areas or communities. People see these new technologies as a promoter for changing teaching and learning styles, and that ICT can remove barriers in disadvantaged communities

that restrict teachers' and learners' access to information. Chigona et al. (2014) argue that teachers in South Africa, as in other developing countries, are encouraged to use technology to enhance learning, but for the benefits of these innovations to be realised, teachers should be integrating these technologies into their teaching practices. Overall, teachers see the use of ICTs as a brilliant way of teaching because their learners learn more using technology than when traditional ways of teaching are used, and it is this sense of achievement that motivates teachers to use ICT resources in the classrooms. Chigona et al. (2014) found that the work itself, responsibility, personal satisfaction and achievement are some of the most important motivating factors to teachers that determine the use of ICT in disadvantaged areas. While most of the teachers in their study believed that using ICT resources in their teaching practices could be rewarding, at the same time demotivating factors bombarded teachers, which resulted in the technology not being used. This happened when the teachers found themselves "teaching the technology" instead of "teaching with it", leaving these teachers feeling demotivated. School managers and investors should give teachers the control and responsibility of technologies meant for teaching and learning so that teachers will be motivated to use ICT in their classrooms to enhance teaching and learning.

Bosman and Strydom (2016) note that where most research concerning the perception of graduate attributes previously focused on international development, research has also started to include the South African context. The study looked at lifelong learning and graduateness, meaning a student on the point of graduation will display the necessary qualities that might be expected from a graduate. Bosman and Strydom (2016) suggest that to be able to become involved citizens, beyond the scope of higher education, it is crucial that student will have the ability to critically engage with mobile devices, so as to prepare them for the complex and ever-evolving world of work. Students must be capable, in both formal and informal learning, to demonstrate the ability to engage critically at a cognitive, socio-emotional and technical level with mobile devices. To make it possible for graduates to function appropriately in an ever-increasingly digitally enhanced workplace, Bosman and Strydom (2016) state that the criticality around cognitive, socio-emotional and technical mobile learning literacies

needs to be fully developed. Mobile learning literacies must form part of the curriculum design and pedagogic approach and be integrated into module and programme outcomes, while making sure this happens smoothly. The aim should be for mobile learning literacies to be integrated into the curriculum, to be advanced through pedagogy and to be developed through interaction with different styles of knowledge. When designing or implementing procedures for the development of graduateness, institutions need to focus on mobile learning literacies as part of digital literacies.

3.2.2 Department of Education

In order to have a well-informed picture of what the standpoint of South Africa is on the use of ICT, the view of the Department of Basic Education should also be taken into consideration. Therefore, the following section will summarise a few key points of relevant White Papers, Guidelines for Teacher Training and a Framework for Digital Learning, as well as take a look at current initiatives, to determine the perspective of the South African government on ICT integration into South African education.

In 2004, the Department of Basic Education published the White Paper on e-Education, focusing on how to transform learning and teaching through ICT (Department of Basic Education, 2004). This White Paper (Department of Basic Education, 2004) acknowledges the global revolution that is taking place in education and training. It recognises that this is taking place due to the changing nature of work, the realities of the information age, new international partnerships and the awareness of the need for equal distribution of educational opportunities. In various contexts and other spheres of social and economic development, ICT has demonstrated to have the potential and capacity to overcome a number of barriers such as fiscal constraints, spatial barriers and other capacity-related limitations to delivery, just as it has the potential to improve the quality of education and training.

The South African government has, according to the White Paper (Department of Basic Education, 2004), responded to the digital divide by focusing on the challenge of rolling out ICT infrastructure that is correctly suited for the country. The Ministry is aware of the

complications that hinder the integration of ICT into management, teaching and learning, but are determined to implement a programme for progressive change. The White Paper (Department of Basic Education, 2004) proposed that it is crucial that the professional development of teachers must go hand in hand with increased access to ICT resources for teaching and learning purposes.

It is not enough for the government that ICT will be a simple exchange of information, but that e-education will transform learning through a range of learning activities that meet educational objectives.

The challenge faced by the South African education and training system is to create a learning culture that keeps pace with all of these digitally enhanced changes and equips people with the knowledge, skills, ideas and values needed for lifelong learning. The aim of the education system must be to produce graduates who use information effectively and are up to date with technological advances.

The White Paper (Department of Basic Education, 2004), therefore, set out to answer why e-education would be significant for the South African education system. Making it clear that it is not the intent of the Department to replace teachers with e-learning, but to enhance the quality and scope of their teaching and reduce the time spent on administrative tasks. E-learning should be used in conjunction with other teaching and learning methods. The essence of e-learning is found in its ability to be suitable for individual learning and teaching styles and strategies.

The Department of Basic Education (2004) argues that to achieve the nationally stated curriculum goals, the use of ICT is one of the most powerful means of supporting learners' learning. To be effective, the implementation of ICT must, however, be thoughtfully selected and incorporated into educational planning and management.

The White Paper (Department of Basic Education, 2004) stated that e-learning has the potential to offer teachers and learners access to a variety of learning and teaching

support material that promotes the appreciation of diversity and a collective identity across different institutions and will begin to connect them to the broader public goals.

Since 2004, the Department of Education has committed itself to realise its vision of implementing ICT in teaching and learning (MyBroadBand, 2019). For another noteworthy initiative of the government, the National Integrated ICT Policy White Paper, which came out in 2016, can be referred to. This document outlines the government's commitment to building a more inclusive society in order to eliminate poverty and reduce inequality in the country by 2030 (Department of Telecommunications and Postal Services, 2016). Because it focusses on the South African National Development Plan, in other words, the South African society in general, and not just on ICT in Education, it will not be discussed as part of this study.

The White Paper on e-Education of 2004, that was mentioned above, outlined the elements of transformed learning and teaching through information and communication technologies (ICT). In 2007 it was supported by the publication of Guidelines for Teacher Training and Professional Development in ICT. These guidelines provided guidelines for teacher professional development in ICT and educator competencies within a developmental framework. Then in 2018, the Professional Development Framework for Digital Learning was published. This framework provides a new approach to the professional development of teachers and any stakeholders using digital tools and content resources to support improved learning outcomes and higher learner attainment in the curriculum (Department of Basic Education, 2018).

According to this framework, it is necessary for the professional development of teachers to specifically address how digital tools and resources can support teaching, and enhance learning in the different subjects within the extensive range of socio-economic contexts that South African teachers encounter. This framework aims to provide guidelines for professional development, specifically to ensure capable educators who use ICTs to enhance teaching and learning, as well as leaders and support staff who can facilitate the development of educator digital learning competencies. The audience that the framework tries to reach is teacher trainers,

school leaders and teachers, e-learning specialists and curriculum subject specialists. It will also try to define professional development for digital learning in an education system that seeks to improve access, quality, equity, redress and efficiency. The framework states that accomplishing this aim will ensure that teachers have a clear plan for their individual needs for professional development in digital learning using digital tools and content resources.

The framework explains that a teacher's needs analysis and planning for professional development in digital learning will form the basis to achieve the goals of this framework on educator competencies in planning and facilitating digital learning. The three key areas in which teachers could gain competency in digital learning includes: Professional Growth, Curriculum Focus and Leadership. It then goes further to give guidelines how the framework will be implemented, stating the activities each department will be responsible for and then ends with an action plan for the achievement of the framework outcomes (Department of Basic Education, 2018).

The latest progress of the Department of Education includes the government's objective to give tablets to all primary and secondary school learners and to launch computer coding and robotics classes for Grades 1 to 3. This is according to the City Press (MyBroadBand, 2019), which stated that President Cyril Ramaphosa was planning a major overhaul of the education system. This overhaul aims to prepare the future workforce of the country for the Fourth Industrial Revolution. The overhaul will include providing tablet computers to all learners in 23 700 primary and secondary schools, introducing computer programming and robotics classes for Grades 1 to 3 and the digitisation of the whole school curriculum, which will include digital textbooks, workbooks and all teaching support material.

With many local schools still without electricity and toilets, many feel that the government's plans to give tablet computers to all learners and to digitise the curriculum are ill-advised. Nic Spaull, a senior researcher in the Economics Department at Stellenbosch University and an educational expert, said that the one-device-per-child plan is not a good idea for South Africa. He said there was no research to show that it

had worked anywhere in the world to improve learning outcomes, and therefore, it was not worth the enormous cost it would entail.

The news indicates that crime is one of the biggest problems hindering the use of technology in impoverished communities, with criminals targeting learners and schools with any valuable equipment to steal. Other complications include learners taking the devices to inappropriate places and events, such as football games, or using the state-sponsored mobile data to download movies, television shows and even pornography. Mathanzima Mweli, the director-general of the Department of Basic Education, said that the abovementioned problems would be solved by “insulating the tablets against the downloading of any material that was not educational”. Not only will this stop learners from abusing this resource, but it will also render the devices useless to thieves (MyBroadBand, 2019).

According to an article in one of South Africa’s well-known newspapers, *Volksblad*, although technology is rapidly increasing in South African schools, some problematic issues are making learners miss their old textbooks. This article was published after President Cyril Ramphosa had announced in his State of the Nation Address that he planned to see a tablet in every learner’s hand in six years. This statement was met with raised eyebrows by education experts. According to the article, Isabel Tarling, director of Limina and an EdTech integration expert, said that although the use of tablets in the classroom could open a world of opportunities, the real picture in most classrooms was less rosy, with tablets that were only gathering dust. According to her, there are more gadgets in both well-off and less well-off schools than ever before. However, if this were the answer to learning problems, there would have been more change by now than only a few brightly coloured pictures, videos and links. A learner can only progress as far as his or her teacher. It is Tarling’s opinion that if South Africa wants to develop 21st-century skills in learners, it is necessary to equip teachers with a safe environment, physically and emotionally, to be able to experiment with digital resources and to start creating with it.

Challenges with regard to shortages of resources, such as broken tablets or chargers that need to be replaced, are part of the problem. Furthermore, tablets in schools in less well-off neighbourhoods can attract criminals. Irregular internet connections, load shedding and learners' eyes getting sore are further challenges.

According to Pienaar (2019), a teacher at one school that has incorporated the use of tablets is of the opinion that the benefits outweigh the negatives. This teacher feels that the school saves a lot on paper since the tablets were introduced. It also means that the learners' schoolbags are lighter to carry (Pienaar, 2019).

However, because technology is changing so rapidly, teachers and learners can never be entirely up to date. Some parents feel that in the end, paper textbooks are cheaper, as e-books cannot be used again by a sibling. Many learners also prefer making notes in their paper textbooks. Another problem involves Wi-Fi connections that are lost and then interrupt lessons. Also, learners are often caught playing games in class time.

Tarling (cited by Pienaar, 2019) states that, as with other inventions, some mythical power is being attributed to a tablet, but creativity is a unique human gift that cannot be replaced by robots or computerised by computers.

Initiatives such as the Closed-Loop Learner Network are putting the plan of President Cyril Ramaphosa into practice by working with the Free State Department of Education to put tablets into the hands of underprivileged learners. It is the Network's plan, for this year, to provide 20 000 tablets to learners in 81 schools that have been identified by the Department of Education as part of their trial to test the president's plan. Its five-year overall plan is to provide a million tablets to learners nationwide. The tablets that have already been distributed in October last year gave the learners free access to the internet with the assistance of MTN. It came preloaded with electronic handbooks that meet the national curriculum guidelines as well as additional online resources. The project currently focuses on Grade 10 to 12 learners (Herselman, 2019). An initiative such as this one strengthens the mission of the Department of Education to equip and prepare South African learners for the digital future.

3.3 ICT, E-LEARNING AND ACCOUNTING

Now that a better understanding of what the view of the Department of Basic Education is on the use of ICT for teaching and learning, some time will be allocated to the idea of what is happening in accounting in general and on school level when the use of ICT is considered.

3.3.1 Higher education

Being a chartered accountant is a sought-after profession with a significant shortage and the supply far outnumbers the demand. Thus it is crucial that higher education institutions deliver an adequate number of candidates that will qualify and meet the extremely high standards of the professional body (Nagel & Oberholster, 2011). In Nagel and Oberholster's (2011) study, conducted at the University of Pretoria, the aim was to increase the success of first-year students in financial accounting to uncover the reasons for the unacceptable retention rate of first-year students. It was found that most students had unrealistic perceptions of the subject and that what they learnt at school did not prepare them for problem solving or to think broader. The students did not take the lecturers' recommended approaches to solve problems to heart because of a misguided sense of expertise – based on high marks at school. The students were found to underestimate the importance of studying the theory of accounting before attempting to answer the questions.

Nagel and Oberholster (2011) propose that learning innovations should be developed to address the above factors and to design and implement a learning management system for the required educational innovations. The researchers kept the previous findings in mind: classes are large and will continue to grow; first-year students do not have a sound theoretical basis in accounting; most students do not know how to manage their time effectively; the temptations that lure students from their books are bound to increase; and there are too few academics, and they are overloaded. Sadly, this situation is unlikely to improve soon. According to Nagel and Oberholster (2011), solutions from other contexts will probably not address these unique South African

challenges. They believe that e-learning solutions in Africa should be home-grown and be suitable for the specific context. A few well-situated ICT solutions should improve the quality of learning in first-year classes by matching student challenges with corporate reality.

The fact that the demand for chartered accountants has increased and that the demand started to exceed the supply, have put universities under enormous pressure. One of the universities that experiences this predicament, is the University of Pretoria. The university needs to deliver its target number of qualified accounting students to the profession, regardless of the quality of first-year students intake or how adequate these students' level of preparation is. In order to deliver more chartered accountants, it means that the pass rate for the first-year accounting students had to be increased (Nagel & Van Eck, 2012). There was a specific need for extra tuition and support for those students who did not have accounting as a school subject. Unsatisfactory academic learning and poor time management, which led to cramming before tests, were identified as reasons for the poor success rates. The University of Pretoria implemented an intervention strategy to amend this problem by introducing weekly online quizzes that the students could complete in their own time. These quizzes contained feedback and explanations that could easily be understood. The tutors, who facilitated additional work sessions and understood the pitfalls in the theoretical work, helped the lecturers to compile the questions and take part in quality control. With these quizzes and feedback, the students were able to pace themselves, make sure they understand the terms and prepare for tests. The pass rate improved from 57 to 75% (Nagel & Van Eck, 2012).

In a study by Nagel and Venter (2015) that focused on a blended learning model in higher education, they mentioned that students' success would not improve by merely using computer technology in their studies while the pedagogy remains the same. The potential of technology should first be reaped, and blended learning analysed and redesigned for the blended learning mode to have an impact on the students' learning success. The findings of their research illustrated the integrated way in which students

moved between contact and online resources for learning. It led Nagel and Venter (2015) to propose the following model for learners' mastery of learning:

- Firstly, when students are learning new work, they prefer a classroom and a teacher who explains the theory and concepts to them.
- Secondly, to monitor students' understanding, students prefer online formative assessment that explains misunderstandings and shows gaps in their knowledge.
- Thirdly, before test and examinations, students value lecturers who help them prepare for tests and prefer using high-quality online resources to practise and apply their skills before tests and examinations.

3.3.2 Perceptions on accounting and mobile technology

As far back as 2002, it was noted that worldwide, the accounting profession had been changed by the digitisation of economic phenomena. Consequently, it has become vital that the impact of ICT on accounting and accounting information should be integrated into basic research on the subject (Hunton, 2002). Although this research focuses on accounting at high school level, it is still relevant for other professionals, as the purpose of the research is to discover how the incorporation of mobile devices is influencing teaching and learning. As mobile devices as a resource continue to grow as part of the education milieu, mobile computing devices are presenting both opportunities and threats to educational institutions where subjects such as accounting are being taught.

In the study by Kutluk and Gülmez (2014) that focused on the mobile learning perspectives of accounting students, it became apparent that accounting students who used mobile devices for learning and educational purposes, research or homework believed they had the required knowledge to use mobile devices for those specific tasks. The students also remarked that mobile learning would be easy and assist them in completing accounting research or homework faster. For students, it is essential that mobile learning is seen as beneficial; also, the service must be reliable and the content easy to navigate. Kutluk and Gülmez (2014) believe that by giving students access to meaningful and just-in-time resources, they can create knowledge, and with the

application of mobile devices, their learning achievement, effectiveness and motivation will display an overall increase. The researchers also felt that the faculty – meaning those in charge and making the decisions – should be familiar with mobile learning as faculty members have a direct influence on students' use of mobile learning. The researchers strongly feel that faculty members should be involved in implementation plans (Kutluk & Gülmez, 2014). Emerging technologies could resolve the technical limitations of mobile devices; therefore all participants should play a role in creating a new way of learning with mobile devices. According to Kutluk and Gülmez (2014), mobile learning is a way of learning that benefits from the advancement of technology and is an educational alternative with which to access knowledge anytime and anywhere.

Later, in the study by Kutluk, Donmez, Gülmez and Terzioglu (2015), the results were compared to those of the study mentioned above, and they found that the use of mobile devices for learning or educational purposes and doing research about accounting lessons or homework for the subject increased remarkably. The researchers concluded that students were adopting mobile devices for learning purposes. The students came to the deduction that using mobile devices for learning purposes would be easy and that with the use of mobile technology, it was possible to do their accounting homework quickly (Kutluk et al., 2015).

Most learning materials are available to students at a cost, or students need to travel to a specific location to access them. In general, in developing countries, these costs are too high, preventing learners from achieving a basic level of education. In developing countries, people may not always have computers to access learning resources, but they have mobile devices or are rapidly obtaining mobile devices with wireless capability to allow them to access learning resources from anywhere and at any time. So, with the help of mobile technology, they can be productive and improve their quality of life. Mobile learning has a significant influence on the education of underprivileged learners and especially learners with speech or language impairments that affect their

educational performance. With the use of mobile technology, it is possible to fill these gaps.

The South African Institute of Chartered Accountants (SAICA) is the professional accountancy body that provides support, advice and services to its chartered accountants throughout their professional lives (SAICA, 2008). A lecturer, Bruwer (2017), at the Centre for Accounting in the Faculty of Economic and Management Sciences at one of the leading universities in South Africa feels that some parts of the competency framework of SAICA are not always possible to teach to students theoretically, even though students are expected to possess specific competencies when they enter the professional field. The best the university can do is to give its students an awareness of these competencies, as it can only be learnt in a practical, hands-on way when they enter the workplace. It is problematic as it is the lecturers' responsibility to link what is being taught in class to what the students will be dealing with in the real world and how they will assess these concepts (Bruwer, 2017). According to this lecturer, various internet resources, such as the TaxTim (2018) website, can be used to teach students about tax, using real-life income tax returns and tax calculations (Bruwer, 2017). Here the student gets, for example, a question or information and has to fill in the tax return as if he or she is doing a real tax return on e-filing.

The Centre for Accounting at this university tried to implement a bring-your-own-device initiative in conjunction with Blackboard, the university's learning management system, for short tests and informal assessments; however, the students' devices were not compatible with the system. The results of these tests had to be excluded as the test results were inconclusive. The Centre for Accounting has since replaced the initiative with clickers. The benefit of clickers is that everyone has the same device. With the clickers, it is possible for the lecturer to ask questions and get an immediate response, which shows the lecturer what the students' understanding of a particular topic is. It is also possible to do assessments or do anonymous polling using the clickers.

Furthermore, they are linked with the students' student numbers, making it easy to see who is attending class (Bruwer, 2017).

Interestingly, according to SAICA and most universities in South Africa, mathematics is a prerequisite to study accounting at a university, but accounting as a school subject is not (SAICA, 2008). The lecturer in Bruwer's (2017) study feels that even though this is the case, accounting at school level is still very important and it is necessary that there should be more cooperation between school-level accounting and university level so that learners will be well equipped when they get to university. She suggests that there should be a platform where lecturers can express what they need from schools to receive the correct type of student. Unfortunately, it is not that simple, as schools are directly controlled and regulated by the Department of Basic Education. However, the lecturer still feels that there should be better communication between these stakeholders (Bruwer, 2017).

It would help if the Department of Basic Education could make sure accounting teachers receive adequate training so that they can be up to date as to what is happening or needed in the workplace and be able to help the learners to be ready and prepared when they go to university. If a first-year accounting lecturer needs regular updates, it is crucial that the accounting teacher should be kept up to date as well (Bruwer, 2017). This is where the use of ICT and mobile learning can come in handy, as it would be easier and more cost-efficient for a teacher to receive such training and updates at home in their own time on their smartphones through a webinar, YouTube video or conference call and be able to refer to it when they need to. This would mean that if the teacher keeps abreast of what is happening or needed in the workplace, and this is given through to the learners, the transition from school to higher education will be much easier. The exposure to ICT and mobile learning at school level can enhance the use of this type of technology at higher education level, which will affect students' learning experience at university as well (Bruwer, 2017).

On the question of what lecturers are looking for in a first-year accounting student, the answer was that the ideal first-year student would be able to think critically – a student

who is not afraid to ask questions and can be sceptical as to how particular things are done (Bruwer, 2017). It is not enough for students to be able to use shortcuts and methods that they learnt at school; they should be able to think on their feet, ask questions and not be afraid to make mistakes. Bruwer (2017) feels that this critical thinking capability should be better developed at school level, and this can be done with mobile technology that gives learners access to more resources and more opinions. It means that when this learner moves on to university, the leap from learner to independent student is more manageable. When such a student gets bombarded with the volumes of work to obtain the Certificate in the Theory of Accounting, he or she will be able to cope as he or she will be an emotionally and intellectually strong student (Bruwer, 2017).

3.3.3 SAICA

As stated earlier, SAICA is, according to their website (SAICA, 2008), the main accountancy body in South Africa. It is, therefore, necessary to look at what this leading institution is doing in schools, universities, in the profession and for the future of accounting when it comes to technology and the 21st century.

Examining the SAICA website, it is easy to see that among everything that is happening at SAICA, the following is addressed: seminars and events; corporate training; and the growing phenomenon – digital practice using quickbooks (making it possible for accountants to manage their practice, clients and work online). Two links are relevant to this study (SAICA, 2008):

- Become a chartered accountant.
- Nation building.

3.3.3.1 Become a Chartered Accountant

Looking at the help and resources SAICA is offering someone to become a chartered accountant, it is clear to see the effort and time this institute puts into finding the correct person for the profession. This help includes showing learners the correct path of how to become a chartered accountant by choosing the correct subjects in school and what

they will have to do to finish their practical examinations. Other assistance includes learner resources, SAICA-accredited programmes, the Thuthaka Bursary Fund to help with financial aid and school and learner initiatives, such as annual Olympiads, academic support programmes and development camps.

a) Professional development department

SAICA has a department where the main focus is on the examinations that trainees have to write, the accreditation of universities, investigations on training officers and everything associated with these functions. The same department is responsible for curriculum development, determining what a chartered accountant must know at the end of the day when he or she passes the Board Examination and how to be in synchronisation with the business world. This is to make sure that the chartered accountant who is sent into the world have the necessary skills and competencies required of the profession. The Professional Development Department is responsible for the competency framework and which competencies should be acquired. These competencies now include ICT literacy, and when it should be done while trying to obtain the Certificate in the Theory of Accounting, the First Board Examination and the Second Board Examination to be proficient in entering the profession.

b) Universities

Considering the profession of chartered accountants, universities are also looking for a specific type of student, according to SAICA's Central Regional Executive, Div Lamprecht (2017). When officials from SAICA visit schools to address the learners, they use a shotgun approach – they aim to get as many as possible candidates interested in the profession. So SAICA tries to get possible candidates into the pipeline at school level, where the institute wants learners to enter the pathway to the profession. SAICA then informs the universities what they want to be addressed in the curriculum and then leave the universities to decide how they want to apply it in their structure and what will suit their administration best. At university, SAICAS's interactions with the students are limited to when they come to offer these students some soft skills development. The

university sees to the progress of the students, but SAICA only sees the candidates again when they start with articles.

c) Professional training

"After university, it is the training officer's responsibility to take the candidate through the article training contract," Lamprecht (2017, n.p.) said in an interview with me. He continued as follows:

> The day that the training officer signs that candidate off it is an indication that that person is competent to enter the profession. So we rely on the integrity of our members, and we test them on a two- to three-year interval, looking at their systems and documentation. So from the institutes' side, we depend on the universities to make sure the candidate is on a certain level, and then we depend on our members to train the candidate so that when he enters the profession, we can step up and say, "Now we serve you." We provide training to all our members, make sure they are up to date with all the rules and regulations as well as services inside SAICA if they have any technical questions, for example on tax and operations. The universities are responsible for giving the student a theoretical basis, and then the training officer is responsible for the practical part. Inbetween, we provide training for the article clerks. After qualifying, the candidate has a number of CPD [continuing professional development] hours that he or she have to complete training, like in most other professions. (Lamprecht, 2017, n.p.)

d) In practice

Considering the question of how technology is changing the accounting profession, the answer is that the First Board Examination is done electronically with a part on theory and a practical part. The Second Board Examination is written 18 months later, but this is more a practical examination. SAICA is already looking at ways how this examination can also be written electronically (Lamprecht, 2017). There are also most definitely change concerning technology in the curriculum as the curriculum needs to change to make provision for how the new chartered accountant of the future looks.

Looking at the future – everything will be done on the Cloud. The clients will fill in all the data on the system, and the system will generate a trial balance. Financial statements

will be drawn up, and the auditors will just check that everything is correct. Software development, therefore, plays a significant role, as all financial information is filled out on templates. It is therefore crucial that learners and students should know how all the procedures work, so that when they are working on a template, they will understand why it should be done; otherwise, it will not have much value for them. This shows again that if learners have exposure to this technology at school level, they will be much better equipped for the 21st-century workplace.

Critical thinking is a critical ability, according to Lamprecht (2017). He concluded: "You have to be able to ask the questions and have the ability to know why it was asked" (Lamprecht, 2017, n.p.).

3.3.3.2 Nation building

According to Lamprecht (2017), education is one of the fundamental cornerstones of any country, and if that fails, the whole country falls to pieces. If education is neglected, the country is in serious trouble, as it affects every aspect of life. That is why SAICA's strategy is focused on public interest. The institute aims to see how it can make South Africa a better place for everyone, not just its members. That is why its members are trying to make a contribution with their Nation Building Division – for the "greater good of South Africa", according to Lamprecht (2017, n.p.).

The organisation aims to help provide solutions for the National Development Plan through its members, with numerous initiatives such as Thuthaka, the Hope Factory, and SAICA Enterprise Development, which aid the national drive for transformation, employment and growth that will ensure social and economic development in South Africa. Some of SAICA's initiatives include the following: the School Governing Board Project, involving schools where the finances have not been appropriately governed and that are in total disarray have been identified and are being helped by lending them a hand through the help of a qualified chartered accountant who serves on their governing body; the Municipality Project, where retired members help identified municipalities with advice and support; the Economic and Management Sciences educator workshops that

target Economic and Management Sciences educators in the lower grades, covering problematic topics in accounting, economics and entrepreneurship; and parental support involvement, making sure to support the parents of the candidates who enter the profession, as it has been found that if a candidate has a stable environment, support and someone to lean on, it is more likely that he or she will succeed. Moreover, there are quite a few projects on school level that SAICA is involved in.

The main aim of the school-level projects is to ensure that enough high-calibre learners enter higher education institutions to pursue a career as chartered accountants. The school projects are the primary feeder for recruiting learners for the Thuthuka undergraduate programmes. In order to create this channel of learners, the school-level projects focus on Olympiads in accounting and mathematics in partnership with Sage Pastel and the Maths Foundation as well as development camps that focus on developing the top five learners from previously disadvantaged schools in mathematics, English, science and other soft skills. These projects include career awareness initiatives through presentations, school visits, exhibitions, symposiums and the media as well as business development games. The focus of these initiatives is to develop interest in the profession and increase the number of learners who choose to study towards becoming a chartered accountant. The business development games are aimed at educating learners about the world of business and finance in a fun and educational manner.

It is crucial that learners should know that to enter the accounting profession, as with most other professional professions, they should take pure mathematics and not mathematics literacy as a subject. Teachers should give learners the correct information and help them to make the best choice for their future and not focus on getting better results for the school. Lamprecht (2017) feels that teachers play a significant role in the problem the professional body has concerning adequate candidates for the profession. It is no longer a prerequisite to have accounting as a school subject to enter the profession, but it is essential to take pure mathematics and, secondly, English (Lamprecht, 2017; SAICA, 2008). The reason for English as a prerequisite is that

English is the business language today, and a chartered accountant needs to have excellent communication skills. Universities have programmes in place to help learners who did not take accounting as a school subject, but if they can do mathematics, they have the intellectual capacity to process something in their head. Such learners can deal with a problem by looking at it systematically. The typical profile of a person who is successful in accounting is someone who understands systems, can work systematically, is ordered in life and is good with particular routines.

After considering all of the points discussed above, it is easy to see how actively involved SAICA is in the development of the accounting profession as well as the development and growth of South Africa on numerous platforms, including at school level. Although SAICA's focus is not on technology integration, it can be assumed that this is essential to the institution as well, as Lamprecht (2017) referred to the ability to think critically. Furthermore, it has previously been mentioned that research has shown that the use of technology in a blended learning environment is beneficial in developing critical thinking skills.

3.4 POCKETS OF EXCELLENCE

3.4.1 Initiatives used in the South African context

As stated earlier, it is impossible to mention every initiative that is currently available to the South African learning community as that would take too much time. I acknowledge that there are other initiatives that are noteworthy, such as Sage Pastel Accounting's Certified Schools Program (Mzizi, 2016). These initiatives focus on entering basic accounting entries into the Pastel software program that is currently being used by South African accountants, or the Accountants2Be and Like2Understand websites (Venter, 2016) focusing specifically on accounting at school level with an all-inclusive handbook, workbook, answering book, summaries, exercises, tests and examination papers with answers, as well as recordings that explain over 200 topics.

Due to time constraints on the study, it was decided to focus on one system only. So, for this study, the ITSI EdTech System will be looked at in more detail.

3.4.2 ITSI EdTech

3.4.2.1 What is ITSI?

ITSI is an EdTech company with a passion for education. The company aims to close the gap between traditional and technology-led teaching – simplifying and enhancing learning through innovative solutions for visible and integrated education, as their slogan "Teaching and Learning – Simplified, Efficient, Enhanced" puts it. The company has partnered with publishers, educators, students and parents to enable anywhere, anytime learning, which is sustained by research-supported tools (ITSI Holdings, 2018). ITSI does not focus only on the primary and secondary school levels but also on the tertiary and corporative levels (Van Tonder, 2018). For this study, however, I will explore only what ITSI is offering to schools.

3.4.2.2 EdTech for schools

Some of the EdTech that ITSI offers to schools include an educator console, training for teachers and the miEbooks application (ITSI Holdings, 2018). In the following section, these different technologies that ITSI offers to schools are briefly discussed.

a) Educator console

The educator console is a platform that is specifically designed for teachers. Teachers can use this platform to share all the enhanced learning material with learners. Teachers can also send additional material to learners' books or create books and make these as interactive as they choose. This includes videos, PDFs and Office files.

With the educator console, teachers have the convenience to create self-marking assessments to test learners' knowledge. The console includes multiple varieties of questions with detailed statistics on the assessments that were completed. This makes it possible for teachers to study these statistics in depth. Another feature is that while a

teacher is teaching, it is possible for him or her to see which learners are active on miEBooks and other resources by using the activity monitor. Other functions include creating flashcards for the learners to help them with the learning process and statistics with in-depth feedback on how every learner is doing, what he or she is learning and what resources he or she is using.

b) Teacher training

Regular teacher training, including professional development courses, is also supplied by ITSI (Van Tonder, 2018). Training consists of interactive workshops for teachers, and these training sessions are all SACE-endorsed professional development courses (ITSI Holdings, 2018). ITSI helps teachers to transform their traditional way of classroom teaching to a more blended e-learning style. ITSI's training support is aimed at empowering teachers to embrace the strengths of technology and enhancing the learning experience.

The modules in the professional development course include:

- change management;
- initial software training for teachers and other role players;
- initial mobile device training for educators and students; and
- on-going educator training on software features.

c) miEbooks

miEbooks is a free application available on Play Store, Microsoft Store and Apple's App Store. The learners receive all the information, including homework, that the teacher sends via the miEbooks application. They can watch videos, complete assessments and do interactive lessons. The application allows learners to archive books of the previous year and look for resources and content with the "search" function. It is possible for learners to see their learning statistics. In addition, they can create folders where they can upload assignments or homework for when they need these or have to share these with the teacher.

In order to help themselves with their learning, learners can create flashcards and retrieve information from the handbooks to create questions or even tests. When the learners have used flashcards to learn, they receive feedback and statistics on how they have done. Conveniently, they are allowed to practise these flashcards repeatedly. Furthermore, it is possible to highlight and make notes and sketches to help with learning. These notes, sketches and highlights can then be used as a summary that can be printed before an examination or test. The summary function also allows them to return to the work that they have highlighted to get more context or for more in-depth learning (Van Tonder, 2018).

c) Additional products

Another unique product that ITSI offers learners is Learning Hacks ("be in control of your brain") courses. These consist of three interactive sessions of two hours each, in which learners are taught how to study more effectively and how to remember better.

ITSI has also teamed up with Siyavula to be able to use its programme through ITSI's application. Siyavula offers mathematics and physical science lessons to learners and teachers.

Digital lessons for subjects such as physical science and mathematics are available on the store. These lessons are divided into smaller sections, allowing for a more useful explanation of the work (Van Tonder, 2018).

Taking into consideration what an enormous impact ITSI can have on the way teachers teach accounting and learners learn the subject, it is easy to see why I decided to use the ITSI system to conduct this research.

3.5 CONCLUSION

It is essential for a study on the use of mobile learning in the South African accounting classroom to not only look at the general use, technical aspects, integration and application of the technology, but also to make sure that the unique challenges for

South Africa and the unique situation and socio-economic background in which South Africa as a developing country finds itself, should be taken into account. Equally important are the demands concerning accounting, not only as a school subject but also as a sought-after profession where the demand for elite, qualified, professional accountants far outnumbers the supply.

In this chapter, the focus was on what is currently happening in South Africa in terms of ICT and e-learning in the classroom. This was done as there is a significant movement towards the use of technology in the classroom, although it may not necessarily be mobile technology as such. This was followed by a section on ICT, e-learning and accounting in general, either as a higher education subject or in the accounting profession. As it was difficult to obtain useable research or literature on accounting as a school subject, the chapter mentioned and then looked at systems that are currently being used in schools in general and also where accounting is one of the subjects that makes use of mobile technology for learning.

When comparing what is happening internationally to what is currently happening in South Africa when it comes to ICT, e-learning and mobile learning, it is possible to see some similarities and differences. While both the international community and here in South Africa, people acknowledge that ICT and, for the study specifically, mobile learning can contribute significantly to enhance and improve teaching and learning. It is also clear to see that the obstacles and socio-economic problems that South Africa faces are hindering the effective implementation of these technologies in school. It, therefore, strengthen the purpose for conducting this research study.

In the next chapter, a discussion on the research design and methodology will be presented.

CHAPTER 4

RESEARCH DESIGN AND METHODOLOGY

4.1 INTRODUCTION

In Chapter 3, mobile learning in South Africa, specifically, was discussed, with a focus on mobile devices in the teaching and learning of the subject accounting. Chapter 4 focuses on the research design, strategy and methods. The purpose of this chapter is to yield further understanding and explanations relevant to the study.

The overall aim of this research is to explore the perceptions of teachers and learners on the use of mobile learning in South African accounting classrooms.

The objectives of this study are:

1. to discuss the practices and benefits of using mobile learning as an educational medium in teaching and learning. This was done in Chapter 2;
2. to review the literature on the practices and benefits of using mobile learning in South Africa and in the accounting classroom. This was done in Chapter 3;
3. to explore the perceptions and experiences of a few selected teachers and learners regarding mobile learning in accounting as a school subject. This will be looked at in Chapter 5; and
4. to provide insights and make suggestions that could enhance the implementation of mobile learning in an accounting classroom.This will be done in Chapter 6.

A valuable aspect of this research work relates to Objective 3, that is, exploring the perceptions and experiences of a few selected teachers and learners regarding mobile learning in accounting as a school subject. However, considering the literature available on mobile learning and accounting, it became apparent that most of the research conducted on the subject focused on accounting at tertiary level (e.g. Kutluk et al., 2015; Kutluk & Gülmez, 2014; Richardson et al., 2013; Staples, Collum & McFry, 2016). The opportunity to gain insight into the way accounting teachers and learners perceive

and experience mobile learning in the classroom ought to contribute significantly to bring about change in the way accounting is being delivered at high school level in South Africa that will benefit learners and teachers as well as other stakeholders.

Chapter 3 on mobile learning and accounting in the South African context found that a gap exists in current research, revealing a lack of literature on mobile learning in accounting at high school level and more specifically within the South African context: accounting in the FET phase (Grades 10-12). The impact of mobile learning in the South African accounting classroom remains unclear and unexplored. With the study, I intend to make a valuable contribution through the study and analysis of actual data on how teachers and learners perceive and experience current mobile learning practices in the accounting classroom in a developing country such as South Africa.

Objectives 1 and 2 have been addressed in the previous sections, in the form of a review of literature in the field of mobile learning in general and in South Africa and accounting more specifically (in Chapters 2 and 3). Objective 3 contributes by taking the research one step further by collecting and analysing the actual data acquired from three high schools where mobile learning is incorporated in the delivery of accounting as a school subject. Notably, by focusing on the views of both teachers and learners, it is possible to gain greater insight into and understanding of the current situation, thus providing the opportunity to explore what should be done to bring about effective change. By matching theory with practice – meaning to compare the literature review findings with what is actually happening – I will be able to obtain a better understanding of the issues surrounding the implementation of mobile learning. This understanding will enable me to contribute valuable knowledge about e-learning in the South African high school accounting classroom. The study will conclude with Objective 4, in Chapter 6, by providing insights and making suggestions that could enhance the implementation of mobile learning in an accounting classroom.

This chapter provides details on the research design and strategy used to answer the research questions, plus shows how the data were collected for analysis, including the sites and participant selection as well as the analysis method that was adopted.

Furthermore, the reader will be steered towards the issues of ethical considerations, possible contributions of the study, possible limitations and delimitations of the chosen research strategy and how the strategy was implemented.

4.2 RESEARCH DESIGN AND STRATEGY

4.2.1 Justification for research

While conducting a literature review on mobile learning and accounting in Chapters 2 and 3, the findings revealed that most of the research conducted on the subject focuses on accounting at tertiary level, as stated above. It became apparent that a need exists for factual data on mobile learning in accounting at high school level and more specifically within the South African context, that is, accounting in the FET phase (Grades 10-12). The impact of mobile learning in the South African accounting classroom remains unclear and unexplored. It was, therefore, my intention, in this study, to conduct my own practical research work and gather first-hand information to help address this insufficiency in the literature available on the subject.

4.2.2 Approaches for the purpose to conduct research

A researcher's philosophical orientation will influence his or her choice of research approach. A researcher can choose from three research approaches, namely quantitative research, qualitative research or mixed methods research.

These three approaches can be broadly explained as follows:

- **Quantitative:** In this type of research design, the researcher collects numerical data and relies on statistical analysis most of the time. It is possible that there sometimes might be a hypothesis, although experimental studies require a statement that should be statistically tested. This design can be experimental but can also be observational (Lacey, 2010).
- **Qualitative:** As a data source, this research design type uses narratives, words, documents or graphical material. The researcher analyses the data to identify themes, relationships and concepts and develops theory when appropriate. A

qualitative research design explores a situation, culture or experience in depth, while keeping the context and complexity in mind. This type of research design is mostly used when little is known about a particular subject; therefore no hypothesis can be formulated. While qualitative studies can help us understand phenomena and can help develop theory, the purpose of this type of design is more exploratory than explanatory (Lacey, 2010).

- **Mixed methods:** The mixed methods approach can be seen as a combination of quantitative and qualitative research (Doyle, Brady & Byrne, 2009).

My aim is to offer a perspective on and understanding of the use of mobile learning in accounting at high school level by providing insight into the way the participants make sense of this new phenomenon in teaching and learning. It would seem that the best approach to follow for this study, when considering the abovementioned explanations, would be a qualitative research approach. The reasons for choosing a qualitative research approach are thoroughly explained in the following section.

4.2.3 Qualitative research

Qualitative research can be defined as follows:

> Qualitative research is multimethod in focus, involving an interpretive, naturalistic approach to its subject matter. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them. Qualitative research involves the studied use and collection of a variety of empirical materials – case study, personal experience, introspective, life story, interview, observational, historical, interactional, and visual texts – that describe routine and problematic moments and meanings in individuals' lives. Accordingly, qualitative researchers deploy a wide range of interconnected methods, hoping always to get a better fix on the subject matter at hand. (Denzin & Lincoln, 1994, p. 2)

Qualitative research is associated with studies that seek to undertake an in-depth exploration of a particular situation and identify where there is an opportunity for responses that speak of high "quality". To clarify, qualitative research answers the "why"

questions, while quantitative research seeks to answer the “how” questions (Biggam, 2008).

This study was conducted using a qualitative research design, where I intended to learn more concerning a specific situation in one of the current high school subjects in South Africa. The aim of the research was to determine the perceptions and experiences of teachers and learners on the use of mobile learning in the accounting classroom. This research design is based on the interpretive, naturalistic approach that seeks to understand the particular situation in a real-world setting, where I will not attempt to manipulate the specific research situation (Biggam, 2008; Nieuwenhuis, 2013).

According to Biggam (2008), interpretative researchers find human participation or observation, the context and the given time of interpretations of reality as fundamental to their research, as they consider several equally valuable interpretations of reality possible and these interpretations depend on when they have been made as well as the context in which they have been made. This means that interpretative research is correctly associated with qualitative research due to the emphasis on human interpretations of events.

4.2.4 Research strategy

There are quite a few research strategies to choose from when conducting qualitative research. These research strategies include ethnography, the grounded theory, case study, phenomenology, narratives, life history, discourse analysis and phenomenography. As I was interested in an in-depth, investigative study, I chose to employ the case study as my chosen research strategy (cf. Biggam, 2008).

4.2.4.1 Why a case study?

I was drawn to a case study research strategy after considering the following points: According to Denscombe (2010), the case study approach is useful when an issue has to be investigated in depth, explaining the complexities and subtleties of real-life situations. Yin (2003) explains that with a case study approach, it is possible to

contribute to our understanding of individual, group, organisational, social, political and related issues. According to Yin (2003), the research questions in a case study typically ask the “how?” and “why?” questions and are explanatory, exploratory or descriptive. It is thus clear that by looking at what is currently happening in accounting classes and getting a feel of what the teachers and learners are experiencing in these classes, the aim will be to get a better picture of that is working or not working to help with the successful implementation of a mobile learning programme in accounting classrooms.

4.2.4.2 Definition of a case study

The following definitions available on the matter will further show why I believed the case study to be the best research strategy for the study:

Stake (1995) claims that a case study is where a researcher will explore a programme, an event, an activity, a process or one or more individuals in depth. The case or cases are limited by time and activity, and researchers collecting detailed information will use a variety of data collection procedures over an on-going period. Stake (2006) adds that a case study commonly involves looking at a single case (which already exists) or an object of study, which is easily identified and separated (a bounded system) from other similar objects, for example an organisation, a place or an illness in one patient. A case study is a suitable methodology for focusing on relationships linking everyday practices in natural settings, placing attention on a local situation (Stake, 2006).

Cohen and Manion (1995, p. 106) describe a case study as follows:

> … the case study researcher typically observes the characteristics of an individual unit – a child, a class, a school or a community. The purpose of such observation is to probe deeply and to analyse intensively the multifarious phenomena that constitute the life cycle of the unit.

4.2.4.3 Characteristics of a case study

According to Savin-Baden and Major (2013), a case study entails the following features:

- It is bounded – it is focused, intensive, narrow in scope and has clear boundaries or limiters.

- It is holistic – it seeks to describe the whole as well as the relationship of the parts of the case.
- It is particularistic – it focuses on the specific rather than the general.
- It is contextual – it is necessary to give an account of the context in order to understand the case.
- It is concrete in descriptions – in order to convey meaning to the reader.

By taking the above definitions and characteristics of a case study into consideration, it is obvious why I chose this approach for the research, as a case study aided my motivation to probe deeply into specific responses from teachers and learners with regard to mobile learning. This was achieved by dedicating time and energy to the task, focusing on these stakeholders' opinions and experiences in their everyday practices in their natural class settings.

The research is concerned with a detailed study of the occurrence of mobile learning in a present-day situation – a third-world school setting – where the limitations and potential of this type of technology in the subject accounting have not been adequately established. To emphasise, the literature review showed that there was a gap in the research on the use of mobile learning in accounting as a school subject, as was made evident by the abundance of research on subjects such as science, technology and mathematics. This is further evident in the abundance of research available on tertiary level training business subjects.

In the research, an in-depth study was made of a present-day phenomenon (mobile learning), in a multifaceted environment (schools where accounting is being delivered through the use of mobile learning), where the perspectives of various stakeholders perspectives were sought. The research explicitly focused on teachers who were already using this technology in their classrooms, but context was given to the study through the inclusion of learners as well. The underlying research philosophy was based on an interpretive understanding of the world. A case study was the strategy that best met the needs of this research because a case study approach provided the focus that was required, emphasising the depth of the study, which was based on the

assumption that reality could only be understood through social constructions and interactions, and that the context in which the phenomena were being studied was complex. These aspects of case study strategy fit perfectly with the aim of Objective 3 of this research, that is, to implement an in-depth exploratory study of the perceptions and experiences of a specific unit of analysis (teachers using mobile learning in accounting as a school subject). However, obtaining other stakeholders' (learners') views regarding their experiences with mobile learning helped to place these different stakeholders' views into context.

The research consisted of a case study conducted at three high schools where mobile learning was incorporated in the delivery of accounting as a school subject. It was possible to gain greater insight into and understanding of the dynamics of the specific situation with case study research, and it offered a multi-perspective analysis for me to consider the voice, perspective and views of the different groups under research and the interaction among them (cf. Biggam, 2008; Nieuwenhuis, 2013; Savin-Baden & Major, 2013). The use of multiple schools in the study allowed me to examine what was comparable and contradictory about the cases. I was looking for similarities and exceptions, specifics and generalities among these schools. It would seem that this case study leaned towards a cumulative case study. A cumulative case study is when information is gathered and grouped together from different sites at different times in order to come up with a collection of information on a specific topic. This type of case study aims to gather information from the different studies to form a more significant, concrete overview of the topic in question without going through the problems of extra costs or time being used on more studies (Morra & Friedlander, 1999; Hayes, Kyer & Weber, 2015).

4.2.5 Credibility, Trustworthiness and Transferability

To make sure that the research would be credible, trustworthy, and transferable; I made use of approved and well-known research strategies and data collection techniques to gather and analyse the actual data that would be appropriate for this study.

I kept and included the records that confirm details of where the empirical research was done by naming the sites where it was conducted to make sure that my work can be relied upon and trusted. Through the transcripts of the actual research that are included for anyone to review, the reader can determine how I went about to make the sample selection and who and what were researched, with evidence of the sample techniques that were used as well as what results were found during the experiments. One should always try to create an objective picture of the findings and guard against overgeneralising the findings and interpretations (Savin-Baden & Major, 2013). This was done by keeping all records of the research process, the data analysis and any problems that were encountered, keeping in mind that the research should be conducted systematically, while involving colleagues and research participants in the design of the research and the data analysis. When conducting a qualitative study such as this one, I recognise that multiple realities exist; and that my personal experiences and viewpoints may result in methodological bias, and that I, therefore, have to clearly and accurately present participants' perspectives (Noble & Smith, 2015).

4.2.6 Confirmability

Confirmability is achieved when truth value, consistency and applicability have been addressed. I intended to implement all the techniques mentioned above properly so that the results of the study could be confirmed or corroborated by others and not be questioned. This would also allow an independent researcher to arrive at similar or comparable findings.

In the next section, all the techniques and methods that were implemented are discussed in more detail to contribute to the credibility and trustworthiness of the research.

4.3 DATA COLLECTION

4.3.1 Research sites

The research sites consisted of the following schools in the Free State Province: an independent school in the Mangaung Metropolitan Municipality area, a public school in the Mangaung Metropolitan Municipality area and a smart high school situated in the Mohokare Local Municipality in the Xhariep District. ("The smart school is a technology-based teaching learning institution for preparing children for the Information Age" [Omidinia, Masrom, & Selamat, 2013, p. 326].) This case study was not meant to be an extensive study of all the mobile learning programmes currently available in South Africa. Such a study, in order to yield significant results, would be extremely arduous and most probably never-ending. This is because technology is ever-changing, with systems, programs and gadgets that may suddenly appear, while others can just as quickly disappear, schools situations and connectivity changing from one term to the next and different districts having different socio-economic challenges that they have to face. Instead, one system that is currently working effectively in South Africa, namely the ITSI EdTech system, formed the focus of the accounting teachers' interviews and the learners' focus group discussion. Specifically, teachers and learners of the independent and public school that have been using the ITSI EdTech system effectively in the delivery of the school subject accounting in the FET phase in the Mangaung Metropolitan Municipality area in the Free State participated in the research. As well as a rural high school in the Mohokare Local Municipality, Xhariep District. This rural school was selected by the Department of Education to become the first and leading smart school of the Xhariep District. Using these three sites permitted a dedicated, attainable approach to the study, allowing the teachers and learners to express detailed perceptions and views on and experiences of the use of mobile learning in accounting.

4.3.2 Participant selection

It is an exciting opportunity for me to implement a case study within the current school system to explore the perceptions, experiences and views of teachers and learners on

the use of mobile technology in the accounting classroom. Most research on mobile learning tends to focus on subjects such as mathematics and science, Foundation Phase subjects or tertiary institutions, while leaving a gap for research on an essential and relevant business subject, such as accounting. Furthermore, many of these studies focus on quantitative data, such as questionnaires or surveys rather than on probing, qualitative data. This research attempted to probe deeply into the approaches of the abovementioned schools to mobile learning in the classroom by executing a case study and focusing on the collection of qualitative data from key participants. I hope that the outcomes from this study will offer the reader a well-rounded depiction of mobile learning in accounting and thereby provide a valuable contribution to the ever-growing wealth of information that is being gathered on the use of mobile technology in the classroom.

Given that an objective of this research was to obtain a deeper understanding of how teachers were integrating mobile learning into the accounting curriculum and how learners were handling this integration into their learning while taking into account what both parties were experiencing, selecting these three schools for the case study presented an excellent opportunity to address questions surrounding the use of mobile learning, more specifically the ITSI EdTech system, in the accounting classroom. By selecting these schools, I am not attempting to say that what is happening in these schools, with this system, is representative of what is happening or will happen in schools all over South Africa. Instead, it is my hope that other schools and other system or software providers will be able to relate to what is happening at these institutions. Mobile learning and e-learning are of high importance to the Department of Education in South Africa, and the experiences, views and perspectives of these stakeholders will increase incrementally the facts with respect to mobile learning research.

The ITSI EdTec system, according to their website, tries to bridge the gap between traditional and technology-led teaching – simplifying and enhancing learning with original solutions that cater for visible and integrated education. ITSI's research-supported mobile learning solutions enable learning to take place anywhere, anytime

(ITSI Holdings, 2018). This system is being integrated at well-established and prestigious schools throughout South Africa, but if the perceptions, experiences and views of teachers and learners using mobile learning in the classroom is to form the focus of this case study, then in order to attain a well-rounded picture, I cannot only include these well-functioning institutions. It is imperative to include a school that is struggling to incorporate the use of mobile technology in the classroom as well, to take into account the challenging socio-economic situation in which the country, and especially the Free State Province, finds itself. This will help the reader to gain a complete perspective of what is currently happening with reference to this phenomenon.

To capture the views, perceptions and experiences of stakeholders regarding the use of mobile learning, learners who were using mobile technology for their learning at the time of the research were interviewed through a focus group discussion. In order to get a balanced perspective on the use of mobile learning, these learners' accounting teachers also formed part of the case study, through individual, semi-structured interviews.

4.3.2.1 Sample size

Due to the qualitative nature of the research, it was conducted using a purposeful participant selection as my sampling technique. The target population included all high school accounting teachers who had been teaching accounting with the integration of mobile learning in order to enhance and enrich the delivery of the subject, as well as their learners. Schools that were contacted and agreed to be part of the study were included in the study. 18 learners in Grade 10 and Grade 11 from three purposely identified schools took part in the focus group discussions. Six selected teachers from the same schools were interviewed using an in-depth interview process in order to obtain answers broad enough to capture all the key aspects and variants of the studied area (cf. Elliott & Timulak, 2005). By making use of convenience sampling, I acknowledge that a non-random sampling method was used because it was convenient for me. Convenience sampling lends itself to a tendency to be used as a form of exploratory research, providing notions and insight that may lead to other, more thorough and representative research (Biggam, 2008). As I intended to use this

sampling technique in an exploratory research setup and is not claiming that the findings are representative of a larger population, this method is acceptable.

4.3.2.2 Data sources

For easy reference, see the information of the resources that were used, shown in the diagram, Figure 4.1, below.

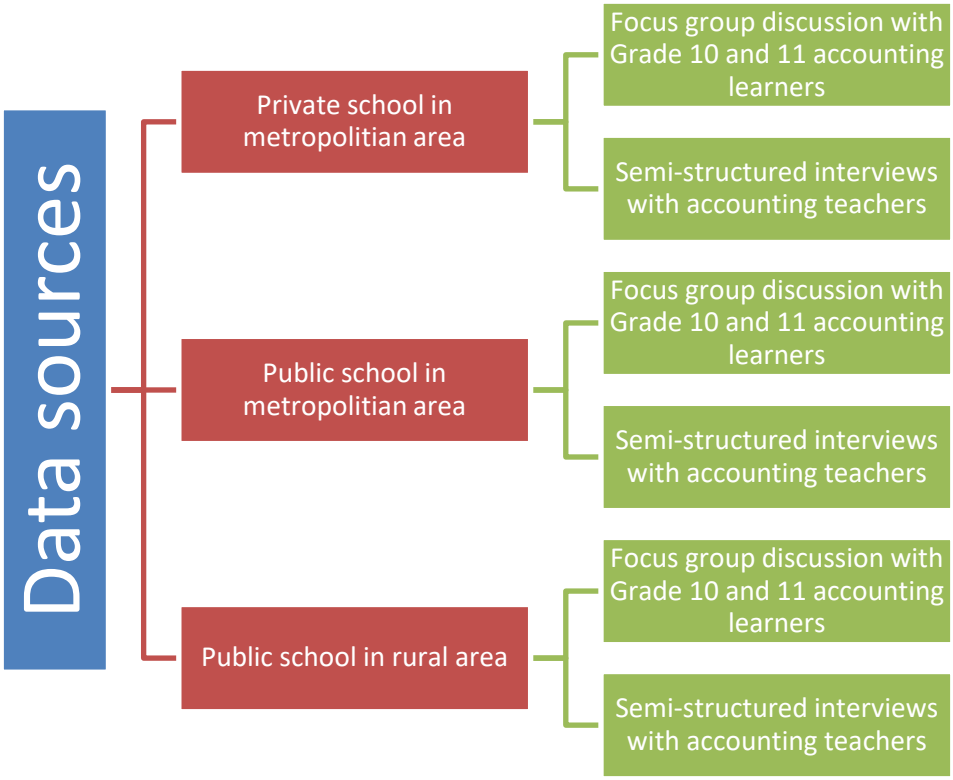

Figure 4.1: Data sources

4.3.3 Data collection techniques

The data collection was completed using the following techniques:

- **Focus group discussions:** Interactive focus group discussions were held with accounting learners at three different schools, concentrating on current practices, their perspectives and experiences regarding mobile learning and how it affects their understanding of the subject. The focus group format would have

encouraged these learners to share and discuss their views in such a way that it would allow me access to a significant number of possible interpretations and a duplication of representational social influence and consensus processes (cf. Elliott & Timulak, 2005).

- **Semi-structured interviews:** Individual semi-structured interviews were conducted with accounting teachers at the abovementioned schools. These interviews focused on the current use of mobile learning in the classroom and how the teachers perceived and experienced its influence on the learners' learning. According to Nieuwenhuis (2013), an interview is a conversation between two persons where the interviewer asks the interviewee questions as a way of collecting information and to learn more about the ideas, beliefs, views, opinions and behaviours of the interviewee.

4.3.3.1 Focus group discussions

It was my intention to make use of focus group discussions for interviewing the learners at the abovementioned schools. I believed that it was a convenient, cost-effective way to gather qualitative data as the participants discussed their perceptions, experiences and views in a relaxed setting (Biggam, 2008). As it is not always easy to gather data in this fashion, I planned to implement the following preparations to make sure the information gathered would be useful for research: I planned to design the topics that were to be discussed beforehand and decided in advance how the data would be collected, while paying attention to the flow of the discussion, being on the lookout for when to stop when the discussion moved in an unproductive direction and making every effort to minimise preconception.

It is essential to keep in mind that I cannot be seen as a neutral observer, as I was the one asking questions, directing the flow of the discussion, interjecting a debate or when the discussion was moving in an unproductive direction and probing the learners in the group, revealing unintentional approval or disapproval. It is, therefore, more precise to describe my role as that of a participating spectator, as my mere presence had an impact on the group dynamics (Biggam, 2008). It is, therefore, this drive of focus group

discussions that make them ideally suited for exploratory, in-depth qualitative studies such as this case study (Savin-Baden & Major, 2013).

Annexure A comprises the exemplar of questions to be used for the focus group discussions, with Annexure B containing the actual focus group discussion transcripts of the learners.

4.3.3.2 Semi-structured interviews

I made use of interviews to facilitate an in-depth discussion of relevant mobile learning matters. A framework was set around the interviews to focus on specific issues with different interviewees, by using semi-structured interviews with open-ended questions that were set in advance (Biggam, 2008). This would allow the interviewer to take a look at new concerns and follow diverse, related leads based on the responses and willingness of the interviewees. The interviews (and focus group discussions) were recorded to guarantee that the analysis of data would be based upon accurate information (the transcript) and to allow the interviewer to focus on the interview.

By interviewing the selected stakeholders, it was anticipated that an enhanced understanding of mobile learning would surface – one that would provide better and more accurate information regarding mobile learning usage and compatibility. This would, in turn, assist in the development of the appropriate software for those faced with implementing mobile learning in the accounting classroom.

This research was aimed at attaining an in-depth and qualitative understanding of the usefulness of mobile learning in the accounting classroom. The review of relevant literature showed that mobile learning is an area of growing interest in the South African school system, and I believe that the results of this study will be of importance to those who are in the process of implementing mobile learning in their schools and classrooms.

With semi-structured interviews, having a planned structure containing key pointer questions would help to generate a fluid, dynamic interview by making use of open-ended questions, which would encourage meaningful responses (Biggam, 2008). This

would give me (the interviewer) the chance to confront fundamental issues, while at the same time allowing the interview process to take unpredicted avenues. The advantage of interviewing was that I would be able to delve into interviewee responses and get to the core of any issues that the interviewees might mention (Savin-Baden & Major, 2013).

With the permission of the participants, the conversations were recorded for data analysis later.

Annexure C contains the collection of questions for the semi-structured interviews. Annexure D comprises the transcripts of the semi-structured interviews with the teachers.

By using both focus group discussions and interviews as data-collecting methods, I was trying to triangulate the results of the study to provide a well-rounded picture of what is currently happening in the accounting classrooms of South Africa.

4.4 FRAMEWORK FOR DATA ANALYSIS

After all the data had been collected, I moved on to describe, analyse and interpret the data to produce useful information to the research community on the use of these technologies in the accounting classroom.

4.4.1 Data description

Firstly, I described the data collected by stating upfront what was found during the interviews and focus group discussions. Part of the description process involved transcribing the recorded interviews and focus group discussions.

I had given exhaustive consideration to the question of how to record the focus group discussions and interviews. At first, I considered just taking notes while the participants talked, but the negative aspects of this option, such as me not being able to give the participants my full attention and leaving space for making errors by omitting crucial

comments and hints, made her decide to search for a better alternative. This led to the idea of recording the interviews and focus group discussions by either video or voice, as the situation and infrastructure would allow. It is true that this method would be very time-consuming, but taking the bigger picture into account, the resulting data that would be gathered would be the useful, accurate, qualitative data that I was seeking. Other advantages to using this type of data-gathering technique involved giving me the freedom to focus on the interview flow and process and, at the same time, to capture all that the participant said, which would later make data analysis easier. As I intended to structure every interview under predetermined themes, the transcriptions of the interviews and focus group discussions were categorised under these identified topics and sub-topics. This would contribute to efficient data analysis later on.

4.4.2 Data analysis

With regard to the analysis, a two-phased approach is: first, the focus group discussion findings are described and analysed; secondly, the teachers' interview findings are described and analysed. In the second phase of the analysis, the learners' findings are compared against the teachers' findings and the relevant literature review findings are interpreted, compared to and contrasted against the case study findings (this is done to avoid repetition of comments concerning the findings in the literature review).

Qualitative data analysis is aimed at examining meaningful and symbolic content of gathered data, which is best achieved through an inductive process where the main aim is to let the research findings arise from important themes innate in the raw data, which would not have been possible with a more structured theoretical orientation (Nieuwenhuis, 2013). Alternatively, as Savin-Baden and Major (2013, p. 435) put it, qualitative data analysis is "an on-going process that involves breaking data into meaningful parts for the purpose of examining them". These inter-related parts or themes will replicate the overall aim and objectives of the research and reaffirm the main topics arising from the literature review (Biggam, 2008).

A key part of the research was to analyse the case study data through a thematic analysis, where the data from the interviews and focus group discussions were broken down (or coded) into easily identifiable themed subsets and then compared and contrasted to determine whether these results supported or contradicted one another. The case study results are reported with respect to the conclusions in the literature review.

As the focus and the aim of the research were to find depth, the teachers were asked five general questions (personal and on mobile learning), three questions on mobile learning and accounting, six questions on perceptions and experiences, three questions on ideas and suggestions and three questions on their thoughts about the learners. The questions for the learners were the same as the questions mentioned above, with the last question being on their thoughts about their teachers who are using mobile learning.

According to Lincoln and Guba (1989), it is quite challenging to decide which information to include and, consequently, what to exclude in a study, as the choice is not merely that of the researcher, but rather a joint construction to all the concerned participants through the result of negotiation. According to Lincoln and Guba (1989), the process sets a context for the report and legitimises the context in which the interpretations are made. When interpretations are negotiated and settled, data and incidents are then chosen to support these interpretations. Features of the context that call forth behaviours, activities and value should be presented to ground them in a particular context. It is imperative that items of information cannot be left out of the report just for the sake of it. The negotiation process ought to require the confrontation of all data gathered and to make some reasonable sense out of the data. If some data are not to be included in the construction that emerges, there ought to be good reasons for the exclusion thereof. The choices of neither the researcher nor the participants can be subjectively made.

4.5 ETHICAL CONSIDERATIONS

All research must be done ethically. According to Howitt and Cramer (2000), ethical research is based on the following three basic principles:

- Consent must be obtained from the participants in the research.
- The participants must be protected from psychological or physical harm.
- The researcher must be in consultation with colleagues and more experienced researchers throughout the research process to make sure the research stays ethical.

This view is shared by Lincoln and Guba (1989), who add that the privacy and confidentiality of research participants must be protected and the research participants should not be deceived. Howitt and Cramer (2000) remind us that ethics are not legal matters, but researchers should not do anything illegal or encourage others to do anything illegal during the research process.

It is the responsibility of a researcher to take into account the effects of the research on the participants and to act in such a manner as to preserve their dignity as mortal beings (Cohen, Manion & Morrison, 2007). As such, it was my intention to conduct the research ethically.

Participation was voluntary, and therefore the participants were asked to complete consent forms indicating their willingness to participate in the study (cf. Howitt & Cramer, 2000). Any information that might be seen as an invasion of the participants' privacy was not disclosed. It is important to note here that as the research followed a naturalistic approach, where the research was conducted through face-to-face interaction with participants, anonymity, confidentiality and privacy was harder to achieve. Therefore, as proposed by Lincoln and Guba (1989), I intended to establish a trust relationship with the participants, which negotiates a relationship of forthrightness, clear and fair explanations of the research and full disclosure of the risks that the participants would be taking, while presenting myself as authentically as possible.

Permission was sought from the different educational institutions before the research commenced. Permission was also requested for the recording of the interviews and the focus group discussions.

4.6 POSSIBLE CONTRIBUTIONS OF THE STUDY

The study will contribute to the knowledge of the discipline regarding mobile learning in several significant ways: firstly, by providing a critical review on matters relevant to the implementation of mobile learning with a specific focus on a developing country; secondly, by critically examining the issues pertinent to the implementation of mobile learning in a subject such as accounting; thirdly, by obtaining the views and perceptions of teachers and learners on existing practices regarding mobile learning in the accounting classroom to form a well-rounded picture, allowing for a meaningful comparison between practice and theory that will contribute towards informed decision making by those implementing mobile technology in high schools in general, but more specifically in accounting; and fourthly, to draw attention to some crucial issues that arose from the study.

4.7 LIMITATIONS AND POTENTIAL CHALLENGES OF THE STUDY

As with all research projects, there are limitations to this study. Although the results of this study cannot be generalised to the broader research community, the results do provide a rich and detailed picture of the experiences and perceptions of individuals working with mobile devices in the accounting classroom. To clarify, the findings of this research cannot even be generalised to represent accounting as a school subject. While main stakeholders, such as accounting teachers and their learners, participated in the focus group discussions and interviews, the study of different methods or programmes, using mobile technology in the classroom, may lead to different findings.

The question of the validity of case study research, because generalisations cannot typically be made, has already been discussed and addressed. I was more interested in the depth of the study than in aiming for generalisability.

Another concern is the question of reliability when using a case study strategy, particularly where interviews are employed as the primary method of data collection. Firstly, there is the issue of studying only one aspect of the situation under study, where the results are not open to immediate generalisation. The next issue that arises is the question of depending on a data collection technique – interviews and focus group discussions – that relies on personal opinion and are therefore open to favouritism and inaccuracies.

Considering reliability in case study research, the aim is measurements that are consistent and repeatable, ensuring that if someone wants to copy the process, he or she will be able to measure the same thing, with the same subjects in similar conditions (Savin-Baden & Major, 2013).

Reliability in the research is achieved through:

- providing reasons why a case study strategy would be appropriate;
- providing reasons why the chosen data collection methods were used;
- giving an explanation of why each school was selected;
- providing an outline of the stakeholders that will be interviewed or take part in the discussions groups;
- providing the themes arising from the research;
- giving the questions used in interviews and discussion groups; and
- explaining the methods used to analyse the data.

Furthermore, complete transcripts are provided. By using a research strategy and data-gathering techniques that are viewed as being highly structured, transparent and detailed by the general research community, reliability is achieved. While the primary source of data collection was interviews, which can be problematic considering the probability of bias and poor memory recall of the interviewees, it can be noted that I did not only depend on the results from one or two participants but on multiple sources. Firstly, a few accounting teachers who were using mobile technology in the classroom were interviewed. By doing this, multiple views on the same subject were collected, guaranteeing that I relied on more than one or two participants for vital information and

data. Secondly, learners who were using mobile technology in accounting were invited to participate in a focus group discussion, which further removed the reliance on opinions that might be factually incorrect or one-sided and gave a broader picture of the subject under study. The interview questions were semi-structured under different themes to allow the participants to express their views without being too restricted, but stay on the topic.

Although people make mistakes and it is possible that they could make themselves guilty of expressing occasional bias or making honest errors in recollection, I believe that most of the participants made an effort to answer the interview questions competently and professionally. It is essential to keep in mind that one can never assume that people will report their actions and thoughts accurately (Howitt & Cramer, 2000). However, by employing the abovementioned procedures, I intended to minimise any bias or misinformation. All identifying comments in the interviews and focus group discussion transcriptions were edited and removed where practical. This ensured that the participants would have fewer concerns regarding their transcriptions and allowed them to speak more freely.

Another issue relating to objectivity is that it might prove difficult for me to establish a trust relationship with the teachers and learners as research subjects in the limited timeframe that the research was conducted (cf. Lincoln & Guba, 1989). I was aware of this danger and attempted, as Lincoln and Guba (1989) advise, to minimise this danger by clarifying her role as researcher and informing the participants of the reason for the study, what would be done with the transcriptions, how the collected data would be used and how the teachers and learners could assist in the research. The fact that I was also an accounting teacher and thus familiar with the subject content might go some way to gain the respect and trust of the teachers and learners.

Another issue that had a significant impact on the study was the time limit for carrying out the actual research. I had to take into account the amount of time I had before the submission date of the dissertation in which the necessary data would be collected, analysed and interpreted in order to be able to make appropriate recommendations.

Due to time delays at the university, the Department of Education and the examination timetables, while arranging the interviews, I found it difficult to organise the participants to make time to take part in the interviews and focus group discussions, as they were unavailable or occupied with their own responsibilities. As I had time limitations of my own to manage with regard to completing the dissertation on time, this posed a significant problem for me. Consequently, calculated decisions had to be made as to what was pertinent, as there was no time to research every aspect of the phenomenon. It may be possible that some relevant issues might have been overlooked because there was no time to appropriately evaluate the data collected while they were being gathered.

Furthermore, the research focused on mobile technologies that were already being used in the accounting classroom. I had difficulty finding schools where mobile technologies were functioning operationally in the classroom. This was further inflated by finding schools in the area that were easily accessible with the constraints of time and distance already being imposed on the study. This led me to choose a working strategy with the limited resources at my disposal.

4.8 DELIMITATIONS OF THE STUDY

It is crucial to carefully set boundaries for a study in order for the findings not to be overly judged. The delimitations of the study were as follows:

- The study focused on the use of mobile learning in the accounting classroom.
- The study was limited to schools that used the ITSI system.
- The case study only consisted of one public school in a metropolitan city, one public school in a rural area and one private school in a metropolitan city (results may vary when a more representative number of schools is included in the study).
- Only three schools in the Free State Province took part in the study.

4.9 CONCLUSION

This chapter dealt with the design and methodology used in the study. The rationale for deciding to employ a qualitative research approach was addressed, including the kind of research strategies used and a description of these strategies. The data collection techniques, reliability, validity and the possible contribution of the research were explored, followed by discussions on the ethical considerations, limitations and delimitations of the study.

In the next chapter, the presentation, analysis and discussion of the information gathered through semi-structured interviews and focus group discussions will be addressed.

CHAPTER 5

CASE STUDY RESULTS – DESCRIPTION AND ANALYSIS

5.1 INTRODUCTION

In the previous chapter, the design and methodology used in the study were discussed. This chapter reveals the results of the case study, as specified in Chapter 4. In this chapter only the results of the case study will be described and analysed, while the final findings, conclusions and recommendations will follow in Chapter 6. The research concentrates on two groups of stakeholders working with mobile technology in accounting: accounting teachers as implementers of the technology in class, and learners of accounting as receivers of instruction on mobile devices. This chapter will therefore try to address the third research objective which is to explore the perceptions and experiences of a few selected teachers and learners regarding mobile learning in accounting as a school subject.

I proceeded with the case study in a highly structured way. A description of the learners' focus group discussions and of the teachers' semi-structured interviews is provided, analysed theme by theme. The gathering of actual data for this research was based on a case study to allow for an analysis of real issues in a specific context. Before a synthesis of the case study results is done, an analysis of the data will be made. The transcripts of the focus group discussions with the learners can be found in Annexure B, and the transcripts of the interviews with the teachers are in Annexure D.

5.2 DATA DESCRIPTION AND ANALYSIS

Learners at three schools – one private school, one public school and one smart school in a rural area – were invited to participate in focus group discussions concerning their perceptions on and experiences of mobile learning in the classroom. The focus group discussions gave a dynamic and enthusiastic dimension to the study that would not have been possible if traditional interviews with the learners were carried out. At the same time, some of the teachers of these accounting learners were selected and asked

to participate in semi-structured interviews to see what their experiences of and thoughts on the current use of mobile technology in the classroom were.

In this section, the findings of the focus group discussions with the learners and the semi-structured interviews with the teachers are described. The descriptions are followed by a section where the answers from the focus group discussions with the learners and the semi-structured interviews with the teachers are analysed. The analysis was done through a thematic procedure, where the data from the interviews and focus group discussions were broken down (or coded) into easily identifiable and related themed subsets and then compared and contrasted to determine whether these results supported or contradicted one another. This chapter also includes my observations and reflections on the topics addressed.

5.2.1 Contextualisation of mobile learning

5.2.1.1 Brand preference

It is important to note that as an ice breaker question learners and teachers were asked what mobile devices they owned. This did not form part of the study and was only included to put participants at ease and to get the conversation going. Therefore the responses as well as two figures: Figure 5.1 - Mobile device preference and Figure 5.2 - Number of mobile devices, is only included as a matter of interest.

Learners' responses

To start with, the learners were asked: **"What mobile devices do you own?"** Almost everyone in the groups said that they owned two devices – a phone and a tablet – excluding the devices in their households. They also specified the different brands they preferred. In the groups, of the 18 learners that took part in the study, collectively, 42% of the phones these learners owned were Samsung phones, 53% were Apple iPhones, and 5% were other brands. Of the tablets, 63% were Samsung phones, 16% Apple iPads, and 21% other brands. The information is shown in Figure 5.1.

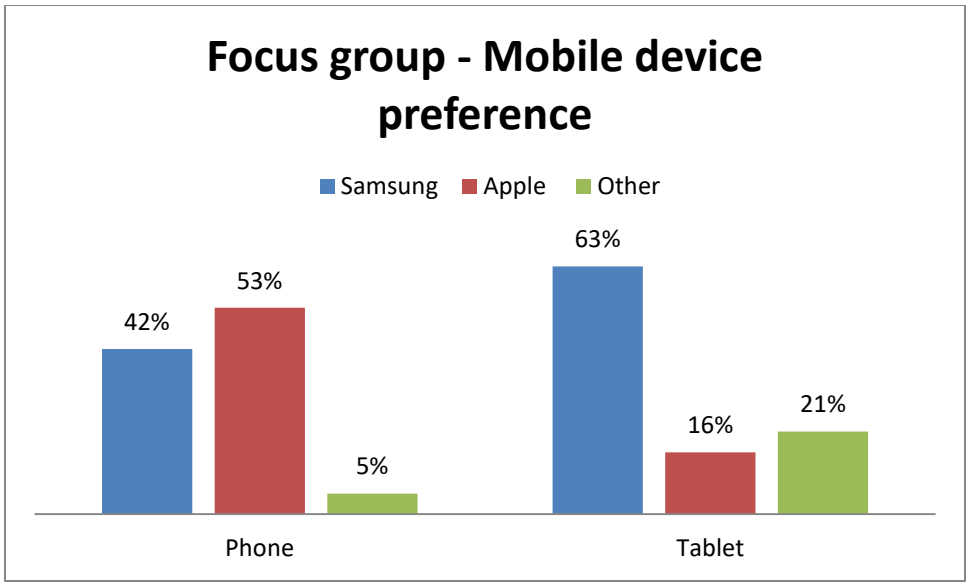

Figure 5.1: Focus group – mobile device preference

Although most of the learners said that they had laptop computers in their households, only two of the learners said they owned laptops.

The learners indicated that they were allowed to use different makes of tablets in school. The only specification was that the tablet should have an Android version 5 or higher operating system.

Teachers' responses

When the teachers were asked the same question, **"What mobile devices do you own?"**, they did not specify the brands they owned as the learners did. What was interesting, was the number of mobile devices used by the teachers. Six teachers were interviewed, and between these six teachers, they had seven smartphones, six tablets, six laptops and two two-in-one devices, which amounted to a total of 21 mobile devices. The information is shown in Figure 5.2.

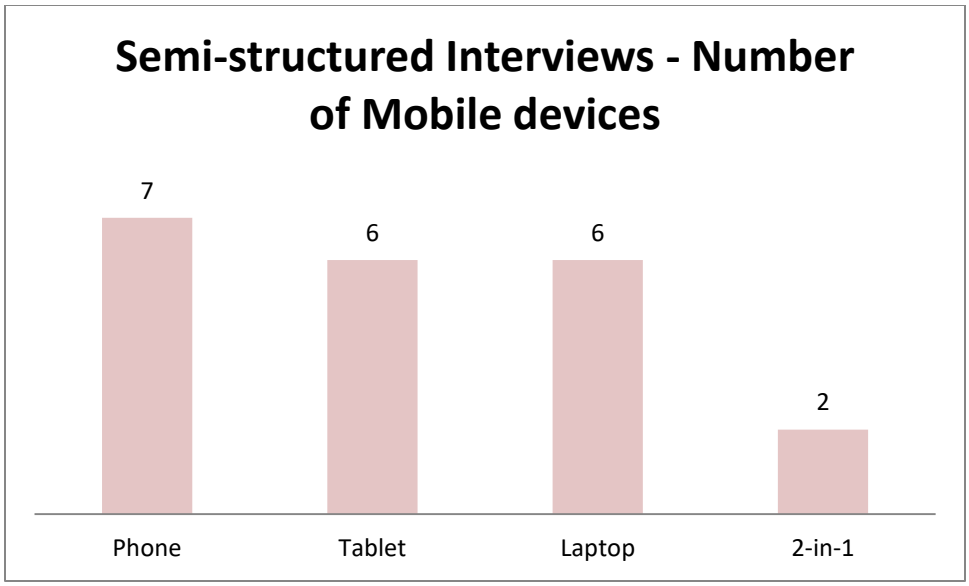

Figure 5.2: Semi-structured interviews – number of mobile devices

These devices were the devices that the teachers owned, and excluded additional devices in their households.

Analysis of brand preference

While the learners were very keen to state what brand of mobile device they owned, the teachers did not bother to mention the brand, showing how big a role brands play in teenagers' lives today.

The average number of mobile devices per learner was just above two; the average of mobile devices per teacher was 3,5.

I observed that the number of mobile devices is not an indication of how technologically advanced these teachers are, but rather that for the teachers' planning, class preparation and administration, they prefer using a laptop to a tablet, and their smartphones are used for organising and socialising. The learners, on the other hand, use their tablets for receiving information from the teachers, but still have to use

handbooks and textbooks for their schoolwork. Where tablets are seen as necessary for their schoolwork, laptops are not and therefore played a minor role.

As seen in Figure 5.1, it was observed that the learners in these groups preferred using an iPhone for their socialisation and correspondence, but for their schoolwork, most of the learners used a Samsung tablet. This can be because the learners were told that the specifications of their tablets should be Android version 5 or higher. As this was only an informal introduction question, not too much time was spent on this, and the learners were not asked if they received discounts from particular suppliers when they bought their tablets for school purposes or why they had chosen a Samsung tablet for schoolwork.

5.2.1.2 The term "mobile learning"

Learners' responses

Starting with mobile learning, the learners were asked: **"What does the term 'mobile learning' mean to you?"**

Most of the learners said that it meant using one's mobile phone to learn, work and study, while others responded:

> *I think, like, when your book is on your tablet …*
>
> *Let's say when you google, you also learn then when you, uhm, when you learn through technology ...*
>
> *Mobile is like when you can take it with you. So it means that you can … you have like, uhm, internet access where you are and you can actually, like, yes uhm, you can learn 24/7.*

When prompted to state whether mobile learning is only used to learn their schoolwork, the learners replied that mobile learning was not just used for schoolwork, but could be used informally to further their general knowledge as well.

Teachers' responses

When the teachers were asked **what the term "mobile learning" meant to them**, the responses to this question showed that some teachers only saw it as a method of teaching learners –

> *Uhm, that means the use of mobile devices to teach learners.*
>
> *To me, that means it is a form of communication to teach learners or you can upload information to them or to help them. It is an aid in the form of a smartphone or any technological device.*

One teacher gave the impression that she was confused by the question –

> *Uhm … The use of technology? Yes. I don't know ... anything that's not in the form of a physical book you can page through. That is what I think …*

Some teachers indicated that they saw mobile learning wider than just an alternative way of teaching –

> *Learning that can take place anywhere by using a mobile device like a cell phone or tablet.*
>
> *Mobile learning is where you utilise technology for teaching and learning purposes.*
>
> *The process of using technological devices to conduct lessons and to allow learners to explore other ways of acquiring information using computers and tablets.*

Analysis of the term "mobile learning"

It would seem that many learners and teachers saw mobile learning only as a substitute for the traditional way of learning, giving comments such as the following:

> *… using your mobile phone to learn, work and study …*
>
> *… when your book is on your tablet …*
>
> *… the use of mobile devices to teach learners …*
>
> *It is an aid in the form of a smartphone or any technological device.*

The use of technology?

… anything that's not in the form of a physical book you can page through.

Heartening, though, were the following comments:

… when you google, you also learn then ... you learn through technology.

Mobile is like when you can take it with you ... you can learn 24/7.

… mobile learning is not just used for schoolwork, but can be used informally to further their general knowledge.

Learning that can take place anywhere by using a mobile device like a cell phone or tablet.

Mobile learning is where you utilise technology for teaching and learning purposes.

The process of using technological devices to conduct lessons and to allow learners to explore other ways of acquiring information using computers and tablets.

These comments show that there are some learners and teachers who realise that using technology and, in this case, mobile technology, means that it is possible to learn anytime, anywhere, not just inside the classroom, and that it is not just for formal academic purposes, but for far more, such as specific interests. It also shows that there are learners and teachers who realise that it is possible for mobile technology to do more with learning, which was previously not possible with traditional teaching methods and that it is far more than just an alternative way of delivering the set curriculum.

5.2.1.3 Applications and time using mobile technology to learn

Learners' responses

The learners' responses to the question **"How long have you been using mobile technology to learn – formally and informally?"** showed that these groups of

learners had not been using it formally for long, as it was phased in in 2015 and most of the learners were in Grade 8 or 9 at that time. Though when it comes to using mobile technology informally, it is another picture, as the following comments show:

> *Like, formally for school, using the tablets in Grade 9 and then I'll say for informal, since like Grade 5 – Grade 5 or Grade 4.*
>
> *For schoolwork since Grade 8, and for general knowledge since Grade 3.*

Asking these learners what applications or websites they used most, they stated that they used the compulsory ITSI miEbooks application as well as PDF readers, Word, Powerpoint, eReaders, Calculator, applications for making notes, a dictionary, a diary and Google. One learner stated:

> *Well, uhm, I don't use any particular websites. I just go onto Google, and I type what I want, and I just go into what websites then pop up and see what they say. It depends on what we are researching. For example, if I am doing a business research task, then I just go onto newspaper websites or reports or stuff like that.*

Teachers' responses

To the teachers, this question was altered to read as follows: **"How long have you been using mobile learning to teach and what system, applications or websites do you use?"**

Most of the teachers stated that they had been using technology for as long as they had been teaching, which was between five and ten years. The youngest teacher who was interviewed had been using it for only two years. These teachers mostly used laptops and projectors in their classrooms to teach and used the tablets as handbooks or to push content to the learners' devices.

One teacher stated that she was not used to teaching with technology due to the experience at the previous school where she had worked –

> *Uhm. Well, at my first school where I used to teach, I had a personal laptop, and the school principal told me I'm not allowed to use technology in the classroom. Like I had my own projector, and I made*

> *PowerPoints and so because when I did my PGCE, they showed us how to present a class and how to make it interesting, with PowerPoint. Yes, for example, to insert videos into a PowerPoint. That principal told me I'm not allowed to use that. So, now I don't know, there are different reasons, maybe the other teachers did not have the privilege, for example at that school, I wasn't allowed to do my marks electronically, I had to write it.*

To the question of what resources, such as applications and software, they used, a multitude of answers were given –

> *On my laptop I use Microsoft Word, Microsoft Excel and, also Adobe for PDFs, uhm, to show the memorandums and so forth through the projector on the board and then uhm, it's easy to set up and project.*

> *Before the tablets, I used WhatsApp messages, a WhatsApp group to give information to the learners. Uhm, I also classify an overhead projector connected to a laptop with internet also as mobile learning, because this way it is possible to show the whole class stuff, and videos regarding a specific lesson. From 2014, we have been using tablets at our school. Uhm, instead of the textbook we use the tablet and together with that we make use of the ITSI program, but there is a variety of other websites one can visit, which is really nice, and I think, uhm, for me personally it is to communicate with the learners because sometimes you have to give them a lot of information; in a WhatsApp group, it is very convenient and nice.*

> *I use many websites that are available on Google and Mindset learning on YouTube. Have used the Accountants2be app – they have nicely set-out resources with videos to help learners to understand the work better.*

> *I use Kahoot – to set online tests and make lessons interesting for learners. And I also make use of ITSI – to upload subject information into the learners' gadgets.*

Analysis of applications and time using mobile technology to learn

When the learners were asked how long they have been using mobile learning, it became apparent that this was fairly new to them as they had only been using it in the classroom for approximately two to three years. That being said, although this was new to them in their formal learning, using technology was not, as they had been using it informally for about seven to nine years, showing that they were quite familiar with

technology, even though it was not for school purposes. It should also be kept in mind that as these learners were between the age of 13 and 16 years, they were the generation that had grown up with technology.

Except for the younger teacher who had only two years' teaching experience, it seemed that even though the use of tablets was new in the class setting, the teachers have been using technology as part of their planning, administration and presentation as long as they have been teaching. This can mean that these teachers did not have a problem with technology and were reaping the benefits of teaching with ICT, or that all of the teachers interviewed were technologically literate. However, it is my opinion that this is not an indication of all teachers in South Africa.

The learners all mentioned standard applications and software that were used. However, I found it worrying that the one learner stated that he did not use any particular websites and just used Google, typed what he was looking for and saw whatever information was given, without looking at the authenticity of the information that was given. He did, however, indicate that what he used depended on what they were researching; for example when he was doing a business research task, he would, for example, look at newspaper websites or reports. I feel that learners need to be informed that not all information on the internet could be seen as factual and they should be taught how to search for authentic resources and information.

Compared to the answers on the resources that the teachers mostly used, the teachers also mentioned standard applications and software available for teaching. One teacher stated that she saw the overhead projector connected to a laptop as mobile technology too, because that way she could show the whole class information and videos with respect to specific lessons. This would seem to show to me that there are still people who do not grasp what mobile learning actually means.

I found it troublesome that one teacher shared her experience of being told not to make use of any technology in her classroom due to the school not having the technology available for the other teachers and this teacher, because of that, not being used to

teach with technology. As technology has made administration tasks so much easier for the teacher, it seems as if telling a teacher not to use it is counterproductive. It also asks the question why, in today's digital age, there are still some teachers who are not equipped with the necessary technology to help them be as effective educators as possible.

5.2.2 Mobile learning and accounting

5.2.2.1 Applications and other resources for accounting

Learners' responses

To test the learners' knowledge of applications and other resources available in the subject accounting, they were asked if **they had heard or used any of the following: Vodacom's eSchool** (which is not just for accounting but all their subjects), **Sage Pastel's School Program, Like2Understand** or **Accountants2Be**. The learners' responses showed that none of the learners in any of the groups interviewed knew or had heard of Like2Understand or Accountants2Be, while most of them knew or made use of the Vodacom's eSchool application –

> *Yes, I use it. Uhm. It is basically, it is a male voice that speaks to you and then, uhm, he presents a lesson to you. Now, it is free, and it doesn't cost any data to watch videos. Then there is one video where he gives you the lesson, and the next video gives you homework questions or a small exercise, and the other one gives you the answers, and he also has a typed-out one that you can look at after the video.*
>
> *That one has all the subjects that I take and lessons and typed notes and also, uhm, questions in video format and it takes data to watch the videos. Yes, and uhm, it just helps to hear the stuff for repetition.*

Only two learners had heard of Pastel, but it became apparent, when prompted to explain more, that they also did not know about the school program that Pastel had for learners, as one learner answered:

> *Uhm, Pastel is uhm, it is like companies and so use it to do their financial books.*

When asked if there were any other applications or websites that the learners used for accounting work, other than their textbooks, that had not been named, they replied that they used the SAICA application. However, it became clear that this application was for career guidance only, showing learners how to become a chartered accountant and not to help them learn accounting as a subject. In one group, more than half of the learners found this helpful, as they intended to become chartered accountants after finishing school.

Teachers' responses

The teachers' responses to this question indicated that they had more knowledge of the resources available, but the resources were not actively being used. The best-known resources were still Vodacom's eSchool and Pastel's School Program. One teacher was familiar with the Accontants2Be website and used its resources, while the other teachers said they had not heard of any of these resources. Only one teacher replied:

> *Uhm, I do not know those programs. I would, uhm, actually like to know more about them.*

Analysis of applications and other resources for accounting

As stated above, the learners were still ignorant of all the resources that were available to them in the subject accounting. Although two of the learners have heard of Pastel, it was not the school program that Pastel has developed especially for learners. In my opinion, the reason for this is that although I believe Pastel will help learners immensely in effectively doing financial transactions, this program is seen as an add-on to the curriculum and not as part of it. With an already overfull curriculum, many teachers do not have the time to incorporate this and only focuses on the given curriculum. The only other application that the learners used was the application from SAICA, but as already stated, this application is for career guidance only and not to help learners learn accounting as a subject.

While the teachers' responses showed more knowledge when they were asked if they were aware of the electronic resources available for teaching, especially in accounting,

it was evident again that these resources were under-utilised. The best-known resources were Vodacom's eSchool and Pastel's School Program. Interestingly, only one teacher was familiar with the Accontants2Be website and used its resources, showing that there are teachers who know and make use of these resources. With one teacher who did not know about the accounting resources available, but who was interested in finding out more about these, it is highlighted that there are teachers who want to know more and would like to have additional resources available to them to enhance their teaching.

Sadly, in 2019 – after the interviews and focus groups had been concluded – I tried to access the resources, and it was found that Accountants2Be had been closed down, due to a lack of interest.

5.2.2.2 Typical accounting lesson

Learners' responses

When it came to the question **"What does a typical accounting lesson on an average day looks like?"**, some differences were observed between the groups' responses as to how much the tablets were used in class. While one group would make use of the tablet for almost the entire period for marking homework and receiving information from the teacher, one group only used it to receive the memorandum for the homework done. The third group that indicated that they used the tablet regularly, confessed that they did not use the tablets for accounting, as they did not enjoy using it in the subject –

> *We don't like using our tablets in accounting … because … it … doesn't make sense.*
>
> *Because it is difficult to use it in accounting. Because with accounting, it is working out, its recording and everything.*
>
> *And our book is your answer book and question book. So we don't really need our tablets and it [the tablet] is only a question book, where our hard copies are both a question and answer book.*

The learners indicated that their teachers made use of an interactive whiteboard, projector, laptop, computer and tablet in their classes.

From this conversation, it flowed that I asked one group of learners if they had any way of communicating with the teacher through the school application software. The answer was “no” – if they needed to connect with her, they used a group chat on WhatsApp. This application was on their phones and not their tablets. When they were asked if they used their tablets for anything else in accounting than for a textbook, they replied that when they had to do a project or do research, they would use Google with the school’s Wi-Fi and do their research. This was the case with a project where they had to audit Spar, in which they received a real-life application using technology.

Teachers’ responses

When the question **“What does a typical accounting lesson on an average day looks like?”** was asked to the teachers, they gave a more definite and better-structured answer than the learners. According to them, mostly the same routine was followed in most classes: after the learners were seated and they had taken out their books, homework was marked, corrections were done, questions were asked, new work was explained and new homework was given. Usually, this incorporated the use of the interactive whiteboard and data projector in class, while homework and corrections were sent to the learners’ devices.

Two deviations worth noting were observed: Firstly, videos were incorporated in some classes, which strengthened the learners’ knowledge of new topics. As one teacher said,

> *Learners are usually shown a video about the new topic that we will start with. This was to get them interested or show different companies, for example, shares … where the shares are traded before actually starting with the classwork activities. It is very rare that they will be using their tablets in class because all the work is projected on the board via the data projector. They usually use their tablets at home when I have pushed content to their tablets ...*

The other interesting comment concerning the use of tablets and something that was not possible using traditional methods of class work, was the following:

> *What is nice about technology, is that learners are now able to take photos of your summaries; they don't have to write everything down. Now they can print the summaries for themselves.*

The teachers' responses to the question indicated that, in one group, as the learners' textbooks were on the tablets, the devices were used for most of the contact time with the learners in accounting. However, some teachers indicated that some learners did not enjoy working with the tablets and preferred using hard copies instead –

> *Well, learners have their tablets with their textbooks on. Some learners have a hard copy of the textbook; others have the textbook on their tablet. So, when they need to do an activity, they need to use their tablets to get access to the textbook. Uhm, we also upload notes they can use and then, of course, I make use of my laptop and an overhead projector to show the answers to the learners.*

In one school, the learners used a hard-copy textbook that was also their answering book, which resulted in the learners not using their tablets in accounting that often –

> *Very little during accounting because they have their hard-copy books to actually do the work. The only time they would use it, is if they want to go over the extra resources that are pushed to them.*

Analysis of typical accounting lesson

It would seem that the typical accounting classroom still looks very much the same in routine as it did before, with the added enhancement of technology, such as an interactive whiteboard, a projector, a laptop, a computer and a tablet.

When the responses of the learners are compared to those of the teachers, both parties felt that the learners did not like working on the tablet when it came to accounting, as it was difficult to follow. Instead, they would work on paper and only use the tablet as a handbook, but rather for receiving homework, additional resources, memorandums and other information from the teacher. While some teachers indicated that as the learners' textbooks were on the tablets, the devices were used most of the contact time with the

learners in accounting, other teachers mentioned that some learners did not enjoy working with the tablets and preferred using hard copies instead.

Practices that were not previously available without technology include the use of WhatsApp for communication with the teacher (although it should be mentioned that this was not done on the tablet but on the smartphones, which means that learners have two devices on which they work and not just one). However, for mobile learning to effectively be "learning that takes place anytime, anywhere", the device should be with the learner at all times, making the administration of two devices troublesome. I wonders if this has something to do with the learners' need to have more privacy and their perceiving the smartphone as the more "private" device and the tablet as their "school" or formal learning device. Other practices include the learners' using their mobile devices to go onto Google with the school's Wi-Fi and gaining real-life application when they have to do a project or do research. Videos were incorporated in some classes, which strengthen the learners' knowledge of new topics, but usually these were projected on the board via the data projector, and the information was pushed to their tablets to review at home. The learners could take photos and print their summaries and did not have to write everything down. The teachers felt that this saved a lot of valuable classwork time.

Although these are all excellent ways in which tablets can be used for mobile learning, I feel that the enhancement of the subject is still not effectively taking place.

5.2.3 Perceptions and experiences

5.2.3.1 Using mobile technology academically

Learners' responses

It is well known that Generation Z has grown up with technology and mobile devices and that they know how to use these devices in their everyday lives. But what about using mobile devices for academic purposes? The learners were asked **whether it was different or harder for them to use these devices to learn,** and the answers were

surprising. Most of the learners felt that the devices were difficult to use for formal learning.

Firstly, on the technical side, some learners struggled with the tablets. One learner commented:

> *Yes, the practical part. Especially with accounting, because let's say you want to make notes and do equations, and so, then you must first click on the tablet and select "free hand" or "add a note"; then it is so unpractical because you must first type and you cannot just write it down quickly. So, it takes time. By the time you finished typing the first part, the teacher has said three other things. So, yes …*

Two other learners responded:

> *When we work on pages, like if Ma'am said "page 35", it takes much longer to get there than working in a textbook …*
>
> *And, like sometimes the handbook tends to freeze, like when, for example, when you scrolled a lot, then it tends to freeze, and when you like, for example, want to write a note… then you cannot see very clearly what you wrote … you don't write exactly like you would have written on a page.*

More learners agreed that they did not like the note-making function on the tablet or to highlight the work on the tablet.

Secondly, the learners found the physical act of learning and making summaries with the tablets difficult –

> *I cannot concentrate with the tablet when I study, because the light … my eyes are weak. So then, as you go, and the words scroll too quick for me, so I study from the textbook, so …*

Another learner interrupted and said:

> *And it is difficult to like recap, because let's say you quickly want to go through something before the test, then you first have to scroll …*

The first learner agreed with her, saying:

> *Yes, it takes you almost 20 minutes to get to the page before you can …*

The second learner continued:

> *And I think, just the idea of a textbook that you can hold in your hands, and you can page through like … like the technology book that you can literally page through because it is a PDF file … it is much better for some learners … than the scrolling through; it doesn't hurt your eyes.*

Another concern was distraction –

> *You get distracted. Like, you can download games and search the internet and stuff like that.*

The learners confessed that it was possible to be in class and play games, although the teacher was able to see on the system which learners were busy with something else during the lesson.

An added frustration was the safekeeping of the tablets –

> *For instance, if your tablet breaks, or your screen cracks and then you have to take it for repairs, and you fall behind with your schoolwork and all that.*

Stealing was also a problem, as the tablets were the learners' own property and they had to make sure the devices were safe. One learner said that she had lost tablets twice in the past three years.

Interestingly, one group of learners did not find battery life a problem. This was because the learners showed the responsibility of charging their tablets the night before, and the school had made provision for such a problem by supplying plugs in the classes, which allowed learners – with the permission of the teacher – to charge their tablets.

Teachers' responses

While the learners were asked whether it was different or harder for them to use these devices to learn, the **teachers were asked if it was different or harder to teach using mobile devices**.

While most of the teachers responded that it was difficult at the beginning to start using the devices, they could see the benefits of using it. They still experienced obstacles such as technical issues, for example when the Wi-Fi was down, or monitoring the learners at all times to make sure that they were busy with schoolwork. Overall, however, the teachers were embracing the use of mobile devices in their classes.

This embracement was seen clearly in this teacher's answer –

> *Yes, it most certainly is more difficult to use technology academically. When … I send learners information on the WhatsApp group, then the learners do not always have data. I think data is a big problem, right? So then they cannot download the information, but I think the WhatsApp groups are effective. Then the tablet, uhm, not all the learners are so comfortable with the tablet. Not everyone is familiar with the functions on the tablet, and that makes it more difficult. I also think that not all the learners are busy with academic work on their tablets; there's always that risk that some of them are busy playing games on the tablet. Maybe not games, but they can download WhatsApp on the tablets and then they can chat with their peers while you are teaching. On the other hand, sometimes the learners are more familiar with the tablet's functions than you are.*

Another teacher shared:

> *Yes, it was [hard], but I prefer the technology. We copy a lot less by using the tablets. The most difficult part is when the technology [Wi-Fi] is not working, then the system of using technology in class does not work. And getting used to the tablet.*

One teacher who was very keen on the use of technology commented:

> *At the beginning of the process of introducing technology into the class it was a slow process because you, as the teacher, you are also new to the devices and need to adapt it into your teaching. And also to show the learners how to use it, but it was not difficult at all, once you buy into the idea of using it, the rest will follow suit and you will be able to achieve the same results. The only difficult part was the learners; they tend to be impatient to want to learn how to use the devices and to see how beneficial it would be to use them [the tablets] in class.*

She continued:

> *Academically it depends on the subjects, [for] example for English, it is the perfect device to use when you are doing literature, and you are required to have the books, then the tablet becomes more efficient to*

> *use than buying the actual book and carrying it around. Most of the reading literature is also free to download electronically, that also cuts the cost of buying hard copy books. Whereas a subject like accounting, it becomes a bit difficult to do entries on the tablet, inserting the information. The curriculum is not structured in a way that it allows it to be electronically friendly. There are many different journals and ledgers that are required to be used all at once. It makes it confusing for learners to use it on the tablet, which makes them lost within the ebook. Up to now, the hard copies have just been used better. Unlike Pastel that is done electronically; it is much easier.*

Also, even the youngest teacher who was interviewed had to learn how to use the devices for academic purposes –

> *It was a bit different in the sense that I had to learn how to upload information into the learners' textbooks and to also learn how to set up online question papers. I also had to learn to make use of the apps.*

Analysis of using mobile technology academically

Analysing the learners' answers, it was evident that they found mobile technology difficult to use for formal learning. The reasons were as follows: Practically, in accounting, when making notes or doing equations, valuable time is wasted because learners cannot write it down quickly and have to type it. Scrolling instead of paging, and tablets that tend to freeze waste time. The learners also found the physical act of learning and making summaries with the tablets difficult. The bright light that hurt their eyes was part of their frustration. Other concerns included distraction by the technology and the guarding and safekeeping of the tablets. This included tablets that break and learners falling behind with schoolwork while the tablets are being repaired, as well as theft. I found it disturbing that in a school where every learner was supposed to have a tablet, one learner had lost two tablets in the past three years.

While most of the teachers' answers indicated that it was difficult at the beginning to start using the devices to teach, they could, in the end, see the benefits of using it. They still faced obstacles such as technical issues, for example when the Wi-Fi was down or monitoring the learners at all times to make sure that they were busy with schoolwork, but overall, the teachers were embracing the use of mobile devices in their classes.

Other problems included learners who did not have data to receive information on time, some learners not being comfortable with the use of the tablet when the Wi-Fi or the system was down and everything coming to a standstill.

On a positive note, one teacher mentioned that much less copying was done by using the tablet instead of the teacher having to make copies and handing these out to the learners.

It would seem that there are both similarities and differences between the answers of these two groups. One shared concern between the teachers and the learners was the distraction element. While the learners are supposed to learn or use the mobile devices for academic purposes, it is possible to download games or social media applications and not work, which leads to the teachers having to constantly monitor whether the learners are genuinely working. While the learners were frustrated with the technical and practical aspect of learning with mobile devices, the teachers' frustration was instead centred around the infrastructure, such as when the Wi-Fi was down. Another difference was that while some learners were embracing mobile technology, others were finding the incorporation of mobile technology troublesome and were not embracing the change. The teachers, on the other hand, were more open to the incorporation of mobile technology in the classroom, as they were able to see the benefit it holds for them and for the learners.

Both the learners and the teachers felt that a tablet might be of more use in subjects such as languages. However, for a practical subject, such as accounting, that moves around quite a lot among the different financial statements, journals and ledgers, using a tablet is problematic and frustrating.

It would seem that for academic work, both the learners and the teachers found that working with the tablets caused more frustration than adding to their learning and teaching experience.

5.2.3.2 Confidence in using mobile learning

Learners' responses

The learners' responses to the question **"How confident are you in using mobile technology to learn?"** showed that they did not have the confidence to learn using mobile technology –

> *In some cases, it is a lot of fun, but in other cases, like to, let's say to learn a lot of theory, it isn't that great on the tablet. But like when Ma'am send us question papers and like notes … that is really okay for me, but to study the whole textbook … isn't nice for me.*

When prompted to say how effectively they would be able to study if all their hard copies and textbooks were taken away, they were very disturbed, shaking their heads and repeatedly saying: "*No, no, no.*" When asked to explain this, one learner said:

> *Because, uhm, I would say, with the textbook, it kinds of sticks more in your brain. Because with the tablet I can't concentrate. Uhm, like if I want to summarise or …, I can't just read off a … of a tablet. I need to physically … [while gesturing] … write it down. Otherwise, it just does not stick. That's why I prefer textbooks over tablets.*

Teachers' responses

When the teachers were asked **how confident they were in using mobile technology to teach**, their answers alternated between being moderately confident to very confident –

> *I would say I am about 70% confident with the use of technology. It depends on the subject. I am teaching two subjects. In the one, it is much easier [to work with the tablet] than in the other.*

> *Moderate. I would switch to the textbook easily if I get frustrated with the technology. I do not use it enough.*

> *I feel quite confident to use the electronics that have been resourced to me to use; it enhances the learning process in class, makes the classes very interesting, especially when you have access to the internet immediately.*

> *Very confident, because I'm technologically literate and advanced.*

One teacher confessed that although she was quite confident in using the devices, she knew that there were learners who definitely knew more about the technology than the teachers.

Analysis of confidence in using mobile learning

Comparing the responses of how confident the teachers and the learners were in using mobile technology, the learners indicated that they did not have the confidence to learn using mobile technology, while the teachers' answers indicated confidence in their teaching with mobile technology. This was the opposite of what was expected, as I expected that the learners would show more confidence in using mobile learning than the teachers. I wonder if it has anything to do with the perception of the different groups. While learners see mobile technology as part of their identity and use it for socialising – being part of the Disruption Age, teachers see it as a tool. While learners want to play, teachers want to work using technology. It could also be that the training the teachers had received helped them to use mobile technology more effectively as a tool. This makes me curious to know whether the learners had received any training beforehand or whether the learners' training had only been done by the teachers.

5.2.3.3 Mobile learning helping or hindering the understanding of accounting

Learners' responses

The learners were asked whether they felt that **mobile learning was helping or hindering their understanding of accounting,** and why they felt that way.

One learner indicated that it was helping her –

> *Personally, it helps me because when I really struggle or something, I would put everything in an Excel sheet on my tablet. Then I can do it neatly to understand exactly what is going on. Or when you download something to help you, you can organise it in a very perfectionistic way, if I can put it like that.*

However, most of the learners felt that it was hindering their understanding of accounting. One learner explained it as follows:

> *Because the textbook has answers in it, like I can [gesturing how she writes] write in it, while the tablet, you can't do anything on it; it's just reading off it …*

Some learners even said it would be better for them to not have tablets. One learner said:

> *It is a struggle because let's say you have the answering sheet here [gestures] on your tablet and you have your textbook and you want to compare stuff, then you must scroll up and down. So, it is difficult, especially in accounting where you must compare stuff.*

This was confirmed by another learner stating that doing accounting on the tablet was very difficult for her.

Teachers' responses

When the teachers were asked **whether mobile learning was helping or hindering the learners understand accounting**, the answers were as diverse as can be. While some said that it did help the learners, others felt it was only a distraction. While some felt that it was a tool to help the learners, others felt it was a frustration or they were still unsure about whether it was beneficial or a hindrance, as can be seen in the following comments:

> *Uh, no, I don't think it is making a difference in how the learners, uhm, understand accounting. An accounting principle is a principle, whether you learn it through a cell phone or tablet, or verbally or writing on the board. If they don't understand that, then they don't understand. So, no, I don't think, uhm, it will help in that way.*

Another teacher said:

> *I personally feel that I am torn in half. I think the resources you give to the learners definitely help a lot and it is very good for them because they can always go back to it. And let's say, let's face it, it is a lot cheaper to upload a lot of stuff on the tablet instead of making copies for each learner. So, there, I think it helps the learners a lot. It helps them that you can show them stuff in the class with the projector and the internet and the computer, how certain stuff works and you are*

able to show them real-life scenario's. But I personally think, and it's my opinion, in accounting it doesn't work that well. Maybe I'm not using it correctly, maybe my learners aren't using it correctly, but for a Grade 10 learner that have [sic] never done adjustments, that never had to do corrections and then to correct those amounts in the statement of income and the balance statement, this won't help that learner. It's not possible to do all the corrections and changes on the tablet, because mostly the format of the activity doesn't make it possible for the learners to add notes. So, I think that definitely hinder [sic] the learners.

Other responses were:

It depends on the learner. Most learners benefit when they embrace the idea. For a learner that has difficulty understanding work on paper, the tablet will just be a distraction.

Yes, for the learners, they do not enjoy working with the tablets; they often complain that they get lost within the textbook and do not always have enough memory on the tablet to download the resources, but if they actively use it, it is of a great benefit.

Hmm, I wouldn't say it helps. It complicates. Uhm … I don't know. The learners, funny enough, like, when they need to study, I like to make them a mind map regarding a specific topic. So, then I would make the mind map on an A3 page, and then I would copy it. They have summary files, and then they would file these pages there. So, before a test, when they sit outside or during the break, they don't have to sit with their textbooks or tablets, they can simply sit and learn with these pages. So, even in my other subjects, uhm, they are very happy to have paper in their hands. They like a tablet, but when it comes to actual learning, then they want paper. So, I don't know whether it's because I'm too "dumb" with technology, that I don't know how to use it in order for it to be beneficial to the learners. Or is it, yes, because I'm not comfortable with using it, but I don't want to say I'm forcing it onto them, but that is how it is in my class. That is how they learn.

I want to believe that it does help, but only for those who use it effectively. It makes my life easier in the sense that I can supplement the information on the textbooks they have uploaded on their gadgets using information from other textbooks. I can also revise some of the theoretical questions through Kahoot. I'm also able to send memos for informal tasks so that they can mark, and I can also give them work to do even when I'm absent.

Analysis of whether mobile learning is helping or hindering the understanding of accounting

When the learners' answers are compared to the teachers' answers, most of the learners felt that it was hindering their understanding of accounting. There are two reasons why the learners felt this way, both being practical reasons: firstly, because accounting is a practical subject, working with the tablet and scrolling when they have to move around between the different ledgers and journals or their calculations and their answer makes it very difficult for the learners and also frustrating; secondly, being able to write down and engage with the information in their books were more important to the learners than just being able to read from the tablet.

When the teachers were asked whether mobile learning was helping or hindering the learners to understand accounting, the answers were very diverse. While some said that it helped the learners, others felt it was only a distraction. And while some felt that it was a tool to help them, others felt it was only a frustration or were still unsure whether it was beneficial or a hindrance. Reasons why the teachers felt that mobile learning was helping learners understand accounting better included that the teachers were able to show them information in the class with the projector, the internet and the computer. They could also show learners how different things work and show them real-life scenarios. They could see whether the learners were actively using their tablets, but some teachers also felt that in accounting, it does not work that well. It is not possible to make all the corrections, adjustments and changes on the tablet, because mostly the format of the activity does not make it possible for the learners to add notes. One remark that was mentioned a few time was that the learners did not enjoy working with the tablets (at least not in accounting). The learners complained that they got lost in the textbook and did not always have enough memory on the tablet to download the resources.

One teacher mentioned how being able to supplement the information on the textbooks with information from other textbooks had made his life easier. He could also do

revision, send memos for informal tasks to the learners to mark and give them work to do even when he was absent from school.

One teacher commented that the learners liked the tablets, but when it came to actual learning, they preferred paper. The teachers also mentioned that learners' effective use of the tablet in accounting depended on the learners themselves. Most learners benefit from it when they embrace the idea and use it effectively. For other learners, it was only a distraction.

I conclude that although a few learners were finding the tablets to be helpful to their learning of accounting, the overall opinion was that the use of the device was, in fact, hindering their understanding of accounting.

5.2.3.4 Teacher training

Teachers' responses

The teachers were asked to **give feedback on the mobile learning training that they received** and the answers differed significantly. While some teachers felt they received enough training and that it was sufficient, others felt it was not enough and that the teachers had to teach themselves, as the following statements show:

> *Uhm, we had quite little training sessions on the tablets. Uhm, we had about two to three sessions of an hour, two hours each. Uhm, the tablet's program that we use is really easy, so the training for me was not beneficial; the first orientation session was enough for me. Luckily, uhm, I can figure these things out on my own, so, uh. We did not really have much training on it.*
>
> *The training we received was presented through ITSI, and they gave us training a couple of times on how to use everything on the system. I just think that one needs a whole lot more training to effectively apply it in the classroom. There are courses available at other places, for example Microsoft courses one can do, uhm, attend that will help you.*
>
> *We got training in using the system at school (two hours' training). Not efficient enough. It was very elementary because the levels of competence differ so much. For me, it would be better to receive a manual. I would have benefitted more.*

> *We have ITSI companies that come to our school quite often to do training with the staff members on how to use the tablets, usually once a term because there are always new upgrades on the use of the app and the e-books. We have an on-site IT teacher that can assist learners and us [the teachers] when we need assistance. Usually, our training was done in groups; they are effective because these trainings are done thoroughly.*

One teacher shook her head, stating:

> *You have to learn yourself. Yes. I know the school sometimes have, uhm, they sometimes have tablet training, but then it is not really subject-specific. So, let's say, uhm, the … the push thing gets upgraded then there will be new stuff, then they will show us for one hour an afternoon – the tablet, okay, this is what changed, this is how to this, but for the rest … no.*

The last teacher shared:

> *The DOE [Department of Education] provided the training on how to push information into learners' textbooks and the setting of papers.*

Analysis of teacher training received

The teachers' responses on how effective the training on the use of mobile learning and technology in the classroom was, differed significantly. While some teachers felt they received enough training and that it was sufficient, others felt it was not enough and that they had to teach themselves. It would seem to me that this was a matter of perception and depended a lot on how motivated a teacher was to learn how to use mobile technology in the classroom.

One teacher stated that, due to the competence level of teachers differing so much, the training was quite elementary, and she would have preferred receiving a manual for personal study. I agree that there is a great need for continuing teacher training, but due to teachers' different levels of competency working with technology in the classroom, giving a manual with the training would be a good way of extending the training beyond the contact session. Moving with the digital times, it is not necessary for this to be a physical manual, but a link to a digital manual would also be sufficient.

One thing that is certain is that there is still a very high need for effective and appropriate teacher training on the use of mobile technology and learning in the classroom.

5.2.3.5 Overall experience with mobile technology and learning

Learners' responses

The learners showed strong positive and negative feelings concerning their **experience with mobile technology**.

A learner who felt positive about working with tablets said:

> *I think it makes everyone's lives easier in a way, with question papers or stuff like that, I don't know how the theory subjects, especially like biology where you need to study illustrations, use it. I think it makes it more difficult for those learners because they must literally make notes to understand it. It is nice to be more paperless and not carry a whole pack [of] paper around the whole time, just when you do summaries from your tablet. Then you can only study from the summaries and then additional stuff from the tablet, like question papers and additional exercises.*

Other learners added the following:

> *When Ma'am push the stuff to us, that is so nice because now we have it. Everything is together; now you don't have to worry about the pages and to keep it safe. Everything is in one document, and it is like the accounting books, it is so heavy, because it is very thick, so it is uncomfortable to carry it around. And those formulas are neat, so you understand them because they are organised, and everything is there; you can study them just as it is.*
>
> *I think like a pro, for having your textbooks on your tablet, is you don't have to carry around all your textbooks, and those textbooks are thick, and the higher your grades will be, heavier and thicker and taking a strain on your back and just … walking around with all those textbook. I'm not, like … I'm being lazy or anything, its … harder … [laughing].*

On the negative side, the learners mostly preferred using a textbook than the tablet, and they felt it should be phased in earlier into their schoolwork –

> *I can … my overall experience with tablets – I didn't like it, because there is [sic] … positives and negatives, but I feel like the positives, no, the negatives outweighs [sic] the positives. Like for me, the only positive is [indicating to her classmate] the schoolbags, but other than that, I don't like it, because Grade 9, we started using it, and when we got to Grade 10, I completely phased it out, and I started using hard copies, like my teachers. I just really don't like the whole tablet situation.*

Some made suggestions on how to improve the situation to make it more acceptable in the future –

> *I think mobile learning and technology have to start at a young age, because now … it is always going to be difficult to adjust from hard copy to electronic education. Because now, tablets and uhm, hard copies are two different things. With the hard copy, we are used to writing and summarising, and you can memorise everything, and on the tablet, you can't. It is something; you can't just memorise … something off a tablet. It's, it's always difficult to do that.*

Another learner added:

> *I think it is because uhm, when I was at primary, we would always work with the textbooks. So I think it is just the habit of working with textbooks and working with tablets now, just doesn't work right now. It's uh, okay, but I think, uh, I am so used to a textbook, I can work with a tablet and think it's not that efficient than comparing [sic] with a textbook …*

Teachers' responses

When the teachers were asked **"What is your opinion about your overall experience with mobile technology and learning?"** it would seem that the overall experience for accounting teachers using mobile learning was not very positive. This was evident as the teachers gave the following answers:

> *Uhm, in accounting it's quite difficult, uhm, because some of the stuff that is electronic, for example the textbooks and so, have a negative aspect to it. Uhm, when you want to do financial statements and adjustments and so, it's much easier to make notes on the adjustments trial balance with pencil and so, but because the textbook is now electronic, this isn't possible. So, sometimes it is necessary to*

write down in accounting. So, many learners also still prefer the hard-copy textbook instead of the electronic version.

My opinion is torn between two aspects, uhm. I feel some aspects are good. It is good that I can upload notes for the learners; it is good that I can communicate with the learners via WhatsApp group and also upload some information there. I just feel that the [digital] textbook is unpractical. Negative aspects are that learners do not have enough knowledge to make notes in the textbook like you could have made notes on the hard copy. I feel that in accounting, it is important to me to underline and to add notes, and on a tablet, it is difficult. So, personally, I am torn. I feel that some aspects are truly good and creative; it is nice to be able to upload notes and question papers. Old examination papers, or extra activities and even the WhatsApp group, because I also classify it as use of technology, but I feel the textbook parts aren't as good. I want to have the hard copy in my hands. I want the learner to have the hard copy in his hands because, in the end, the learner will be writing the exam on a sheet of paper. Their question paper is on paper; now they are used to technology the whole time, then they forget or aren't used to underline certain important things. So, I feel that the tablet hinders that part.

This negativity was confirmed by another teacher:

Learners still prefer textbooks for accounting. They find it difficult to embrace the technology. I do agree that something like adjustments is easier to do if you can underline. It differs from learner to learner. Other learners embraced the opportunity and are doing fine.

On the other hand, one teacher observed:

Overall experience has been excellent. It is a wonderful tool to have in the class to enhance the teaching and conveying the message across to learners and be able to access information instantly. In accounting, teaching the lesson has been great to be able to show them real-life examples on the internet, [for] example shares on the JSE show the different companies listed and how accounting fits there.

Then again on the flip side, the following teacher answered:

Uhm, I think … to teach with it, isn't for me; it actually doesn't help at all, but as I said with homework, it's nice to have it for the learners and I can see they make use of it; they do use it, when they take out the tablet, and they literally sit and mark their work. So, that part to me is nice, but uhm, the rest … [shakes her head and laughs].

Analysis of the overall experience with mobile technology and learning

The learners showed strong positive and negative feelings concerning their experience with mobile technology. Using keyword analysis (cf. Savin-Baden & Major, 2013), it was possible to determine what these strong positive and negative feelings were. When the learners talked about the positive elements of their overall experience with mobile technology and learning, they used words and phrases such as "*not have to carry all the textbooks*", "*abundance of resources*", "*to push the information*", "*more paperless*", "*everything is together*" and "*those formulas are neat*".

It is, therefore, possible to determine that what the learners found positive, is the practical and added benefits that the mobile devices bring to the classroom, such as having everything together, for instance their textbooks and additional resources that are pushed to them without having to carry all of these around in paper format. Another positive aspect is not having to try to decipher what they were trying to write in their handwriting; they can type it and print it out when needed.

Nothing was said about any learning benefit though. This makes one wonder if the use of mobile technology is contributing to learners' learning of the subject accounting.

On the negative part of their overall experience with mobile technology and learning, the learners mostly used words such as "*preferred using a textbooks*", "*should be phased in earlier into their schoolwork*", "*use hard copies*", "*difficult to adjust from hard copy to electronic education*", "*not that efficient*" and "*[w]ith the hard copy, we are used to writing and summarising and you can memorise everything, and on the tablet, you can't*".

This indicated that to learn, the learners preferred using the traditional textbook over the tablet and they saw mobile learning as inferior to writing, summarising and memorising.

When the learners' answers are compared to the teachers' answers to the same question, almost all of them felt that the overall experience for accounting teachers

using mobile learning was not positive. Keyword analysis was used again to determine how the teachers perceived the overall experience of mobile learning. The words or phrases that were mostly used were as follows: "*in accounting it's quite difficult*," "*easier to make notes on the adjustments trial balance with pencil*", "*it is necessary to write down in accounting*", "*many learners also still prefer the hard-copy textbook instead of the electronic version*", "*[digital] textbook is unpractical*", "*learners don't have enough knowledge to make notes*", "*in accounting, it is important to me to underline and to add notes*", "*adjustments are easier to do if you can underline*", "*I want … the hard copy in my hands*", "*question paper is on paper*", "*the tablet hinders*", "*learners still prefer textbooks*", "*difficult to embrace the technology*", "*to teach with it, isn't for me"* and *"it actually doesn't help at all*".

Much emphasis was placed on "*for accounting*" or "*in accounting*", showing that the teachers felt that the difficulties encountered were specifically due to the nature of the subject, and it might be different in other subjects. Many learners agreed with this.

The only positive attributes that were mentioned were "*upload information*" and "*communicate with the learners*".

While most of the teachers and the learners showed a negative outlook on their overall experience with mobile technology and learning, one teacher could be seen as an outlier, using words such as *"[o]verall experience has been excellent", "a wonderful tool … to enhance the teaching and conveying the message across", "also, to be able to access information instantly", "[i]n accounting, teaching the lesson has been great"* and "*show them real-life examples".*

This confirmed to me that the way the users of these digital resources perceive mobile technology and learning will influence the way they will embrace the technology and the enhancement of their learning and teaching experience.

5.2.3.6 What do you like most about using mobile learning?

Learners' responses

When the focus groups were asked **what they enjoyed most of using mobile learning,** the learners answered:

> *The fact that I can take it everywhere with me, because when we go to the farm or are on the road, I can study my work, but if you take a textbook, it is uncomfortable and unpractical.*

> *It is very nice, because like all your books are now like on your tablet. So, it is not as if you have to take your whole bag everywhere you go. It is so much easier to get stuff from, like, the teacher, like work that you have or emails or stuff like that and to use it to communicate with each other.*

They also enjoyed the fact that everything was together. Surprisingly, one learner said:

> *I use my tablet most of the time in accounting, because of those question papers and notes.*

A further aspect that they felt very positive about was the ease with which they could do assignments and research, without having to go to a library or an internet café and using the Wi-Fi at school for these purposes. One learner said:

> *Well, I feel it is easier to do research and do assignments, 'cause now we can; it is time efficient and cost efficient and we can, unlike having to go to a cafe … to do research and they charge you per minute or whatever for as long as you are there. So, now it is easier because if you have a tablet, you just do your research and you just go print out everything.*

Another reason why learners enjoyed using the keyboard on their tablets to type, was the auto-correct function –

> *Ja, well, there are [sic] like this auto-correct … like for a specific word… and you don't have to worry about your spelling, because the auto-correct will correct it. That is an advantage.*

Teachers' responses

While most of the teachers **enjoyed** the fact that they were able to share more information with the learners, some specific points were mentioned that each teacher enjoyed about the technology in class. The following responses were given:

> *Uhm, what I like about it, is that the resources and work can be stored. So, you don't have to rediscover the work from year one to year two. Uhm, the formats are also done; in previous years the teacher had to write the format on the board with every class that walks in, and that wasted a lot of time. So, yes, now we save considerable time; so that is definitely a positive aspect; you get to do a whole lot more of activities.*
>
> *What I like about it in my subject, accounting, is like I said already, that you can upload certain stuff for them. Also, with projects, then you can, uhm, go online on JSE and you can show them how it works. So, it's very nice, yes, the stuff you can show them.*
>
> *The amount of extra information that I can give learners, past papers and other notes. You can give as much as you want, and don't feel guilty because of the amount of paper used.*
>
> *Getting information instantly without having to delay the learning. In terms of teaching, the learners can take the lesson home in a multisensory medium for as much repetition as is needed, and in terms of assessment, more time can be spent marking long answers while shorter answers are quicker. The old traditional way in class, you would often have spontaneous learners who would ask a question, and you would not always have the answers to [them] immediately, no matter how prepared you are for the lesson. There is no such thing as a perfect lesson. Then you are required to say, "You [sic] do not know the answer to that now, but will come back to you at a later stage to provide you with an answer." This therefore then does not keep the learners interested – at a later stage, the moment has passed. Whereas with technology, easily accessible, just open up Google [the] same moment and google the question, and the class discussion will continue. It will keep the learners engaged because you are dealing with the question immediately; the information is instant.*

One teacher replied:

> *I get to test their knowledge through an online test which can also provide immediate feedback.*

Analysis of what the learners and the teachers liked most about using mobile learning

When the focus groups discussions are compared with the teacher interviews, the learners' responses centred around these facts: "*I can take it everywhere with me*", "*everything is together*", "*all those question papers and notes*", "*to communicate with the teacher*", "*it is easier to do research and do assignments"* and the "*auto-correct*" function. On the other hand, most of the teachers enjoyed the fact that they were able to share information, such as extra information, previous examination papers and other notes, with the learners. They also liked the idea that the resources and work could be stored, and that the formats were already done, which was a huge benefit because of the time that this saved so that they could do more activities. They also enjoyed going online and showing the learners additional information and being able to test the learners' knowledge through online tests which can also provide immediate feedback.

All these answers show that there are many benefits to using mobile technology in the classroom and that the teachers, as well as the learners, enjoy the added features and benefits of mobile technology that are improving the teaching and learning experience. However, I am still concerned about the enhancement of teaching and learning in the classroom.

5.2.3.7 What frustrates you?

Learners' responses

Both the learners and the teachers had to point out what **frustrated them with regard to mobile technology** in the classroom.

From the learners' responses, it became apparent that resources tend to take a lot of time to download –

> *Uhm, sometimes the resources take time to download, and you can't … actually, do your work.*

According to the learners, the Wi-Fi could cause problems –

> *Uhm, like sometimes, uh, when we, for example, have tests or exams scopes, sometimes the teacher don't send it to us and like the day before the exam or like, two days before we should start studying, like we don't have it and the teachers says no, she did send it. It is because the tablets aren't connected to the Wi-Fi, so that makes it hard for us – the scopes of the tests and the exams.*
>
> *Ja, I would say if you don't have Wi-Fi at your home, you can't always update your tablet or your information. You have to come to school and update.*

Although one group stated earlier that it was not a problem, battery life was still a concern for one of the groups –

> *When the battery goes flat, and you cannot do anything about it, or if it freezes.*

The learners also experienced practical issues with the tablets –

> *The whole story with turning the page, and when we do provision statements, and you must rule out that stuff. But with the tablet, you cannot rule it out.*
>
> *I know with a computer you can open two files, to minimise and compare, but not on a tablet. You cannot open two files at once to compare and minimise, and it is a problem.*

One learner was quite frustrated about the fact that she was instructed to use a Samsung tablet at school –

> *I think it means to have the tablet of your choice. Uhm, it's like in my household we only use Apple products, and now I had to have a Samsung tablet and, uhm, I don't know how to use a Samsung. It works more difficult than an Apple …*

Teachers' responses

When the same question was asked to the teachers, they expressed their **frustrations** with regard to teaching with the technology –

> *What frustrates me is, of course, uhm, the technology doesn't always work properly. One depends on it and then when it does not work, then*

uhm, yes, then you can't proceed with your class. Then you waste much time to write everything on the board again.

Further, it would also seem that many teachers had a problem with the technical aspects of the tablet, the operation of the system and the Wi-Fi –

It frustrates me when a learner's tablet is not charged, or when it's broken, because that happens, right? And when the tablet is so slow, and the learner isn't on the same page as you, when the tablet freezes, that frustrate me. It frustrates me when you tell the learners to add notes to the textbook, and they don't know how, or when certain documents are in a specific format, and you cannot add anything. So, it is a big frustration for me. Then another frustration is that sometimes the Wi-Fi doesn't work or the internet doesn't work; then the learners aren't able to download the stuff you uploaded for them. You are very dependent on internet and electricity. If the learner couldn't charge the tablet the previous night, then you must deal with the dilemma today. If the internet doesn't work today, then you can't upload resources, and they cannot open the resources. Sometimes you will sit in a class, and some learners will access the resources, but others can't. So, the system sometimes let you down, and that is very frustrating.

The fact that I must remember to charge the tablet if the Wi-Fi does not work; slow and mediocre software.

Wi-Fi tends to be slow if everyone has to access it, but an upgrade has been done to try to increase the speed. Electricity, if there is a power cut, not in your control, you no longer can use the technology. The hardware is not keeping up with the software. Learners have not charged their tablets before coming to school, and they spend the lesson not having access to the books. Not all learners have the same tablet; [it] makes it difficult at times for the teacher when they do not know how to configure the learner's tablet to the specs of the school's server; then that also takes time to process.

One teacher said:

Uh, okay, first of all, I think they don't know that it can be an aid to the learning process. They look at a tablet or that stuff [portable smart mobile devices] and they see it as a social device. So, to take more photos or to play with it or to watch videos or stuff like that. They don't see it as a "textbook". Uhm, I think for an example, uhm, I'm not going to use my textbook and my cell phone the same way, because it is not the same thing. Where for them, I don't think they can differentiate, so they cannot understand when I tell them you cannot listen to music while you are busy with accounting, but they think they have the tablet

and the earphones, so why not? So, [laughs] understand, it wasn't even an option in my time, but okay, we changed regardless, so. And then the fact that the batteries are always flat, uhm, and then uhm, I've had an extension thing in my class, then it's only [gestures wildly] tablets and chargers and so, but still, while it's on charge, you cannot work on it in the class, and then, uhm, the theft also. Uhm, I have been at this school for four years now, my tablet has been stolen twice. So, uh, I don't know, it's a … Okay, textbooks have also been stolen previously, but, uhm, yes. It's like an extra, I don't want to say it's an extra responsibility for the learners, but it tends to be our responsibility. Uhm, there will always be questions like, "Why weren't you in the class when this …" I can't look after every learner's tablet ...

The same sentiment was shared by the last teacher:

Most learners do not use the gadgets for academic purposes.

One teacher said she felt like she was spending more time on the computer than on teaching. The same teacher said she thought that using technology was not good for her eyes.

Analysis of what the learners and the teachers found frustrating

What the learners found frustrating was that resources tend to take time to download, the problems with the Wi-Fi and the battery life of the tablets. Also, they experience practical issues with the tablets, such as not being able to turn the page but having to scroll, not being able to rule out, make notes, underline or circle information in accounting as they could do with a hard copy and not being able to minimise and compare two files

It would seem that when the same question was asked to the teachers, their frustrations tended to correlate with what the learners said and more. The teachers' frustrations entailed the following: the technology that does not always work; problems with the Wi-Fi; learners' tablets not being charged; broken tablets; the tablets freezing; learners not being able to add notes to the textbook; some documents being in a specific format, and they cannot add anything; learners not using the tablets for academic purposes and not seeing it as an aid to the learning process but as a social device, that is, learners not

being able to differentiate; learners not being able to download the information that was sent to them; charging the tablets; poorly developed software; outdated hardware; electricity problems or when there is a power cut and they cannot use the technology; incompatible tablets; theft, which tends to become the teacher's responsibility; spending more time on the computer than on teaching; and the fact that using technology is not good for one's eyes.

The frustrations that were mentioned could all contribute to the teachers and the learners not embracing mobile learning, as it could be seen as a hindrance to their learning process.

5.2.3.8 Mobile learning improving and enhancing teaching and learning

Learners' responses

Moving on to teaching and learning, the learners were asked **what they thought of the statement:** "Mobile learning should not just replace traditional methods of teaching and learning, but should improve and enhance teaching and learning of the subject." The learners seemed somewhat unsure about the question and responded as follows:

> *Ma'am, like, I think we are quite good because the era we currently live in is more technological and for our future, we must learn to be more technological. And I think that can help our teachers more. So, I think like when a teacher is a bit unsure about something, they can just easily go google the answer; they have access to so much more than just old textbooks, which are easier and more effective ...*

Another learner added:

> *And I think, another thing is … the teachers are starting to understand it more now. Sometimes when the new Grade 8s start at the school, they learn new stuff what you can also do with a cell phone and a tablet. Like, if you can teach learners in a subject like life orientation [about] these technology gadgets and their functions in the education system.*

This unsureness was also observed in the following group, as one learner said:

> *It can improve teaching, but it has to start from a young age and for … Like you said ... It must be … that … must be the way that you learn. It shouldn't … the transition is the problem … From textbook to*

technology … Yes, okay. I feel like, in a sense, some … some aspects of, like, e-learning, it did enhance learning because now you have more visuals, you can … ja, like it did enhance, but it still hinders as well, but it enhances a bit.

Another learner confirmed the above by saying:

I don't know … Uhm, it's just more difficult to start. Just to start, like learning from a tablet. Maybe that is just my opinion, 'cause I started learning from textbooks, but maybe … let's say the primary school, they get to this grade now; then they would probably have a different answer compared to ours.

Teachers' responses

The teachers were also asked to **comment on the statement:** "Mobile learning should not just replace traditional methods of teaching and learning, but should improve and enhance teaching and learning of the subject." The answers given seemed to show that teachers also did not quite understand the question, that they were set in their ways or were not very optimistic of thinking that it would change –

I don't think, uhm, mobile learning will ever replace traditional methods of learning, but will rather strengthen and improve the method of teaching.

I do not agree with this statement at all. I think there are certain things in a traditional system and in a traditional method of teaching and learning that cannot be replaced with technology. I think the traditional methods can be improved with technology, which is wonderful so that technology can be an aid to traditional teaching methods, but I feel personally that technology must not replace traditional methods, because in the end the learners will be assessed on the traditional method with writing. They write exams on paper. So, if you do everything on the tablet, uhm, and never on hard copy, how will the learners write the exam? How will they be prepared for an exam if they have never done it that way? And once again in accounting, I feel, you want to write everything down on paper. That is unfortunately how the subject is to me.

I agree, but I see a problem. New research has shown that students do not benefit from the amount of screen time when learning from tablets. This part would have to be investigated.

> *Yes. No, I do agree with it, it must not replace it, it must, uhm, promote, and help. Uhm, I think in certain aspects, it's happening now. Uhm, it is … There's a lot more stuff one can show the learners thanks to technology, uh, and you can make it more creative and more fun to teach the work on their level. Where when it was in the textbook, then they wouldn't be as interested, but there is certain stuff that needs to be done in a textbook, so uh, yes, I don't know. But, yes, like I said, it goes both ways, because to me it feels I'm teaching better now as we have the textbook now and we fill out answers. But I also know it will be better if it's possible to do it on a computer and you do it on a program like Excel or Pastel, or, or, whatever, uhm, instead of using the tablet. You are never going to use a tablet in the workplace. So … Yes, I, I don't understand why Pastel isn't a part of CAT [computer applications technology]. Uhm, instead of, uh, I know, I taught CAT to Grade 10s a while ago, then they do stuff like PowerPoint. Now, these learners can design a PowerPoint from Grade 4 already. So, instead of focusing on stuff like Word, okay, you, everyone knows how Word works. So rather include something in the curriculum that can prepare the learners, but it would be actually nice if it can be included in the accounting curriculum, but I don't know whether there is enough time for it … you would need another teacher to teach that …*

Only two teachers seemed positive and eager to embrace the change –

> *I agree 100%. It is a tool to enhance the learning process and will benefit the learners [and] also prepare them for the real world.*

> *I believe that we are living in the 21st century, which is ruled by the ever-evolving, dynamic and advanced technology. As such, we should do away with the traditional teaching methods and move with the times.*

Analysis of mobile learning improving and enhancing teaching and learning

In this context, improvement is more or less seen as something that is below one's expectations and can be brought up to standard where the new state is better overall than the previously existing state. Enhancement would mean something that is already good can further be added some skill or quality, or it involves an addition to a previously existing state.

The learners' answers entail that in today's technological age, they must be more technological. When teachers are unsure about something, they can google the answer,

and teachers are starting to understand it better now. The answer that came up in all the groups was that in order to use mobile learning effectively, it has to be started from an earlier age and learners should be shown how to use these technological devices and all the functions for educational purposes, as they found the transition between textbook and technology for learning to be a problem.

The teachers gave the following responses:

> *Mobile learning will never replace traditional methods of learning, but will rather strengthen and improve the method of teaching.*
>
> *There are certain things in a traditional system and in a traditional method of teaching and learning that can't be replaced with technology.*
>
> *It mustn't replace it; it must promote and help.*
>
> *… traditional methods can be improved with technology.*
>
> *Technology can be an aid to traditional teaching methods, but technology mustn't replace traditional methods, because learners will be assessed on the traditional method with writing. They write exams on paper … if everything is done on the tablet, and never on hard copy, how will learners write the exam?*
>
> *There is certain stuff that needs to be done in a textbook. I'm teaching better now that we have the textbook.*

There still seems to be many teachers (and learners) who see technology as an add-on to the traditional methods of teaching and not as a way of improving and enhancing teaching and learning. They would rather cling to the traditional methods of teaching than embracing the enhancement of teaching that is taking place today in the Fourth Industrial Revolution. It is like saying that the television will never replace the radio or that digital cameras will never be able to take better photos than film cameras.

On the topic of learners who need to be prepared for assessment on the traditional method of writing, I ask if it is not time that the manner in which accounting learners are being assessed should also change to keep up with the digital advancement of

technology in the workplace? Instead of saying that learners should be able to write the examinations, a practical component should be phased in, in which learners are assessed on their ability to use software to draw up the different journals, ledgers and financial statements.

One teacher added something worth thinking about: that new research has shown that students do not benefit from the amount of screen time when they learn from tablets and this should be investigated.

Showing that technology can enhance teaching and learning, one teacher commented on all the information that can now be shared, such as showing learners videos and making lessons more creative and more fun. This will add to the learning experience of learners.

One of the most constructive arguments that one teacher made and which I agree with, is that rather than trying to use a tablet in accounting, the subject should be made more practical and the learners should be allowed to use software suitable for accounting, such as Excel or Pastel or a program that is even more suitable, such as QuickBooks, which is used internationally. The chance of ever using a tablet in the workplace is minimal. Instead, accounting can rather be done like the subject computer applications technology to include content in the curriculum that can prepare the learners for the workplace. The appropriate software can be incorporated as part of the curriculum and not just as an add-on, as in the case of Pastel, so that there will be enough time for it in the curriculum. I acknowledge that this might mean additional training for accounting teachers who might not know the specific software.

Only two teachers seemed positive and eager to embrace the shift to technology-enhanced learning. These teachers saw it as a tool to enhance the learning process, which will benefit the learners and prepare them for the real world, as living in the 21st century is ruled by technology which is ever evolving, dynamic and advanced. Consequently, the traditional teaching methods should be done away with and teaching and learning should move with the times. These were the only teachers who were

looking at the future and seeing the potential that teaching with technology holds for improving and enhancing learning in South Africa. That being said, I acknowledge that due to economic and socio-economic challenges facing the South African schooling system, it might prove difficult to incorporate these changes.

5.2.4 Thoughts on learners

5.2.4.1 What is the effect that mobile learning is having on learners?

Teachers' responses

The teachers were asked to give their opinion on **what effect they saw mobile learning was having on learners**. Some teachers felt that they could see a positive effect for those learners who embrace the technology, while for others it is a distraction –

> *It depends on the learner. Learners that embrace the idea, use the tablets to their full advantage. For a learner that is easily distracted, this can be a real problem. It distracts them more.*

Two teachers were very positive –

> *It has opened their minds and broadens their thinking and reasoning ability.*

> *Technology adds value to learning when you need extra information. The internet makes it easy to access it during a lesson. Learners can actively be part of the lesson by researching the information themselves. This way they also learn how to use the internet. They learn what words to search … learn which websites are relevant and which are not, [for] example Wikipedia, that does not always have true information, or it is very outdated.*

Other teachers did not see a learning benefit, but a physical benefit –

> *Some are happy because there is no need for them to be carrying heavy bags with books; they just have this tablet to carry around. Then again, some do not enjoy that they have to use the e-books.*

One teacher could not decide –

> *Well, once again, it is mixed [her feelings on the subject]. Some learners are extremely excited, and they use the technology to the*

best of their abilities. They know exactly what to do, how to add stuff and they enjoy it because you do not have 30 textbooks anymore. Only one tablet with everything on it, so it makes it a lot easier. In other subjects, for example English, it is also very convenient, because all the textbooks and reading books are on one device. Literature and language are everything on one device; you don't have to carry all those books around. And another thing that is very nice, is that you can do a lot of research. You can upload a lot of information like poems. But like I said, for some subjects, it is wonderful, for others, I feel it's not that great.

Two teachers gave negative answers on the topic –

The effect it has … the learners get lazy, they don't want to write anymore. They write half, and the problem with that is that they do their homework half because they are lazy, then uh, they are in an exam setting, then they don't completely write all the words. They lose unnecessary marks because they abbreviate where they're not supposed to …

I really don't know, sometimes I don't know if it is like, isn't it bad for me? It's bad on my eyes ... I have glasses now that I use when I work on a computer because I started getting horrible headaches, uhm, or it felt as if everything was blurred, so uhm, yes, it, it, it's the bad thing of technology. I don't know if it is the … I don't have an example I can use to explain the effect on the learners, but uhm, as I said, I sometimes feel as if I'm spending more time on the computer than I'm teaching …

Analysis of the effect that mobile learning has on learners

The teachers were asked to give their opinion on what effect they saw mobile learning had on learners. Some teachers felt that they could see a positive effect for those learners that embraced the technology, while for others it was a distraction, depending on the learner as well as the subject. One teacher felt that it had opened their minds and broadened their thinking and reasoning ability. With technology, it was possible to add value to learning when needed. Extra information could be found by accessing the internet during a lesson. The learners become actively part of the lesson by researching the information themselves. The learners also enjoyed the fact that they did not have to carry a bag full of books when they used the tablet.

Negative answers on the topic included that the technology was making the learners lazy because they did not want to write anymore. This also had an effect on how they completed their homework or how they answered examination questions, and they lost marks because of incomplete answers.

I found it troublesome that no one said anything about learner engagement, learners becoming more eager to learn or self-directed in their learning or that their critical thinking skills and creativity were being better developed by making use of the devices and mobile learning.

5.2.4.2 Is mobile learning the solution in South Africa?

Teachers' responses

The teachers were also asked the question **"Do you feel that mobile learning is the solution in South Africa to address the needs of the diverse set of learners in today's classroom?"** One teacher responded by saying yes, without giving any substantial reason for the answer –

> *Yes, they should have access to learning to educate them further and to make them knowledgeable.*

Most of the teachers agreed that they did not feel that it was the solution, as not all learners had access or the financial power to afford the technology, as proven by the following comments:

> *No, not necessarily. It differentiates actually more because not everyone has access to mobile learning in the classroom. There are a lot of poor schools. Some of the thriving schools have access to it, but division actually grows more now.*

Two teachers gave the following alternatives that they felt would be better at the moment:

> *I don't think it is a solution for South Africa. If you look at how high theft is in South Africa, uhm, and … the electricity, not all the learners have electricity at home. Not all learners have money to buy a tablet. A tablet isn't a device you buy once, and it will keep you for five years in high school. It must be upgraded. What can the parent without money do? This stuff is fragile. What if the tablet breaks; what will the parent*

do then? What will the learner do? Now the learner doesn't have the textbook. The tablet won't, uhm, be fixed overnight. The learner won't get a new tablet overnight. So, it stays a problem; I most certainly think it isn't a solution. I think it is an aid; I think it can make some subjects more convenient, but I feel in our land with our economy and places where learners don't always have electricity, really, how will they charge the tablets? How will some of the schools get a Wi-Fi system if they don't even have the money now to make copies? So, it isn't only financial implications for the learner and the parents, but also [for] the school. And what will it help if the learners have the tablets, there is a Wi-Fi system, but they don't know how to use it? Training, training, training. They must receive training on how to use it. It doesn't help they have it, but they never get any training.

No … Money will always be a problem. Tablets are not necessarily cheaper. The teachers must be trained properly then. Rather focus on training teachers properly than introducing mobile learning.

Analysis of whether mobile learning is the solution in South Africa

When the teachers' answers are analysed, the following becomes clear: most of the teachers agreed that they did not feel that it was the solution, as not all learners had access or the financial power to afford the technology. As such, it discriminates inherently more because not everyone has access to mobile learning in the classroom.

Obstacles to the use of mobile learning include theft, households that do not even have electricity, financial stress, the fragility of the devices, the lack of Wi-Fi connections and the lack of knowledge of both teachers and learners about how to use the devices. An alternative that was suggested was that instead of incorporating mobile devices, it was more crucial at the moment that teachers would be adequately trained.

I partially agree. It is my opinion that teacher training is crucial, especially in specialised subjects, but it is also necessary that technology should be incorporated. It must be part of the way that teachers teach and learners learn. In a previous answer, it has already become clear how much more learning can be enriched and enhanced with the additional layers of learning that can be added through the use of technology and

access to the internet. Therefore I feel that an alternative to this problem should be sought.

5.2.5 Thoughts on teachers

5.2.5.1 Teachers using mobile learning in class

Learners' responses

The learners' responses to the question **"How do you feel about the way that your teacher is using mobile learning in your class?"** indicated that they were satisfied with the way their accounting teacher was using mobile technology in the classroom; but in general, teachers did not use technology as effectively as they should –

> *Uhm, very few teachers use it effectively. Like the e-books, they still use textbooks.*

When asked why they thought that was the case, the learner said:

> *They probably don't understand it that good [sic]. Maybe when the teachers get more training or get used to it, they will get more comfortable with it, or when they use it more often.*

When I asked this group of learners how they thought their teachers should use technology in class, they smiled and giggled, giving the following responses:

> *To charge it, because some teachers forget to charge the tablet; then they are negative about it, and then they just put it down and don't want to use it.*
>
> *To maybe start with the easier stuff. Just, for example, to do exercises with the tablet to see how it works in the classroom.*
>
> *They must be forced to use it the whole time, to like [gestures] … otherwise they will just leave it.*
>
> *If they have the textbooks, they will rather grab the textbook, so maybe they shouldn't have the textbook with them. [The whole grouped giggled again.]*

In another group, the learners were satisfied with the way their teachers were using technology at their school –

> *Well, it is easier, because, uhm, for her to find the work, like, if you swipe to the side, then it has all the headings and subheadings for each chapter, so it is easier, and you don't have to page. There is like an index and that in our textbooks, but I think like it's easier and less time consuming and you get more work done. And like, if you close a specific textbook today, tomorrow if you open it, it will be on the exact same page.*

Another learner said:

> *I would say I am satisfied, 'cause every year they would have courses and stuff and there they enhance their knowledge about e-learning, so they try to give us their best of knowledge that they have and pass it on to us.*

Analysis of how teachers are using mobile learning in class

In analysing the learners' responses on how they felt about how their accounting teachers were using mobile learning in the classroom, it becomes clear that the focus groups were satisfied with the way their accounting teachers were using mobile technology in the classroom; however, this was not the overall sentiment towards all their teachers. One group made it clear that, in general, teachers did not use technology as effectively as they should. Their opinion was that this might be because the teachers did not understand it that well and needed more training.

It would seem that the learners mirrored the way that their teachers were embracing the technology in class, and therefore these learners were satisfied. However, as it was mentioned that not all teachers were using technology effectively, it shows that there is still a problem and that teacher training and attitude towards the devices should be addressed.

5.2.6 Ideas and suggestion

As first-line users of mobile technology for learning, the learners, as well as the teachers, were asked to share their ideas and suggestions so that the implementers, other users and developers of mobile technology for learning would be able to improve and enhance these features.

5.2.6.1 What would you like to change?

Learners' responses

Aspects that the learners felt needed change centred on the functionality and technical aspects of the mobile devices and miEbooks system. One learner answered:

> *The turning pages ... If you can turn the page instead of scrolling … If there were literally a page to turn. I think it would be more practical.*

Another learner added:

> *If you can insert a bookmark. Like when you open your tablet, you open at the last page you were. Now it opens the book from the start, so you have to scroll to page 300 again.*

One learner felt it would be better to keep paper as an option –

> *If you have like the option of printing the exercise, so for example the teachers give you exercise 2.1, then you can ask the teacher: "Can you please print this for me." Like, sometimes it's really frustrating, 'cause the notes are on top, and you have to keep on scrolling and it just, likes, gets really confusing.*

Another learner added:

> *Like, if they can guarantee me that miEbooks app, for example, won't start becoming slow after some time, cause like, say now, I am on the app for about … I am on my textbook for 30 minutes then after a while the textbook starts getting slow and it takes longer to load pages and stuff.*

One learner simply stated:

> *Storage space.*

When prompted, she explained:

> *It is miEbooks. Like in the educator's folder, each subject, you have a lot, especially for English and stuff, so it takes a lot of space.*

Likewise, another learner added:

> *And, uhm, like sometimes some of the children in our class, like, if you were here last year, some of your education folders from last year start re-downloading, like if I am Grade 10, then my Grade 9 life science re-download … and we still have our old books from the previous years, and you can't delete them. We just have to archive them.*

Teachers' responses

When the teachers were asked **what they would like to change**, three of the six teachers spoke about the content of the curriculum that needs to be updated so that it is more relevant and adapted to be usable on the mobile devices or using the accounting software that is being used in the workplace today. Some technical issues were also mentioned as the following comments show:

> *Uh, I would want the textbooks to be revised to have more relevant information. The textbooks still talk about cheques being released and that type of thing, uhm, yes. I would also like the learners to learn more about electronic transfers and to, uhm, show the learners how to make an electronic payment and so forth. They just always hear these words, but they don't know exactly. We teach them to know how to fill out a cheque, but that doesn't happen in real life anymore. But nobody teaches them how to make electronic payments. So, yes, I would like to teach them using programs for accounting in practice, like Pastel or so, where there can be a practical period once a week so that you can train the learners in that way.*

On the technical side, one teacher answered:

> *I would like to be able to add notes in any book, in any format. I would like to give the learners the ability to let them make notes, but also to let them add voice notes at the chapter you are currently teaching. Maybe this is already possible, but the learners don't know all these extra functions.*

Other responses were:

> *My smartboard is not connected to the internet. I would want the internet. My software is old. Would like to have it upgraded. Get a high-range tablet.*
>
> *Every learner should be getting the same tablet or devices. It would make it easy for teachers to help them. The accounting curriculum should be adapted to be used on electronic devices. Have learners also participate in workshops on how to use technology and how beneficial it would be for them to use it at school.*

Analysis of what should change

When the learners were asked what they felt needed to change, they mentioned the functionality and technical aspects of the mobile devices and the ITSI miEbooks

application, such as being able to turn the pages instead of scrolling and inserting bookmarks to open at the last page they were on. One learner felt that a paper option should still be available, showing that this learner wants to keep to the old traditional way of learning. The learners also wanted a way that the miEbooks application would not become slow after working for some time on the application. Another element of the application that learners wanted to change was to have bigger storage space, as the educator's folder seemed to contain a large amount of information and sometimes the previous year's information would re-download.

I believe that these are all technical aspects that could be upgraded with software patches.

When the teachers were asked what they would like to change, the content of the curriculum was mentioned: it should incorporate more relevant, up-to-date and mobile device adaption and use the accounting software that is currently being used in the workplace today. As such the teachers were again stating, as was mentioned earlier, that there is a need for a more up-to-date, more practical and more relevant curriculum. Some technical issues were also mentioned, such as being able to add notes to any format that a textbook is in and the learners being able to add notes and voice notes to the chapter under study, being connected to the internet, new software and better tablets.

One note-worthy point that was made, involved training. One teacher felt that the learners should have the same devices so that it would be easier for the teachers to help them. She also felt that learners should participate in workshops on how to use technology and the benefits it would have for learners using it at school. This would help the teachers as well. Instead of placing the burden of preparing the learners for the use of the tablets on the teachers, a technology-savvy, young, enthusiastic trainer should teach them. I feel that this will have a tremendous impact on the learning curve of using mobile devices in the classroom.

5.2.6.2 What would you like to happen in the future?

Learners' responses

When the learners were asked if they **had any suggestions or ideas on what they would like to happen in the future** with regard to mobile learning, one learner responded as follows:

> *I think to like make it more interactive, so that you can make notes easier and quicker, more clear notes. And to, and I know in the biology book it works like this, tap and then add something at the questions.*

With regard specifically to accounting, one learner said:

> *I personally think accounting is a subject where you will work a lot on the computer. I think like a statement of income where you don't have to literally write stuff down, but just fill out the information on the spreadsheet; I think it will be much easier and more practical to submit the assignments.*

One learner was quite innovative and said:

> *The desk will be the textbook. The desk will be like the tablet or textbook; instead of us having to bring the textbooks. So the computer is practically on the desk, it is like a screen, and you have your pen, and you write on it, you just log in on your account and then … You can't forget your tablet, and it will be plugged into the wall, like electricity, like and when there is a power surge then …*

When the learner was asked if he was using a pen at the moment, he answered:

> *I have a pen, so like say with highlighting, you have to press, and your finger can press some other sentence, and with a pen, it is easier to line, like underline it. And you can write notes.*

Teachers' responses

On the question of **what the teachers would like to happen in the future in the subject accounting**, accounting software and programs for application, the teachers' input in applications and videos and the affordability of technology were mentioned –

> *I think, in the future, if you can give a learner a question paper and they must, for example, set up financial statements on Pastel and so forth. You can have written question papers and a practical part. Uhm,*

then, uh, an accounting program where you can apply the theory. That will be very meaningful for the future.

Some of the apps and videos available do not have the input of teachers. Get teachers to help when developing an app for phones.

Technology should become cheaper to buy so that everyone can afford it and have access to be able to use it, from your underprivileged to the privileged learners.

More programs suitable for accounting.

Analysis of what should happen in the future

When the learners were asked if they had any suggestions or ideas on what they would like to happen in the future with regard to mobile learning, the answers included being able to make notes easier and quicker and to tap and then add something at the question as they were able to do in other subjects.

I would like to make special note of what one of the learners said regarding accounting specifically. This learner stated that accounting was a subject where much work was done on the computer and that she thought that it should be possible to, for example, fill out the information on a spreadsheet, and it would be much easier and more practical to submit such assignments. This shows that even the learners are beginning to see the gap in the accounting curriculum and would like it to be more practical and relevant for the current digital age.

One particularly innovative learner had the idea that the desk should be the textbook, which means that they would not have to bring either textbooks or tablets. He explained it as follows: the computer is practically the desk, it is like a screen and they can just log in on their account; the learners cannot forget their tablets and the desk will be plugged into the wall to its power source. I was quite keen on this idea as it would mean that as the learners move between classes it would be possible for everyone to log in on their accounts and continue with the work in each class, and when they leave, the next class of learners will be able to use the same digital desks. The learners would still need their

tablets for studying at home and doing homework, but this will only be to access their accounts remotely. It would seem that this is the type of creativity that is looked for in the Fourth Industrial Revolution, where learners are expected to think “outside the box” and come up with new and better solutions to current problems. It seems fitting here as it appears that learners have a problem with mobile technology as it is presently incorporated in the classroom, but without shunning the technology, this learner is embracing it and trying to find a solution that might be more appropriate.

Another suggestion that I would like to make at this stage is that the homework should be in a format that would make it easier for the learners to complete it digitally.

To the same question of what the teachers would like to happen in future in the subject accounting, more useful accounting software and programs for application, the teachers’ input in applications and videos and technology being made more affordable were mentioned. One teacher mentioned (and I want to add that it should be possible) giving the learners a question paper and they have to set up financial statements on, for example, Pastel or Excel, and that the accounting curriculum could have written question papers as well as a practical part. This would give the learners a better understanding of what is happening in real life.

I would like to make the suggestion of rather than forcing a tablet into the hands of every learner, it may be better to fully equip a school to become a digital hub with ICT specialist teachers, unlimited Wi-Fi and ICT equipment so that the learners will have a controlled, safe learning environment – an environment where they can come and study and equip themselves better for the future.

5.2.6.3 Is there anything in your other subjects that you would like to use in accounting?

Learners' responses

When the focus groups were asked if they **were using anything else concerning mobile learning that they would also like to be able to use in accounting**, there was not really anything that the learners in any of the groups felt they wanted. One learner mentioned the videos that they were using in English to study their poems –

> *Uhm, English. In English, we use it for when we do poems ... The teacher sometimes pushed videos for us, and that just helps because sometimes it is a summary of the poem or so, and that also helped sometimes.*

From this question, the conversation flowed and the learners were asked whether they were doing any tests on their tablets. The majority said no. One group, however, had written a test in physical science that was marked by the system, but their overall experience with this method was not good. This was due to the lack of practicality of the test –

> *It is a bit difficult because like, the one that we had, was like, a small block and you had to scroll to look at the diagram and then you had to come back to the answers to answer them.*

Thus the learners could not see the diagram and fill in their answers at the same time, which made the test unpractical.

Analysis of anything in other subjects that could be used in accounting

When the focus groups were asked if they were using anything else concerning mobile learning that they would like to have available in accounting as well, there was not anything the learners in any of the groups felt they wanted to use. They did make a suggestion that incorporating videos that explain specific aspects of accounting would be beneficial. These videos would be able to show learners in a more visual way how to apply and understand specific accounting aspects better.

In one subject they had written a test online, which was marked by the system; however, it was not very successful or practical, as the learners could not see all the information at the same time. It is my opinion that this is a technicality that should be sorted out and implemented more by every teacher, as it would save a tremendous amount of time as the teacher would not have to sit and mark every answering book.

5.2.7 Final thoughts

Learners' responses

Five matters were mentioned again:

- It is good that mobile learning has been implemented at school level.
- The effectiveness of the system has to improve.
- The learners want separation between their private life and schoolwork.
- They do not think it is right that the teachers can see what they are busy with in class while they are on their tablets.
- It is frustrating doing research when many websites are blocked for use.

The following responses were given by the learners:

> *Because the universities and everything is [sic] busy switching over to technology, so to do it on a school level is actually a very good idea.*
>
> *They could improve the effectiveness of e-learning because there are always problems with the textbooks and like accounting problems with the textbooks. But then we have to go to the head of the technology or whatever you call it, but ja, it takes time and then she has to keep our tablet while she does the work and then we also have private information and then we have to give our passwords to her … They want us to use computers now, and you can't just use computers for your private life, like keeping memories on your phone, and they can see what we do. They can see what we do, 'cause they say that we have to "download" a certificate in order for us to [use] the internet, but then in actual fact, it also just monitors what we do on our tablets, and with internet usage as well. They can see if we are like not on our textbook.*
>
> *I … I think that is why they want us to be connected to the Wi-Fi at all times, because the Wi-Fi gives them access to our tablets, but also*

after hours, if we go onto the Wi-Fi at home, they can still … They can still see what we are doing … And also like, doing research at school. It's also not easy, like the Wi-Fi, our Wi-Fi blocks a lot of websites.

Most of the learners agreed with this statement and added:

They block almost 90% of the websites, so doing research is really quite difficult.

And say like you have an app to use like to get information from like I use to have, but you can't … You need a … like a … search engine or update and then you can't use this Wi-Fi, cause you can't go into apps …

This concluded the focus group discussions with the learners.

Teachers' responses

At the end of each interview, every teacher was asked if there was anything else they wanted to say on the matter of mobile learning. The following answers were given:

I think that mobile learning … as I said, there are two sides to the coin. The one side is very positive because it really helps and you mustn't see it as a tablet; you can see it as a phone with WhatsApp. It is good if the learners are able to let you know when they struggle with something; this is how you can help them. You can upload resources … on the tablet, uhm, you can set up tests that the tablet will mark immediately, which is so much more convenient. There is one option on the tablet where you can see which learner is currently busy with the textbook. For how long the learner was busy with the textbook, when last did the learner use the textbook. However, once again, it takes time, right? So yes, uhm, technology is very good; it's good to prepare a learner with technology because a lot of universities make use of technology. But I don't think we must throw away the traditional methods. The learner must be able to choose, does he want to use the tablet or the hard-copy textbook. I also think training is very important. Not only for the teacher, but also the learner. And boundaries must be set. Not only through the teachers for the learners, but also through parents for learners, otherwise the learner will misuse the tablet; so, rules are important for a school. The rules must be applied.

One teacher said:

It is the best resourceful tool that makes learning and interacting in class more effective … and makes it easier to have learners to [sic]

continue on their own even if their teacher is not available. They are able to work at their own pace on their own time as well if they did not get or understand the lesson at that given time.

Lastly:

I just think, uhm, they will need to learn [sic] educators more on university, because although learners of today know more about technology, they are growing up with it, but uhm, I'm going to teach for at least 40 years and the next 40 years, that gap in technology … someone needs to, to … understand? One [sic] can still learn yourself, but you can only learn yourself that much. So, there need [sic] to be, I think, be training and to make people more positive about it and … No, well, on university level also, but that's why I just interrupted myself, I think, or I don't know, I think maybe the … the … let's say the students of today or learners that's [sic] currently in the school, when they go to the university, they will be more comfortable with technology, because it's how they grew up. But we who didn't grow up with it, I mean, I got my first cell phone in matric. Uhm, somewhere they need to help our generation with it, I think. As I said, you know how to watch YouTube videos and so on, but I think there's so much more that you can, you can do. Uhm, but these stuff like power outages or uhm, learners playing on it and so that makes you negative, so you rather go back to what you are used to, yes. And uhm, what I do, for example, I try to explain to the learners, I may not have personal videos and photos on my school computer. Uhm, I mean, head office can see what exactly is on my computer. When I download, they can see exactly what I download. Uhm, and the learners don't understand … like I said, the distinction …

On a sad note, one teacher said:

We did an inspection on the gadgets and out of the 645, we are left with only 66 functional gadgets because [the] learners are breaking them.

Analysis of final thoughts

When the final thoughts of the two groups of participants are analysed, the learners' thoughts consisted of the following: it is good that mobile learning was implemented at school level; the effectiveness of the system had to improve; the learners want separation between their private life and schoolwork; they do not think it is right that the teachers can see what they are busy with in class while on the tablet; and it is frustrating to do research when many websites are blocked for use. Compared to the

answers the teachers gave, the teachers' answers consisted mostly of the following thoughts: they think that mobile learning can be an effective way of learning although some still cling to the traditional methods; learners can become self-directed in learning; and it is necessary that technology should be accommodated in the training teachers receive so that they will be kept up to date with the latest developments in the digital age. These comments all show what is important to the specific groups. These needs and comments should be taken into consideration if mobile learning is to be implemented effectively.

On a sad note, the teacher who informed me about the inspection on the mobile devices and that out of the 645 they had received from the Department of Education, only 66 functional devices were left because the learners were damaging the devices, pointed out one of the realities of mobile learning that should be faced. It would seem that handing the learners these fragile devices, which do not personally belong to them, causes a problem. However, instead of doing away with mobile devices due to such obstacles, alternatives should be sought in order to find solutions to problems like this one.

This completes and concludes my description and analysis of the findings. All the data that were gathered during the focus group discussions with the learners and the semi-structured interviews with the teachers have been described and summarised. This was followed by the data analysis section of the chapter, in which the learners' answers were compared to the answers the teachers gave as well as my opinion of these comparisons and contrasts.

5.3 CONCLUSION

This chapter presented and analysed the data from the focus group discussions with the learners and the face-to-face interviews with the teachers. A qualitative means to analyse the data was applied. Interpretations and deductions were made based on the presented data.

The next chapter presents the final findings, conclusions and recommendations based on the findings of both the theoretical and the practical research.

CHAPTER 6

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

The overall aim of this research was to explore the perceptions of teachers and learners on the use of mobile learning in South African accounting classrooms.

The specific objectives of this study were:

1. to discuss the practices and benefits of using mobile learning as an educational medium in teaching and learning;
2. to review the literature on the practices and benefits of using mobile learning in South Africa and in the accounting classroom;
3. to explore the perceptions and experiences of a few selected teachers and learners regarding mobile learning in accounting as a school subject; and
4. to provide insights and make suggestions that could enhance the implementation of mobile learning in an accounting classroom.

In this section, I re-examine the research objectives as stated above, summarises the findings of this research work and offers conclusions based on these findings. In Chapter 5, the results of the case study were described and analysed, and those results need to be summarised; therefore, in this chapter, the summary and recommendations for future research are discussed. In addition, a section reflecting on the research process that has been undertaken is included. By adopting this structure, I intend for the research work to be concluded to reflect on whether or not the objectives stated at the beginning of this research have been met. After this, the final comments are given and the research concluded.

6.2 SUMMARY OF FINDINGS AND CONCLUSION

This section summarises the findings of the case study research that was carried out, focusing on the following two questions:

- As a result of my literature review and practical research, what did I found out about the stated research objectives?
- What conclusions can be drawn from the findings?

6.2.1 Research Objective 1: Mobile learning as an educational medium

6.2.1.1 Summary of findings for Research Objective 1

The value of mobile learning:

The literature identified mobile learning as learning that can take place anytime, anywhere, not just inside the classroom, and is not only for formal academic purposes, but for far more, such as specific interests as well. When this is compared to the findings of this case study, it would seem that many teachers and learners still do not realise the benefit of this type of learning, as they only use it as a textbook, for doing research or for communication between the teacher and the learner. However, some teachers and learners know that mobile learning involves utilising technology for teaching and learning purposes. These learners and teachers realise that it is possible for mobile technology to do more with learning, which previously was not possible with traditional teaching methods, and that it is far more than just an alternative way of delivering the set curriculum, as was mentioned in the literature review.

Transformation of learning:

The literature showed that mobile learning could transform learning, as there is so much more that can be done with mobile devices in the classroom, which was not possible with traditional teaching and learning methods. In practice, though, some learners and teachers still seem to think that mobile learning is only a substitute for the traditional way of learning.

Assumptions about learners' abilities to use mobile learning for academic purposes:

The literature also indicated that one should not presume that because these learners are the generation that grew up with technology, they know how to use it effectively for

academic purposes as well. In practice, when learners were asked how long they have been using mobile learning, it became apparent that this is relatively new for them, as they had only been using it in the classroom for approximately two to three years. That being said, although this was new to them in their formal learning, using technology was not, as they had been using it informally for about seven to nine years, showing that they were quite familiar with technology, even though it was not for school purposes.

The age, willingness and attitude of the teacher:

The literature made it clear that how effectively mobile technology will be implemented does not depend on the age of the teacher, but on the willingness and attitude of the teacher towards the use of mobile technology in the classroom. When the semi-structured interviews with the teachers were conducted, it was found that even though the use of tablets was new in the class setting, the teachers had been using technology as part of their planning, administration and presentation as long as they had been teaching. This observation can mean that these teachers do not have a problem with technology and are reaping the benefits of teaching with ICT or that all of the teachers interviewed are technologically literate. However, as the learners indicated, this is not an indication of all teachers in South Africa, as there are still many who are not using it effectively.

6.2.1.2 Conclusions from findings for Research Objective 1

The lessons of this case study appear to be, concerning the practices and benefits of using mobile learning as an educational medium, that mobile learning is a new way of learning. It can take place anytime and anywhere and is not confined to the classroom. Even though it can transform learning, this is not what is currently happening in the South African classroom as teachers and learners still do not embrace it as they should and only see it as a substitution of the traditional teaching and learning methods. This lesson is followed by the fact that although these learners are the generation that has grown up with technology, they do not know how to use mobile technology effectively for academic purposes. Furthermore, teachers' attitude and willingness to adopt mobile

learning in the classroom will determine how effectively it will be implemented in their teaching methods.

The conclusion that can be drawn from this research on the practices and benefits of using mobile learning as an educational medium in teaching and learning is that teachers and learners still do not grasp how effective mobile learning can be to transform teaching and learning. It can help them to be ready for the demands of the 21st-century technologically driven era, but for this to happen, both teachers and learners should be trained and shown what is possible with this technology in (and outside) the classroom and the added benefits it holds for their teaching and learning experiences.

6.2.2 Research Objective 2: Mobile learning in South Africa and the accounting classroom

6.2.2.1 Summary of findings for Research Objective 2

Overhaul of the education system to incorporate mobile technology:

The literature revealed that in South Africa, the focus of the Department of Basic Education is to prepare the country's future workforce for the Fourth Industrial Revolution and to equip South African learners for this digital future. A complete overhaul of the educational system is proposed over the next few years. This overhaul will include the incorporation of mobile technology in the classroom. The literature identified some troublesome aspects that can cause problems with the implementation of such a digital programme. Challenges include learners preferring studying from textbooks, resource shortages such as broken tablets or chargers that need replacing, criminals and theft, irregular internet connections, load shedding and sore eyes from too long exposure to the bright screens of mobile devices.

Gap in the literature on mobile learning in the South African accounting classroom:

As has already been stated, no known literature is available on the specific effect that mobile learning has in the South African accounting classroom, with the emphasis on accounting as an FET subject. The only literature available focuses on accounting in higher education and accounting in a professional capacity.

Resources available in accounting:

During the case study, teachers and learners were asked if they knew of some of the resources available to them in accounting and it became apparent that the participants were still ignorant of most of these resources. No one knew or had heard of the resources specially designed to help learners in accounting, although they knew or had made use of applications available for all their subjects. The only other application with which they were familiar was the application from SAICA, but they only used this application for career guidance and not to help them learn or teach accounting as a school subject. One program available that has been specifically designed for school accounting, Pastel's School Program, is currently not effectively being used because it is not part of the curriculum and is only seen as an add-on. With an already overfull curriculum, many teachers do not have the time to incorporate this and only focuses on what needs to be done. During the case study, one teacher who did not know of the accounting resources available, showed interest in finding out more about these resources. This finding correlates with the literature review finding that states that the success of mobile learning depends on the teacher and his or her perception of using the technology and resources available. Teachers' perceptions will influence not only how they will implement technology in their teaching practices but also their eagerness to know more about and search for additional resources available to them to enhance their teaching.

Mobile technology in the accounting classroom:

The research found that the typical accounting classroom still looks very much the same as it did traditionally, with the added enhancement of technology such as an interactive

whiteboard, a projector, a laptop or computer and tablets. I also found that the learners did not like working on the tablets when it comes to accounting and preferred using textbooks instead. The reason for this was that they found it difficult to follow, to write or to make notes with the tablets. They would preferably work on paper and only use the tablet as a handbook or for receiving homework, additional resources, memorandums and other information from and communication with the teacher, as well as for doing research using Google. They were able to use the devices to gain real-life application with projects such as auditing, showing that there are options for using the devices to enhance lessons that were previously not available without the technology in class. Other added features included showing videos and taking photos or making summaries with the tablets. The teachers felt that this saved a lot of valuable classwork time.

6.2.2.2 Conclusions from findings for Research Objective 2

The lessons of this case study, concerning mobile learning in South Africa and the accounting classroom, are that it is the aim of the Department of Basic Education to equip today's learners for the Fourth Industrial Revolution by revolutionising the current education system. The Department plans to go digital and make sure that each learner will receive a mobile device in the next six years, although sceptics are concerned about the challenges this plan will bring. Challenges include learners who prefer studying from textbooks, resource shortages such as broken tablets or chargers that need replacing, criminals and theft, irregular internet connections, load shedding and sore eyes from too long exposure to the bright screens of devices.

Furthermore, a gap in the literature was identified concerning mobile learning in the South African accounting classroom as the literature available only focuses on accounting in higher education and the professional workplace. Although resources, software and applications are available for high school level accounting, these resources are either not known or under-utilised. Software that was explicitly designed to help learners understand accounting better at school level is currently only seen as an add-on to the curriculum and therefore not used as effectively as it could have been, as the curriculum is seen as overfull already. That being said, some teachers would like

to learn more about all the resources available to them in accounting. The learners did not enjoy working with the tablets in accounting as they found it difficult to follow, to write or to make notes with the tablets and would preferably work on paper. Features of the tablets that they did value included receiving homework, additional resources, memorandums and other information from and communication with the teacher, as well as using the devices for doing research using Google. The learners were able to gain real-life application with projects, and showing videos and taking photos or making summaries with the tablets were also possible. The teachers felt that this saved a lot of valuable classwork time.

The conclusion that can be drawn from this research on mobile learning in South Africa and the accounting classroom is that this study significantly contributes to the gap that was identified in the literature. Furthermore, as the Department of Basic Education aims to make sure that learners are being equipped for the digital future, the concerns that were identified should be addressed to make sure that the overhaul of the education system will be successful. In addition, software that was designed to help learners understand high school level accounting better is not being used effectively as the curriculum is overfull and the software is only seen as an add-on; it is vital that this is rectified. Teachers who are eager to learn about the resources that are available to them in accounting should be allowed to do so. As accounting is a practical subject that moves between transactions, journals, ledgers and financial statements, the learners found it challenging to work with mobile devices.

6.2.3 Research Objective 3: Perceptions and experiences of teachers and learners

When the literature is examined, it is possible to see that the way the users of mobile technology, such as teachers and learners, perceive the experiences with these devices will determine how successful the implementation of mobile technology in the classroom will be. It is therefore vital to understand the reasons why people accept or resist mobile learning and in what ways this acceptance can be improved. The literature points out that it is here that taking people's perceptions into account should be the first step when

implementing mobile learning into a course or class. In the literature, it has been found that learners and teachers will adopt mobile learning if they can see how it would benefit their particular needs.

6.2.3.1 Summary of findings for Research Objective 3

Using mobile technology academically:

The literature identified studies where the use of tablets was incorporated in the classroom and learners were overall positive about the use of these handheld devices and even found them necessary for their learning experience. Furthermore, learners found it easier to read on the mobile devices; they were more willing to research projects and were able to write and edit on the tablets through “plugin” keyboards. It was also found that when learners were introduced to the opportunities that the tablets gave them, they all became more engaged in learning.

One study showed that these devices helped learners to take control of their learning and they supported continuous learning by allowing learners to switch effortlessly from formal to informal or personal to social learning contexts. The same study claimed that the devices engaged and motivated learners by keeping them focused on content for more extended periods, and because the tablets could be used inside and outside the classroom, they allowed learners to enhance and expand their learning in ways that were previously more difficult or even impossible. Also, due to the multiple communication features, accessibility and availability of tablets, they make communication between different stakeholders, such as teachers, learners and parents, more accessible and more routine. This was in contrast to what this study found, as when the learners were asked if it was different or harder for them to use these devices to learn accounting, most of them answered that they found the tablets challenging to use for formal learning. Reasons mentioned included the following: practically, in accounting when making notes or doing equations, valuable time is wasted because learners cannot write it down quickly but have to type it; scrolling from the beginning of the handbook and not being able to page further frustrated the learners; when they have been working for some time on the devices, the tablets tend to freeze, which added to

their frustration; it was frustrating to the learners when they could not see what they have written earlier as the writing function is not as accurate compared to their handwriting; the learners found the physical act of learning and making summaries with the tablets difficult; and the bright light that hurt their eyes was also a problem. In the literature review, the bright light that can hurt the user's eyes was also mentioned.

While most of the teachers in the case study stated that it was difficult at the beginning to start using the mobile devices, they could see the benefits of using it. They still experienced obstacles, such as technical issues, for example when the Wi-Fi was down, or having to monitor the learners at all times to make sure that they are busy with schoolwork, but overall, the teachers were embracing the use of mobile devices in their classes. One matter that the study and literature review agrees on is that communication between the different stakeholders, with the help of the mobile devices, is now more active and routine.

Both the learners and the teachers felt that the tablets might be of more use in subjects such as languages, but for a practical subject such as accounting, which moves around quite a lot between the different journals, ledgers and financial statements, it was problematic and frustrating.

Confidence in using mobile learning:

In the literature review, studies where learners feel they are competent in using their mobile devices and express feelings and perceptions of high self-efficacy were cited. The literature states that if mobile learning is convenient, easy to use, reliable and easy to navigate, learners believe that mobile learning can be useful and they plan to use the mobile application.

To be able to feel confident in using mobile learning effectively, the literature review made it clear that information technology and digital media skills are now core competency skills one needs to be able to succeed in most careers today. This makes it essential for digital skills to form part of a comprehensive education programme. If there

is no digital educational framework, the knowledge and access to technology will be unevenly distributed, enlarging the socio-economic gap and worsening inequality. The literature review made it clear that teachers need to develop learners' ability and confidence to excel both online and offline in a world where digital media is ubiquitous. Just like IQ or emotional intelligence, digital intelligence is an individual's ability to use and competently command digital media. The literature states that this should start as early as possible, ideally when one starts actively using games, social media or any digital device.

As the literature review pointed out, one level of digital intelligence is digital citizenship, which stands for the ability to use digital technology and media in safe, responsible and effective ways. It would seem that as there are learners, such as some of those interviewed in this study, who plainly state that they do not use any particular websites but just go onto Google, type what they are looking for and then see whatever information is given (without first looking at the authenticity of the information) it is crucial to teach learners these important aspects of digital intelligence at the earliest possible opportunity in formal education.

In this study, when the teachers and the learners were asked how confident they were with using mobile technology, the learners indicated that they did not have the confidence to learn by using mobile technology, while the teachers' answers indicated confidence in their teaching with mobile technology. It could also be that the training the teachers received taught them how to use mobile technology effectively as a tool. This emphasises, as the literature review and the study showed, that it is essential to teach not only the teachers but also the learners how to use ICT, and in this case, mobile technology, for academic purposes and to make sure that they build their confidence levels in a digitally advanced world. The literature review showed that many believe that because Generation Z is the first to grow up with smartphones and social media, they will be able to know how to use it for academic purposes, as they would have picked up these digital skills by themselves or they would have learnt the skills at home. Unfortunately, neither parents nor teachers can effectively equip children with these

skills, due to the digital generation gap. These children are often exposed to and targets of cyber risks, such as technology addiction, cyberbullying and grooming. Their ability to interact with others can be affected by absorbing toxic behavioural norms. This again points to how important it is that learners' digital intelligence is developed. As the study found, this should be done as early as possible in their formal schooling.

Mobile learning helping or hindering the understanding of accounting:

In the literature review, it was noted that the accounting profession had been changed globally by the digitisation of economic phenomena. Therefore it is crucial that the impact of ICT on accounting and accounting information must be integrated into basic research on the subject and to discover how the incorporation of mobile devices is influencing teaching and learning. The literature review named a study where the researchers found that the use of mobile devices for learning or educational purposes and doing research or homework about accounting lessons increased as students were adopting mobile devices for their learning purposes. The students came to the deduction that using mobile devices for learning purposes was easy and with the help of mobile technology, it is possible to do their accounting homework quicker. It was in contrast to the findings of this study where the learners felt that mobile learning was hindering their understanding of accounting. It was because in accounting, working with the tablet and scrolling while moving between the different ledgers and journals or calculations and answers were made very difficult and frustrating for the learners. The learners felt that being able to write down and engage with the information in their books was more important than just being able to read off the tablet, and therefore they preferred textbooks for learning.

When the teachers were asked whether mobile learning was helping or hindering learners in understanding accounting, many teachers saw it as a distraction or a frustration for the learners. One remark that was mentioned a few times was that the learners did not enjoy working with the tablets – specifically in accounting. They (the learners) complained that they got lost in the textbook and did not always have enough memory on the tablet to download the resources. However, some saw it as a helpful

tool or beneficial to study accounting, depending on how the learner embraced the idea. The teachers thought that it helped when the teachers were able to show the learners information in the class with the projector, the internet and the computer, such as how specific things works and real-life scenarios, although these mainly focused on ICT and not mobile technology. Afterwards, the teachers will push these resources and additional information to the learners' tablets so that they could revisit these at home.

This correlates with the literature review, which spoke of a lecturer at one of the leading universities in South Africa who feels that some parts of the competency framework of SAICA are not possible to teach to the students theoretically, even though students are expected to possess specific competencies when they enter the professional field. The best the universities can do is to give the students an awareness of these competencies, as these can only be learnt in a practical, hands-on way when they enter the workplace. According to the lecturer, there are internet resources where students are being taught about tax using real-life income tax returns and tax calculations.

Overall experience with mobile technology and learning:

The literature review identified user acceptance as one of the success factors of mobile learning and that how well a user's overall experience with mobile technology and learning was, depends on learner acceptance. It was mentioned that if a learner had prior skills and experience of mobile technology, it would affect the learner's perception. Learners with strong basic ICT skills exhibit a relatively high intention to adopt mobile learning, and learners with advanced mobile technology skills are more likely to perceive mobile learning as being easy to use and useful. It is therefore important to anticipate learners' negative attitudes stemming from low ICT self-efficacy. As the literature review revealed, with support and guidance, it is possible to support the ease and willingness of learners to test and adopt mobile learning. In this study, it would seem that the user acceptance of mobile learning was not as high as could be hoped for. What the learners found positive, was the practical and added benefits that the mobile devices brought to the classroom, such as having everything together, for instance their textbooks and the additional resources that are pushed to them, without

having to carry all of these around in a paper format. They also enjoyed not having to decipher what they had written, as they could type it and print it when needed. Nothing was said about any learning benefit.

On the negative side of the learners' overall experience with mobile technology and learning, the learners preferred using the traditional textbook over the tablet, and they saw it as being inferior to writing, summarising and memorising.

The teachers also felt that the overall experience of using mobile learning was not positive. Much emphasis was placed on accounting, showing that the teachers, as well as the learners, felt that this was specifically due to the nature of the subject and that it might be different for other subjects. What the teachers did find positive was the ability to upload information and being able to communicate with the learners.

While most of the teachers and learners showed a negative outlook on their overall experience with mobile technology and learning, one teacher was particularly positive about mobile technology and believed that it was contributing to the enhancement and delivery of the subject.

Again this made me wonder if the embracement of the technology and the enhancement of the learning experience were not being influenced by the way that the users of these digital resources perceived it, as the literature review indicated a few times. The literature review also revealed that teachers were very positive about using e-learning as a teaching-assisted tool and that the intention to use it was influenced by the apparent usefulness and self-efficacy that e-learning holds. Another study in the literature review found that teachers had a good perception towards mobile learning, and even though their knowledge of mobile learning was average, they were eager to learn more about this type of technology. On the other hand, it had been pointed out that the less a teacher was willing to use technology in the classroom, the less the teacher would be comfortable with technology, and this is related to neither age nor years of teaching experience.

Benefits of mobile learning:

In the literature review, a few benefits of mobile learning was mentioned as many people see mobile learning as a way to go beyond the traditional classroom. This gives both the learner and the teacher more flexibility and offers more interaction opportunities than ever before. Furthermore, it improves learner productivity, gives anytime and anywhere access to information and content, leads to self-motivated, self-disciplined study, gives distance learning support, enhances student-centred learning, improves interaction among students, learners, teachers and instructors, and reduces cultural and communication obstacles between the schools or universities and the learners or students by using communication methods that the learners and students like and use every day.

Comparing the literature review with the findings in this study that mention some reasons why the learners liked using mobile devices to learn included being able to take the devices everywhere with them, having everything in one place, the added resources available to them, communication with teachers and classmates, the ease with which assignments and research can be done and the auto-correct function. The teachers, on the other hand, enjoyed the fact that they were able to share information with the learners, such as extra material, previous papers and other notes. The teachers liked the fact that the resources and work could be stored, the formats that were already done and the time it saved so that they could do more activities. The also enjoyed going online and showing the learners additional information or videos, being able to test the learners' knowledge through an online test which can also provide immediate feedback and that much less copying had to be done.

All these answers show that there are benefits to the use of mobile technology in the classroom and that both the learners and the teachers enjoyed the added features and benefits that were improving the teaching and learning experience, although not much was said about the enhancement of teaching and learning in the classroom.

Frustrations:

The literature identified some of the frustrations with regard to mobile technology in the classroom, which include the small screen of the device, disconnection at times and limited memory space and battery life. Some of the complexities of mobile learning include the cost thereof, familiarisation of the learners and the instructors, their readiness to use it, their perception on how efficient mobile learning is going to be, the difficulty to implement it and the technical limitations thereof. In practice, the learners found it frustrating that the resources tend to take a long time to download, problems with the Wi-Fi, the battery life of the tablets, practical issues with the tablets such as the learners not being able to page through the textbook but having to scroll, not being able to rule out, make notes, underline or circle information in accounting as can be done with a hard copy and not being able to minimise and compare two files. These frustrations with regard to mobile learning correlate more or less with the theory.

Something to consider is that the literature review showed that one of the most significant advantages of mobile technology is the high value that young people place on this type of technology, as it is the primary portal for social communication at present. The literature stipulated that learning will happen at its best when these young individuals find it relevant for them, when there is a social aspect connected to it and when they have a personal interest in the learning. In this study, one frustration for the learners was that they wanted separation between their private life and schoolwork. This might be because the learners wanted to use their mobile devices for socialising and felt that there should be some way in which to protect their personal life from the teachers, as the learners did not think it was right that the teachers could see what they were busy with in class while they were on their tablets. On the note of social devices, the literature highlighted that in one study it was found that half of the participating teenagers felt that they were addicted to their mobile devices and this affected their daily lives. That study found that when children are socialising while doing homework, multitasking and toggling between screens and people, it impairs their ability to lay down memories and learn and work effectively. This could be a reason why in the current study, the learners were finding it difficult to study with their mobile devices.

The teachers' frustrations included the following: technology that does not always work; problems with the Wi-Fi; learners' tablets that are not charged or are broken; the tablets freezing; the learners not being able to add notes; learners who are not comfortable with the use of the tablet; learners not using the tablets for academic purposes; learners not seeing the tablet as an aid to the learning process, but a social device or for playing games; problems downloading the information that the teachers send; learners who do not have data to receive information on time; poorly developed software; out-dated hardware; power cuts; incompatible tablets; the guarding and safekeeping of the tablets; tablets that break and the learners falling behind with schoolwork while their devices are in for repairs; theft, which tends to become the teachers' responsibility; spending more time on the computer than on teaching; and the technology being bad for their eyes.

The frustrations that were mentioned could all contribute to teachers and learners not embracing mobile learning as it could be seen as a hindrance to their learning and teaching processes.

Enhancing teaching and learning:

One should keep in mind that the study set out to see how the implementation of mobile learning could improve and enhance the teaching and learning of accounting at school level.

In the literature review, it was stated that it was not enough for mobile devices to merely replace previous methods that were accomplished without these devices; it must also transform learning. According to the literature review, the SAMR model can help to determine how well mobile learning activities meet the objective of transforming learning through the use of a mobile device. With regard to learning activities, the four categories of technology use, according to the SAMR model, are substitution, augmentation, modification and redefinition. The literature review noted that learning activities that fell within the substitution and augmentation categories could enhance learning, while learning activities that fell within the modification and redefinition categories had the potential to transform learning. With the focus on improving and enhancing teaching and

learning, the study found that the learners were more concerned about being able to use the devices and were not thinking of improving their learning or enhancing their experience yet. The literature review indicated that mobile learning might aid in solving some of the traditional learning system problems. Learners, teachers, instructors and students must be prepared for the next generation of learning and training. By developing a mobile infrastructure that meets the need for nomadic learning, this becomes possible and opens up new scenarios for developing e-learning and telecommunication industries. Both teachers and learners need a suitable and convenient system where they can interact with each other and that can facilitate the learning experience. The aim of mobile learning systems should never be to replace traditional classrooms but to complement the learning process. The answer that surfaced in all the focus groups was that to use mobile learning effectively, it has to start from an earlier age, as the learners found the transition between textbook and technology for learning to be a problem. Learners should be taught how to use these technological devices and all the functions for educational purposes from an early age.

The teachers mentioned that mobile learning would never replace traditional methods of learning, but should rather strengthen and improve the method of teaching. It mirrors what the literature review said on how teaching and learning could be enhanced and improved, as mobile learning could provide learners with more opportunities than traditional classroom strategies to apply investigative and critical thinking abilities and increase learners' learning methods positively and effectively. By letting learners access meaningful and just-in-time resources, they are constructing their knowledge, and with mobile device applications, they can increase their motivation, learning success and effectiveness. Although some teachers in the case study maintained that mobile learning would never replace traditional methods of learning, but should preferably be used to strengthen and improve the method of teaching, the most frequent answers given seemed to show that most of the teachers were set in their ways or not very positive in thinking that it would change.

Showing that technology can enhance teaching and learning, one teacher commented on all the information that can now be shared, showing the learners videos and making lessons more creative and more fun, which will add to the learning experience of learners. This reflects again the findings of the literature review, which spoke of the new capabilities that mobile learning offered.

In the study, one teacher stated that research had shown that learners did not benefit from the amount of screen time when they were studying with tablets and that this should be investigated. This was confirmed by the literature review. Furthermore, mention was made of learners experiencing problems with their eyes and the bright light of the screen that can hinder the learning process.

Some teachers are positive and eager to embrace the shift to technology-enhanced learning. These teachers see technology-enhanced learning as a tool to enhance the learning process that will benefit the learners and prepare them for the 21st century, which is ruled by technology. These teachers are looking at the future and seeing the potential that teaching with technology can bring to improve and enhance learning in South Africa.

The effect that mobile learning is having on learners:

The literature review stated that learners needed to realise that the jobs of the future would go to those learners who are self-directed in their learning and agile and thriving in this new mobile environment to meet the demands of the learning environment and workplace. They will need the ability to learn and self-monitor, to improve their learning progress across all subjects, to collaborate with others and to identify and complete meaningful projects and other learning experiences with the help of research, mentors or experts. Mobile learning can do just that. In practice, this was not as clear, as some teachers felt that they could see a positive effect for those learners who embrace the technology, while for others it was only a distraction, depending on the learner as well as the subject. A constructive answer to the question confirmed that mobile learning has opened their minds and broadened their thinking and reasoning ability. With technology,

it was possible to add value to learning. If extra information was needed, it could be found by accessing the internet during a lesson. The learners can become actively part of the lesson by researching the information themselves, and they do not have to carry a bag full of books.

Negative answers on the topic included that the technology is making the learners lazy because they do not want to write anymore. In addition, this has an effect on how they complete their homework or how they answer examination questions and lose marks for giving incomplete answers. Nothing in the study pointed to its being necessary to decrease learners' cognitive load in a mobile learning environment, as was mentioned in the literature review.

Mobile learning as the solution in South Africa:

On the question whether mobile learning was the solution in South Africa to address the needs of the diverse set of learners in today's classroom, the literature review revealed that when an institution, such as a school, decided to implement a mobile learning strategy, it must realise that it would have a significant financial impact on them. If this approach is not adequately planned, thought through and correctly executed, it could have a significant impact on initial and follow-up costs. The literature review also declared that finances could be one of the biggest obstacles a school must overcome for a mobile learning strategy to be successful. This could be the reason why most of the teachers in the case study were of the opinion that they did not feel that mobile learning was the solution for the South Africa educational crisis. This is because not all learners have access or the financial power to afford the technology. As such, it discriminates inherently more, as not everyone has access to mobile learning in the classroom. The study also shows that obstacles to the question whether mobile learning is the solution in South Africa essentially also point to financial complications, including theft, households that do not even have electricity, financial stress, the fragility of the devices, the lack of Wi-Fi connections and the teachers' and learners' lack of knowledge of how to use the devices.

As an alternative, it was suggested that instead of incorporating mobile devices into the curriculum, it is more crucial that teachers receive adequate pedagogical training.

Teachers using mobile learning in class:

The literature identified a study that saw the new technologies as a promoter for changing teaching and learning styles, which could remove barriers in disadvantaged communities that restrict teachers' and learners' access to information. The study argued that teachers in South Africa, as in other developing countries, are being encouraged to use technology to enhance learning, but for the benefits of these innovations to be realised, teachers should be integrating these technologies into their teaching practices. Overall, teachers see the use of ICT as a brilliant way of teaching because their learners learn more using technology than using traditional ways of teaching. It is this sense of achievement that motivates teachers to use ICT resources in the classroom. They found that the work itself, responsibility, personal satisfaction and achievement are some of the most important motivating factors for teachers that determine the use of ICT in disadvantaged areas. School managers and investors should give teachers the control of and responsibility for technologies meant for teaching and learning so that they will be motivated to use the technology in their classrooms to enhance teaching and learning.

In the literature review, another factor that was very important with regard to mobile learning for teachers was that they had to change instruction. It was pointed out that if the instruction does not change, it would do nothing to allow learners to use mobile devices, showing again how vital proper training for teachers is. The literature states that it is vital for teachers to realise that for learning to be intellectually engaging, they need to move away from the idea of lessons that are mere exercises in sitting, listening and reading, and they should build mobile learning lessons that interact with the context of the learning outcomes. The reason for this is to enable, engage and empower their learners. In this case study, the teachers found the mobile technology in class to be a helpful tool. It helped them to communicate with their learners faster and more efficiently; additional resources could be uploaded, which aided in deepening and

widening the learning experience of the learners; tests could be set and marked immediately through the software; the teachers found it beneficial to see what the learners were busy with; it is the best resourceful tool that makes learning and interacting in class more productive; it makes it easier to have the learners to continue on their own even when the teacher is not available; the learners can work at their own pace, on their own time; and the learners can review the work if they did not get or understand the lesson at the given contact time.

In this study, the learners in one group indicated that they were satisfied with the way their accounting teacher was using mobile technology in the classroom, but in general, teachers do not use technology as effectively as they should. The learners' opinion was that this was perhaps because the teachers did not understand the technology that well and needed more training. When this group of learners was asked how they thought their teachers should use technology in class, they answered that the teachers should remember to charge the tablets and incorporate the mobile devices by starting with simpler exercises to see how they worked first and that using the tablet should be the only option, with no possibility of using a textbook. In another group, the learners were satisfied with the way their teachers were using technology at their school. They felt that it was easier and less time consuming to find the work and the teacher could get more work done. In this group, the teacher training was mentioned again, but this time, the learners indicated that they were satisfied with the training that their teachers were receiving as the teachers were enhancing their knowledge about e-learning and passing it on to the learners.

According to the literature review, a mobile device such as an iPad could improve classroom learning. This is not because it is an iPad, but mainly because teachers who do integrate mobile technology into their lessons make more use of a project-based learning approach, which has been shown to improve learning. With this type of active and engaged learning, learners are inspired to obtain a more in-depth knowledge of the subjects they are studying.

Teacher training:

In today's digital age, teachers need to be equipped with the necessary technology, adequate training and support to help them be as effective educators as possible.

The literature review showed that it was not the age of the teacher or the years of teaching experience that determined whether the teachers would use technology in their classrooms, but rather how willing the teacher was to learn how to use the technology that would determine how comfortable he or she would be in using it. If the teacher is willing to be taught or receive professional development, it is possible for even senior teachers to embrace the latest technology in their classrooms. The literature review showed that one of the challenges that South African teachers faced, which prevented them from realising the possibilities that the assistance of technology would bring to their teaching, was indeed the lack of knowledge and teacher training in ICT use. There is a need for adequate training and support to facilitate teaching through technology. It was mirrored in this case study, as the teachers were asked about the training they had received to use mobile technology to teach effectively and it became clear that even though some found the training they had received helpful and sufficient, a great need for substantial, suitable teacher training still existed. This was due to the competence level of teachers that differs substantially. Some teachers found the teacher training inadequate and mentioned that they had to teach themselves how to use the technology in class and would have appreciated receiving a manual to refer to.

The literature review made two valid points concerning teacher training: Firstly, it is the responsibility of the Department of Education to make sure accounting teachers receive adequate training so that they can be up to date as to what is happening or needed in the workplace and be able to help the learners to be ready and prepared when they go to university. With the use of mobile technology, training can be done at home, in their own time, on their smartphones or tablets through a webinar, YouTube video or conference call, and they should be able to return to it when they need to. Secondly, although mobile learning has great potential to become a useful tool for learning when speaking about mobile learning, it is critical to remember that it is only a mode of

learning, with a mobile phone or a tablet only being a tool to enrich the process of learning. It is imperative to note that with mobile learning, the main focus is the learning itself and not the technology that is being used to achieve this. Using a specific mobile device in mobile learning does not necessarily mean that learning has occurred. The effectiveness of the learning depends more on how the learning process was conducted than on which mobile device was used, and this again depends on how well equipped the teacher as an instructor is.

What the learners in the focus group interviews appreciated about the training their teachers had received was that their teachers were enhancing their knowledge about e-learning and were passing it on to the learners.

6.2.3.2 Conclusions from findings for Research Objective 3

Using mobile technology academically:

The lesson of this case study appears to be that although the literature highlighted numerous studies that show how mobile learning was benefitting learning, in this study, the opposite was found. It would seem that, except for communication among the stakeholders that are happening more effectively, for academic work, both learners and teachers find that working with tablets (especially in accounting) causes more frustration and problems at the moment instead of adding to their learning and teaching experience.

The conclusion that can be drawn from this research on using mobile technology academically is that for the potential of mobile learning to be realised, especially in accounting, the frustrations and problems that are currently being experienced in the subject should be addressed, otherwise teachers and learners will not embrace mobile technology in their teaching and learning methods.

Confidence in using mobile learning:

The lesson of this case study appears to be, even though the literature indicates that it is possible to have confidence in using mobile learning, that there is still a gap between

what was found in this study and the literature. The study found that the learners were not as confident to use mobile technology to learn as the teachers, who had received training, were to use it to teach. More than once in the literature review, and in the study, it was mentioned that learners did not feel confident to use mobile technology to learn, even though many assume that as these learners are the generation that grew up with technology, they are supposed to thrive in using it for academic purposes as well. It brings one to the conclusion that not only do teachers need training on how to use mobile technologies, but special attention should be given to learner training as well. The focus should be on how to use technology appropriately and how to effectively integrate mobile technology in teaching.

The conclusion that can be drawn from this research on confidence in using mobile learning to teach and learn is that it is necessary to teach not only teachers but also learners how to effectively use ICT, and in this case mobile technology, for academic purposes. For teachers, as well as learners, to build their confidence levels in a digitally advanced world, adequate, relevant and effective training is a must.

Mobile learning helping or hindering the understanding of accounting:

The lesson of this case study appears to be that some learners are finding the use of tablets helpful to their learning of accounting. However, the overall opinion was that due to the practical nature of the subject accounting, the tablets were, in fact, hindering their understanding of the subject and the learners preferred using the traditional methods of learning accounting.

The conclusion that can be drawn from this research on mobile learning helping or hindering the understanding of accounting is that maybe it should be possible for learners at high school level to use internet resources to give them a better understanding of accounting by exposing them to real-life application of the subject, just like higher education institutions are preparing their students by real-life application of accounting in the workplace. If this should happen, it might help them to understand

accounting better, which would lead to their seeing these technologies as being beneficial for their understanding of the subject.

Overall experience with mobile technology and learning:

The lesson of this case study appears to be, concerning the contrast to the literature, that the overall experience with mobile learning was not as positive as had been anticipated. The learners found the practical and added benefits of mobile learning positive, such as having everything together (their textbooks and additional resources that are pushed to them) and not having to carry all of their textbooks around. Nothing was said about any learning benefit. Some learners preferred using the traditional textbook over the tablet, and they saw the tablet as being inferior when it comes to writing, summarising and memorising. The teachers found the ability to upload information and being able to communicate with the learners to be benefits, but they too felt that the overall experience of using mobile learning was not positive. Considerable emphasis was placed on accounting, showing that the teachers, as well as the learners, felt that this was specifically due to the nature of the subject and that it might be different for other subjects.

The conclusion that can be drawn from this research on the overall experience with mobile technology and learning is that the embracement of the technology and the enhancement of the learning experience are influenced by the way that the users of these digital resources perceive it. Because both the teachers and the learners felt that it was difficult to use mobile devices in accounting, as it needs a more practical and hands-on approach moving between the different journals, ledgers, financial statements, other calculations and answers, the acceptance of mobile technology in the subject accounting by the participants of this case study was low. Because of this low user acceptance of mobile learning in accounting, the overall experience, benefits and usage of these devices are not successfully implemented in the subject at present.

Benefits of mobile learning:

The lesson of this case study appears to be, with respect to what the learners and teachers liked most about using mobile learning, that there are benefits to the use of mobile technology in the classroom. The learners, as well as the teachers, enjoyed the added features and benefits that were improving the teaching and learning experience with the help of mobile devices. However, the enhancement of teaching and learning in the classroom still seems to be lacking.

The conclusion that can be drawn from this is that even though mobile devices are improving teaching and learning by adding features that were previously not available, mobile learning still seems to be lacking real enhancement of the teaching of accounting. This should, therefore, be investigated to ensure that the potential that mobile learning holds for the subject will be realised.

Frustrations:

The lesson of this case study appears to be that the frustrations both learners and teachers are experiencing are contributing factors as to why these stakeholders are currently not very enthusiastic about incorporating mobile learning into their learning and teaching processes.

The conclusion that can be drawn from this is that to ensure that this new way of learning and teaching will be accepted, the frustrations these users of mobile technology are experiencing should be addressed.

Enhancing teaching and learning:

The lesson of this case study appears to be that there is still much work that needs to be done before technology in the South African accounting classroom will be able to transform learning. Currently, the perceptions of accounting teachers and learners towards the technology are not as positive as was hoped for. In this study, it would seem that there are still many teachers and learners who see technology only as an add-on to the traditional methods of teaching and not as a way of improving and

enhancing teaching and learning. They would rather cling to the traditional methods of teaching than embrace the enhancement of teaching that is taking place today in the Fourth Industrial Revolution. Instead of embracing the technology, the learners were complaining that it should be phased in earlier into their formal schooling education. Only a few participants were eager to embrace the change and challenges of the digital era and all it holds for teachers and learners in the future.

The conclusion that can be drawn from enhancing teaching and learning is that perceptions need to change, and instead of forcing learners to work on a tablet, which might not be practical in a subject such as accounting, it might be necessary to see if there are other ways of incorporating digital tools into the subject.

The effect that mobile learning is having on learners:

The lessons of this case study appear to be that, depending on the learner as well as the subject, for those learners who embrace the technology, it has opened their minds and broadened their thinking and reasoning ability. Learners are able to do so much more than with traditional learning, while for learners who do not accept the technology, it will be only a distraction. The teachers were concerned about the way the learners completed their homework and examination questions, as the learners did not want to write things down anymore, which cost them marks.

The conclusion that can be drawn from this research on the effect that mobile learning is having on learners is that mobile learning is, in fact, contributing to the learning process and experience of learners as long as they are embracing the shift to a more digital learning environment. If learners do not accept the technology, it will only be a distraction to them and they will not reap the benefit from this new way of learning. Learners need to be taught how to effectively use digital technologies to enhance their learning to be able to complete meaningful projects and other learning experiences with the help of research, mentors or experts. If might also be necessary to change the way that homework and examination questions are structured to be aligned with the demands of teaching and to learn with technology.

Mobile learning as the solution in South Africa:

The lesson of this case study appears to be that due to the financial implications that a mobile learning initiative holds, the participants did not feel that mobile learning was the solution to the current educational crisis. As an alternative, it was suggested that instead of incorporating mobile devices into the curriculum, it was more crucial that teachers would receive adequate pedagogical training.

The conclusion that can be drawn from this research on mobile learning as a solution in South Africa is that due to the financial implications that a mobile learning initiative will hold for schools, teachers, learners and parents, an alternative should be sought and the number one suggestion that was made was adequate teacher training.

Teachers using mobile learning in class:

The lesson of this case study appears to be that learners mirror the way that their teachers are embracing the technology in class; therefore the learners in this case study were satisfied with the way that their teachers were using technology. However, as it was also mentioned that not all teachers were using it effectively, there is still a problem which constitutes teacher training and teachers' attitude towards the devices.

The conclusion that can be drawn from this research on teachers using mobile learning in class is that for teachers to effectively use the mobile devices in class, they need to receive, as was already mentioned, appropriate and adequate training. This, in turn, will help them to see the technology as beneficial and necessary for their teaching, which will, in turn, change their attitude and user acceptance towards the devices and hopefully help with the successful implementation of these technologies in the classroom.

Teacher training:

The lesson appears to be that for teachers to be as effective as possible, they need to be equipped with the necessary technology, adequate training and support to be the best at teaching they can be. The literature showed that one of the challenges that

South African teachers faced, which prevented them from realising the possibilities that the assistance of technology would bring to their teaching, was the lack of knowledge and teacher training. This was also confirmed in the study, as most of the teachers felt they needed more training. A crucial point that needs mentioning is that it is imperative to take into account that speaking of teachers' training, there should be a clear distinction between two types of training that are mentioned throughout the study. The first training that is spoken of is pedagogical, knowledge training on how to be able to be a competent and capable teacher. The other training that is mentioned is related to this study and focuses on training on how to use ICT, and in this case, specifically mobile technologies, in the classroom.

The conclusion that can be drawn from this research on teacher training is that in South Africa, teachers need to be better equipped to be able to adhere to the demands that are made on them and what are expected from them, and to be able to do this, they need suitable training. This training can be divided into two categories; the first is adequate and appropriate pedagogical and content training on how to be a competent and capable teacher; and the second is specifically focused on the equipment and software that teachers will need to be ready to address the needs of education in the 21st-century digitally enhanced classroom. It should also be stated that for the second training to be effective, teachers need to have completed and mastered the first type of training that was mentioned. That is why teachers also need continuous quality support, as the demands and pressure that teachers in South Africa are being exposed to are incredibly high.

6.2.4 Final thoughts

The question of sustainability:

The literature review asked whether mobile learning could be sustainable. This study highlighted some issues that have to be dealt with; otherwise, the full potential of this initiative will not be met and this could lead to a great deal of money being wasted and schools leaving mobile devices to gather dust instead of using them.

6.2.5 Concluding comments of research

This research was immensely enjoyable and worthwhile. As South Africa seems to be at the beginning of a new education era, it may be that the findings of this research can contribute in more significant ways than what I set out to achieve at the beginning of the study.

Now that the findings of this research have been summarised and concluding observations have been made, it is only fitting to make recommendations as to what should happen next in terms of addressing the proposed issues or taking the research forward.

6.3 RECOMMENDATIONS

The fourth and final research objective was to provide insights and make suggestions or recommendations that could enhance the implementation of mobile learning in an accounting classroom.

6.3.1 Recommendations for Research Objective 1: Mobile learning as an educational medium

The first conclusion that was made on the practices and benefits of using mobile learning as an educational medium in teaching and learning stated that teachers and learners should grasp how effective mobile learning can be to transform teaching and learning and help them to be ready for the demands of the 21st-century technologically driven era.

Training and support for both teachers and learners:

From the first conclusion, the first recommendation to be made is that it is crucial that for mobile learning to have an impact on teaching and learning practices, extensive and in-depth training for both teachers and learners are needed. It is not enough that learners know how to use these devices for socialising; they should also know how to use these devices to enhance their learning and to be self-regulated, motivated and

able to take their learning beyond the walls of the classroom to become lifelong learners. The training should be able to show them new and exciting possibilities that mobile learning can bring, so that afterwards, teachers and learners will be able to transform the teaching and learning activities that take place in class and mobile learning not just being seen as a substitute for the traditional methods. It is, therefore, necessary that these training should be well planned, extensively thought through and effectively executed to ensure that these changes take place. However, it is not enough that these stakeholders just receive the training; it is vital that they should also have constant and adequate support afterwards to ensure that any unresolved issues will not hinder the success of such a mobile learning initiative.

Learners should participate in workshops on how to use technology and the benefits it holds for learners to use it at school. This will help the teachers as well. Instead of placing the burden of preparing the learners for the use of the tablets on the teachers, a technology-savvy, young, enthusiastic trainer should teach the learners. I feel that this will have a tremendous impact on the learning curve of using mobile devices in the classroom

This recommendation would have the following benefits: Firstly, if teachers and learners realise that mobile learning can enhance their teaching and learning practices and is not just something that is forced upon them, these individuals will embrace the technology more eagerly. Secondly, if these participants go back to school after the training, they will be able to assist and support each other more effectively if the one group runs into a problem or issue that they cannot resolve or shares something that they have learnt that can benefit the other party. This will automatically enhance the collaboration and communication between teachers and learners.

6.3.2 Recommendations for Research Objective 2: Mobile learning in South Africa and the accounting classroom

The second conclusion, made on mobile learning in South Africa and the accounting classroom, stated that this study significantly contributes to the gap that was identified in

the literature on the subject. Furthermore, as the Department of Basic Education aims to make sure that learners are being equipped for the digital future, the concerns that were identified should be addressed to make sure that the overhaul of the education system will be successful. In addition, resources and software available to high school level accounting are not being effectively used, as the curriculum is overfull and mobile learning is only seen as an add-on. Teachers who are eager to learn about the resources that are available to them in accounting should be allowed to do so. As accounting is a practical subject that moves around between transactions, journals, ledgers and financial statements, the learners found it challenging to work with mobile devices.

From the above conclusions, it is recommended that more research on high school accounting is done. A need for a more digitally enhanced accounting curriculum exists.

More research on high school accounting:

More research on the use of mobile learning in South African high school accounting should be carried out to better understand the unique situation in which the country finds itself. A vast number of research options are available on accounting at high school level and the use of ICT technology that still need to be explored. By researching the unique context in which South Africa is currently finding itself, a clearer picture would be given as to where there are factors that need to be addressed to prepare the South African youth for the demands and workforce of the 21st century. It was also confirmed by the literature review on the view of higher education institutions that electronic learning solutions in Africa should be home-grown and suitable for the specific context of Africa. These institutions believe that a few well-situated ICT solutions should improve the quality of learning, by matching student challenges with corporate reality. This also includes, as the findings showed, looking at the current concerns and issues (as was identified in this study) that are hindering the successful implementation of a digitally enhanced curriculum and addressing these issues and concerns effectively before it is rolled out nationally.

Digitally enhanced accounting curriculum:

One pertinent recommendation that needs to be made, is the one concerning an alternative solution to the use of mobile learning in the accounting classroom. As accounting is a very practical subject, rather than trying to use a tablet in accounting, the subject should be made more practical and the learners should be taught how to use software programs suitable for accounting, such as Excel or Pastel. As mentioned in the literature review, there are excellent accounting programs that can help learners grasp what accounting is all about in a real-life situation. However, with an already overfull curriculum, many teachers do not have the time to incorporate this and only focus on the given syllabus. It is my opinion that some appropriate accounting software should be incorporated into a revised, more practical digital curriculum, which will give learners a more real-life application of accounting. It does not necessarily have to be Pastel, but some software that will have value to further the understanding of and application in the subject. The chance of ever using a tablet in the workplace is minimal. Instead, accounting can be rather done like the subject computer applications technology and include elements in the curriculum that can prepare the learners for the workplace. The appropriate software should be incorporated as part of the curriculum and not just an add-on, as is the case with Pastel, so that there will be enough time for it. I acknowledge that this might mean additional training for accounting teachers who do not know the specific software.

As stated, accounting is a subject where much work is done on the computer. Thus it should be possible for learners to, for example, fill out information on a spreadsheet. It would be much easier and more practical to submit these assignments — showing again the need for the accounting curriculum to be more practical and relevant today. Instead of saying that the learners should be prepared to write their examinations, a practical component in which learners are assessed on their ability to use software to draw up the different journals, ledgers and financial statements should be incorporated into the curriculum.

It would further seem that the best option for the way forward in using mobile devices in the accounting classroom will be a blended learning approach where the teachers will incorporate the use of technology, such as software and applications on computers and handheld devices, such as tablets, into the curriculum to enhance the learners' educational experiences. Old, obsolete accounting practices, such as using a cheque, should be omitted and digital practices, such as electronic funds transfers, should be included in the curriculum.

These recommendations would have the following benefits: Firstly, more research on the topic of ICT in South African high schools and especially in accounting will hone in on those areas that need the most attention and support. Secondly, it will save a considerable amount of money for schools that could preferably use the finances for infrastructure and upgrades of the internet.

6.3.3 Recommendations for Research Objective 3: Perceptions and experiences of teachers and learners

The third research objective focused on what the perceptions and experiences of accounting teachers and learners were, and the conclusions that were drawn from the research on these perceptions and experiences stated the following:

- These stakeholders' acceptance of mobile technology in the subject was low.
- Mobile learning is currently hindering the understanding of accounting.
- These learners and teachers did not feel as confident in using mobile learning as was expected.
- Mobile learning was, in fact, contributing to the learning process and experience of the learners as long as they were embracing the shift to a more digital learning environment. If learners do not accept the technology, it will only cause a distraction, and they will not reap the benefits from this new way of learning.
- The frustrations as well as the problems that are currently being experienced in the subject should be addressed.
- Due to the financial implications that a mobile learning initiative could hold for schools, teachers, learners and parents, it may be necessary to seek an

alternative that could have a higher educational impact; the number one suggestion that was made was adequate teacher training.

- In order to enhance teaching and learning, the perceptions of this first line of stakeholders need to change, and instead of forcing learners to do work on a tablet, which may not be practical in a subject such as accounting, it may be necessary to see if there might be another way of incorporating digital tools into the subject.

From the above conclusions, it is recommended that for mobile learning to be effectively implemented into the accounting classroom to enhance the delivery of the subject, three important aspects need to be considered: training for both teachers and learners; the functionality and technical aspects of the devices; and a digitally enhanced curriculum. As can be seen, some of these recommendations have already been mentioned, which only strengthens the importance of these recommendations.

Training and support for both teachers and learners:

Teacher and learner training has been mentioned a few times already. The reader is reminded that although current high school learners have grown up with technology, it does not necessarily mean that they know how to use these devices effectively for academic purposes, and therefore it might be a good idea that learners should first be taught how to use these devices effectively in their formal education training.

Also, importantly, from the first and the third conclusion – related to teacher training – this training can be subdivided into two categories. The first is adequate, appropriate and meaningful pedagogical and content training on how to be a competent and capable teacher. The second training is specially focused on the equipment and software or technical training teachers will need to be ready to address the needs of the education in the 21st-century digitally enhanced classroom. This training should be done in a organised way, aimed specifically at preparing teachers for integrating mobile learning into their teaching practices, covering the following topics: the benefits of mobile learning; practical advice on how mobile learning is changing the role of teachers

and learners; getting effective support structures in place; and guidance on what works and what does not. It should also be mentioned that for the other training to be effective, teachers need to have completed and mastered the first type of training that was mentioned. That is why teachers also need continuous quality support, as the demands and pressure that teachers in South Africa are being exposed to are incredibly high. For teachers to effectively be able to use mobile devices in class, they need to receive, as has already been mentioned, appropriate and adequate training. This, in turn, will help teachers to see the technology as beneficial and necessary for their teaching, which will, in turn, change their attitude and user acceptance towards the devices and hopefully help with the successful implementation of these technologies in the classroom.

Functionality and technical aspects:

On the functionality and technical aspects of mobile devices, it is recommended to improve these aspects of the devices and the ITSI miEbooks application, such as being able to turn the pages instead of scrolling, inserting bookmarks to open the textbook at the last page they were on, ensuring that the miEbooks application would not become slow after working on it for some time, making bigger storage space available and being able to delete (and not just archive) the previous year's information.

Digitally enhanced accounting curriculum:

On the digitally enhance curriculum, there is a great need for a more practical and more relevant curriculum in accounting as a high school subject. This curriculum should incorporate the relevant software that is currently being used in the accounting workplace. It has been mentioned that to be effective, the curriculum should be adjusted and re-invented to make sure it is aligned with the incorporation of mobile devices in a blended learning environment. It is my opinion that this should be incorporated into a more practical part of a revised digital curriculum, which will give learners a more real-life application of accounting. It does not necessarily have to be Pastel, but some

software that will have value to advance the understanding of and application in the subject.

These recommendations would have the following benefits: if teachers and learners are effectively taught how to enhance their teaching and learning experiences with mobile devices in a blended learning environment, the technical issues and functionality of the devices are addressed and an improved, revised, 21st-century-centred curriculum is implemented in the accounting classroom, the impact that these changes will have on the way accounting is being delivered will be so dramatic that it will launch a new way of preparing learners for a hands-on and more realistic future in accounting.

6.3.4 Conclusion of recommendations

In this section, all the recommendations that could be made from the conclusions of the research were set out. Each recommendation was followed by the benefits that the recommendation will have. This concludes the findings and recommendation section of the research study.

In the following section, I will reflect on the research study overall.

6.4 SELF-REFLECTION

On a personal note, it is essential to reflect on the lessons I have learnt during the time spent on my dissertation.

Therefore, I would like to reflect on the following two questions:

- What advice would I give to other students?
- If I had to do my research again, what would I do differently?

6.4.1 Advice to other students

6.4.1.1 Initial research interest and decision of topic

The first thing to remember is that this is your dissertation. You will be the one working on this research for the next few years, and it is, therefore, crucial that you select a topic that you are genuinely interested in.

My interest in the topic at hand is rooted in my conviction that people should be helped through education; therefore I combined my academic background with my passion for the subject, focusing on teachers who will then help learners understand the subject better. I firmly believe that mobile learning can help achieve this.

Choose a topic that gets you excited and that you would like to know more about. Choosing an exciting topic will keep you motivated when things get hard. In the end, it is your work, and you should be proud of it.

6.4.1.2 Research framework, design and methodology

One of the crucial parts of a dissertation is the chapter on research framework, design and methodology. This chapter is a challenging part to comprehend, but it is essential to grasp the importance of this section as it is pivotal to your practical work. While working with the different concepts, it can become confusing as terms such as “phenomenology”, “positivism” and “ontological” are so abstract that they can be bewildering. Another problem can be how to decide which approach to follow to collect and analyse your data and to be sure that it is indeed the correct approach for your research.

It is here where the support and guidance from your supervisor can have an enormous impact on your decision-making process and overall progress. After visiting my supervisor and informing him of my decision about a topic and my research aim, he helped steer me in the right direction as to which methodologies could work. I then went back and read up on every aspect of the methodology approaches, strategies, philosophies and data collection techniques that my supervisor proposed. Through this

process, it became clear that the case study research would be the best fit for my proposed research.

On methodology, the greatest lesson I learnt was that methodology and the techniques that you choose matter in taking appropriate steps in decision making and critically understanding any particular situation.

6.4.1.3 Stages of the dissertation

No linear route:

Working on the different parts of the dissertation does not always follow an uninterrupted linear route. It is possible, for example, to work on the literature review, while being busy with your data gathering and then reading something that takes you back to your literature review. Be warned: research is not a smooth, seamless process from your first introduction up to where you write your conclusion. Things can, and will, go wrong.

Be prepared for setbacks:

The case study required careful planning, not only in working out the thematic structure of the interviews – based on topics that arose from the literature review – and the questions to ask concerning those topics, but also in terms of how to analyse the collected data. Despite such careful and meticulous planning, one has to be prepared for setbacks. For example, at the end of one particular teacher's interview, it was discovered that the teacher's interview was only a few minutes long. During the interview, the video had stopped due to the battery of the video camera that went down, which had gone unnoticed. I had to accept that it had happened and had to re-do the interview.

Keep a record:

Keep a record of your progress and write everything down so that you know precisely what to do when you return to a previous section where you were busy working.

Make use of equipment for recordings and keep backups:

Two things that worked well for me was, firstly, making use of a video camera for the recording of the interviews and focus group discussions. This made it easier to see who said what and what their general feelings were when I later did the transcriptions. The next thing that worked for me was keeping at least three backups at all times and in different locations. It helped me to be able to work even when I was not at my desk or using my laptop. It also reduced the risk of someone stealing my laptop with my only copy on it or the backup drive being corrupted and my having to start from the beginning again. Every backup was saved with the date that I worked on, so to further ensure my not using an older version of my dissertation.

6.4.1.4 In general

The following are just a few general pieces of advice to also keep in mind:

- One of the best pieces of advice that I can give any student is to keep in regular contact with your supervisor. Doing this electronically will help you keep a record of every conversation you had on to reflect on as often as possible. Keep your interactions truthful, yet professional at all times.
- The dissertation will cost you more than just your registration and class fees; examples are travelling expenses as well as the professional editing and proofreading of your final manuscript. Remember to keep track and budget for all of these expenses as well.
- A dissertation takes arduous work, dedication, commitment and sacrifice. This will have an impact on your family, friends and other relationships. A dissertation should not be underestimated, and if at all possible, try to avoid completing one while you have small children. It will also have an impact on them, and trying to finish a section while they are ill or in need of you can put added stress on your work. Three years may seem long for a dissertation, but with family responsibilities, it will be over faster than you anticipated. The same can be said of their childhood.
- From day one, commit to a balanced lifestyle which should include work, study, enough sleep and relaxation, as well as a healthy diet and exercise. This may

seem obvious, but if you do not make time for each of the above points mentioned, your stress will affect your work, and your health will deteriorate.

- Lastly, my perspectives on the strategies, ethics, methodologies and manners of conducting research were broadened. Applying these lessons will help me in the future to be able to identify the correct manner and technique to use in providing solutions to a number of obstacles and problems.

6.4.2 What would I have done differently?

If I had to do my dissertation again, I would do the following differently:

- I would do more reading on the literature available beforehand, before deciding on the specific topic that I would like to research further. It is through reading what is available that you find specific areas and current problems or new knowledge that interest you, and this will unveil where currently there are gaps in the literature.
- I would make sure exactly what is expected from me, concerning the field, discipline and how broad I am being allowed to do my research in that particular field and discipline.
- I would take into consideration the impact my studies would have on my family, friends, other relationships and health. I would plan and set aside time in my schedule to nurture these relationships and look better after myself, so as not to reach burn-out.
- I would use only professionals for help. As friends and acquaintances are not as committed to your dissertation as you are, they will let you down and your relationship may be damaged.
- I would not wait for others to give required feedback or information to be able to move forward, but would proceed with other parts of the dissertation that need to be done while waiting, as this would have saved much time later on.

6.4.3 Final comment on self-reflection

Writing this dissertation was a demanding intellectual journey, and for me, it was three and a half years of extremely challenging hard work, long hours, sleepless nights, suffering, tears and feelings of being overwhelmed and despondency, but at the same time, it was a tremendously enjoyable experience as well. As I believe in life-long learning, I know that this is only the beginning of the research that I will undertake, and I am eager to see where my research will lead me in the future.

Apart from having added enormously to my academic knowledge through the course of the research, I have also learnt valuable lessons and skills which would be useful in my professional career as a teacher now and any future paths I might choose. One of the most interesting lessons that I have learnt was how much you are capable of if you put your mind to it and not give in to any excuses, no matter how hard your current circumstances!

If there is one last piece of advice that I might give to those considering something similar to such a research project, it is that there is no easy road to research. It takes perseverance, hard work, dedication, sacrifice and a disciplined mind; but keep on going, and in the end, you will have a finished product to reflect on with pride.

6.5 CONCLUSION

This chapter provided a summary of the study by restating the problem, research questions, purpose and objectives of the study. A summary of the findings and the recommendations of the study were also presented. I also included a section on my reflection on the whole process and undertaking of enrolling for a master's degree.

6.6 CONCLUDING REMARKS ON THE RESEARCH

The study provided an overview of the literature study on the use of mobile learning in general and in the specific context of the South African accounting classroom as well as

the perceptions of users of these mobile technologies. The focus of the study has been achieved and the questions answered.

The interest of the study was to see how mobile learning can enhance and improve the delivery of accounting lessons in South African accounting classrooms. It is imperative that the accounting curriculum be aligned with the skills and demands of the 21st century. Although mobile learning and ICT knowledge can provide these skills and meet these demands, it is necessary to ensure that the users of these devices receive the appropriate training and acquire the proper knowledge so that their perceptions will change and they can use these devices effectively for mobile learning to have a significant impact on the way accounting will be delivered in South African accounting classrooms.

REFERENCES

Ali, L. (2011). *The digital revolution in sub-Saharan Africa*. Retrieved 26 April 2016, from www.aljazeera.com https://www.aljazeera.com/indepth/features/2011/10/201110108635691462.html.

Alrasheedi, M., & Capretz, L. F. (2015). An empirical study of critical success factors of mobile learning platform from the perspective of instructors. *Procedia – Social and Behavioral Sciences, 176*, 211-219.

Apple Inc. (2010). *Apple Sells Over 300,000 iPads First Day.* Retrieved 8 August 2016, from www.Apple.com http://www.apple.com/pr/library/2010/04/05Apple-Sells-Over-300-000-iPads-First-Day.html.

Biggam, J. (2008). *Succeeding with your master's dissertation.* Maidenhead, England: Open University Press.

Bizi, A. M., & Shittu, F. (2014). Information and communication technology (ICT) and education. *Journal of Educational and Social Research, 4*(7), 88-91.

Bosman, J. P., & Strydom, S. (2016). Mobile technologies for learning: Exploring critical mobile learning literacies as enabler of graduateness in a South African research-led university. *British Journal of Education Technology,* (47), 510-519.

Bruwer, L. (2017, March 3). Lecturer at the Centre for Accounting. (M. Faber, Interviewer).

Buck Institute for Education. (n.d.). *What is project based learning?* Retrieved 16 August 2016, from http://www.bie.org/about/what_pbl.

Burston, J. (2016). Realizing the potential of mobile phone technology for language learning. *International Association for Language Learning Technology Journal of Language Learning Technologies, 41*(2), 56-71.

Canalys. (2012). *Smart phones overtake client PCs in 2011.* Retrieved 18 March 2017, from https://www.canalys.com/static/press_release/2012/canalys-press-release-030212-smart-phones-overtake-client-pcs-2011_0.pdf.

Center for Parent Information and Resources. (2010). *Contents of the IEP*. Retrieved 16 August 2016, from http://www.parentcenterhub.org/repository/iepcontents/.

Chen, Y. -F., & Mo, H.-E. (2015). A review of adoption of online learning and new directions based on self-reported assessment. *International Journal of Academic Research in Education and Review, 3*(4), 100-107.

Cheng, K. W. (2011). The gap between e-learning managers and users on satisfaction of e-learning in the accounting industry. *Journal of Behavioral Studies in Business, 3*, 1.

Cheon, J., Lee, S., Crooks, S. M., & Song, J. (2012). An investigation of mobile learning readiness in higher education based on the theory of planned behavior. *Computers & Education, 59*, 1054-1064.

Chigona, A., Chigona, W., & Davids, Z. (2014). Educators' motivation on integration of ICTs into pedagogy: Case of disadvantaged areas. *South African Journal of Education, 34*(3), 1-8.

Chu, H. -C. (2014). Potential negative effects of mobile learning on students' learning achievement and cognitive load – A format assessment perspective. *Educational Technology & Society, 17*(1), 332-344.

Clark, W., & Luckin, R. (2013). What the research says – iPads in the classroom. *London Knowledge Lab*, 1-31.

Cochrane, T. D. (2010). Exploring mobile learning success factors. *Research in Learning Technology, 18*(2), 133-148.

Cohen, L., & Manion, L. (1995). *Research methods in education* (4th ed.). London: Routledge.

Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education* (6th ed.). Abingdon, England: Routledge.

Cox, M. J., Cox, K., & Preston, C. (1999). *What factors support or prevent teachers from using ICT in their classrooms?* Paper presented at the British Educational Research Association Annual Conference, University of Sussex, at Brighton, September 2-5.

Denscombe, M. (2010). *The good research guide: For small-scale social research projects.* (4th ed.). Maidenhead: Open University Press.

Denzin, N. K., & Lincoln, Y. S. (Eds.). (1994). *Handbook of qualitative research.* Thousand Oaks, CA: Sage Publications.

Department of Basic Education. (2004). White Paper on e-Education. *Government Gazette*, 3-43.

Department of Basic Education. (2011). Curriculum and Assessment Policy Statement – Further Education and Training Phase Grades 10-12. *National Curriculum Statement*. Pretoria: Government Printing Works.

Department of Basic Education (2018). Professional Development Framework for Digital Learning. Pretoria: Department of Basic Education

Department of Telecommunications and Postal Services. (2016). National Integrated ICT Policy White Paper. *Government Gazette*, 176(40325).

Devaney, L. (2016). *eSchool News.* Retrieved 6 May 2016, from http://www.eschoolnews.com/2016/05/06/8waysdigitalmediawillevolveforthefuture.

Doyle, L., Brady, A. -M., & Byrne, G. (2009). An overview of mixed methods research. *Journal of Research in Nursing, 14*(2), 175-185.

Edutopia. (n.d.). *Project-based learning.* Retrieved 16 August 2016, from http://www.edutopia.org/project-based-learning.

Elliott, R., & Timulak, L. (2005). Descriptive and interpretive approaches to qualitative research. In J. Miles, & P. Gilbert (Eds.), *A handbook of research metods for clinical and health psychology* (pp. 147-160). Oxford: Oxford University Press.

English Oxford Living Dictionary. (2017). Retrieved 17 January 2017, from www.oxforddictionaries.com. https://en.oxforddictionaries.com/definition/mobile.

Falloon, G. (2014). What's going on behind the screens? *Journal of Computer Assisted Learning, 30*(4), 318-336.

Fatma, S. F. (2013). E-learning trends issues and challenges 3. *International Journal of Economics, Commerce and Research, 3*(2), 1-10.

Franklin, T. (2011). Mobile learning: At the tipping point. *The Turkish Online Journal of Educational Technology, 10*(4), 261-257.

Gikas, J., & Grant, M. M. (2013). Mobile computing devices in higher education: Student perspectives on learning with cellphones, smartphones & social media. *Internet and Higher Education, 19*, 18-26.

Hayes, R., Kyer, B., & Weber, E. (2015). *The case study cookbook*. Retrieved 29 September 2019, from https://web.wpi.edu/Pubs/E-project/Available/E-project-121615-164731/unrestricted/USPTO_CookbookFinal.pdf.

Herselman, M. (2019, March 20). Nog 20 000 tablette vir arm leerlinge. *Volksblad*, p. 6.

Hesser, T. L., & Schwartz, P. M. (2013). iPads in the science laboratory: Experience in designing and implementing a paperless chemistry laboratory course. *Journal of Science, Technology, Engineering and Mathematics Education, 14*(2), 5.

Hlodan, O. (2010). Mobile learning anytime, anywhere. *BioScience, 60*(9), 682.

Hockly, N. (2013). Technology for the language teacher: Mobile learning. *English Language Teaching Journal, 67*(1), 80-84.

Horn, M. B., & Staker, H. (2011). The rise of K-12 blended learning. *Innosight institute, 5*.

Howitt, D., & Cramer, D. (2000). *First steps in research and statistics: A practical workbook for psychology students.* London: Routledge.

Hu, W. (2011, January 4). Math that moves: Schools embrace the iPad. *The New York Times.* Retrieved 23 February 2016, from https://www.nytimes.com/2011/01/05/education/05tablets.html

Hunton, J. E. (2002). Blending information and communication technology with accounting research. *Accounting Horizons, 16*(1), 55-67.

Hussin, S., Manap, M. R., Amir, Z., & Krish, P. (2012). Mobile learning readiness among Malaysian students at higher learning institutes. *Asian Social Science, 8*(12), 276-283.

Ingle, J. C., & Moorehead, T. (2016). *eSchool News*. Retrieved 23 February 2016, from http://www.eschoolnews.com.

ITSI Holdings. (2018). *ITSI Education*. Retrieved 1 September 2018, from https://www.itsieducation.com.

Jantjies, M., & Joy, M. (2015). Mobile enhanced learning in a South African context. *Educational Technology & Society, 18*(1), 308-320.

Jantjies, M., & Joy, M. (2016). Lessons learnt from teachers' perspectives on mobile learning in South Africa with cultural and linguistic constraints. *South African Journal of Education, 36*(3), 1-10.

Kutluk, F. A., & Gülmez, M. (2014). A research about mobile learning perspectives of university students who have accounting lessons. *Procedia – Social and Behavioral Sciences, 116*, 291-297.

Kutluk, F. A., Donmez, A., Gülmez, M., & Terzioglu, M. (2015). A re-research about usage of mobile devices in accounting lessons. P*rocedia – Social and Behavioural Sciences, 197*, 57-66.

Lacey, A. (2010). The research process. In K. Gerrish, & A. Lacey (Eds.), *The research process in nursing* (6th ed., pp. 13-26). Chichester, England: Wiley-Blackwell.

Lamprecht, D. (2017, March 3). SAICA Regional Executive. (M. Faber, Interviewer).

Lehner, F., Nösekabel, H., & Lehmann, H. (2003). Wireless e-learning and communication environment: Welcome at the University of Regensburg. *E-Service, 2*(3), 23-41.

Lewis, S., Whiteside, A., & Dikkers, A. G. (2014). Autonomy and responsibility: Online learning as a solution for at-risk high school students. *International Journal of E-Learning & Distance Education/Revue internationale du e-learning et la formation à distance, 29*(2), 1-11.

Liaw, S. -S., Huang, H. -M., & Chen, G. -D. (2007). Surveying instructor and learner attitudes toward e-learning. *Computers & Education, 49*, 1066-1080.

Lincoln, Y. S., & Guba, E. G. (1989). Ethics: The failure of positivist science. *The Review of Higher Education, 3*, 221-240.

Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). Paradigmatic controversies, contradictions, and emerging confluences, revisited. In N. K. Denzin, & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (4th ed., pp. 105-117). Thousand Oaks, CA: Sage Publications.

Liu, P. -H., & Tsai, M. -K. (2013). Using augmented-reality-based mobile learning material in EFL English composition: An exploratory case study. *British Journal of Educational Technology, 44*(1), E1-E4.

Liu, Y., Li, H., & Carlsson, C. (2010). Factors driving the adoption of m-learning: An empirical study. *Computers & Education, 55*, 1211-1219.

Luckin, R., & Clark, W. (2012). The problem of context: The circumstances in which ICT can support learning. *The University of the Fraser Valley Research Review, 4*(2), 1-13.

MacCallum, K., & Jeffrey, L. (2013). The influence of students' ICT skills and their adoption of mobile learning. *Australasian Journal of Educational Technology, 29*(3), 303-314.

Makoelle, T. M., & Van der Merwe, M. (2014). Information communication technologies (ICTs) and inclusive pedagogy: A South African perspective. *International Journal of Education and Research, 2*(7), 519-534.

Mango, O. (2015). iPad use and student engagement in the classroom. *Turkish Online Journal of Educational Technology, 14*(1), 53-57.

Martin, F., & Ertzberger, J. (2013). Here and now mobile learning: An experimental study on the use of mobile technology. *Computers & Education, 68*, 76-85.

Morra, L. G., & Friedlander, A. C. (1999). *Case study evaluations*. Washington, DC.: World Bank, 3-21.

MyBroadBand. (2019). *MyBroadBand*. Retrieved 7 January 2019, fromhttps://mybroadband.co.za/news/government/290820-major-hi-tech-overhaul-planned-for-south-africas-education-system.html.

Mzizi, P. (2016, March 14). ATC and CSP Accounts Manager at Sage Pastel. (M. Faber, Interviewer).

Nagel, L., & Oberholster, J. G. (2011). Research-informed design: Learning to balance the books. *IDesign, Development and Research*, 371-381.

Nagel, L., & Van Eck, L. (2012). *Sustainable learning through formative online assessment: Using quizzes to maintain engagement.* Paper presented at the Ascilite 2012. Wellington, New Zealand.

Nagel, L., & Venter, L. (2015). *Mastering the blend: Students' value of classroom and online components in a blended accounting course.* Paper presented at the Expanding Learning Scenarios – Opening out the Educational Landscape, (pp. 1-6). Barcelona.

Ndlovu, N. S., & Lawrence, D. (2012). *The quality of ICT use in South African classrooms. Towards Carnegie III – Strategies to overcome poverty & inequality*. Cape Town: University of Cape Town.

Ng, W., & Nicholas, H. (2013). A framework for sustainable mobile learning in schools. *British Journal of Educational Technology, 44*(5), 695-715.

Nieuwenhuis, J. (2013). Analysing qualitative data. In K. Maree (Ed.), *First steps in research* (13th ed., pp. 98-122). Pretoria: Van Schaik Publishers.

Nieuwenhuis, J. (2013). Introducing qualitative research. In K. Maree (Ed.), *First steps in research* (13th ed., pp. 46-68). Pretoria: Van Schaik Publishers.

Nieuwenhuis, J. (2013). Qualitative research designs and data gathering techniques. In K. Maree (Ed.), *First steps in research* (13th ed., pp. 69-97). Pretoria: Van Schaik Publishers.

Nithia, K., Yusop, F. D., & Rafiza, A. R. (2015). *Mobile learning for teaching and learning science, technology, engineering and mathematics (STEM): A review of literature.* Paper presented at the International Congress on Economics, Social Sciences and Information Management (pp. 1-6). Bali.

Noble, H. and Smith, J., 2015. Issues of validity and reliability in qualitative research. *Evidence-based nursing*, 18(2), 34-35.

Omidinia, S., Masrom, M., & Selamat, H. (2013). *An examination of the concept of smart school: An innovation to address sustainability.* Proceedings of the 2nd International Conference on Advances in Computer Science and Engineering (pp. 326-329). Los Angeles, CA, USA.

Park, Y. (2016). *World Economic Forum.* Retrieved 16 October 2016, from www.weforum.org https://www.weforum.org/agenda/2016/09/8-digital-life-skills-all-children-need-and-a-plan-for-teaching-them?utm_content=buffera6d5a&utm_medium=social&utm_source=facebook.com&utm_campaign=buffer.

Passey, D. (2010). Mobile learning in school contexts: Can teachers alone make it happen? *IEEE Transactions on Learning Technologies, 3*(1), 68-81.

Peckham, J. (2014). *What is a phablet? Apple, LG & Samsung's definitions compared.* Retrieved 10 August 2016, from www.knowyourmobile.com

http://www.knowyourmobile.com/devices/phablet/22505/what-phablet-apple-lg-samsungs-definitions-compared.

Pienaar, C. (2019, March 1). Cyril's tablet-plan do not save schools. *Volksblad*, p. 7.

Procter, C. (2003). *Blended learning in practice. Education in a Changing Environment*. Manchester: University of Salford.

Puentedura, R. (2006). *Transformation, technology, and education.* Retrieved 5 June 2016, from http://hippasus.com/resources/tte/.

Puentedura, R. (2014). *Common sense graphite*. Retrieved 9 July 2016, from https://www.commonsense.org/education/blog/samr-and-blooms-taxonomy-assembling-the-puzzle.

Richardson, P., Dellaportas, S., Perera, L., & Richardson, B. (2013). Students' perceptions on using iPods in accounting education: A mobile-learning experience. *Asian Review of Accounting, 21*(1), 4-26.

Romrell, D., Kidder, L. C., & Wood, E. (2014). The SAMR model as a framework for evaluating mLearning. *Journal of Asynchronous Learning Networks, 18*(2), 1-15.

Rosman, P. (2008). M-Learning – As a paradigm of new forms in education. *E+M Economie a Management, 1*, 119-125.

Rouse, M. (2016). "Tablet". Retrieved 9 August 2016, from TechTarget.com. http://searchmobilecomputing.techtarget.com/definition/tablet-PC.

Ruiz, J. G., Mintzer, M. J., & Leipzig, R. M. (2006). The impact of e-learning in medical education. *Academic medicine, 81*(3), 207-212.

SAICA. (2008). *How to become a CA(SA).* Retrieved 16 June 2017, from https://www.saica.co.za/Training/BecomingaCA/tabid/157/language/en-ZA/Default.aspx.

Sangrà, A., Vlachopoulos, D., & Cabrera, N. (2012). Building an inclusive definition of e-learning: An approach to the conceptual framework. *The International Review of Research in Open and Distance Learning, 13*(2), 145-159.

Sarrab, M., Elgamel, L., & Aldabbas, H. (2012). Mobile learning (m-learning) and educational environments. *International Journal of Distributed and Parallel Systems, 3*(4), 31-38.

Savin-Baden, M., & Major, C. (2013). *Qualitative research: The essential guide to theory and practice.* Abingdon, England: Routledge.

Schoology. (2016). *6 tips for launching a successful mobile learning program in your district.* Retrieved 30 May 2016, from https://info.schoology.com/how-to-plan-mobile-learning.html?utm_source=schoology-resources-page&utm_medium=web&utm_campaign=best-practices-series&utm_content=6-tips-for-mobile-learning-guide&from=resources.

Shih, J. L., Chuang, C. W., & Hwang, G. J. (2010). An inquiry-based mobile learning approach to enhancing social science learning effectiveness. *Educational Technology & Society, 13*(4), 50-62.

Stake, R. E. (1995). *The art of case study research.* Thousand Oaks, CA: Sage.

Stake, R. E. (2006). *Multiple case study analysis.* New York: Guilford Press.

Staker, H., & Horn, M. (2012). *Classifying K–12 blended learning*. San Francisco, CA: Innosight Institute. Retrieved 9 March 2017, from http://www.innosightinstitute.org/innosight/wp-content/uploads/2012/05/Classifying-K-12-blended-learning2.pdf.

Stanberry, K. (2014). *Understood – for learning and attention issues*. Retrieved 16 August 2016, from https://www.understood.org/en/school-learning/special-services/504-plan/understanding-504-plans.

Staples, J., Collum, T., & McFry, K. (2016). *Mobile devices in the accounting classroom*. Retrieved 18 June 2016, from http://blog.cengage.com/wp-content/uploads/2016/05/Spring2016_Staples-Collum-McFry _Mobile-Devices-in-the-Accounting-Classroom_5.pdf

Statista. (2018). *Number of smartphone users worldwide from 2014 to 2020 (in billions).* Retrieved 22 October 2018, from https://www.statista.com/statistics/330695/number-of-smartphone-users-worldwide/.

TaxTim. (2018). *Teaching students about tax.* Retrieved 25 October 2018, from https://www.taxtim.com/za/services/student-assist.

Traxler, J., & Leach, J. (2006). Innovative and sustainable mobile learning in Africa. *WMTE '06 Proceedings of the Fourth IEEE International Workshop on Wireless, Mobile and Ubiquitous Technology in Education*, 98-102.

Van Tonder, K. (2018, October 26). ITSI Team Manager: Support. (M. Faber, Interviewer).

Venter, L. (2016, March 17). Lecturer at the University of Pretoria, Department of Accounting Sciences. (M. Faber, Interviewer)

Watson, D. M. (2001). Pedagogy before technology: Re-thinking the relationship between ICT and teaching. *Education and Information Technologies, 6*(4), 251-266.

Watson, J., Powell, A., Staley, P., Patrick, S., Horn, M., Fetzer, L., et al. (2015). Blending learning: The evolution of online and face-to-face education from 2008-2015. *Promising Practices in Blended and Online Learning*, 1-20.

Wells, P., & Fieger, P. (1997). *Accounting: Perceptions of influential high school teachers in the USA and NZ.* Paper presented at the AFAANZ conference, Alice Springs, Australia.

West, D. M. (2013). Mobile learning: Transforming education, engaging students, and improving outcomes. *Center for Technology Innovation at Brookings*. Retrieved 7 September 2017, from https://www.brookings.edu/wp-content/uploads/2016/06/BrookingsMobileLearning_Final.pdf.

Yin, R. K. (2003). *Case study research: Design and methods* (3rd ed.). Thousand Oaks, CA: Sage.

Yusri, I. K., Goodwina, R., & Moon, C. (2015). Teachers and mobile learning perception: Towards a conceptual model of mobile learning for training. *Procedia – Social and Behavioral Sciences, 176*, 425-430.

Zhang, D., & Nunamaker, J. F. (2003). Powering e-learning in the new millennium: An overview of e-learning and enabling technology. *Information Systems Frontiers, 5*(2), 207-218.

APPENDICES

APPENDIX A – QUESTIONS TO LEARNERS

Focus group discussion with learners

10-15 learners, 30-60 minutes (open-ended questions)

Start: Introduction of myself and the research study. Bring under attention – recording.

Part 1 – General information (ice breaker)

1. What mobile devices do you own?
2. And in your household?
3. What happens when the Wi-Fi is down, there is no signal or there is a blackout?

Part 2 – General information on mobile learning

4. What does the term “mobile learning” mean to you?
5. How long have you been using mobile technology to learn (formal and informal)? What apps/websites do you use and why?

Part 3 – Mobile learning and accounting

6. Have you heard and what do you think of Vodacom’s eSchool? Pastel’s School Program? Like2Understand? Accountants2Be?
7. A typical day in an accounting lesson.
8. Of that time how much is done on the mobile device?

Part 4 – Perceptions and experiences

9. You have grown up with technology and mobile devices such as smartphones and I am sure you all know how to use them properly and effectively, but what about using them academically? Was it different or harder to use these devices to learn? Why? What was the most difficult part?
10. How confident are you in using mobile technology to learn? Why?

11. Do you feel that mobile learning is helping/hindering your understanding of accounting? Why?
12. What is your opinion about your overall experience with mobile technology/learning? And in accounting?
13. What do you like or enjoy most of using mobile technology/learning? And in accounting?
14. What frustrates you? In general and in accounting?

Part 5 – Ideas and suggestions

15. What would you like to change?
16. Any suggestions or ideas of what you would like to see happen in the future in mobile learning? And accounting?
17. Is there anything that you are doing in other subjects that you would also like to be available in accounting?

Part 6 – Thoughts on teachers

18. What do you think of this statement: “Mobile learning should not just replace traditional methods of teaching and learning, but should improve and enhance teaching and learning of the subject”?
19. How do you feel about the way your teacher is using mobile learning in your class?
20. How do you think he/she should use it?

Part 7 – Final thoughts

21. What else can you tell me about mobile learning that you feel I should know?
22. Do you have any questions that you would like to ask me?

Thank you for your time.

Some “probes” or follow-ups" to be used if necessary:

“Can you say more about that?”, “Can you give an example?”, “What do you think?”

“How about you? Do you have some thoughts on this?”

“Does anyone else have some thoughts on that?”

APPENDIX B – TRANSCRIPTS OF FOCUS GROUPS

FOCUS GROUP DISCUSSION WITH LEARNERS 1

Introduction: Explaining of study and making sure that everyone is aware that the focus group discussion will be recorded and that everyone is comfortable with this arrangement.

Part 1 – General information (ice breaker)

1. What mobile devices do you own?

Interviewer: The first question is just an ice breaker. Okay. I am going to ask it in English. You don't have to answer it in English, this will be translated. So here we go!
1. What mobile devices do you own?
So let's start with you [pointing to learner next to the interviewer].

Learner 1: I have a tablet and a cell phone.

Interviewer: What is the make of the tablet and the cell phone?

Learner 1: It is Samsung.

Interviewer: Okay. So both are Samsung? Right.
Next?

Learner 2: I have an iPad and an iPhone

Learner 3: An iPhone and a tablet.

Interviewer: What make is your tablet?

Learners 3: A Samsung.

Interviewer: A Samsung? Okay.

Learner 4: An iPhone and a Samsung tablet.

Learner 5: A Samsung phone and a Samsung tablet.

Interviewer: So both Samsung? [Learner nods head.]

Next?

Learner 6: Ma'am, I, it is a Samsung and I think a Telefunken tablet.

Interviewer: Okay.

Learner 7: Ma'am, I have an iPhone and then I have a Samsung tablet and a Toshiba uhh computer.

Interviewer: A Toshiba computer. Is it a desktop or a laptop?

Learner 7: A laptop.

Learner 8: An iPhone cell phone, a Samsung tablet and then a MacBook Pro laptop.

Interviewer: A MacBook Pro.
Okay.
Now:

2. <u>"What other devices do you have in your household?"</u>

Interviewer: So let's talk … At your house what do you have there? What else is there? Is there …?

Learner 1: A printer and a tablet. Agh, uhh, a laptop.

Interviewer: A printer and a laptop.
What about smart TVs?

Learners: [Together "yes".]

Interviewer: Is there. So you all have smart TVs?

Learners: [Together "yes".]

Interviewer: So all of you have smart TVs?
Who of you have laptops at home?
[Most of the learners raise their hands.]
So most of you have laptops at home?
Does anyone still have a desktop?

Learners: [Some say "yes" and raise their hands.]

Interviewer: Okay, so there are four of you that still have desktops? And all of you have printers at home?

Learners: [Together “yes”.]

Interviewer: Okay. Next:

3. <u>“What happens when the Wi-Fi is down, there is no signal or there is a blackout?”</u>

What do you say? What happens?

Learner 1: We can do nothing.

Learners: [Giggles and agrees “yes”.]

Interviewer: And then?

Learner 2: Then we are bored.

Interviewer: [Laughs.] Then you are bored? Why?

Learner 2: Because then we don’t have anything to do.

Learner 3: And nobody plays outside in the garden anymore. And the gardens have become so small, as the houses are so modern.

Interviewer: Okay. Okay.

Learner 4: Our whole security system is gone because the whole system is on the Wi-Fi.

Interviewer: So, on the farm, it is a problem, because then your whole security system then goes down, because when the electricity is down, then you feel unsafe?

Learner 4: Yes, Ma’am, and when the, uhm, Wi-Fi goes down, then uhm, it works through a computer, then the computer is not active, then nobody knows what is going on.

Interviewer: Oh, that is very bad. That is very bad.
Okay. Okay. So now we want to know the following:

<u>Part 2 – General information on mobile learning</u>

Interviewer: Part 2 is about general information on mobile learning.

4. <u>What does the term "mobile" learning mean to you?</u>

Learner 1: Ma'am, I think, like, when your book is on your tablet, or any work that you have to learn is on the tablet and you have to study using your tablet. You cannot get it on hard paper or like a hard copy or so …

Interviewer: Okay, is that all?

Learners: [Murmuring. Hears someone say "no".]

Learner 2: Let say when you google, you also learn then … when you …

Learner 3: Uhm, any, uhm that you learn through technology.

Learners: [Murmuring. Hears someone agrees.]

Interviewer: So, everything that you … Tell me more …

Learner 4: Mobile is like, uhm, when you uhm, when you can take it with you. So, it means that you can, you have like, uhm, internet, uhm, access where you are and you can actually, like, yes uhm, 24/7 can you actually, if you want to, learn.

Interviewer: Okay, anyone else that would like to add to that?

Learner 5: And is it also very nice, because like all your books are now like on your tablet. So, it is not as if you have to take your whole bag everywhere you go and I think that is like very …

Learner 6: And it is so much easier to get stuff from like the teacher, like work that you have or emails or stuff like that and to use it to communicate with each other.

Interviewer: Anything else?
Okay. Now:

5.1 <u>How long have you been using mobile technology to learn (formal and informal)?</u>

Okay, tell me quickly, how long have you been using it?

Learner 1: We were in Grade 9 when it started.

Learners: [Murmuring. Hears someone saying "yes" and "from 2015".]

Interviewer: So that was since 2015 and you were in Grade 8, right? And you lot were in Grade 9?

Learners: [Nod their heads.]

Interviewer: Okay.
Now:

5. <u>What apps or websites do you use and why?</u>

Learner 1: A PDF file to get all the work from and then E-Books because that is the required one to download from.

Interviewer: Okay.
Any other apps? It doesn't necessarily have to be at the school.

Learner 2: O, and Word. I know a lot of our documents open in Word and for consumer studies we often make use of PowerPoint.

Interviewer: What? Power … PowerPoint. Yes. What else?
Are there any other apps that you have on your gadgets?

Learner 3: Like Google Chrome, I know that is fast …

Learner 4: Kobo's e-Reader.

Learner 5: Amazon Reader.

Interviewer: Amazon's Reader. Does anyone of you use your calculator on your phones?

Learners: [Giggling and murmuring confirmation.]

Interviewer: Anything else? Any app that makes it easier for you. What about …?

Learner 1: Notes.

Interviewer: Notes. You get an app where you can make notes. Right, what about a dictionary? Who of you have dictionaries on your phones?

Learners: [Murmuring "yes".]

Learner 2: You get a diary on your phone that you can use.

Interviewer: A diary on your phone. What do you use? [Pointing to the learner nearest to the interviewer.]

Learner 1: That, Ma'am.

Learner 2: Ma'am, I know like for iPhone there are i-Books which is nice.

Interviewer: Okay, quickly switch on your phone. What is there on your phone that you use to study with? What is there that isn't currently at your school?

Learner 3: There is a maths app that my sister has where you literally take a photo of the equation and then it explains to you the equation step by step.

Learners: [Exclaim in wonder and amazement.]

Interviewer: Okay. All right. So, there is stuff like that you also use.
All right. Then I ask you the following:
Why do you use these different apps? But you have explained that already, hey?
Okay. Let's talk about the PDF's and the PowerPoints and Word and those type of stuff. The PowerPoints … you use to do … what? To gather information, right? And sometimes you use it to make it easier for you guys? Isn't it?

Learner 4: Also, to sometimes fill out information, Teacher.

Part 3 – Mobile learning and accounting

Interviewer: Yes. Okay.
Now:

6. Have you heard and what do you think of E-School? Have you ever heard of E-School? Vodacom's E-School?

Learners: [Murmuring "yes".]

Learner 1: Yes, I use it.

Interviewer: Okay, tell me more.

Learner 1: Uhm. It is basically. It is a male voice that speaks to you and then, uhm, he presents a lesson to you. Now, it is free, and it doesn't cost any data to watch videos. Then there is one video where he gives you the lesson and the next video gives you homework questions or a small exercise and the other one gives you the answers, and he also has a typed out one that you can look at after the video.

Learner 1: Uhm.

Interviewer: Have you heard and what do you think of Vodacom's E-School?

Learner 2: Uhm, Ma'am, I use the, uhm, website of Vodacom's E-School and that one has all the subjects that I take and lessons and typed notes and also, uhm, questions in video format and it takes data to watch the videos … Yes, and uhm, it just helps to hear the stuff for repetition.

Interviewer: Hmm. Okay, you said something about the data. Okay.
Does one of you know what is Pastel's School Program? Have you guys heard of it before?

Learners: [Murmuring "no".]

Interviewer: Okay. Like2Understand?

Learners: [Murmuring "no" and someone says "yes".]

Interviewer: Have you heard of it before?

Learner 1: Ma'am, it is, uhm, Pastel is uhm, it is like companies and so uses it to do their financial books.

Interviewer: There is like actually a school version that we can use, but I have uh, I am going to do it only from next year.

Learner 2: I remembered one teacher told us she is going to do it.

Interviewer: Yes. Like2Understand? You have never heard about it, hey?

Learners: [Murmuring "no".]

Interviewer: And Accountants2Be?

Learners: [Murmuring "uh-uh, no".]

Interviewer: Okay, now:

7. <u>What is a typical day in an accounting lesson?</u>

Interviewer: A typical day. Tell exactly how it works.

Learner 1: We will mark the homework we have done, then we will either start with new work or we will get new homework.

Learner 2: And we will ask questions.

Learners: [Confirms with a yes.]

Interviewer: Okay, tell about the technology in the classroom.

Learner 3: We have a smartboard that uhm, Ma'am, like you can go through different slides at once and you can uhm, what do you call it, like, yes and a projector and you can, uhm, like the exercise Ma'am had on her computer and then Ma'am can put it on the board.

Interviewer: Okay.

Learner 4: And Ma'am can work directly of it or on the tablet or the computer which is directly connected and immediately on the PDF.

Interviewer: Okay, so we can put it directly on it. Okay. Right.
How much of the 50-minute period are you on your tablets, do you think?

Learners: [Confirming "almost the whole time".]

Learner 1: In our class, almost the whole time, because we mark almost the whole period, so if you have your book on your tablet, then you will be on your tablet the whole time.

Interviewer: Okay.

Learner 2: And if Ma'am marks with us, she usually shows it on the board then it is directly available.

Interviewer: Oh, directly on the board. Then the class can also see it.
Okay. All right.

Now the interviewer asks the following:

Part 4 – Perceptions and experiences

8. You have grown up with technology and mobile devices such as smartphones, and I am sure you all know how to use them properly and effectively, but what about using them academically? Was it different or harder to use these devices to learn? Why? What was the most difficult part?

Interviewer: Okay, we make use of it for academic purposes. You all make use of it academically, right? Now the interviewer wants to know whether it was it harder to work from the tablet as the textbook, and why?

Learners: [Murmuring "yes".]

Learner 1: The practical parts.

Learner 2: Especially with accounting, because let's say you want to make notes and do equations and so, then you must first click on the tablet and select freehand or add a note … then it is so … unpractical because you must first type and you cannot just write it down quickly. So, it takes time.

Learner 3: By the time you finished typing the first part, the teacher has said three other things. So, yes …

Learner: … when we work on pages like if Ma'am said page 35, it takes much longer to get there than working in a textbook …

Learners: [Some murmur "yes".]

Learner 5: And, like sometimes the handbook tend to freeze, like when for example when you scrolled a lot, then it tends to freeze, and when you like for example want to write a note, because now you can, then you cannot see very clearly what you wrote, because it freezes or the words …

Learners: [Murmuring "yes".]

Learner 6: Yes, you don't write exactly like you would have written on a page.

Interviewer: Okay, now what do you guys think is the most difficult of it?

Learner 1: To learn, because I still use textbooks, Ma'am, I only have my mathematics and I think accounting's binders and stuff on my tablet, but, like, I cannot concentrate with the tablet when I study, because the light, my eyes are weak, so then as you go, and the words scroll too quick for me, so I study from the textbook and I summarise, so …

Learner 2: Yes, and it is difficult to like … recap, because let's say you quickly want to go through something before the test, then you first have to scroll …

Learner 3: Yes, it takes you almost 20 minutes to get to the page before you can …

Learner 4: And I think just the idea of a textbook that you can hold in your hands, and you can page through, like …

Interviewer: Okay.

Learner 5: … like the technology book that you can literally page through because it is a PDF file and it is much better for some learners … just for the idea of a textbook and the scrolling through it doesn't hurt your eyes, so this new version worked for everyone.

Interviewer: Okay.

9. <u>How confident are you in using mobile technology to learn? Do you feel positive about it?</u>

Learner 1: Ma'am, in some cases it is a lot of fun, but in other cases, like to lets say to learn a lot of theory, this isn't that great on the tablet, but like when Ma'am send us question papers and like notes are really okay for me, but to study the whole textbook isn't nice for me.

Learners: [Others confirm.]

Interviewer: Okay. All right.

10. <u>Do you feel that mobile learning is helping or hindering your understanding of accounting? Why?</u>

Learner 1: Ma'am, personally it helps me, because when I really struggle or something I would have put everything on an Excel sheet on my tablet, then I can do it neatly to exactly understand or when you download something to help you, you can organise it in a very perfectionistic way if I can put it that way. So, the tablet helped me a lot.

Interviewer: Okay, what were challenges for you guys?

Learner 1: Is It was a struggle because let's say you have the answering sheet here on your tablet and you have your textbook and you want to compare stuff, then you must scroll up and down. So, it is difficult especially in accounting where you must compare stuff.

Learner 2: In accounting, yes, like she said, you must quickly do equations, for example, the statement of income or so, like it is very difficult for me on the tablet.

Interviewer: Okay.

Learner 3: Like, I think like she said, because in Grade 8 we had like a textbook page, and I think if the page on the tablet was like that, then we would have improved a lot.

Learner 4: And … a dividing line, because then you can copy from it.

Interviewer: Oh, yes, yes, yes. It's like a PDF reader, right? Okay
All right.

11. <u>What is your opinion about your overall experience with mobile technology or learning?</u>

Learner 1: I think it makes everyone's lives easier in a way, with question papers or stuff like that, I don't know how the theory subjects, especially like biology where you need to study illustrations, use it. I think it makes it more difficult for those learners because they must literally make notes to understand it.

Learner 2: It is nice to be more paperless and not carry a whole pack paper around the whole time, just when you do summaries from your tablet. Then you can only study from the summaries and then additional stuff from the tablet like question papers and additional exercises.

Interviewer: **Hmm, okay and then in accounting? What do you guys think?**

Learner 1: Like that one Ma'am … that push … the stuff for us, that is so nice, because now we have it. Everything is together, now you don't have to worry about the pages and to keep it safe. Everything is in one document and it is like the accounting books, it is so heavy, because it is very thick, so it is uncomfortable to carry it around.

Learner 2: And those formulas are neat, so you understand them because they are organised, and everything is there, you can study them just as it is.

Interviewer: Okay. All right. Next question:

12. <u>What do you like or enjoy most of using mobile technology or learning?</u>

Learner 1: The fact that I can take it everywhere with me, because when we go to the farm or are on the road I can study my work, but if you take a textbook instead, it is uncomfortable and not practical.

Learners: [Confirm "yes".]

Interviewer: And you guys enjoy the fact that everything is together, right?

Learners: [Murmur "yes".]

Interviewer: All right, is there something in accounting that is more fun with technology than in other subjects, or is it more or less the same stuff?

Learner 1: I use my tablet most of the time in accounting, because of those question papers and notes.

Interviewer: Yes, okay.

13. What frustrates you most of the technology?

Learner 1: When the battery dies too quickly and you cannot do anything about it, or if it freezes.

Learner 2: And the whole story with turning the page.

Interviewer: Okay, and in accounting?

Learner 3: When we do provision statements, and you must rule out that stuff …

Learners: [Adamantly confirming "yes".]

Learner 4: Yes, and you cannot rule it out.

Interviewer: So, you don't see the picture clearly.

Learners: [Confirm "yes".]

Learner 5: I know with a computer you can open two files, to minimize and compare, but not on a tablet. You cannot open two files at once to compare and minimise, and it is a problem.

Part 5 – Ideas and suggestions

Interviewer: Okay.

14. What would you like to change?

Learner 1: The turning pages.

Interviewer: So, you feel, but you need to speak up so that the auntie can hear clearly.

Learner 2: If you can turn the page, instead of scrolling. If there were literally a page to turn … I think it would be more practical.

Interviewer: Okay, okay. Something else?

Learner 3: If you can insert a bookmark. Like when you open your tablet, you open at the last page you were. Now he opens the book from the start, so you have to scroll to page 300 again.

Interviewer: Okay. Okay. Uhm.

15. Any suggestions or ideas of what you would like to see happen in the future in mobile learning?

Learner 1: I think to like make it more interactive, so that you can make notes easier and quicker, more clear notes. And to, and I know in the biology book it works like this, tap and then adds something at the questions.

Learner 2: I personally think, accounting is a subject where you will work a lot on the computer, I think like a statement of income where you don't have to literally write stuff down, but just fill out information on the spreadsheet, I think it will be much easier and more practical to submit the assignments.

Learners: [Confirm they agree with "yes".]

Interviewer: Yes, that is my plan for next year.
All right. Okay.

16. Is there anything that you are doing in other subjects that you would also like to be available in accounting?

Interviewer: I think we pretty much covered most of the subjects that make use of technology.

Learners: [Confirm they agree with "yes".]

Interviewer: So, at the school in any case.
Anything at another subject? Quickly think about mathematics. They mostly do the same that we do, right? And English?

Learner 1: Uhm, English. At English they will use it just for when we do poems, that is all where we use it.

Learner 2: … Ma'am sometimes pushed videos for us and that just helps because sometimes it was a summary of the poem or so, and that also helped sometimes.

Interviewer: Okay, so we must maybe look at videos?

Part 6 – Thoughts on teachers

Interviewer: All right.

17. <u>What do you think of this statement: "Mobile learning should not just replace traditional methods of teaching and learning, but should improve and enhance teaching and learning of the subject"?</u>

Learner 1: Ma'am, like I think we are quite good because the era we currently live in is more technological and for our future, we must learn to be more technological and I think that can help our teachers more. So, I think like when a teacher is a bit unsure about something, they can just easily go Google the answer, they have access to so much more than just old textbooks which are easier and more effective.

Learner 2: And I think, another thing is the teachers are starting to understand it more now. Sometimes when the new Grade 8s start at the school, they learn new stuff what you can also do with a cell phone and a tablet. Like if you can teach learners in a subject like life orientation these technology gadgets and their functions in the education system.

Interviewer: Okay.

18. <u>How do you feel about the way your teacher is using mobile learning in your class?</u>

Learner 1: Uhm, very few teachers use it effectively. Like the e-books, they still use textbooks.

Interviewer: Why do you think is that?

Learner 2: They probably don't understand it that good. Maybe, when the teachers get more training or get used to it, they'll get more comfortable with it, or when they use it more often.

Learner 3: Ma'am, I think it means to have the tablet of your choice, uhm, it's like in my household we only use Apple products and now I had to have a Samsung tablet and, uhm, I don't know how to use a Samsung. It works more difficult than an Apple and …

Interviewer: Yes …

19. <u>How do you think he or she should use it?</u>

Interviewer: Now think about the teachers that use the tablet in the least and think about a solution for her or him.

Learner 1: To charge it, because some teachers forget to charge the tablet; then they are negative about it and then they just put it down and don't want to use it.

Learner 2: To maybe start with easier stuff. Just, for example, to do exercises with the tablet to see how it works in the classroom.

Interviewer: Do they need to do it repeatedly? What do you think?

Learner 3: Yes, they must be forced to do it the whole time, to like yes, otherwise they will just leave it.

Learner 4: If they have the textbooks, they will rather grab for the textbook, so maybe they mustn't have the textbook with them.

Learners: [Giggle.]

Interviewers: Yes, okay, all right.
Final thoughts, we are almost finished.

20. <u>What else can you tell me about mobile learning that you feel I should know?</u>

Interviewer: Do you think it will fade away?

Learners: [Murmur "no".]

Learner 1: Because the universities and everything are busy switching over to technology, so to do it on a school level is actually a very good idea.

Interviewer: Okay.

21. <u>Do you have any questions that you would like to ask me?</u>

Learners: [Some murmur "no".]

Interviewer: Okay, then we are finished.

FOCUS GROUP DISCUSSION WITH LEARNERS 2

10-15 learners, 30-60 minutes (open-ended questions)

Start: Introduction of myself and the research study. Bring under attention – recording.

Part 1 – General information (ice breaker)

1. What mobile devices do you own?

Learner 1: I use my tablet.

Interviewer: Just your tablet? You don't use anything else? You don't have a smartphone?

Learner 1: After school, I use my phone.

Interviewer: What phone do you have?

Learner 1: Uhh. A Samsung.

Interviewer: Samsung. Okay, is it a smartphone? Or just a normal phone?

Learner 1: Just a normal phone, Ma'am.

Interviewer: Okay, great.

Learner 2: Uhm, I use my tablet during school time and my phone. I have a Samsung J5.

Interviewer: Okay.

Learner 3: Uhm, I use my tablet and my phone and I have an iPhone 6.

Learner 4: I use my tablet and I have an iPhone 6 plus.

Learner 5: I use my tablet and I have a phone as well.

Interviewer: What phone?

Learner 5: Uhm, a Hisense 20.

Interviewer: Okay.

Learner 6: I use my iPad in school and I have an iPhone 6 plus.

Interviewer: Sorry, I can, can I ask then, do you all use iPads or do you use different tablets?

Learners: [Answer all at once.]

Interviewer: Different tablets?

Learners: [Confirms with a “yes”.]

Interviewer: Okay. What is the criteria that you need for school?

Learners: [Mumble.]

Learner 5: You need a tablet with software of Android version 5 or higher.

Interviewer: Okay, Android 5 or higher okay. So it doesn’t matter if it is an iPad or a Hisense or something, it just has to be uhm, okay, great.
Okay, where were we?

Learner 7: Oh, I have a tablet and an iPhone 7.

Learner 8: I use a tablet and I also have an iPhone.

Learner 9: I have a tablet and an S6.

Learner 10: Uhm, I use a tablet and I have a Samsung S6.

Learner 11: I uh, I use an iPad and I have an iPhone as well.

Interviewer: Okay, it is interesting, there is a lot of you that are using iPhones.

Learners: [Mumble.]

Interviewer: Okay, that is very interesting.

Interviewer:

2. **<u>And in your household? How many, how many mobile devices do you have?</u>**

Interviewer: That could be a smartphone, an iPad, an iPod, a … How many, how many devices do you have in your household?

Learner 3: Like, how many do your parents have?

Interviewer: Yes, your sisters, your brothers. How many is there in your house?

Learners: [Mumble and giggle “a lot”.]

Interviewer: Count. Let me know.

Learner: What about laptops?

Interviewer: Yes, laptops as well. Laptops as well.

Learners: [Mumbling] Ten. Ten. Ten. I count twelve. Ten. Twelve. Seven. I count fifteen. Nine. Twelve as well. Nine.

Interviewer: Wow. Great. Uhm, okay.
How many time do you spend on your mobile devices? If you take an average per day? Okay, let’s … Let’s say because you are using the tablets in school. Let’s, Let’s leave that out. Okay, I am talking about when you get home. How many time, if you could roughly give me a time on average do you spend on your mobile device? Laptop, or whatever?

Learner: I think it is like three to four …

Interviewer: Hours? Uh okay, that is excluding your TV time, your.

Learner: Excluding TV, then it is like two to three.

Interviewer: Okay, I am not talking about when you are watching TV, I am just talking about working on your mobile device.

Learners: [Mumbling] Two to three hours.

Interviewer: Are you sure? Are you taking into account every WhatsApp conversation or Facebook or …

Learner: Including that?

Interviewer: Ja, I mean that’s also on your …

Learner: Uhm, [with a smile], then four to five hours.

Interviewer: [Laughs.] Okay, I think that is more … I mean, if you take in every conversation that you have with a friend …

Learners: [Mumbling] Five hours. Six. Five. Four to five hours. Six. Six hours.

Interviewer: Okay, great. Uhm.

3. **What happens at your house when the Wi-Fi is down, there is no signal, the electricity is down or there is a blackout?**

Interviewer: What happens then?

Learner 1: Go to sleep.

Interviewer: Go to sleep. [Laughs.] Someone said …

Learner 2: Just sit there.

Interviewer: You don't play games or read books?

Learners: [Mumble] I do play games.

Interviewer: Okay, but that is also on your phone? What if your battery dies?

Learner 3: Then I just go to sleep.

Interviewer: Even if it is in the afternoon?

Learners: [Mumble "yes".] No, if it is in the afternoon, I will eat something. Visit a friend.

Interviewer: Visit a friend. Okay. Anyone else that does that? Okay? Do you have a lot of blackouts nowadays? I know a bit back it was …

Learners: [Mumble "no".]

Interviewer: No, so you are most of the time online …

Learners: [Mumble "yes".]

Interviewer: Okay. Just with the show of hands, who has Wi-Fi at their house?

Learners: [Seven raise their hands.]

Interviewer: Okay. Great.

Part 2 – General information on mobile learning

4. **What does the term "mobile learning" mean to you?**

Interviewer: If I say “mobile learning” what comes to mind? Show of hands, then I can go to you. Yes?

Learner 1: Using your mobile phone to learn, work, study, ja, and study, your work in school.

Interviewer: Okay. Okay. Is it just in school, or uh, is it informal as well? Is it just school work that you do, or could it be something else that you’re interested in as well?

Learner 1: I, generally search it up on the web. Like learning about new stuff.

Interviewer: Okay, for example?

Learner 1: Uhm, learning say like, we need this information on this famous person or in history on this famous person, like when did World War 2 start and ja …

Interviewer: Okay, great. You also had your hand up [to learner 2].

Learner 2: Uhm, to be, when I think of that … when it comes to mind that all my study material, all the material is on my tablet, such as textbooks, notes and everything.

Interviewer: Okay, great. Anything else that someone wants to add? Do you agree with them?

Learners: [Mumbles “yes, Ma’am”.]

Interviewer: Something else that you don’t agree with what they said? It’s not just school work? You can use it for your own general knowledge as well? Are you using that as well?

Learners: [Mumble “yes”.]

Interviewer: Are you using something else than Google, or just Google?

Learners: Wiki, Safari. You can change to Firefox. Yahoo. Yahoo.

Interviewer: Okay.

5. <u>How long have you been using mobile technology to learn (formal and informal)? What apps or websites do you use and why?</u>

Learner 1: Uhm, I have been using technology for school since Grade 9. Like formally for school, using the tablets in Grade 9 and then I’ll say, for informal, since like Grade 5, Grade 5, Grade 4.

Interviewer: For when you were doing projects, or …

Learners: [Mumble “ja” or “yes”.]

Interviewer: Is it? Okay. Anyone else? Yes?

Learner 2: Ma’am, for school work since Grade 8, and for general knowledge since Grade 3.

Interviewer: Oh, that’s quite early. Okay. What websites do you use?

Learner 2: Google.

Interviewer: Google.

Learners: [Mumbling indistinctly.]

Interviewer: Okay, ja, but what websites? What apps? I know you get apps as well to learn something. Uhm, any one of you heard of Udemy?

Learners: [Mumble “no”.]

Interviewer: Okay, okay. Websites?

Learner 1: Well uhm, don’t use any particular websites. I just go on to Google and I type what I want and I just go into what websites then pop up and see what they say.

Interviewer: Okay, so you don’t look for the authenticity of the website and look if it is someone’s blog or …

Learner 1: No, depends on what we are researching.

Interviewer: Okay, give an example.

Learner 1: For example uh, for example, if I am doing a business research task then I just go onto newspaper websites, or reports or stuff like that.

Interviewer: Okay, that’s good.

Part 3 – Mobile learning and accounting

6. Have you heard and what do you think of Vodacom’s eSchool?

Learners: [Murmur “yes”.]

Interviewer: Have you used it?

Learners: [Mumble “no”.]

Interviewer: No? Okay.
Pastel’s School’s Program?

Learners: [Mumble “no”.]

Learner 1: I have heard of it.

Interviewer: Okay, you have heard of it. Okay, but you haven’t seen if or …?

Learner 1: No.

Interviewer: Okay.
Like2Understand?

Learners: [Mumble “no”.]

Interviewer: Okay and **Accountants2Be?**

Learners: [Mumble “no”.]

Interviewer: Okay. Is there any accounting websites or apps or something else that you use other than your school books or textbooks that’s on your tablets?

Learner 2: To learn?

Interviewer: Ja, visit or …

Learner 2: That app from SAICA.

Interviewer: The app from SAICA?

Learners: [Mumble “yes”.]

Interviewer: Okay, the SAICA website.

Learner 2: But there’s an app.

Interviewer: For, for school children?

Learner 2: Ya, we can search up on accountants and get information about CAs.

Interviewer: Okay, so that is if I understand you correctly, it is for career purposes.

Learner 2: Ja.

Interviewer: Not for learning about accounting?

Learner 2: Ah, no, no, no, no.

Interviewer: Anyone else that's been on SAICA's website?

Learners: [Mumble "no".]

Interviewer: Have you been?

Learner 3: Yes.

Interviewer: Also for?

Learner 3: Career purposes.

Interviewer: Career purposes, not for learning about accounting?

Learner 3: No.

Interviewer: Anyone uses any app or website other for learning accounting?

Learners: [Mumble "no".]

Learner 4: There's a book, but not a website. Just that study guide book.

Interviewer: Uhm, sorry, I don't know what you are using, so please explain a bit.

Learner 4: I don't know what's that brown, that yellow-brown book?

Learners: Mumbles Oh. Oh, yes.

Interviewer: Is it an online book?

Learners: [Mumble "no".] It is just a textbook.

Interviewer: Is it, is it one that you use in school?

Learners: [Mumble "yes". Look at each other.] We don't really use it. It is for extra work.

Interviewer: O, is it for extra work?

Okay, so you have your handbook on your tablet and then there is an extra book, that's a hard copy, that you can use?

Learners: [Confirm "yes".]

Interviewer: Okay. And it is not compulsory to use it?

Learners: [Agree "no".]

Interviewer: Okay, okay, great. Uhm.

7. <u>Can you please take me through a typical accounting lesson that you have?</u>

Interviewer: I know there's Grade 10s that's not using their tablets, if I am correct, for accounting. So, I would like someone, that's using a tablet and someone that's not using a tablet, explain to me, how does a typical accounting lesson look like, per day.

Learner 1: Well, for the ones that we don't use it, we do use our tablets for corrections in our books. The teacher scans the corrections and then she sends it to our tablet and then we go through it with her.

Interviewer: How do you mean she sends it to you?

Learner 1: We get the answer sheet and then she scans it and she forwards it to our tablets and then we look at the answers after we have done our work we've got the answers to go through the work and then when we don't understand it we could also ask her to get the … to get to understand how to get to that answer.

Interviewer: Okay. Can you please take me through a lesson, from where you get into class, how do you work through your lessons.

Learner 1: Well, what we do is, we sit down, we take out our books and what Ma'am does, if it is new work, we go through it, we do examples …

Interviewer: Is it on the tablet?

Learner 1: No, no, no, no, no. This is on, on the hard copy.

Interviewer: Okay. On the hard copy.

Learner 1: We go through the examples and then we try an exercise and then, uhm, after that, while we have gone through with the teacher one of the exercises and then we try one on our own and then after that we correct it with our teacher.

Interviewer: Okay. Uhm, are you using your tablets at the moment for accounting?

Learner 1: No.

Interviewer: Are you Grade 10?

Learner 1: I am Grade 10.

Interviewer: Okay. Okay great. And, uhm, then you say only if there are corrections

Learner 1: Only if there are corrections, ja.

Interviewer: Then she sends it to you?

Learner 1: Ja.

Interviewer: What, what mode of ... does she, what … is it WhatsApp or?

Learner 1: No, it's a, it's a textbook app.

Interviewer: A textbook app.

Learner 1: Ja, MiEbooks.

Interviewer: MiEbooks, okay. Anyone that's using the tablets in class at the moment? For accounting?
How does your day look like?

Learner 2: Well, with us, we have tablets, but we don't use them. Because we don't like using our tablets in accounting.

Interviewer: Okay, why?

Learner 2: Because ... it ... doesn't make sense. Okay …

Interviewer: No, no, no, that's fine!

Learner 3: Because it's difficult, Ma'am.

Learner 2: It's difficult to use it in accounting. Because with accounting, it is working out, it's recording and everything, so …

Learner 3: And our book is your answer book and your question book.

Learner 2: And your question book. So we don't really need our tablets and it is just a question book, where our hard copies are both a question and answer book.

Interviewer: Okay, so you have your answers in your hard copies as well with your questions, do I understand correctly?

Learner 2: No our answer book we mean like the pages that we fill in. Yes.

Interviewer: Oh, so you have places where you can fill in your answers? Okay. Okay, that's good to know. Uhm, so there is not a lot of accounting happening on the tablets at the moment?

Learners: No.

Interviewer: It is just for conversation with your teacher? Can you send her messages?

Learners: No.

Interviewer: No. So there is no way that you can communicate with her?

Learners: [Mumbling] There is WhatsApp.

Interviewer: WhatsApp? Do you have a WhatsApp group that you are using?

Learners: Yes.

Interviewer: Okay, and that's, that's on your phones?

Learners: Yes.

Interviewer: That's not on your tablets?

Learners: No.

Interviewer: Are you using your tablets for anything else that a handbook?

Learners: [Mumbling] Yes, no, don't know.

Interviewer: Are you?

Learner 1: When we do research.

Interviewer: Okay, so you can go onto, onto.

Learner 1: Google, with the Wi-Fi.

Interviewer: Do the, do the school have Wi-Fi?

Learners: [Mumble “yes”.]

Interviewer: Okay, so you can use your tablets if you want to do research?

Learners: [Mumble “yes”.]

Interviewer: And do you use the research in accounting as well?

Learners: [Mumbling] No. Sometimes. Sometimes.

Interviewer: Sometimes?

Learner 2: When we have a project, then …

Interviewer: Okay, for example?

Learner 2: We had a project to do, to do research, come on …

Learner 3: We had to audit Spar’s.

Learner 4: Spar’s financial reports, yes.

Interviewer: Oh, okay. That’s interesting. So you are actually using, uhm.

Learner 1: Real-life application.

Interviewer: Real-life application. Great! That’s wonderful.
Uhm, okay. I am going to ask you a few other questions on perceptions and experiences.

Part 4 – Perceptions and experiences

8. You have grown up with technology and mobile devices such as smartphones and I am sure you all know how to use them properly and effectively, but what about using them academically? Was it different or harder to use these devices to learn? Why? What was the most difficult part?

Learner 1: You get distracted, Ma’am.

Interviewer: You get distracted? How?

Learners: [Mumble “yes”.]

Learner 1: Like, you can like.

Learner 2: Download games.

Learner 1: Games and search on the internet and stuff like that.

Interviewer: Okay. Uhm, and you can do it here at school?

Learner 1: [Mumble “yes”.]

Interviewer: So, I mean you can sit here in class and be playing a game.

Learner 2: Yes, but the teacher will know.

Learner 1: She would know.

Interviewer: She would know.

Learner 2: That’s where the distraction comes in. With our books but then play games rather than working.

Interviewer: Okay, so that is a problem.

Learners: Yes.

Interviewer: Anything else that’s difficult for learning with the mobile device?

Learner 1: Sometimes making summaries.

Interviewer: Summaries? Why?

Learner 1: Because you can’t like necessarily like, it is difficult for me to.

Learner 2: Highlight.

Learner 1: … highlight on the tablet. I like using hard copies …

Interviewer: Okay. So you still like the hard copy idea?

Learners: [Mumble “yes”.]

Interviewer: You still like making notes on your own?

Learners: Mumbles yes.

Interviewer: I know that with the ITSI system that you are using you can put notes in.

Learner 1: Notes in, yes.

Interviewer: Uhm, is that difficult to use?

Learner 1: We don't like using it.

Interviewer: You don't like using it? Why?

Learner 1: Because I like studying with paper and writing.

Interviewer: Okay, even in the other subjects?

Learners: Yes.

Interviewer: Not just in accounting.

Learners: Yes.

Interviewer: Anyone else who wants to add to that?

Learner 3: When your tablet has problems and it starts to freeze up when you scroll in your textbook. Like I have that situations and then I have to exit the app and then have to re-enter into the app.

Interviewer: And that is frustrating.

Learner 3: Ya, it is.

Interviewer: Okay. Uhm, so it is not always working, effectively, like it should.

Learners: Yes.

Interviewer: Anything else?

Learner 4: For instance, if your tablet breaks, or your screen cracks and then you have to take it for repairs and you fall behind with your school work and all that.

Interviewer: Oh, yes, of course!
Is stealing a problem?

Learners: [Actively confirm "yes".]

Interviewer: It's, it's your own tablet. So you have to protect it and make sure that …

Learners: Yes.

Interviewer: Okay. Uhm. Who of you have lost a tablet.

Learners: [Some put up their hands.]

Learner 2: I have lost a tablet twice in the last three years.

Interviewer: Twice? Wow. Okay and uhm, the battery life? Is that a problem?

Learners: [Mumbling] No. Not really.

Interviewer: Not really. Okay.
How do you care for your tablets? Do you go home and you charge it?

Learners: Yes.

Interviewer: Do you have to charge it every day to make sure you have it the next day?

Learners: Yes.

Interviewer: What happens if you don't charge it and you come to school and your tablet is not working?

Learner 1: Sometimes we will bring charges and plugs and plug it in there. Shows the interviewer the plugs.

Interviewer: Are you allowed to do that?

Learners: Yes. With the teacher's permission.

Interviewer: With the permission of the teacher. Okay. Good. I am getting lovely stuff from you.

9. <u>How confident are you in using mobile technology to learn? Why?</u>

Learner 1: Please explain what you mean by that.

Interviewer: If we, uhm, If uhm, If we take away all your textbooks and your hard copies, how effective will you be able to learn with your mobile device?

Learners: [Strongly confirm "no". Shaking their heads.]

Interviewer: You still need your textbooks,

Learners: [Confirm "yes".]

Interviewer: … your hard copies. You don't feel confident to just use your tablets?

Learners: Yes.

Interviewer: You want the paper.

Learners: [Confirm "yes".]

Interviewer: Okay. Why do you think is that?

Learner 1: Because, uhm, I would say, with the textbook, it kind of sticks more in your brain. Because with the tablet I can't concentrate. Uhm, like, if I want to summarise or, I can't just read off a, off a tablet. I need to physically …

Interviewer: Write it down?

Learner 1: Ya, otherwise it just doesn't stick. That's why I prefer textbooks over tablets.

Interviewer: Okay, okay. So you don't like just making the notes on your tablet and then having it there?

Learner 1: No, I need to physically … show that she has to write it down.

Interviewer: You have to write it? Okay. Anyone else who wants to add to that?
So, you still feel that you need your textbooks. You don't just want the mobile device?

Learners: [Confirm "yes".]

Interviewer: Okay, so going paperless is not for you?

Learners: [Smile and confirm "no".]

Interviewer: Okay, great.

10. <u>Interesting question: Do you feel that mobile learning is helping or hindering your understanding of accounting?</u>

Learner 1: Hindering.

Learner 2: Hindering.

Interviewer: Hindering. Why?

Learner 1: Because … like … It's just the way it is. Because the textbook has answers in it like I can write in it, while the tablet you can't do anything on it. It's just reading off it.

Interviewer: So, if they take away your tablets you'll be fine? You'd …

Learner 1: Yes, we'll be fine, because the textbooks have questions and answers, yes …

Interviewer: Okay, so you don't feel they can, I mean, if something happens, the Wi-Fi goes down here, you will be fine? You will be able to still go on, learning.

Learners: [Mumble "yes".]

Interviewer: And actually you say that it will be better for you …

Learners: [Confirm "yes".]

Interviewer: … not to have the tablets?

Learners: [Confirm "yes".]

Interviewer: Okay. Great!

11. <u>So, uhm, What is your opinion about your overall experience with mobile technology or learning? And in accounting?</u>

Learner 1: I think mobile learning and technology have to start at a young age because now, it is always going to be difficult to adjust from hard copy to electronic education.

Learners: [Agree with Learner 1.]

Learner 1: Because now, tablets and uhm, hard copies are two different things. With the hard copy we are used to writing and summarising and you can memorise everything and on the tablet, you can't. It is something, you can't just memorise something off a tablet. It's, it's always difficult to do that.

Interviewer: So you feel, if … if I'm understanding you correctly, that if maybe you have done it from a younger age, you might feel different about working with it.

Learners: [Agree "yes".]

Interviewer: So, because it was phased in at a later stage you don't feel like it really benefits …

Learners: [Agree “yes”.]

Interviewer: Okay, anyone that has something to add?

Learner 2: Ya, uhm.

Interviewer: Yes?

Learner 3: I think it is because uhm, when I was at primary, we would always work with the textbooks. So I think it is just the habit of working textbooks and working with tablets now, just doesn’t work right now.

Interviewer: So, you are not very positive about the experience with working with technology in the classroom?

Learner 3: It’s uh, okay, but I think, uh, I am so used to a textbook, I can work with a tablet and think it’s not that efficient than comparing with a textbook, if that sounds right.

Interviewer: Okay, thanks, no that is fine. Thank you. Yes, you also wanted to say …

Learner 2: I think like a pro, for having your textbooks on your tablet is you don’t have to carry around all your textbooks and those textbooks are thick and the higher your grades will be heavier and thicker and taking a strain on your back and just walking around with all those textbook. I not like I’m being lazy or anything, it’s harder …

Learners: [Laughing.]

Interviewer: No, I understand and so there is more of a physical benefit for you then a learning benefit for you.

Learner 2: Ya.

Learners: [Confirm “yes, that’s true”.]

Interviewer: Okay, great.
Yes?

Learner 4: I can … my overall experience with tablets – I didn’t like it, because there is positives and negatives, but I feel like the positives, no the negatives outweigh the positives. Like for me, the only positive is what Learner 2 just said – the schoolbags, but other than that I don’t like it, because Grade 9, we started using it and when we got to Grade 10, I completely phased it

out and I started using hard copies, like my teachers hard copies instead of using my tablet.

Interviewer: Okay.

Learner 4: I just really don't like the whole tablet situation.

Interviewer: Okay, great. Anyone else who wants to add? You all feel about the same as what they are saying at the moment?

Learners: [Confirm "yes".]

Interviewer: Okay.

12. <u>Uhm, so is there anything that you like or enjoy except for the physical benefit of using mobile technology or learning? It there anything that is positive or that you enjoy or like?</u>

Learner 1: Well, I feel it is easier to do research and do assignments, 'cause now we can, it is time efficient and cost efficient and we can unlike having to go to a cafe and to do research.

Learners: [Murmur "yes".]

Learner 1: … and they charge you per minute or whatever for as long as you are there. So now it is easier because if you have a tablet, you just do your research and you just go print out everything.

Interviewer: Okay, and you can do it at school, you don't have to go to a library.

Learners: [Mumble "yes".]

Interviewer: Who of you still uses a library for research? You have your tablets.

Learners: Yes.

Interviewer: So that is something of a positive at the moment for, in the favour of technology.

Learners: [Mumble "yes".]

Interviewer: Okay. Anything else that you want to add?

Learner 2: Maybe having all your textbooks in one place?

Interviewer: Okay, like they said, you don't have to carry everything around. Everything is with you. Uhm, I don't know if, I know at my school where the children only have the textbooks and then they get to class and then they say, sorry they don't have their books because the time table was shuffled around.

Learners: [Agree.]

Interviewer: And now they don't have the textbooks. Now you have your textbook with you.

Learners: [Agree.]

Interviewer: Even if it is not the hard copy.
Great.

13. <u>Anything else that frustrates you?</u>

Interviewer: I know you said that you like the hard copy, but what else frustrates you? I've, we have talked about when your screen is cracked and when you get behind work. So anything else that you feel, you really don't like about the technology? That you haven't …Yes?

Learner 1: Uhm, sometimes the resources take time to download, and now you can't actually do your work.

Interviewer: Okay, so the real-time thing isn't working so well as you would like it too?

Learner 1: [Agree.]

Interviewer: Okay, yes?

Learner 2: Uhm, like sometimes, uh, when we, for example, have tests or exams scopes, sometimes the teacher don't send it to us and like the day before the exam or like two days before we should start studying, like we don't have it and the teachers says no, it is because the tablets aren't connected to the Wi-Fi, so that makes it hard for us the scopes of the tests and the exams.

Interviewer: Okay, that's good to know.

Learner 3: Ya, I would say if you don't have Wi-Fi at your home, you can't always update your tablet or your information. You have to come to school and update.

Interviewer: So even if there is information, you still have to come back to school to get it?

Learners: [Confirm “yes”.]

Interviewer: Okay. Great.
Okay, now …
I would like you to give me your ideas and suggestions.

Part 5 – Ideas and suggestions

14. What would you like to change about the system?

Interviewer: If you could make the technology, or the use of devices better, for you to study or wha ... what would you change, what would you suggest people who’s sitting with this products and giving it to you and actually pushing it down your throat, okay. What would you suggest to them? What would make you more eager to use it, or what you think will be better?
Yes?

Learner 1: If you have like the option of printing the exercise, so for example the teachers gives you exercise 2.1, then you can ask the teacher, “Can you please print this for me?” Like, sometimes it really frustrating, cause the notes are on top and you have to keep on scrolling and it is … just likes … gets really confusing.

Learners: [Mumble “yes”.]

Interviewer: Okay, okay, so you want the option that maybe you would be able to print it out and then you would have the notes so that you could see it there.

Learners: [Mumble “yes”.]

Interviewer: Anything else?
Any suggestion? How can you make technology more sufficient? More …
Yes?

Learner 2: Like, if they can guarantee to me that my e-books app, for example, won’t start becoming slow after some time, cause like, say now, I am on the app for about, I am on my textbook for 30 minutes then after a while the textbook starts getting slow and it takes long to load pages and stuff.

Learners: [Mumble in agreement.]

Interviewer: Okay, you all have a problem with that?

Learners: Confirms yes.

Interviewer: Okay, anything else?

[Long silence.]

Learner 3: Storage space.

Interviewer: Storage space?

Learner 3: Ja, on the tablet.

Interviewer: Okay, it that a system problem or is that a …

Learner 3: Shakes her head no. No, It is MiEbooks. Like in the educator's folder, each subject, you have a lot, especially for English and stuff, so it takes a lot of space.

Learner 4: And Afrikaans.

Learner 3: Ja, and Afrikaans.

Interviewer: So, you would like the system to have more storage space for you.

Learner 3: [Nods her head "yes".] Um-hum, lots.

Interviewer: So, it is not your tablet that has a problem with space?

Learner 3: Well, I don't really know, but MiEbooks take a lot of space.

Learners: [Mumble "yes".]

Interviewer: Okay.

Learner 5: And, uhm, like sometimes some of the children in our class, like, if you were here last year, some of your education folder from last year starts redownloading, like if I am Grade 10, then my Grade 9 life science redownload …

Learners: [Confirm "yes".]

Interviewer: Okay, and you don't need that any more and it takes up space.

Learners: [Agree.]

Learner 5: No, and we still have our old books from the previous years and you can't delete them. We just have to archive them.

Interviewer: Okay.

Learner 5: Which takes up more space, like Learner 3 said.

Interviewer: Okay, good. That's very interesting.
Uhm. Okay. You said …

15. <u>Any suggestions or ideas of what you would like to see happen in the future in mobile learning? And accounting?</u>

Interviewer: If you think of a world where you are your own designer of the universe, okay, how do you see school?

Learner 1: The desk will be the textbook.

Interviewer: The what?

Learner 1: The desk will be like the tablet or textbook.

Interviewer: Okay.

Learner 1: Instead of us having to bring the textbooks.

Interviewer: That's an interesting idea!

Learner 1: So the computer is practically on the desk, it is like a screen and you have your pen and you write on, you just log in on your account and then …

Interviewer: Wow, that's a very good idea.

Learners: [Like the idea as well.]

Interviewer: We have an innovator here among us! And then you will have some way of logging into your account.

Learner 1: You can't forget your tablet, it will be plugged into the wall, like electricity, like and when there is a power surge then …

Interviewer: That is actually very nice. Would you … you … you talked about a pen … Are you using a pen at the moment on your tablets?

Learner 1: I have a pen, so like say with highlighting, you have to press and your finger can press some other sentence and with a pen, it is easier to line, like underline it. And you can write notes.

Interviewer: Okay, okay. Writing notes, it's uhm, it's … does your tablet have the function of putting it into …

Learner 1: S Note. I use S Note.

Interviewer: Okay. So it is not just your writing. It puts it like the, what do you call it, certain font?

Learner 1: Y ... Ya, it depends on how you write.

Interviewer: Okay, I know mine, you have to put your own a and then b and then it picks that up and then every time that you write it, it will …

Learner 1: No, it's not, it …

Interviewer: You don't have that?

Learner 1: No, you literally write it and then …

Interviewer: Is it difficult for you to write on the screen?

Learner 1: Ya, as I don't have the best handwriting, so.

Learners: Laugh.

Interviewer: Then, later on, you ask: "What did I write here?"
Okay, great. Uhm …

16. <u>Is there anything that you are doing in other subjects that you would also like to be available in accounting?</u>

[Long silence.]

Interviewer: Nothing?
It's not like, for maths you are using this type of thing and … Oh, yes, I would love that to be able to do that in accounting? Not? Okay

Learners: [Shake their heads "no".]

Interviewer: Are you writing tests at the moment on your tablets?

Learners: [Shake their heads "no".]

Learner 1: She did send it. Just the question paper.

Interviewer: Just the question paper? So it is not like a system, you know, like a survey that you can do? Almost like a survey, that you could do the test on your tablet?

Learners: [Shake their heads “no”.]

Interviewer: You don’t have anything like that?

Learner 2: We did that once.

Interviewer: You did.

Learners: [Some agree “yes we did”.]

Learner 3: Ya, we just did that, but that was for Bio

Interviewer: For bio? And how did it went?

Learner 3: [Laughs.] It was okay, but like the computer, or the system, whatever it is market it at the same time and it gave you the score.

Interviewer: So, you got your score immediately? Okay, and …

Learner 3: But it is a bit difficult because like, the one that we had, was like a small block and you had to scroll to look at the diagram and then you had to come back to the answers to answer them.

Interviewer: Oh, so you couldn’t see the diagram and do your answers at the same time? So that is a problem?

Learners: [Some mumble “yes”.]

Interviewer: Okay. Was there anything that you liked about that … way of testing?

Learners: [Shake their heads.] No, not really.

Interviewer: Because I mean where I come from, the children want their answers immediately. So, if they could to the test and see what they got, then they would be thrilled because every day I hear: “Ma’am, when are we getting our tests back? When are we getting our tests back?”

Learner 4: Ya, well, there are like this auto-correct, like for a specific word, and you don't have to worry about your spelling, because the auto-correct will correct it. That is an advantage.

Learners: [Agree.]

Interviewer: I have a very interesting question and I hope you will understand it.

Part 6 – Thoughts on teachers

17. What do you think of this statement: "Mobile learning should not just replace traditional methods of teaching and learning, but should improve and enhance teaching and learning of the subject"?

Learner 1: It can improve teaching, but it has to start from a young age and for …

Interviewer: Like you said. It must be … that … must be the way that you learn. It shouldn't … the transition is the problem … From textbook to technology …

Learner 1: Yes.

Interviewer: Okay.

Learner 2: I feel like, in a sense, some … some aspects of, like, e-learning it did enhance learning, because now you have more visuals, you can … ja, like it did enhance, but it still hinders as well, but it enhances a bit.

Interviewer: Okay.
Anyone who wants to add to that?
Do you agree with this statement?

Learner 3: Not as much, like not 100%

Interviewer: Why not?

Learner 3: I ... 'cause … I don't know ... Uhm, It's just more difficult to start. Just to start, like learning from a tablet. Maybe that is just my opinion, cause I started learning from textbooks, but maybe … Let's say the primary school they get to this grade now then they would probably have a different answer compared to ours.

Interviewer: Okay, that's good to know.

18. How do you feel about the way your teacher is using mobile learning in your class?

Learner 1: Well, it is easier, because, uhm, for her to find the work, like, if you swipe to the side, then it has all the headings and subheadings for each chapter, so it will be easier and you don't have to page. There is like an index and that in our textbooks, but I think like its easier and less time consuming and you get more work done.

Interviewer: Okay.

Learner 2: And like, if you close a specific textbook today, tomorrow if you open it, it will be on the exact same page.

Interviewer: Okay, so it does not take time to page …

Learner 2: No, it does not.

Interviewer: Okay.
Are you satisfied in the way she is using it or do you feel they have to learn technology more? They are a bit behind us younger generations?

Learners: [Mumble that they are satisfied.]

Interviewer: You are satisfied?

Learner 3: I would say I am satisfied, cause every year they would have courses and stuff and there they enhance their knowledge about e-learning, so they try to give us their best of knowledge that they have and pass it on to us.

Interviewer: Okay, great. So, it not like, you feeling like you know more about the technology in the class then they do?

Learners: [Shake their heads and agree "no".]

Interviewer: Okay. That's wonderful.

Part 7 – Final thoughts

19. What else can you tell me about mobile learning that you feel I should know, that we haven't discussed?

[Long silence.]

Interviewer: Or maybe the people that gave the system or the ITSI to us?
Do you like them to know something else?

Learner 1: They could improve the effectivity of e-learning, because there's always problems with the textbooks and like accounting problems with the textbooks, but then we had to go to the head of the technology or whatever you call it, but ya it takes time and then she has to keep our tablet while she does the work and then we also have private information and then we have to give our passwords to her …

Interviewer: Oh, so you don't have a separate system for your school and your private life? It's all on the same … So?

Learners: Nods their heads.

Interviewer: So you would like that separation between private life and school life?

Learner 1: Ya.

Interviewer: Why … do you have something to hide …?

Learner 1: No, they want us to use computers now, and you can't just use computers for your private life, like keeping memories on your phone.

Interviewer: Photos …

Learner 1: Nods head, photos and ya.

Interviewer: Okay. Okay, so you would actually like that This is my school password and if someone has to … Okay. Is there no way that they can uhm see something, like working on their computer, but like, you know like that their system but that they can see your screen but you don't have to …

Learner 1: They can see what we do. They can see what we do, cause they say that we have to "download" a certificate in order for us to the internet, but then in actual fact, it also just monitors what we do on our tablets.

Learners: [Some agree.]

Interviewer: Oh, so they can see if you are playing games, maybe.

Learner 1: Ya, and with internet usage as well.

Learner 2: They can see if we are like not on our textbook. I … I think that is why they want us to be connected to the Wi-Fi at all times because the Wi-Fi gives them access to our tablets.

Interviewer: Oh, like a Big Brother effect?

Learners: [Some laugh.]

Learner 1: Ya, but also after hours if we go onto the Wi-Fi at home, they can still …

Interviewer: They can still see what you are doing?

Learner 1: Ya.

Interviewer: So you would really like to have more privacy?

Learners: [Agree "yes".]

Learner 2: And also like doing research at school. It's also not easy, like the Wi-Fi, our Wi-Fi blocks a lot of websites.

Learners: [Some agree.]

Learner 2: So when you try to go onto websites to gain that information you can't because it's blocked. So they block almost 90% of the websites, so doing research is really quite difficult.

Interviewer: Okay. I can understand why, because they want you not to be able to see porn and that stuff, but I mean I also understand that there's certain websites that you are supposed to get onto. Is there no way that you can like ask for certain websites to be unblocked?

Learners: [Shake their heads and say "no".]

Learner 3: No, its from head office.

Interviewer: From head office. Okay.

Learner 1: And say like you have an app to use like to get information from like I use to have, but you can't … You need a like a search engine or an update and then you can't use this Wi-Fi, cause you can't go within apps to …

Interviewer: Can you use it from your house, or …?

Learner 1: Ya, for apps, but not from this Wi-Fi.

Interviewer: Oh, okay. Good.

20. <u>Do you have any questions that you would like to ask me?</u>

Learner 1: Ya, what are your studying into?

Interviewer: I am studying uhm education, uhm accounting education. I'm looking at how to make accounting better. Starting at school age, because a lot of the uhm the … the … uhm accountants and the people at university say that there is a gap between what you study at school and what you are actually using in practice and uhm, I am trying to find out is there a way that you can close that gap, maybe start using uhm from using Pastel or something at school age that you can already see what's happening outside in the accounting world and start pulling that through to … to school age that, so that when you get there, it's not using … like you are using different uhm, words, uhm and, and, and names for certain things. When you get to university they change it. So why not use the word that you are going to use in practice? Uhm, so, that's what I am trying to establish. Is, is there a way that we can close that gap between school accounting and … and accounting at university. And I mean you don't even need accounting in school to go and study it, so why is that? Why, why is there that discrepancy, if I can say it like that.

Learner 1: As I understand it, if you have it, then you can skip that part, but if you don't, then you have to do it …

Interviewer: Yes, my sister, she uhm, she dropped accounting when she was in Grade 10 and then she studied BCom Marketing, so she had to do uh course for getting that information that she missed. So ja, is there anything that you think will help me with that mission of closing the gap between school accounting and what you do in practice? Is there something that you would like to see happen? Is there anyone of you that's thinking of becoming an accountant?
You are! Okay.

Learner 2: Chartered accountant.

Interviewer: Chartered accountant, okay.
Are you.

Learner 3: Yes. CA as well.

Interviewer: Yes, CA.

Learners: And three more for CA.

Interviewer: Wow, there's a lot of you!
That's wonderful.
Okay.
So, I hope your maths is up to par …

Learners: [Smile and say "ja".]

Interviewer: Good luck with that.
I know they say, like, that it is the gatekeeper of anything if you want to go and study and then I would like to thank you for your time.
Any, any other questions?
Any other information that you would like to share?
Was this okay for you?

Learners: Yes.

Interviewer: I didn't make you feel uncomfortable?

Learners: No.

Interviewer: I appreciate every one of you being here.
Thank you and goodbye.

APPENDIX C – QUESTIONS TO TEACHERS

Semi-structured interview with teachers

30-60 minutes (open-ended questions)

Start: Introduction of myself and the research study. Bring under attention – recording

Part 1 – General information (ice breaker)

1. What mobile devices do you own?
2. And in your household?
3. What is the amount of time that you spend daily on your mobile devices?

Part 2 – General information on mobile learning

4. What does the term "mobile learning" mean to you?
5. How long have you been using mobile technology to teach? What system/apps/websites do you use and why?

Part 3 – Mobile learning and accounting

6. Have you heard and what do you think of Vodacom's eSchool? Pastel's School Program? Like2Understand? Accountants2Be?
7. A typical day in an accounting lesson.
8. Of that time how much is done on the mobile device?

Part 4 – Perceptions and experiences

9. Most of us know how to use technology and mobile devices such as smartphones properly and effectively, but what about using them academically? Was it different or harder to use these devices to teach? Why? What was the most difficult part?
10. How confident are you in using mobile technology to teach? Why?
11. Tell me more about the training that you received to effectively use mobile technology?

12. What is your opinion about your overall experience with mobile technology or learning? And in accounting?
13. What do you like or enjoy most of using mobile technology or learning in accounting?
14. What frustrates you?

Part 5 – Ideas and suggestions

15. What would you like to change?
16. Any suggestions or ideas of what you would like to see happen in the future in mobile learning and accounting?
17. What do you think of this statement: "Mobile learning should not just replace traditional methods of teaching and learning, but should improve and enhance teaching and learning of the subject"?

Part 6 – Thoughts on learners

18. Do you feel that mobile learning is helping or hindering learners understanding of accounting? Why?
19. What is the effect that you see mobile learning is having on the learners?
20. Do you feel that mobile learning is the solution in South Africa to address the needs of the diverse set of learners in today's classroom (financially, inclusion …)? Why?

Part 7 – Final thoughts

21. What else can you tell me about mobile learning that you feel I should know?
22. Do you have any questions that you would like to ask me?

Thank you for your time.

Some "probes" or follow-ups to be used if necessary:

"Can you say more about that?", "Can you give an example?", "What do you think?"

“How about you? Do you have some thoughts on this?”

“Does anyone else have some thoughts on that?”

APPENDIX D – TRANSCRIPTS OF SEMI-STRUCTURED INTERVIEWS

SEMI-STRUCTURED INTERVIEW WITH TEACHER 1

30-60 minutes (open-ended questions)
Start: Introduction of myself and the research study. Bring under attention – recording.
Part 1 – General information (ice breaker)

1. What mobile devices do you own?

Teacher: Uh … me, personally?

Interviewer: Yes.

Teacher: Uhm … I only own a laptop and a cell phone.

Interviewer: Okay.

Teacher: Yes.

Interviewer: You don't have a tablet, right?

Teacher: No … I, uhm … I only have, no, I don't use I have one of those … What are those?

Interviewer: Two in one?

Teacher: Yes, but I don't use it.

Interviewer: Okay.

Teacher: So, it's in the storage room, but I don't use it.

Interviewer: Okay.

Teacher: So, I use my laptop and then I only have a cell phone.

Interviewer: Okay.

Teacher: Yes.

Interviewer: Why don't you use the two-in-one?

Teacher: Uh … it's too small.

Interviewer: Too small?

Teacher: Yes, I can't, I can't set up the tests, I don't like it at all.

Interviewer: Okay.

Teacher: It's … it's frustrating.

Interviewer: Okay.

Teacher: Yes, yes, yes. I don't like it at all and I also don't like a tablet … [laughs].

Interviewer: Okay, why not?

Teacher: Because, because it is too small, and you cannot highlight and stuff on the tablet, but I prefer to underline and circle and make notes in a textbook, and it just takes up too much time to do it with my finger instead of using a pen. So, timewise the tablet takes up too much time.

Interviewer: Okay.

Teacher: Yes.

Interviewer: You are teaching accounting for Grade 10 and 11, right?

Teacher: Grade 10 and 11, yes. Yes.

Interviewer: Okay.

2. <u>What is the amount of time that you spend daily on your mobile devices?</u>

Teacher: Uhm … I think on the cell phone ... [sighs]. I'm not really … I have Facebook and I have WhatsApp, so I use that. I only WhatsApp and so when I need to organise something. I don't have con … If I want to chat I'll call them or I'll go to them and uhm … I think here at the school I am much busier with my laptop than I was at the previous school. So, sometimes it feels to me it takes away all my teaching time, where I would more …

Interviewer: Because you need to work more on the tablet? I mean on the laptop?

Teacher: Yes, and uhm … the fact that we *push* all the resources to the children and all of that takes up time. So … uhm … where if you had a textbook, then everything is in the textbook. Or if you had to make a copy then you can do it after school and then when the class started, you simply hand out the papers and you can start teaching, where with technology … and

sometimes a learner's … his thing's battery would be flat and then you cannot do a class test on it. So, yes, I don't know. I'm a bit old-school … [Laughs shyly.]

Interviewer: No, no, no. That is exactly what I want to know.

Teacher: So, yes.

Interviewer: I want to know exactly that ...

Teacher: It's really time consuming for me.

Interviewer: Okay.

Teacher: Yes, it takes up a lot of time … I don't know whether it is because … look we grew up with books. So, I don't know whether it's because we are a bit behind and so or, let's say, the children of today, let's say they are teachers in about ten years. Uhm … it's going to be easier for them than it is for us.

Interviewer: Okay. Good. Uhm …

Part 2 – General information on mobile learning

3. What does the term "mobile learning" mean to you?

Teacher: Hmm … Okay, like for me, mobile is that like learning from a tablet?

Interviewer: I want to know – If you hear the words mobile learning, what does it mean to you?

Teacher: Uhm … The use of technology?

Interviewer: Okay.

Teacher: Yes. I don't know, anything that's not in the form of a physical book you can page through. That is what I think, yes.

Interviewer: Uhm. You said since you were at this school, you started using the tablet more. So, how long?

4. How long have you been using mobile technology to teach? What system/apps/websites do you use and why?

Teacher: Uhm. Well, at my first school where I used to teach, I had a personal laptop and the school principal told me I'm not allowed to use technology

in the classroom. Like I had my own projector and I made PowerPoints and so because when I did my PGCE, they showed us how to present a class and how to make it interesting.

Interviewer: With PowerPoints?

Teacher: Yes, for example, you cannot insert videos into a PowerPoint. That principal told me I'm not allowed to use it. So, now I don't know, there are different reasons, maybe the other teachers didn't have the opportunity, for example at that school I wasn't allowed to do my marks electronically, I had to write it.

Interviewer: Okay.

Teacher: So, when I came to this school, I'm so, I am, first I used to teach there, then I went for a year overseas, and I taught abroad and I definitely used technology and uhm … Yes, now I'm at Curro for years, so yes, I think I've been using it for four years now. Technology was part of … because I wasn't allowed at the previous school.

Interviewer: Okay. Now you said when you were abroad you used technology, how does it differ with what we are doing here?

Teacher: Uhm, okay, I home-schooled two boys …

Interviewer: Okay.

Teacher: Uhm, it is … now I can't remember exactly is it …

Interviewer: Where was it?

Teacher: It was in Chile, but I gave them on the Canadese teaching plan, I uhm, because they were in the process to immigrate to Canada So, they had to be ready to start in the school next year. So, I think it was Calvered Home Schooling Program or something like that. So, it was a lot of fun and it was very easy because uhm, I just went on the day's stuff and everything was already organised. The videos the learner had to watch, the homework he had to do, uhm … the ... how it is organised, made it easy, where on this side … If I had to compare it, for example, last year's Grade 10 accounting. That frustrated me, because the textbook is on the tablets, and they have a book where they need to fill out the answers. Uhm, then one learner doesn't have his tablet here at school or the battery is dead or whatever, and no work has been done in the book. The learner next to him doesn't want to share his tablet, because maybe he will let the tablet fall or he will get it dirty. It's his personal property so, uhm … yes, that makes it difficult.

Interviewer: So, would you say you would have been more positive about it if everything was on the tablet?

Teacher: No!

Interviewer: Not?

Teacher: No. I, I didn't.

Interviewer: The, the work you've done with the homeschooling was that on a computer?

Teacher: Uhm … they had stuff they did on the computer, but they also had … or no. Let me rather say it this way … the whole program they had to do, was on the computer and then there were a few stuff that had to be submitted on the computer, which was marked directly, but with it were like textbooks, which they had to, uhm, had to do stuff in the textbook. But you will, for example, watch the videos on the computer, but the questions would be in the textbook and you had to write the answers in the textbook.

Interviewer: And that is what frustrates you?

Teacher: Yes, that, that … Well, we changed it now. We decided we're not going to do it that way anymore because it doesn't work, so then we got new textbooks for this year, and uhm, the textbook has the question with room to fill out an answer. So, you … it's not like searching here, searching there and fill out here so yes, this works easier. But what I do, my sister is a CA, so uhm, I know you actually only work from your computer, that's all you do, so I ... I do agree with accounting you have to get used to using a computer, but there's a difference between a computer and a tablet. There's a difference between reading stuff, uhm, filling out transactions let's say, and to actually, fill out the stuff. For example, I would say, stop making all these pages and design a program on Excel and teach accounting in Excel, because that's what you do in practice because it's just Excel. So then, instead of wasting time with adding up with the calculator, if you know how Excel works and you can fill in all the information, and the formula adds everything. Why do you learn a learner how to work with a calculator, because that's where a lot of their mistakes are, then you start in practice and then you never use a calculator? So, I, I don't want to say technology is just bad, but I think learners had to be taught in the right way, on the right technology they will use in the future. That's what I think.

Interviewer: No, it's good you're telling this to me, because my study is exactly about this, to see how we can minimise the gap between school, university and

in the practice. I want to see how we can improve the school curriculum and accounting. Do you understand?

Teacher: Yes, because for example, uhm, I don't know how to answers the learners a question like … why do we still do cheques? Why does the transaction say *paid by cheque?* Uhm, I literally had to show three Grade 11s how a cheque looks like. They didn't know what a cheque looks like. You understand?

Interviewer: Yes, so it's completely out of date.

Teacher: Who still use cheques? So …

Interviewer: Yes, that's exactly what I wanted to know. Thanks. Okay, so which websites or apps if you need to use it, or you want to show the learners something, do you use?

Teacher: Uhm, okay, what I usually do, I will go on YouTube, and if I'm busy with a theme I will search *salaries and wages* and then I'll go through the videos they'll give me and then I'll push the videos. Uhm, I have seen the learners really do enjoy videos, so before you begin with a theme, I would say push about five to six videos and say go watch it at home, because we don't have time in class and then when they come to class they'll have a small background about … and there's really nice stuff. There are people who literally draw even the T-accounts and then they do all the other stuff, so, there is yes …

Interviewer: So, is it what they call *flip the classroom* where you give them work beforehand, you do your own preparation and when you return each learner has their own background and then you can proceed with your lesson?

Teacher: Yes, yes, but I saw the Grade 11s, they, uhm, they look at the videos, but they didn't really do it. Like, they return and for example with partnerships, which is a quite a tough one for them, uhm, they looked at the videos, but when they return, and I asked questions the, mmm … [shakes head in disappointment]. So, you send the videos, but I don't know whether it's always that … effective, yes. Uhm, I eventually saw what works best for me, I'm also not teaching from the front of the classroom anymore. I sit with the kids and give them an activity then we do it together and I'll give them a bit of background information, but they must literally sit and do it, because I don't know these kids, they can't, I don't know if it's just at our school, but you can teach and teach … it just doesn't get absorbed. Where if I literally sit with them and do it together with them, then, okay, but it's easier for me because I only have three learners in my class. So, we literally sit around this table and we, we work together and I can see

who is writing what and I have eye contact, so it makes it a whole lot easier.

Interviewer: Okay.

Teacher: Yes.

Interviewer: It's nice with such small classes.

Teacher: Yes. [Laughs shyly.]

Part 3 – Mobile learning and accounting

5. Have you heard and what do you think of Vodacom's E-School? Pastel's School Program? Like2Understand? Accountants2Be?

Teacher: [Shakes her head with every question.] No, not at all.

Interviewer: Good. Uhm. You've touched it a bit, but tell me how does a typical day in your accounting class look like?

6. A typical day in an accounting lesson

Teacher: Okay.

Interviewer: From beginning to the end.

Teacher: Okay, so, uhm … I, firstly I would let's say if they, when we must start with a new chapter, then uhm, like I said, I would start by showing the videos I send them the previous day. They will be seated and then I would ask some general knowledge questions, just in between then I would say, no, okay, let's sit down with this, uhm, this activity. Now, the textbook we've got is very nice, it explains every concept first with an example and then an activity. So, it's nice, so I always first work through the example then the example would be very easy and then the activity which is the difficult part. So, when I do the example with them, then they'll do the activity for homework. Uhm, there's not enough time in the class to always do the homework with them or to mark it. So, what I do, is I push the answers to them. Uhm, I did it the previous year in the first quarter, I showed the answers on the board and then they had to mark it in class, but nothing is really happening there. So, my arrangement is, you'll get your answers and you have to mark it at home. I want to see how the learners marked it and that you've done corrections, then I'll check it on a Friday. Then we will go through the week's activities and then I'll take one learner's book and see what she did wrong and I'll try to understand and know why. Do you understand? Then I'll try to go through it and … There's not always

enough time to run through everything, so the learners know by now, they'll ask me something they don't understand. Sometimes after school, one would come to me and ask: "Ma'am, I got this and that wrong, I don't know why, please explain to me." And I think there it helps, there the tablet works quite well. I know back when I was in school, it was very bad, you had the answers on the board or the teacher read it to you and then you had to mark whether you missed something or not. And now I feel the learners have something to refer back to learn for a test then, then it's there and then it saves, let's say it saves a lot of paper. So, uhm, a lot of times when I explained a topic then there will be an extra activity they can get used to. Then I let them do it in class, so that they haven't finished, will be homework.

Interviewer: For homework. Okay.

Teacher: Yes, uhm, once again something that's really cool, but they don't think it's that cool, the book already has all the lines. Back when I was in school, we had to draw all those lines by hand. So, sometimes then I'll tell them how privileged they are because for me it took me almost two hours to draw all those lines and then after that you can start with the activity. So, uhm, that is why I think, if you do it on the computer it will be much faster, because then it's there, yes, you simply insert the formula, the computer will add everything, you simply insert the data. So, yes.

Interviewer: Okay.

Teacher: Yes, I think it's complete.

Interviewer: Uhm, what form of communication do you have with the learners? Uhm, do you use, is it only in the class, or is there another way someone can contact you after school if they want to ask you something or that they can WhatsApp you or what, what do you … do you have such a system?

Teacher: Uhm, funny enough, they don't want to add me to the WhatsApp group.

Interviewer: Oh, is it?

Teacher: Yes, they have a WhatsApp group, but I don't know about the Grade 11s, but the Grade 10s most certainly does have a WhatsApp group. So I have, I'm not on their WhatsApp group, but they all have my number, so there were a few learners who send me a WhatsApp, especially about an assignment, but then I'm irritated, because then it needs to be handed in tomorrow and then it's too late, so, uhm, but I will always, I will always answer, I just don't have long conversations on WhatsApp. And our school principal just isn't for it too, we may not really be part of a WhatsApp group. Yes, he says funny things come from it. [Laughs.]

Interviewer: I can understand why he says so. [Laughs as well]. We had, out of experience …

Teacher: Yes [laughs].

Interviewer: Okay, good. And now, let's say that was a typical lesson, right?

7. <u>How much of your lessons do you spend on the mobile device?</u>

Teacher: Hmm, nothing.

Interviewer: Nothing?

Teacher: Nothing.

Interviewer: It's just when you push stuff to them.

Teacher: I will literally at the end of the period tell them to quickly take out your tablets, uhm, and then quickly check if you received the stuff I send.

Interviewer: Okay.

Teacher: But it's different now, this year it's different. Last year it wasn't like this. They would sit the whole period with their tablets because then the questions used to be on the tablet.

Interviewer: Okay.

Teacher: So, this is the difference between this year and last year.

Interviewer: Okay, so that is a big difference.

Teacher: Yes.

Interviewer: Okay. So, do you send it at the beginning of the lesson and then they just have to check at the end of the period whether they received it.

Teacher: Yes, or for example if I did it the previous day after school. I have to, I take, I take a screenshot of, oh that also takes up a lot of time, you, I, there's no option to copy and paste. So, I take a screenshot of the work and now it's on the computer so it's in a very funny format. So, now you have to resize it, or I'll take a screenshot then I'll copy and paste it in Word and then I have to, uhm, first convert the Word file to PDF and then I can send the PDF to them. So, that takes a lot of time, uhm, but like I said I want them to have the answers. So, I will see, for example, one afternoon

I'll sit with three activities. I also don't always give them the answers immediately, because there's not always time. So, uhm, yes, it's difficult. Uhm, uhm, but what I saw with last year's learners, if the textbook is on the tablet, some of them have tablets like this [shows size with hand] big, other's tablets are this big [shows with hands bigger size] and some of them have those [shows even bigger] laptop thing, but they who have small ones, it's frustrating, because now they read a transaction, but it's too big, then they must minimise it, then they can't remember. Then the amount is here [shows in the air] and then they must go back, and one can't remember what account it is. So, it's very frustrating, uhm, uhm, yes, sometimes I think the learners just aren't up for it. They've asked me a lot of times if I can, I have uh, if I have a textbook, with the questions. Or if they can take a photo of the page with the tablet to, uhm, to have the whole activity on one photo, then if they, then it is easier for them to swipe with the tablet or so …

Interviewer: Good, uhm.

Part 4 – Perceptions and experiences

8. Most of us know how to use technology and mobile devices such as smartphones properly and effectively, but what about using them academically? Was it different or harder to use these devices to teach? Why? What was the most difficult part?

Teacher: Uhm, yes for me it is. Yes, I don't know, but once again, I think for me, it's maybe a funny thing, I've had until recently an old Blackberry.

Interviewer: Okay.

Teacher: So, the learners said to me I can leave my phone on the table in front, because would steal it, so on my phone, I literally only has WhatsApp and Facebook. I'm not, I'm not someone who downloads apps and stuff like that. Don't even ask what there is.

Interviewer: Okay, okay. So, then it's more difficult for you to …

Teacher: Yes.

Interviewer: Okay, good. So …

9. How confident are you in using mobile technology to teach? Why?

Teacher: Uhm … Well, I'm quite comfortable with the computer. Uhm, but I don't really use it … I don't use PowerPoint presentations and stuff like that in accounting. In my other subject, I do. So, I'm comfortable to set up stuff

like that, I can, I know how the whole push-thing works and all that, but I'm not going, I don't know, I'm not going to download an app for the learners which will make it easier to … I don't know. I don't even know if there is something like that … So, yes … [laughs].

Interviewer: [Laughs]. Okay. Uhm.

10. <u>Tell me more about the training that you received to effectively use mobile technology?</u>

Teacher: [Shakes head "no"].

Interviewer: Nothing?

Teacher: You have to teach yourself. Yes. I know the school sometimes have, uhm, they sometimes have tablet training, but then it's not really subject specific. So, let's say, uhm, the … the push thing gets upgraded then there will be new stuff, then they will show us for one hour an afternoon, the tablet, okay this is what changed, this is how to this, but for the rest … no.

Interviewer: No specific training.

Teacher: No.

Interviewer: Okay. Good.

11. <u>What is your opinion about your overall experience with mobile technology or learning? And in accounting?</u>

Interviewer: So, with … with your overall experience and you know, how do you feel about it and then specific with regards to accounting? Because there is a difference between overall and the subject itself.

Teacher: Uhm, I think … to teach with it, isn't for me, it actually doesn't help at all, but like I said with homework, it's nice to have it for the learners and I can see they make use of it, they do use it, when they take out the tablet and they literally sit and mark their work. So, that part to me is nice, but uhm, the rest … [laughs]. I don't know if I'm giving you the wrong answer.

Interviewer: No, there's no wrong answer. It's your opinion, so uhm.

12. <u>What frustrates you?</u>

Teacher: With regards to the technology? Uhm …

Interviewer: And with regards to the learners and the technology. Anything that can frustrate you in a technological set-up.

Teacher: Uh, okay, first of all, I think they don't know that it can be an aid to the learning process. They look at a tablet or that stuff and they see it as a social device. So, to take more photos or to play with it or to watch videos or stuff like that. They don't see it as a "textbook". Uhm, I think for an example, uhm, I'm not going to handle my textbook and my cell phone the same way, because it's not the same thing. Where for them, I don't think they can differentiate, so they cannot understand when I tell them you cannot listen to music while you are busy with accounting, but they think they have the tablet and the earphones, so why not? So, [laughs] understand, it's not even an option that I could've spent my time, but okay we changed regardless, so that. And then the fact that the batteries are always flat, uhm, and then uhm, I've had an extension thing in my class, then it's only tablets and chargers and so, but still while it's on charge you cannot work on it in the class, and then, uhm. The theft also. Uhm, I've been at this school for 4 years now, my tablet's been stolen twice. So, uh, I don't know, it's a … Okay, textbooks have also been stolen previously, but, uhm yes. It's like an extra, I don't want to say it's an extra responsibility for the learners, but it tends to be our responsibility, uhm, there will always be questions like why weren't you in the class when this … I can't look after every learner's tablet. So, yes, I don't know whether this is good reasons … [laughs].

Interviewer: No, it is. It is!

Teacher: It's probably a type of responsibility you need to learn, but I don't know whether the learners have it.

Interviewer: Hmm, yes, I think it's very frustrating.

Teacher: And, the stuff I've seen on tablets, understand, it's horrible.

Interviewer: Is it?

Teacher: Yes. So …

Interviewer: Do you mean stuff they inappropriately …

Teacher: Yes, that age group learners aren't interested in pictures anymore … Understand, so they are, uh, actually busy with other stuff and then they will tell me, oh, but the homework didn't come through, but another will tell me no, he received it and then it's a process you need to do to see whether there is enough space on the tablet and there's no space because there is a lot of other stuff. And this is a waste of time. I don't …

I've reached a point where I … will look if there is enough space, if there's not, then it's not my problem.

Interviewer: So, they upload a lot of stuff on the tablet which aren't supposed to be there …

Teacher: Oh, yes!

Interviewer: And then it takes up valuable space if I can put it that way.

Teacher: Yes! Yes! Because remember every teacher push for his own subject, so there's a lot of stuff being sent and when you download a lot of other stuff, then some of them doesn't even know how much space they have, so, yes …

Interviewer: So, there's no distinction between private life and school work …

Teacher: [Shakes head]. Not at all! Not at all.

Interviewer: It's the same tablet they use.

Teacher: Yes, some of them, uhm, WhatsApp on their tablets. I didn't even know you can do it, so, while I, uhm, let's take the lower grade as an example, while I will teach, and you are supposed to have your textbook in front of you to follow with me, then, you can see if a learner, so then, understand, what, what am I supposed to do? I can't interrupt myself the whole time. So, that's part of the technology, but with the older learners, I have to say it gets better. But their tablets are filled with inappropriate stuff [laughs].

Interviewer: Okay.

Part 5 – Ideas and suggestions

13. What would you like to change?

Teacher: Uhm, okay, like I said earlier, uh, that, the stuff about the cheque for example. It, it feels to me, I have no idea why it's there. And then, uhm, I don't know if they, they do a bit about EFT and I saw in the textbook there's a bit more about it, but it feels to me, in today's life, one pays … a lot of transactions also, for example, *paid cash*, uhm, or most of them, uhm, I don't know, maybe if you learn the learners a bit about what it really means to do electronic transfers because it actually is how we do it nowadays. Uhm, and yes, I don't know, sometimes I feel that the CPJ and CRJ, what is the point of that? We, we don't use it anymore, but the learners need to learn it now. So, rather focus on what, yes what we are using currently.

Interviewer: Hmm, okay.

Teacher: Uhm …

Interviewer: So, you would say the curriculum needs to be adapted to be more, how can I put it, uhm, to be more modern.

Teacher: Modern, yes, I don't know, it feels to me the accounting is exactly, I'm talking specifically about transactions and so, is exactly the same it was ten or fifteen years ago, and a lot has changed already. So, before you focus on the technology, maybe first look at what, what changed. Uhm, I mean you cannot uh, uh, a textbook says "Water and electricity" R300. Where in South Africa will you use water and electricity for R300, understand? So, stuff like that, you …

Interviewer: It's outdated.

Teacher: Yes, a misconception with the learners. Uhm, and then you are at 'varsity and suddenly uhm, you work with thousands, hundreds of thousands of Rands, uhm, then you start at a workplace, then, you work with millions. So, uhm, that part and then … [sighs while looking down] … Uhm, what did I just think of? Uhm, oh, I, I personally experience the learners struggle a lot with theory about accounting. Like, uhm, they maybe understand how to calculate the stuff and so, but if they need to interpret what it means, so if this ratio is higher than that one, uhm, they cannot in accounting terms, understand it, uhm, and interpret it. They cannot at all. They'll write, uhm, most of the time they'll write the person must get a disciplinary hearing, then, then you don't understand an owner of a business … [Shakes head]. So, they, they, I don't know how they …

Interviewer: Their capability to reason …?

Teacher: Yes. Yes, sometimes I wonder, I don't know how to teach it better, because you must, I don't know you must have a feeling for it, but you must, you must uhm, use accounting terms and they don't, they don't know. I don't know if it is something the lower grades must begin with … Uhm, and stuff and I know with the IEB it's a big part of the question paper.

Interviewer: Okay. Would you say that learners struggle to … to think for themselves?

Teacher: For sure, because what I saw recently, is, when I, for example, push the answer to them, specifically the questions they need to answer in words, so when it's in the test, then the questions are almost exactly the same as in the activity, but it has a completely different outcome, then they would

write down the answer they wrote in the homework activity, because it's work they studied like a parrot, because …

Interviewer: So, they don't understand …

Teacher: [Shakes head.] They don't understand. They don't understand … but, it's difficult, because how can you calculate the correct answer, but you don't understand why it's correct, yes. So, that gap is for me …

Interviewer: So, you would say you want to see in accounting, not only in accounting, but in general, and specific because we talk about accounting …

Teacher: Yes.

Interviewer: That learners must, that is must be adapted so that they can go learn to think for themselves, instead of just repeating the answers.

Teacher: [Nods head.] Yes.

Interviewer: Like you said, learning like a parrot …

Teacher: Yes, yes, because uhm … if you see, when you go do an audit or something, then you must write a report and, you must communicate with them and tell them, listen, this is the statement of income and this is the balance statement. Uhm, so it doesn't help, you simply do, it's not calculating, it's not where it ends, and the learners see it still as … they see it as maths, they think it's only calculating and I don't think accounting is only that, it's more than that, I don't know, I think in university you learn a bit more of you start at a workplace and then [laughs] … I don't know.

Interviewer: Yes, the university started to, how can I put it? But I talked with the people at the university also and they also said there is so much their trying, trying to teach you in the four years …

Teacher: Yes, yes …

Interviewer: They, actually, don't have the time to develop your reasoning capability, although it's required. Uhm, they have, the one lady there told me she wants them to learn that capability on school level already because when you arrive at the university and you learned how to think for yourself, that is when you will progress to CA.

Teacher: Yes, yes.

Interviewer: Because they then have the capability to think further and interpret …

Teacher: But I think the technology also makes it, the learners don't learn to think for themselves …

Interviewer: Okay.

Teacher: Because if you, for example, uhm, if you tell them … you have to do something, uhm, then the first thing most of them do is they take out their tablets and they search it on YouTube. How to … and then there's a YouTube video for everything you can think of, if you want to bake a cake, then … you don't even have to read a recipe, he will show you, tell you … So, learners, they get lazy to think for themselves, because someone else can …

Interviewer: It's finished.

Teacher: Anytime, anywhere. It's not like you need to go to the library and it took some time and you … they closed. I mean, you can anytime, yes, use it.

Interviewer: Okay.

Teacher: Or it's what I think, I don't know, yes.

Interviewer: Hmm. Okay. Uhm.

14. <u>What do you think of this statement: "Mobile learning should not just replace traditional methods of teaching and learning, but should improve and enhance teaching and learning of the subject"?</u>

Interviewer: Should I read it again?

Teacher: Yes. No, I do agree with it, it mustn't replace it, it must, uhm, promote, and help.

Interviewer: And improve.

Teacher: And improve, yes. Uhm.

Interviewer: Do you think it's currently happening now?

Teacher: Uhm, I think in certain aspects. Uhm, it is … There's a lot more stuff one can show the learners thanks to technology, uh, and you can make it more creative and more fun to teach the work on their level. Where when it was in the textbook then they wouldn't be as interested, but there is certain stuff that needs to be done in a textbook, so uh, yes, I don't know. But, yes, like I said, it goes both ways, because to me it feels I'm teaching better now as we have the textbook now and we fill out answers, but I also

know it will be better if it's possible to do it on a computer and you do it on a program like Excel or Pastel, or, or, whatever, uhm, instead of using the tablet. You are never going to use a tablet in the workplace. So …

Interviewer: I hear you. Uhm, to get back, you mentioned Pastel. You said it will be better for you to work on Excel, but what about Pastel? Don't you think there's room in the school system or in the curriculum for Pastel to play a bigger role earlier?

Teacher: Yes, I, I don't understand why Pastel isn't a part of CAT. Uhm, instead of, uh, I know, I taught CAT to Grade 10s a while ago, then they do stuff like PowerPoint. Now, these learners can design a PowerPoint from Grade 4 already. So, instead of focussing on stuff like Word, okay, you, everyone knows how Word works. So rather include something in the curriculum that can prepare the learners, but it would be actually nice if it can be included in the accounting curriculum, but I don't know whether there is enough time for it. There you would, and you would need another teacher to teach that …

Interviewer: Do you think so?

Teacher: Yes, I don't know how Pastel works. I wouldn't be able to …

Interviewer: Okay, okay I hear you, because you, you have an education background, and not the accounting background.

Teacher: No, I have, I studied human movement science.

Interviewer: Okay.

Teacher: Yes, so.

Interviewer: Okay. But my point is still …

Teacher: Uhm, yes.

Interviewer: It's not, it's not, because we who studied accounting …

Teacher: Oh, did you?

Interviewer: Yes, I also did my articles.

Teacher: Okay.

Interviewer: So, we worked with Pastel. So, I hear you …

Teacher: Yes.

Interviewer: … that either the teacher must also receive training, in Pastel, before he or she …

Teacher: Yes, or if you study education and accounting is one of your core modules, then it must be part of your …

Interviewer: Part of your curriculum.

Teacher: Yes, yes, yes.

Interviewer: Okay, wonderful.
Uhm, do you think …

Part 6 – Thoughts on learners

15. Do you feel that mobile learning is helping or hindering learners understanding of accounting? Why?

Teacher: Hmm, I wouldn't say it helps.

Interviewer: Really?

Teacher: I also wouldn't say it … What's the other word …?

Interviewer: Hinders.

Teacher: Like …

Interviewer: Complicates.

Teacher: Complicates. Uhm … I don't know. The learners, funny enough, like when they need to study, I like to make them a mindmap regarding a specific topic. So, then I would make the mindmap on an A3 page and then I would copy it. They have summary files and then they would file these pages there. So, before a test when they sit outside or during the break, they wouldn't have to sit with their textbooks or tablets, they can simply sit and learn with these pages. So, even in my other subjects, uhm, they are very happy to have paper in their hands. They like a tablet, but when it comes to actual learning, then they want paper.

Interviewer: Okay.

Teacher: That's what I experience.

Interviewer: Okay.

Teacher: Yes.

Interviewer: Uhm.

Teacher: So, I don't know, I don't know about accounting.

Interviewer: Yes, that's, that's also what I would like to know – the difference between accounting and other subjects.

Teacher: Yes, you … so I don't know whether it's because I'm too "dumb" with technology that I don't know how to use it … in order for it to be beneficial to the learners or is it, yes, because I'm not comfortable with using it, but I don't want to say I'm forcing it onto them, but that is how it is in my class. That is how they learn. So, yes ...

Interviewer: Uhm, do you think there's a way one can manage them to tend more to the technological way of learning?

Teacher: Uhm, I think, they will enjoy it, I just don't know timewise. I also don't know, uhm, yes, I, I get frustrated when uh, when a learner takes a lot of time and he doesn't know where, uhm, on which page we are. When I say I'm going to page 258, then you can literally page to 258, but on a tablet, it's quite a mission. Uhm, maybe if the stuff is designed better and you can maybe search for the page and then … Like improvements like that on stuff like this …

Interviewer: Well …

Teacher: Yes, but for now … when a learner goes like this [moves finger rapidly from side to side], I get frustrated.

Interviewer: No, it makes sense …

Teacher: Yes.

Interviewer: And I also think the designers of the systems must know, they must make it user-friendly for the teacher and the learner.

Teacher: Yes, and I uhm, it's just something interesting I noticed a while ago. Uhm, the learners hold their phones like this [shows with hands] and then so [show with thumbs] to type, now it frustrates me because they do it with the calculators. So, they, when I did the calculations, then I would write, and my calculator would be there [shows flat on the table] and I would type like this [tick on an imaginary calculator]. They would put down their pens and pick up the calculator and they would look and type on it like this

[shows how the learners work between the paper on the desk and the calculator in their hands] it takes up so much more time where you would sit and you know exactly where all the numbers are [demonstrates by showing how she looks at paper and punch next to her at the same time] and you would type like so. So, uhm, that technology, uh, I don't know, it helps you, but in this case, I don't know ... I know, it's hard for them, they can't put the calculator on the table and work that way. They don't have the coordination to do it like that.

Interviewer: Okay.

Teacher: Yes. [Laughs.]

Interviewer: That's very interesting.
Uhm, I actually wanted to ask you, let's see if you can add something …

Teacher: Okay.

16. <u>What is the effect that you see mobile learning is having on the learners?</u>

Interviewer: This is a lot like you already said …

Teacher: Said, yes … uhm …

Interviewer: Is there something else you wanted to say?

Teacher: I really don't know, sometimes I don't know if it is like, isn't it bad, for me it's bad on my eyes. I literally when I first started here. I have glasses now that I use when I work on a computer because I started getting really bad headaches, uhm, or it felt as if everything was blurred, so uhm, yes, it, it, it's bad of technology. I don't know if it is the … I don't have an example I can use to explain the effect on the learners, but uhm, like I said, I sometimes feel as if I'm spending more time on the computer than I'm teaching. Okay, so, yes, I can't think of some more stuff …

Interviewer: But you just said, but that means it has an influence on your teaching time for the next few years because isn't your preparation done already and then you simply have something to carry on with? Under … understand it initially … I, I, I'm wondering … Now …

Teacher: Yes, yes, yes. Look, I think it's a bit difficult to compare other schools with ours. I'm teaching ten subjects.

Interviewer: Jo!

Teacher: So, uhm.

Interviewer: Sjoh, that's a lot!

Teacher: Yes, and if I look back to where I started with Curro, then I don't teach the same subject every year. Like for example this year was the first time I taught a subject twice in a row and that's the Grade 10 accounting. So, this year's Grade 10 accounting went a lot better, but we got a new textbook already. So, and the whole setting. The set-up of last year already changed or im … improved.

Interviewer: I hear.

Teacher: But, uhm, but I'm constantly busy whether there are 3 learners or 30 learners in a class, I need to set up question papers, uhm, understand? So, preparation for me is a never-ending job.

Interviewer: Nightmare, I think.

Teacher: Yes. [Laughs.]

Interviewer: Sjo, okay. Uhm …

17. <u>Do you feel that mobile learning is the solution in South Africa to address the needs of the diverse set of learners in today's classroom (financially, inclusion …)? Why?</u>

Teacher: Hmm …

Interviewer: Do you think mobile learning can help South Africa's diversity to learn learners more, and better, when you take into consideration financial aspects or inclusivity and so …?

Teacher: Uhm, well in South Africa I think it's a bit difficult at this stage, I do think, the learners here are privileged to have a technological device, but not everyone in South Africa has, has that privilege, so, uhm, it can probably … I don't know. It, on the one hand, I want to say it can help you, but on the other hand, if you don't have it, how will it help you? Then, then you help one group people and the other group have a backlog.

Interviewer: A backlog.

Teacher: Yes, and I don't say it has anything to do with race, I mean, there's just so much poor white people as there are black people, so yes. I don't know, I don't know if we are there where we can have certainty. Although the technology is supposed to help you, it must help you. This is the future, so. One must probably focus more on it. I would just say in the right way.

Interviewer: Hmm. Okay.

Teacher: I don't really know if I answered this correctly [laughs].

Interviewer: No, it is. It's fine. Uhm. Curriculum-wise, how do you feel about the curriculum currently?

Teacher: Uhm, okay, I don't really have that much experience and background in it, uhm. Okay, I taught EMS for two years now to Grade 8 and 9s, then it's separated in accounting and business studies, I would say, they need to focus more, uhm, from the intermediate phase on the accounting and uhm, a better base from there going forward. Then when you reach Grade 10, then you can start with the important work because there are some schools where accounting isn't even done in the EMS subject, then a learner arrives in Grade 10 at another school and he doesn't know what credit is and what is debit. And then I'm like, okay I don't have time to go back, understand? So, I think in that case, uhm, I don't know why they, uhm, why they took EMS out of Grade 5 and 6, why only in Grade 7 to … It feels to me it's also an important subject … yes. Uhm, I see with the CAPS we are currently busy with, uhm, there's more time for SS than for EMS, uhm, I don't understand that. Why must there be … uh … yes. Not that I'm saying history and geography aren't important, but the learners start with a backlog in Grade 10, uhm, and it is work that needs to be understood. It's not like maths, you can't carry on just when you know your timetables. So, uhm, but okay, Grade 10 and 11? I … I don't know, I enjoy the outlay of the work and the way it connects with each other, I really don't have a problem uhm, yes, with that.

Interviewer: Okay, good.

Teacher: Yes. I'll say more from Grade 9 to Grade 10.

Interviewer: Hmm. Okay, that gap. Okay.

Part 7 – Final thoughts

18. What else can you tell me about mobile learning that you feel I should know?

Teacher: [Laughs.] Uhm, no, sjo, I think I've said everything. I think, I just think, uhm, they will need to learn educators more on university, because, although learners of today know more about technology, they are growing up with it, but uhm, I'm going to teach for at least 40 years and for the next 40 years, that gap in technology someone needs to, to … understand? One can still learn yourself, but you can only learn yourself that much. So, there need to be, I think, be training and to make people more positive about it and …

Interviewer: Are you talking about training for where you are currently?

Teacher: Where I'm currently, yes.

Interviewer: Not only on university level?

Teacher: No, well, on university level also, but that's why I just interrupted myself, I think, or I don't know, I think maybe the … the … let's say the students of today or learners that are currently in the school, when they go to the university, they will be more comfortable with technology, because it's how they grew up, but we who didn't grow up with it, I mean, I got my first cell phone in matric. Uhm, somewhere they need to help our generation with it, I think.

Interviewer: And like you said you never received any training …

Teacher: No. We didn't. Yes, you sit with your … Like I said, you know how to watch YouTube videos and so on, but I think there's so much more that you can, you can do. Uhm, but these stuff like power outages or uhm, learners playing on it and so, that makes you negative, so you rather go back to what you are used to, yes. And uhm, what I do, for example, I try to explain to the learners, I may not have personal videos and photos on my school computer. Uhm, I mean, head office is able to see what exactly is on my computer. When I download, they can see exactly what I download. Uhm, and the learners don't understand … like I said, the distinction …

Interviewer: That ethical …

Teacher: Between, this is for your work … and this is for social and I don't know how you will … learn that to them [shrugs shoulders].

Interviewer: Okay, okay.

Teacher: Yes. [Laughs.]

Interviewer: No, it's wonderful! You are giving very good information you are giving to me. Uhm …

<u>19. Do you have any questions that you would like to ask me?</u>

Teacher: Hmm. Let me just think … Do you think, uhm, is it better to teach accounting with technology or with a textbook?

Interviewer: I think, honestly at this stage, South Africa is too far behind with technology. Like you said, and I actually agree with you, the uhm, the

curriculum is for me a bigger problem, because I feel when you modify the curriculum, and the learners can actually use technology like in the workplace …

Teacher: Workplace, yes.

Interviewer: It will be better because before you can start with the technology, you must first … take away the cheque.

Teacher: Yes, yes, yes.

Interviewer: Do you understand? You must first do that.

Teacher: Yes.

Interviewer: And uhm, and another thing you said with which I also agree, you said, to teach learners to think for themselves.

Teacher: Yes.

Interviewer: And you won't always be able to accomplish that through …

Teacher: Through technology …

Interviewer: Yes, I think, the curriculum with which the learners are confronted, also plays … and it's not only in accounting.

Teacher: Yes, yes.

Interviewer: I think, I think it's the whole school system that needs to get a new way to challenge the learner to think for himself.

Teacher: Yes, to think for himself. Yes …

Interviewer: And I don't think before you learn the learner to think for himself, he won't be able
to apply technology effectively.

Teacher: Yes, yes, yes.

Interviewer: So, it's very interesting to me to hear what people say about mobile technology, because it's where this world is going, but it doesn't help that your technological input is wrong.

Teacher: Yes. Yes, yes, then what is the point?

Interviewer: So, understand, it is, it's why I, I researched, how one can minimise the gap between the school and the university? But something that stood out to me in that, what do you give the learners to work with?

Teacher: Yes, yes.

Interviewer: Because I mean, overseas they do unbelievable stuff with technology. I mean, Chinese learners are now able to learn English through their cell phones and then to show it to an object then the English word will appear …

Teacher: Ooh!

Interviewer: … some of it.

Teacher: Sjo!

Interviewer: They can show the phone towards a table and then it will say *table,* understand? Uhm, I mean stuff like that, that is with language so …

Teacher: Yes.

Interviewer: But yes, that's … there is definitely room for technology and I think, uhm, like, for example, I spoke to a woman with something completely different, they were in India for a year or in Pakistan for two years and she said what the learners in Intermediate Phase can do with technology, is unbelievable. How they, uhm, make their own presentations and do their own research and so … She says, South Africa is not that far behind at this stage, but the gap will rapidly start to get bigger.

Teacher: [Nods head.] Will get, yes.

Interviewer: Because …

Teacher: The technology doesn't stop … It, it just goes on.

Interviewer: The technology doesn't stop, but the skills are busy getting lost.

Teacher: My … That's interesting you're saying about the language. We have a learner in Grade 11, he's Korean, I think. And uhm, we're struggling a lot with him, because he keeps putting his tablet on, uhm, Korean. So, uhm, now he reads everything in Korean, but when he needs to answer it on his question papers, then he must do it in English and then he can't. He can't, he can't [shows movement between two places in the air] that thing doesn't and then every single day, every single day, you need to check, is his thing … that he changed, so. So, it also makes it …

Interviewer: Sjoh. Yes, because it's true … the language …

Teacher: Because it's easy to do it, so …

Interviewer: If he could in a way, write it in Korean, and then have a translator to English … then it would've been easier.

Teacher: Yes. Yes, yes, yes, yes, yes. Yes, because I do feel sorry for him because it's his first language and he can't express himself that good in English …

Interviewer: Yes.

Teacher: But unfortunately, this is an English school, so he can't … you can also see it in his creative writing. Ugh … it looks like drawings when he writes it like that.

Interviewer: Ag shame.

Teacher: Yes.

Interviewer: Thank you so much.

Teacher: It's a big pleasure.

SEMI-STRUCTURED INTERVIEW WITH TEACHER 2

Part 1 – General information (ice breaker)

1. **What mobile devices do you own?**

Teacher: I have a cell phone, a tablet and a laptop.

2. **And in your household?**

Teacher: It's the same, also a cell phone, a tablet and a laptop.

3. **What is the amount of time that you spend daily on your mobile devices?**

Teacher: It depends, uhm, let's say on average about two to three hours a day.

Part 2 – General information on mobile learning

4. **What does the term "mobile learning" mean to you?**

Teacher: Uhm, that means the use of mobile devices to teach learners.

5. **How long have you been using mobile technology to teach? What system/apps/websites do you use and why?**

Teacher: I have been using it now for about six years. That's how long I have been teaching. I use my laptop most of the time, on my laptop I use Microsoft Word, Microsoft Excel and, also Adobe for PDF's, uhm, to show the memorandums and so forth through the projector on the board and then uhm, it's easy to set up and project.

Part 3 – Mobile learning and accounting

6. **Have you heard and what do you think of Vodacom's E-School? Pastel's School Program? Like2Understand? Accountants2Be?**

Teacher: Uhm, I don't know those programs. I would, uhm, actually like to know more about them.

7. **A typical day in an accounting lesson**

Teacher: The learners will be seated, I will have a look at their homework to check whether it's done or not, I will explain the new work if there is, then I will give them that day's homework and thereafter I will mark the previous day's homework.

8. **Of that time how much is done on the mobile device?**

Teacher: Uhm, I will day in a period of 45 minutes, between 20 to 40 minutes, uhm, is spent on the laptop. It's usually when we mark.

Part 4 – Perceptions and experiences

9. **Most of us know how to use technology and mobile devices such as smartphones properly and effectively, but what about using them academically? Was it different or harder to use these devices to teach? Why? What was the most difficult part?**

Teacher: It is a great form of aid, and uhm, it is usually used to, uhm, yes, it is used, but the most difficult part is to monitor the learners, uhm, when they are on their phones, then they are usually busy with other stuff they're not supposed to be busy with, uhm, not busy with the type of stuff you want them to be busy with. So, that is the most difficult part, they will immediately send a message to the mother or a friend or that type of stuff.

10. **How confident are you in using mobile technology to teach? Why?**

Teacher: I am quite, uhm, confident to uhm, use the devices I am familiar with. I know I am not the smartest and best with the new devices. Uhm, there are learners that, definitely, know more than us, uhm, like how to do some stuff, but I am quite familiar with that.

11. **Tell me more about the training that you received to effectively use mobile technology?**

Teacher: Uhm, we had quite little training sessions on the tablets. Uhm, we had about two to three sessions of an hour, two hours each. Uhm, however the tablet's program that we use really easy is, so the training for me wasn't really helpful, the first orientation session was enough for me. Luckily, uhm, I can figure these things out on my own, so, uh. We didn't really have much training on that.

12. **What is your opinion about your overall experience with mobile technology or learning? And in accounting?**

Teacher: Uhm, in accounting it's quite difficult, uhm, because some of the stuff that is electronic for example the textbooks and so, have a negative aspect to it, uhm, when you want to do financial statements and adjustments and so, it's much easier to make notes on the adjustments trial-balance with pencil and so, but because the textbook is now electronic, this isn't possible. So, sometimes it is necessary to write

down in accounting. So, many learners also still prefer the hard copy textbook instead of the electronic version.

13. <u>What do you like or enjoy most of using mobile technology or learning in accounting?</u>

Teacher: Uhm, what I like about it is that the resources and work can be stored. So, you don't have to rediscover the work from year one to year two. Uhm, the formats are also done, previous years the teacher had to write the format on the board with every class that walks in, and that wasted a lot of time. So, yes, now we save a lot of time so that is definitely a positive aspect, you get to do a whole lot more activities.

14. <u>What frustrates you?</u>

Teachers: What frustrates me is, of course, uhm, the technology doesn't always work properly. One depends on it and then when it doesn't work then uhm, yes, then you can't proceed with your class, then you waste a lot of time to write everything on the board again.

<u>Part 5 – Ideas and suggestions</u>

15. <u>What would you like to change?</u>

Teacher: Uh, I would want the textbooks to be revised to have more relevant information. The textbooks still talk about cheques being released and that type of thing, uhm, yes. I would also like the learners to learn more about electronic transfers and to, uhm, show the learners how to do an electronic payment and so forth. They just always hear these words, but they don't know exactly. We teach them how to fill out a cheque, but that's doesn't happen anymore in *real life.* But nobody teaches them how to do electronic payments. So, yes, I would like to teach them using programs for accounting in practice like Pastel or so, where there can be a practical period once a week so that you can train the learners in that way.

16. <u>Any suggestions or ideas of what you would like to see happen in the future in mobile learning and accounting?</u>

Teacher: I think, in the future, if you can give a learner a question paper and they must for example set up financial statements on Pastel and so forth, you can have written question papers and a practical part. Uhm, then, uh, an accounting program where you can apply the theory, that will be very meaningful for the future.

17. What do you think of this statement: "Mobile learning should not just replace traditional methods of teaching and learning, but should improve and enhance teaching and learning of the subject"?

Teacher: I don't think, uhm, mobile learning will ever replace traditional methods of learning, but will rather strengthen and improve the method of teaching.

Part 6 – Thoughts on learners

18. Do you feel that mobile learning is helping or hindering learners understanding of accounting? Why?

Teacher: Uh, no, I don't think it is making a difference in how the learners, uhm, understand accounting. Accounting principles is a principle, whether you learn it through a cell phone or tablet, or verbally or writing on the board. If they don't understand that, then they don't understand. So, no, I don't think, uhm, it will help in that way.

19. What is the effect that you see mobile learning is having on the learners?

Teacher: The effect it has; the learners get lazy, they don't want to write anymore. They write half and the problem with that is that they do their homework half because they are lazy, then uh, they are in an exam setting, then they don't completely write all the words. They lose unnecessary marks because they abbreviate where they're not supposed to.

20. Do you feel that mobile learning is the solution in South Africa to address the needs of the diverse set of learners in today's classroom (financially, inclusion …)? Why?

Teacher: No, not necessarily. It differentiates actually more because not everyone has access to mobile learning in the classroom. There are a lot of poor schools. Some of the thriving schools have access to it, but diversity actually grows more now.

Part 7 – Final thoughts

21. What else can you tell me about mobile learning that you feel I should know?

Teacher: Nothing.

22. Do you have any questions that you would like to ask me?

Teacher: No.

SEMI-STRUCTURED INTERVIEW WITH TEACHER 3

30-60 minutes (open-ended questions)
Start: Introduction of myself and the research study. Bring under attention – recording
Part 1 – General information (ice breaker)

1. **What mobile devices do you own?**

Teacher: Two-in-one (tablet and laptop device, normal laptop, cell phone).
And in your household? Laptop, tablet and cell phone.
What is the amount of time that you spend daily on your mobile devices? Averaging twelve hours a day.

Part 2 – General information on mobile learning

2. **What does the term "mobile learning" mean to you?**

Teacher: Mobile learning is where utilise technology for teaching and learning purposes

3. **How long have you been using mobile technology to teach? What system/apps/websites do you use and why?**

Teacher: Been using it for five years.
Use many websites that are available on Google, mindset learning on YouTube.
Have used the Accountants2be app – they have nicely set-out resources with videos to help learners to understand the work better.

Part 3 – Mobile learning and accounting

4. **Have you heard and what do you think of Vodacom's eSchool? Pastel's School Program? Like2Understand? Accountants2Be?**

Teacher: Yes, have heard of Vodacom e-school. They usually only use the NSC. Exam papers are put online. m currently teaching at an IEB school. Do not actually use it find it a long process to log on to it, have not had the patience to investigate those options, maybe because I know there are no IEB resources and they only have past papers, that I am aware of.
Use the Accountants2b website and app. Download a lot of there resources as well to enhance the learning in class.

5. **A typical day of an accounting lesson**

Teacher: Learners are usually shown a video about the current topic that we shall start with to get them interested or show different companies for example

shares, show learners where the shares are traded before actually stating with the actual activities. It is very rare that they will be using their tablets in class because all the work is projected on the board via the data projector. They usually use their tablets at home when I have pushed content to their tablets to use.

6. <u>Of that time how much is done on the mobile device?</u>

Teacher: Very little during accounting, because they have their hard copy books to actually do the work. The only time they would use it if they want to go over the extra resources that are pushed to them.

<u>Part 4 – Perceptions and experiences</u>

7. <u>Most of us know how to use technology and mobile devices such as smartphones properly and effectively, but what about using them academically? Was it different or harder to use these devices to teach? Why? What was the most difficult part?</u>

Teacher: At the beginning of the process of introducing technology into the class it was a slow process because you as the teacher, you are also new to the devices and need to adapt it with your teaching and also to show the learners how to use them, but it was not difficult at all once you buy into the idea of using it the rest will follow suit and you will be able to achieve the same results.

The only difficult part was the learners, they tend to be impatient to want to learn how to use the devices and to see how beneficial it would be to use them in class.

Academically it depends on the subjects, example for English it is the perfect device to use when you are doing literature and you are required to have the books then the tablet becomes more efficient to use than buying the actual book and carrying it around. Most of the reading literature is also free to download electronically that also cuts the cost of buying hard copy books.

Whereas a subject like accounting, it becomes a bit difficult to do entries on the tablet inserting the information the curriculum is not structured in a way that it allows it to be electronically friendly, there are many different journals and ledgers that are required to be used all at once makes it confusing for learners to use it on the tablet, which makes them lost within the ebook. Up to now, the hard copies have just been used better. Unlike Pastel is done electronically it is much easier.

8. <u>How confident are you in using mobile technology to teach? Why?</u>

Teacher: I feel quite confident to use the electronics that have been resourced to me to use, it enhances the learning process in class, makes the classes

very interesting, especially when you have access to the internet immediately.

9. <u>Tell me more about the training that you received to effectively use mobile technology?</u>

Teacher: We have ITSI companies that come to our school quite often to do training with the staff members on how to use the tablets, usually once a term because there are always new upgrades to use the app which ebooks.
We have an on-site IT teacher that also is able to assist us and learners when needs assistance.
Usually, our training is done in groups, they are effective because these trainings are done thoroughly.

10. <u>What is your opinion about your overall experience with mobile technology or learning? And in accounting?</u>

Teacher: The overall experience has been excellent. It is a wonderful tool to have in the class to enhance the teaching and conveying the message across to learners and be able to access information instantly. In accounting teaching the lesson has been great to be able to show them real-life examples on the internet, example, shares on the JSE show the different companies listed and how accounting fits there …

11. <u>What do you like or enjoy most of using mobile technology or learning in accounting?</u>

Teacher: Getting information instantly without having to delay the learning. In terms of teaching, the learners can take the lesson home in a multisensorial medium for as much repetition as is needed and in terms of assessment, more time can be spent marking long answers while shorter answers are quicker.
The old traditional way in class you would often have spontaneous learners who would ask a question and you would not always have the answers to immediately, no matter how prepared you are for the lesson, there is no such thing as a perfect lesson, then you are required to say you do not know the answer to that now but will come back to you at a later stage to provide you with an answer. This therefore then does not keep the learners interested at a later stage the moment has passed.
Whereas with technology, easily accessible, just open up google same moment and google the question, and there a class discussion will continue, it will keep the learners engaged because you are dealing with the question immediately, the information is instant.

12. What frustrates you?

Teacher: Wi-Fi tends to be slow if everyone has access to it, but upgrades have been done to try to increase the speed. Electricity, if there is a power cut, not in your control you no longer can use the technology. The hardware not keeping up with the software. Learners have not charged their tablets before coming to school and they spend the lesson not having access to the books.
Not all learners have the same tablet, makes it difficult at times for the teacher when they do not know how to configure the learner's tablet to the specs of the school's server, then that also takes time to process.

Part 5 – Ideas and suggestions

13. What would you like to change?

Teacher: Every learner should be getting the same tablet or devices makes it easy for teachers to help them. The accounting curriculum should be adapted to be used on the electronic devices.
Have learners also participate in workshops on how to use technology and how beneficial it would be for them to use it at school.

14. Any suggestions or ideas of what you would like to see happen in the future in mobile learning and accounting?

Teacher: Technology should become cheaper to buy so that everyone can afford it and have access to be able to use it from your under-privileged to the privileged learners

15. What do you think of this statement: "Mobile learning should not just replace traditional methods of teaching and learning, but should improve and enhance teaching and learning of the subject"?

Teacher: I agree 100%. It is a tool to enhance the learning process and will benefit the learners also prepare them for the real world.

Part 6 – Thoughts on learners

16. Do you feel that mobile learning is helping or hindering learners understanding of accounting? Why?

Teacher: Yes, for the learners, they do not enjoy working with the tablets, they do often complain they get lost within the textbook, and do not always have enough memory on the tablet to download the resources, but they actively use it, it is of a great benefit.

17. What is the effect that you see mobile learning is having on the learners?

Teacher: Some are happy because there is no need for them to be carrying heavy bags with books, they just have this tablet to carry around then again some do not enjoy having to use the e-books.

18. Do you feel that mobile learning is the solution in South Africa to address the needs of the diverse set of learners in today's classroom (financially, inclusion …)? Why?

Teacher: Yes, they should have access to learning to further educate them and to make them knowledgeable.

Part 7 – Final thoughts

19. What else can you tell me about mobile learning that you feel I should know?

Teacher: It is the best resourceful tool that makes learning and interacting in class more effective in class and makes it easier to have learners to continue on their own even if their teacher is not available. They are able to work at their own pace on their own time as well if they did not get or understand the lesson at that given time.

20. Do you have any questions that you would like to ask me?

Teacher: No.

Interviewer: Thank you for your time.

SEMI-STRUCTURED INTERVIEW WITH TEACHER 4

30-60 minutes (open-ended questions)

Part 1 – General information (ice breaker)

1. **Please give me some background of the school, its current situation, strong points and challenges.**

Teacher: The school consists of one principal, one deputy, four HoDs, eighteen teachers, three non-teaching staff. The number of matric learners for 2018 is 75, and 27 of them are doing commercial subjects. Strong points: experienced teachers, subject specialist, dedicated and committed staff. The challenges are the high number of learners and few teachers, failing to implement some of the policies and strategies, the high rate of absenteeism (both teachers and learners), vandalism, late coming by learners, shortage of resources such as textbooks.

2. **Please provide background on the subject, grades and (how many) children that you teach.**

Teacher: I'm currently teaching Grade 11 and 12 with 24 and 27 learners respectively. The school is said to be a maths and science school and accounting will be phased out by end of 2019.

3. **What mobile devices do you own?**

Teacher: I own a laptop and a tablet.

4. **And in your household?**

Teacher: A laptop, cell phone and tablet.

5. **What is the amount of time that you spend daily on your mobile devices?**

Teacher: Uhm, between 16 to 20 hours per day.

Part 2 – General information on mobile learning

6. **What does the term "mobile learning" mean to you?**

Teacher: The process of using technological devices to conduct lessons and to allow learners to explore other ways of acquiring information using computers and tablets.

7. **How long have you been using mobile technology to teach? What system/apps/websites do you use and why?**

Teacher: I have been using it for two years. I use Kahoot! to set online tests and make lessons interesting for learners as well as ITSI to upload subject information into the learners' gadgets.

8. **Can you please explain how the school received tablets, the reason for the use of tablets in your school and the current situation with the Wi-Fi and service provider?**

Teacher: They were received from the Department of Education because they wanted to turn the school from an ordinary school to Smart School.
We have been unable to use the tablets in class with learners since May 2017 until now and there is still nothing. Teachers cannot access the internet through the laptops since there is no Wi-Fi. Vodacom is the provider and unfortunately, I do not know the reason for the unavailability of the Wi-Fi.

Part 3 – Mobile learning and accounting

9. **Have you heard and what do you think of Vodacom's Eschol? Pastel's School Program? Like2Understand? Accountants2Be?**

Teacher: This is the first time I hear of it.

10. **A typical day – how does your accounting lessons look like?**

Teacher: I use a projector when I'm doing corrections for a test or exam so as to move faster. Only write important or challenging calculations on the board.

Part 4 – Perceptions and experiences

11. **Most of us know how to use technology and mobile devices such as smartphones properly and effectively, but what about using them academically? Was it different or harder to use these devices to teach? Why? What was the most difficult part?**

Teacher: Uhm, It was a bit different in a sense that I had to learn how to upload information into the learners' textbooks and to also learn how to set up online question papers. I also had to learn to make use of the apps.

12. **How confident are you in using mobile technology to teach? Why?**

Teacher: Very confident, because I'm technologically literate and advanced.

13. **Tell me more about the training that you received to effectively use mobile technology?**

Teacher: The DoE provided the training on how to push information into learners' textbooks and the setting of papers.

14. **What is your opinion about your overall experience with mobile technology or learning? And in accounting?**

Teacher: It is useful to a certain extent for accounting.

15. **What do you like or enjoy most of using mobile technology or learning in accounting?**

Teacher: I get to test their knowledge through an online test which can also provide immediate feedback.

16. **What frustrates you?**

Teacher: Most learners do not use the gadgets for academic purposes.

Part 5 – Ideas and suggestions

17. **Any suggestions or ideas of what you would like to see happen in the future in mobile learning and accounting?**

Teacher: Well … More programs suitable for accounting.

18. **What do you think of this statement: "Mobile learning should not just replace traditional methods of teaching and learning, but should improve and enhance teaching and learning of the subject"?**

Teacher: I believe that we are living in the 21st century, which is ruled by the ever-evolving, dynamic and advanced technology; as such we should do away with the traditional teaching methods and move with the times.

Part 6 – Thoughts on learners

19. **Do you feel that mobile learning is helping or hindering learners understanding of accounting? Why?**

Teacher: I want to believe that it does help but only for those who use it effectively. It makes my life easier in a sense that I can be able to supplement the information on the textbooks they have uploaded on their gadgets using information from other textbooks.

I can also revise some of the theoretical questions through Kahoot!
I'm also able to send memos for informal tasks so that they can mark and I can also give them work to do even when I'm absent.

20. What is the effect that you see mobile learning is having on the learners?

Teacher: It has opened their minds and broadened their thinking and reasoning ability.

21. Do you feel that mobile learning is the solution in South Africa to address the needs of the diverse set of learners in today's classroom (financially, inclusion …)? Why?

Teacher: Yes, for those with a good background because they are familiar with the gadgets and how to use them.
No, it will be a challenge for learners from rural areas and it will take time for them to adapt and in the meantime, the schools will not have good results.

Part 7 – Final thoughts

22. What else can you tell me about your school or mobile learning that you feel I should know?

Teacher: We did an inspection on the gadgets and out of the 645, we are left with only 66 functional gadgets because learners are breaking them.

23. Do you have any questions that you would like to ask me?

Teacher: No.

Interviewer: Thank you for your time.

SEMI-STRUCTURED INTERVIEW WITH TEACHER 5

30-60 minutes (open-ended questions)
Start: Introduction of myself and the research study. Bring under attention – recording
Part 1 – General information (ice breaker)

1. **What mobile devices do you own?**

Teachers: I own a Samsung.

2. **And in your household?**

Teacher: My husband owns an iPhone.

3. **What is the amount of time that you spend daily on your mobile devices?**

Teacher: It depends on the day and what during the day happens. I think I spend about four or four and a half hours on the phone maybe, on a busy day.

Part 2 – General information on mobile learning

4. **What does the term "mobile learning" mean to you?**

Teacher: To me, that means it is a form of communication to teach learners or you can upload information to them or to help them. It is an aid in the form of a smartphone or any technological device.

5. **How long have you been using mobile technology to teach? What system/apps/websites do you use and why?**

Teacher: Probably as long as I have been teaching, about seven years. Just not in the form of using the tablet, but uhm, previously, before the tablets, I used WhatsApp messages. A WhatsApp group to give information to the learners. Uhm, I also classify an overhead projector connected to a laptop with internet also as mobile learning, because this way it is possible to show the whole class stuff, and videos regarding a specific lesson. From 2014 we have been using tablets at our school. Uhm, instead of the textbook we use the tablet and together with that we make use of the ITSI program, but there is a variety of other websites one can visit which is really nice and I think, uhm, for me personally it is to communicate with the learners because sometimes you have to give them a lot of information, in a WhatsApp group it is very convenient and nice.

Part 3 – Mobile learning and accounting

6. **Have you heard and what do you think of Vodacom's E-School? Pastel's School Program? Like2Understand? Accountants2Be?**

Teacher: No, I haven't heard of Vodacom's E-School.

7. **A typical day in an accounting lesson**

Teacher: My learners will be seated, and then if I need to explain new work, I will do that together with an example on the board on how to do this activity, then we will ask questions and answer them, and then I will give them homework to do. If we are busy with a specific chapter, and I have already explained the work, then the learners will be seated. I will mark the homework with them, and then I'll see what problems they had. For me it is important to do the activity with them to see where they had errors, then I will give them another activity to finish in class. What's nice about technology, is that learners are now able to take photos of your summaries, they don't have to write everything down. Now they can print the summaries for themselves.

Interviewer: Of that time how much is done on the mobile device?

Teacher: Well, learners have their tablets with their textbooks on. Some learners have the hard copy of the textbook, other have the textbook on their tablet. So, when they need to do an activity, they need to use their tablets to get access to the textbook. Uhm, we also upload notes they can use and then, of course, I make use of my laptop and an overhead projector to show the answers to the learners.

Part 4 – Perceptions and experiences

8. **Most of us know how to use technology and mobile devices such as smartphones properly and effectively, but what about using them academically? Was it different or harder to use these devices to teach? Why? What was the most difficult part?**

Teacher: Yes, it most certainly is more difficult to use technology academically. When I send learners information on the WhatsApp group, then it isn't always the learners that don't have data. I think data is a big problem, right? And then they cannot download the information, but I think the WhatsApp groups are effective. Then the tablet, uhm, not all the learners are so comfortable with the tablet. Not everyone is familiar with the functions on the tablet, and that makes it more difficult. I also think that not all the learners are busy with academic work on their tablets, there's always that risk that some of them are busy playing games on the tablet.

Maybe not games, but they can download WhatsApp on the tablets and then they can chat with their peers while you are teaching. Sometimes the learners are more familiar with the tablet's functions than you are.

9. <u>How confident are you in using mobile technology to teach? Why?</u>

Teacher: I would say I am about 70% confident with this use of technology. It depends on the subject. I am teaching two subjects. In the one, it is much easier than in the other.

10. <u>Tell me more about the training that you received to effectively use mobile technology?</u>

Teacher: The training we received was presented through ITSI and they gave us training a couple of times, on how to use everything on the system. I just think that one needs a whole lot more training to effectively apply it in the classroom. There are courses available at other places, for example, Microsoft courses, uhm, which you can attend that will help you.

11. <u>What is your opinion about your overall experience with mobile technology or learning? And in accounting?</u>

Teacher: My opinion is torn between two aspects, uhm, I feel some aspects are good. It is good that I am able to upload notes for the learners, it is good that I can communicate with the learners via WhatsApp group and also upload some information there. I just feel that the textbook is unpractical. Negative aspects are that learners don't have enough knowledge to make notes in the textbook … like, you could have made notes on the hard copy. I feel that in accounting it is important to me to underline and to add notes, and on a tablet it is difficult. So, personally, I am torn. I feel some aspects are truly good and creative, it is nice to be able to upload notes and question papers, old examination papers, or extra activities and even the WhatsApp group because I also classify it as use of technology, but I feel the textbook parts aren't as good. I want to have the hard copy in my hands. I want the learner to have the hard copy in his hands because in the end, the learner will be writing the exam on a sheet of paper. Their question paper is on paper, now they are used to technology the whole time then they forget or aren't used to underline certain things that are important. So, I feel that the tablet hinders that aspect.

12. <u>What do you like or enjoy most of using mobile technology or learning in accounting?</u>

Teacher: What I like about it in my subject, accounting, is like I said already, that you can upload certain stuff for them. Also, with projects, then you can,

uhm, go online on JSE and you can show them how it works. So, it's very nice, yes, the stuff you can show them.

13. What frustrates you?

Teacher: It frustrates me when a learner's tablet is not charged, or when it's broken because that happens, right? And when the tablet is so slow and the learner isn't on the same page as you, when the tablet freezes, that frustrate me. It frustrates me when you tell the learners to add notes to the textbook, and they don't know how, or when certain documents are in a specific format and you can't add anything. So, it is a big frustration for me. Then another frustration, sometimes the Wi-Fi doesn't work, or the internet doesn't work, then the learners aren't able to download the stuff you uploaded for them. You are very depended on internet and electricity. If the learner couldn't charge the tablet the previous night, then you must deal with the dilemma today. If the internet doesn't work today, then you can't upload resources, and they cannot open the resources. Sometimes you will sit in a class and some learners will access the resources, but others can't. So, the system sometimes let you down and that is very frustrating.

Part 5 – Ideas and suggestions

14. What would you like to change?

Teacher: I would like to be able to add notes in any book, in any format. I would like to give the learners the ability to let them make notes, but also to let them add voice notes at the chapter you are currently teaching. Maybe this is already possible, but the learners don't know all these extra functions.

15. What do you think of this statement: "Mobile learning should not just replace traditional methods of teaching and learning, but should improve and enhance teaching and learning of the subject"?

Teacher: I don't agree with this statement at all. I think there are certain things in a traditional system and in a traditional method of teaching and learning that can't be replaced with technology. I think the traditional methods can be improved with technology which is wonderful, so this way technology can be an aid to traditional teaching methods, but I feel, personally, that technology must not replace traditional methods, because in the end the learners will be assessed on the traditional method with writing. They write exams on paper. So, if you do everything on the tablet, uhm, and never on hard copy, how will the learners write the exam? How will they be prepared for an exam if they have never done it that way? And once again in accounting, I feel, you want to write everything down on paper. That is unfortunately how the subject is to me.

Part 6 – Thoughts on learners

16. Do you feel that mobile learning is helping or hindering learners understanding of accounting? Why?

Teacher: I personally feel that I am torn in half, I think the resources you give to the learners, definitely help a lot and it is very good for them, because they can always go back to it, and let's say, let's face it, it is a lot cheaper to upload a lot of stuff on the tablet instead of making copies for each learner. So, there I think it helps the learners a lot, it helps them that you are able to show them stuff in the class with the projector and the internet and the computer, how certain stuff works and you are able to show them real-life scenario's, but I personally think, and it's my opinion, in accounting it doesn't work that good. Maybe I'm not using it correctly, maybe my learners aren't using it correctly, but for a Grade 10 learner that never done adjustments, that never had to do corrections and then to correct those amounts in the statement of income and the balance statement, this won't help that learner. It's not possible to do all the corrections and changes on the tablet, because mostly the format of the activity doesn't make it possible for the learners to add notes. So, I think that definitely hinder the learners.

17. What is the effect that you see mobile learning is having on the learners?

Teacher: Well, once again, it is mixed. Some learners are extremely excited, and they use the technology to the best of their abilities. They know exactly what to do, how to add stuff and they enjoy it because you don't have 30 textbooks anymore, only one tablet with everything on it, so it makes it a lot easier. In other subjects, for example, English, it's also very convenient, because all the textbooks and reading books are on one device. Literature and language are everything on one device, you don't have to carry all those books around and another thing that is very nice is that you are able to do a lot of research. You can upload a lot of information like poems, but like I said for some subjects it is wonderful, for others, I feel it's not that great.

18. Do you feel that mobile learning is the solution in South Africa to address the needs of the diverse set of learners in today's classroom (financially, inclusion …)? Why?

Teacher: I don't think it is a solution for South Africa. If you look at the theft situation in South Africa, uhm, and the electricity, not all the learners have electricity at home. Not all the learners have money to buy a tablet. A tablet isn't a device you buy once, and it will keep you for five years in high school. It must be upgraded. What can the parent without money do? This

stuff is fragile. What if the tablet breaks, what will the parent do then? What will the learner do? Now the learner doesn't have the textbook. The tablet won't, uhm, be fixed overnight. The learner won't get a new tablet overnight. So, it stays a problem, I most certainly think it isn't a solution. I think it is an aid, I think it can make some subjects more convenient, but I feel in OUR land with OUR economy and places where learners don't always have electricity. Really, how will they charge the tablets? How will some of the schools get a Wi-Fi system if they don't even have the money now to make copies? So, it isn't only financial implications for the learner and the parent, but also for the school. And what will it help if the learners have the tablets, there is a Wi-Fi system, but they don't know how to use it? Training, training, training. They must receive training on how to use it. It doesn't help they have it but they never get any training.

Part 7 – Final thoughts

19. What else can you tell me about mobile learning that you feel I should know?

Teacher: I think that mobile learning like I said, there are two sides to this coin. The one side is very positive because it really helps and you must not see it as a tablet, you can see it as a phone with WhatsApp. It is good if the learners are able to let you know when they struggle with something, this is how you can help them. You can upload resources to WhatsApp on the tablet, uhm, you can set up tests that the tablet will mark immediately, which is so much more convenient. There is one option on the tablet where you can see which learner is currently busy with the textbook. For how long the learner was busy with the textbook, when last did the learner used the textbook. But once again, it takes time, right? So yes, uhm, technology is very good, it's good to prepare a learner with technology because a lot of universities make use of technology. But I don't think we must throw away the traditional methods. The learner must be able to choose, does he want to use the tablet or the hard copy textbook. I also think training is very important. Not only for the teacher, but also for the learner, and boundaries must be set. Not only through the teachers for the learners, but also through parents for learners, otherwise the learner will misuse the tablet so, rules are important for a school. The rules must be applied.

20. Do you have any questions that you would like to ask me?

Teacher: No.

Thank you for your time.

SEMI-STRUCTURED INTERVIEW WITH TEACHER 6

Semi-structured interview with teachers
30-60 minutes (open-ended questions)
Start: Introduction of myself and the research study. Bring under attention – recording
Part 1 – General information (ice breaker)

1. **What mobile devices do you own?**

Teacher: I have three tablets, three phones and two laptops.

2. **And in your household?**

Teacher: Three tablets and four phones.

3. **What is the amount of time that you spend daily on your mobile devices?**

Teacher: I also work on my mobile devices, about three to four hours a day.

Part 2 – General information on mobile learning

4. **What does the term "mobile learning" mean to you?**

Teacher: Learning that can take place anywhere by using a mobile device like a cell phone or tablet.

5. **How long have you been using mobile technology to teach? What system/apps/websites do you use and why?**

Teacher: At least ten years.

Part 3 – Mobile learning and accounting

6. **Have you heard and what do you think of Vodacom's eSchool? Pastel's School Program? Like2Understand? Accountants2Be?**

Teacher: Yes, I know about some of these accounting apps. Especially Pastel's School Program.

7. **A typical day in an accounting lesson**

Teacher: Switch on smartboard, mark homework, show correct answers using the smartboard, do new work – I write notes on the smartboard because I write down everything I say.

8. **Of that time how much is done on the mobile device?**

Teacher: Students' textbook and my textbook is on the tablets – so every period.

Part 4 – Perceptions and experiences

9. **Most of us know how to use technology and mobile devices such as smartphones properly and effectively, but what about using them academically? Was it different or harder to use these devices to teach? Why? What was the most difficult part?**

Teacher: Yes, it was, but I prefer the technology. We copy a lot less by using the tablets, but the most difficult part is when the technology (Wi-Fi) is not working, then the system of using technology in class does not work … And getting used to the tablet.

10. **How confident are you in using mobile technology to teach? Why?**

Teacher: Moderate. I would switch to the textbook easily when I get frustrated with the technology … I do not use it enough.

11. **Tell me more about the training that you received to effectively use mobile technology?**

Teacher: We had training in using the system at school (two-hour training). Not efficient enough. It was very elementary because the levels of competence differ so much. For me – it would be better to receive a manual. I would have benefitted more.

12. **What is your opinion about your overall experience with mobile technology or learning? And in accounting?**

Teacher: Learners still prefer textbooks for accounting. They find it difficult to embrace the technology. I do agree that something like adjustments is easier to do if you can underline. It differs from learner to learner. Other learners embraced the opportunity and are doing fine.

13. **What do you like or enjoy most of using mobile technology or learning in accounting?**

Teacher: The amount of extra information that I can give learners, past papers and other notes. You can give as much as you want, and don't feel guilty because of the amount of paper used.

14. What frustrates you?

Teacher: The fact that I must remember to charge the tablet, if the Wi-Fi does not work, slow and mediocre software.

Part 5 – Ideas and suggestions

15. What would you like to change?

Teacher: My smartboard is not connected to the internet, I would want internet, my software is outdated; I would like to have it upgraded and get a high range tablet.

16. Any suggestions or ideas of what you would like to see happen in the future in mobile learning and accounting?

Teacher: Some of the apps and videos available does not have the input of teachers. Get teachers to assist during the development process of the app.

17. What do you think of this statement: "Mobile learning should not just replace traditional methods of teaching and learning, but should improve and enhance teaching and learning of the subject"?

Teacher: I agree, but I see a problem. New research has shown that students do not benefit from the amount of screen time when learning from tablets. This part would have to be investigated.

Part 6 – Thoughts on learners

18. Do you feel that mobile learning is helping or hindering learners understanding of accounting? Why?

Teacher: It depends on the learner. Most learners benefit when they embrace the idea. For a learner that has difficulty understanding work on paper, the tablet will just be a distraction.

19. What is the effect that you see mobile learning is having on the learners?

Teacher: This also depends on the learner. Learners that embrace the idea use the tablets to their full advantage. For a learner that is easily distracted, this can be a real problem. It distracts them more.

20. Do you feel that mobile learning is the solution in South Africa to address the needs of the diverse set of learners in today's classroom (financially, inclusion …)? Why?

Teacher: No, money will always be a problem. Tablets are not necessarily cheaper. The teachers must be trained properly then. Rather focus on training teachers properly with regards to introducing mobile learning.

Part 7 – Final thoughts

21. What else can you tell me about mobile learning that you feel I should know?

Teacher: No.

22. Do you have any questions that you would like to ask me?

Teacher: No.

Thank you for your time.

APPENDIX E – APPLICATION TO REGISTER AND CONDUCT RESEARCH IN THE FREE STATE DEPARTMENT OF EDUCATION

Ref: Research Application

APPLICATION TO REGISTER AND CONDUCT RESEARCH IN THE FREE STATE DEPARTMENT OF EDUCATION

- Please complete all the sections of this form that are applicable to you. If any section is not applicable please indicate this by writing N/A.
- If there are too few lines in any of the sections please attach the additional information as an addendum.
- Attach all the required documentation so that your application can be processed.
- Send the completed application to:

DIRECTOR: STRATEGIC PLANNING, POLICY AND RESEARCH

Room 319, 3rd Floor Old CNA Building Bloem Plaza Charlotte Maxeke Street BLOEMFONTEIN, 9300	OR	Free State Department of Education Private Bag X20565 BLOEMFONTEIN, 9300

Email: berthakitching@gmail.com and B.Kitching@fseducation.gov.za

PLEASE DO NOT EMAIL ANYTHING IN PICTURE FORMAT

Tel: 051 404 9283 /9211 / 082 454 1519

TITLE (eg Ms, Mrs, Mr, Dr, Prof, etc):

M	R	S	

1. INITIALS

M				

2. SURNAME

F	A	B	E	R											

3. TELEPHONE HOME:

0	7	2	6	2	4	8	3	2	7						

4. TELEPHONE WORK:

0	8	1	7	7	9	5	8	2	4

5. TELEPHONE CELL:

0	7	2	6	2	4	8	3	2	7

6. FAX:

7. E-MAIL

m	a	r	l	i	a	m	f	a	b	e	r	@	g	m	a
i	l														

8. ADDRESS HOME:

F	A	R	M		P	R	A	M	B	E	R	G		
J	A	C	O	B	S	D	A	L						
Postal Code											8	7	1	0

9. ADDRESS WORK:

L	A	N	D	B	O	U	D	A	L					
J	A	C	O	B	S	D	A	L						

Postal Code											8	7	1	0

10. POSTAL ADDRESS

P	O		B	O	X		3	4						
J	A	C	O	B	S	D	A	L						
Postal Code											8	7	1	0

12 **NAME OF TERTIARY INSTITUTION / RESEARCH INSTITUTE AND STUDENT NUMBER**

U	F	S													
2	0	0	9	1	3	2	0	1	6						

13. OCCUPATION

M	A	T	H	S		T	E	A	C	H	E	R			
F	O	R		G	R	A	D	E		8	&	9			

14. PLACE OF EMPLOYMENT

A	G	R	I	C	U	L	T	U	R	A	L		H	I	G
H		S	C	H	O	O	L		J	A	C	O	B	S	D
A	L														

15. NAME OF COURSE

M	A	S	T	E	R	S		P	R	O	G	R	A	M
I	N		E	D	U	C	A	T	I	O	N			

16. NAME OF SUPERVISOR / PROMOTER

P	r	o	f		L	P		L	o	u	w				

17. TITLE OF RESEARCH PROJECT

AN EXPLORATION OF MOBILE LEARNING IN SOUTH AFRICAN ACCOUNTING CLASSROOMS: A CASE STUDY

18. CONCISE EXPLANATION OF THE RESEARCH TOPIC

I am interested to see how mobile learning can enhance and improve the delivery of accounting lessons so that learners will find the subject more enjoyable, develop their critical thinking abilities and understand the benefits of learning accounting at school level. I believe the accounting curriculum should be aligned with the skills and demands of the 21st century and that mobile learning and ICT knowledge are essential improvements necessary to provide these skills and meet these demands.

When considering the literature available on mobile learning and accounting, it became apparent that the majority of the research done on the subject focuses on accounting at tertiary level and that there is a lack of literature on mobile learning in accounting at secondary school level and more specifically within the South African context: accounting in the Further Education and Training Phase (Grades 10-12). The impact of mobile learning in the South African accounting classroom remains unclear and unexplored.

It is therefore my intention to investigate teachers' and learners' perceptions and experiences as well as current mobile learning practices in the accounting classroom in a developing country such as South Africa. These perceptions will provide a starting point to bring about change in the way accounting is being delivered at high school level in South Africa that will benefit the learners and the teachers, as well as other stakeholders.

19. APPLICATION VALUE THAT THE RESEARCH MAY HAVE FOR THE FREE STATE EDUCATION DEPARTMENT

This research will contribute to the knowledge of the discipline regarding mobile learning in a number of important ways: first, by providing a critical review on matters relevant to the implementation of mobile learning; second, by critically examining the issues pertinent to the implementation of mobile learning in a subject such as accounting; third, by obtaining the views and perceptions of teachers and learners on existing practices regarding mobile learning in the accounting classroom to form a well-rounded picture, allowing a meaningful comparison between practice and theory that will contribute towards informed decision-making by implementers of mobile technology in high schools in general, but more specifically in accounting and to draw attention to some important issues that arise from the study.

20. LIST OF SCHOOLS AND DISTRICTS INVOLVED IN THE RESEARCH
(If not enough space, please add more rows)

Curro Private School	Bloemfontein	Mangaung Metropolitan Municipality											
Lere-La-Thuto Secondary School, in Matlakeng,	Zastron	Xhariep District											
C&N Meisieskool Oranje (perhaps)	Bloemfontein	Mangaung Metropolitan Municipality											
Martie du Plessis Special School (perhaps)	Bloemfontein	Mangaung Metropolitan Municipality											

21. LIST OF DIRECTORATES / OFFICIALS IN THE DEPARTMENT INVOVLED IN THE RESEARCH

N	/	A											

22. DETAILS OF TARGET GROUP WITH WHOM THE RESEARCH IS TO BE UNDERTAKEN

Target group	Number	Grade	Subject	Age	Gender	Language
Teachers	4-8	N/A	Accounting	N/A	Both	English
Learners	20-40	10	Accounting	15-16	Both	English
Learners	20-40	11	Accounting	16-17	Both	English

23. FULL PARTICULARS OF HOW INFORMATION WILL BE OBTAINED, EG QUESTIONAIRES, INTERVIEWS, STANDARDISED TESTS, ETC.

Please attach copies of questionnaires, questions that will be asked during interviews, tests that will be completed or any other relevant documents regarding the acquisition of information.

Interviews with teachers,
Focus group discussion with learners.

24. STARTING AND COMPLETION DATES OF THE RESEARCH PROJECT

Please bear in mind that research is usually not allowed to be conducted in schools during the fourth academic term (October to December).

The research will be conducted on a date between 1 August 2017 and 29 September 2017 that will suit the school. Making sure it does not fall in the fourth term.

25. WILL THE RESEARCH BE CONDUCTED DURING OR AFTER SCHOOL HOURS?

Please bear in mind that research is usually not allowed to be conducted in schools during normal teaching time.

Times will be negotiated with the teachers and learners to fit around their schedules so as to not intrude on an inconvenient time.

26. HOW MUCH TIME IS NEEDED WITH THE TARGET GROUP/S TO CONDUCT THE RESEARCH?

Target Group	Activity (ie interview, questionnaire, etc)	Time Needed
Teachers	Interview	30 – 60 min
Learners	Focus group discussion	30 – 60 min

27. HAVE YOU INCLUDED / ATTACHED?

27.1 A letter from your supervisor confirming your registration for the course you are following?

Yes	No
X	

27.1 A draft letter / specimen that will be sent to principals requesting permission to conduct research in their schools?

Yes	No
X	

27.2 A draft letter / specimen that will be sent to parents requesting permission for their children to participate in the research project?

Yes	No
X	

27.3 A draft letter / specimen that will be sent to research participants to give their consent to take part in the research project?

Yes	No
X	

27.4 A copy of the questionnaires that you wish to distribute to the target group/s?

Yes	No
	N/A

27.5 A list of questions that will be asked during interviews and focus group discussions with the target group/s?

Yes	No
X	

27.6 Ethical clearance certificate from higher education institution

Yes	No
X	

28 I …… herewith confirm that all the information in this application form is correct and that I will abide by the ethical code and the conditions under which the research may be undertaken, ie:

28.1 I will abide by the ethical research conditions in the discourse of my study in the FSDoE.

28.2 I will abide by the period in which the research has to be done

28.3 I will apply for extension if I cannot complete the research within the specified period

28.4 If I fall behind with my schedule by three months to complete my research project in the approved period, I will apply for an extension.

28.5 I will not conduct research during the fourth quarter of the academic year

28.6 I will not disrupt normal learning and teaching times at schools to undertake my research

28.7 I will submit a bound copy or CD of the research document to the Free State Department of Education, Room 319, 3rd Floor, Old CNA Building, Charlotte Maxeke Street, Bloemfontein, upon completion of the research.

28.8 I will upon completion of my research study make a presentation to the relevant stakeholders in the Department as per the arrangements of the Department.

28.9 The ethics documents (attached) will be adhered to in the discourse of my study in your department.

28.10 The costs relating to all the conditions mentioned above are for my own responsibility.

SIGNATURE: _____ DATE: _____

ETHICAL REQUIREMENTS : FREE STATE DEPARTMENT OF EDUCATION

The scientific research enterprise is built on a foundation of trust and that the reports by others are valid. The reports should reflect an honest attempt by the researcher to describe the world accurately and without bias; this trust will endure only if the researcher devotes himself or herself to exemplifying and transmitting the values associated with ethical research conduct.

There are many ethical issues to be taken into serious consideration when conducting research. The Free State Department of Education believes that the researchers conducting research in this department would, amongst others, adhere to the following ethical conduct:

ETHICS GENERAL APPLICATION

1. Be aware of having the responsibility to secure the actual permission and interests of all those involved in the study;
2. Not misuse any of the information discovered
3. Moral responsibility maintained towards the participants
4. Embracing corporate social responsibility
5. Protecting the rights of people in the study as well as their privacy and sensitivity
6. Confidentiality of those involved in the observation must be carried out, keeping their anonymity and privacy secure.
7. Follow the ethical clearance guideline of the institution that granted such.

   Amplifying the voice of the participants

   Enhancing collective plurality.

ETHICS: INHERENT PRINCIPLES

8. Reliability
9. Informing the participants about the importance of the research
10. Values of trust, fairness and integrity are maintained in the study.

ETHICS

11. The value of transparency is considered.
12. The research is committed to delivering the intended promise as informed by the objectives.
13. The research accentuates the values of reputation and respect.

RESEARCHER: INITIALS AND SURNAME **SIGNATURE:**

DATE:

APPENDIX F – APPROVAL TO CONDUCT RESEARCH

education
Department of Education
FREE STATE PROVINCE

Enquiries: KK Motshumi
Ref: Research Permission: M Faber
Tel. 051 404 9283 / 9221 / 079 503 4943
Email: K.Motshumi@fseducation.gov.za

M Faber
Farm Pramberg
JACOBSDAL, 8710

072 624 8327

Dear Mrs Faber

APPROVAL TO CONDUCT RESEARCH IN THE FREE STATE DEPARTMENT OF EDUCATION

1. This letter serves as an acknowledgement of receipt of your request to conduct research in the Free State Department of Education

   Topic: An exploration of mobile learning in South African accounting classrooms: A case study

   Schools involved: Lere la Thuto Secondary School, Xhariep District, C&N Meisieskool and Martie Du Plessis Special School, Motheo District.

   Target Population: 4-8 teachers teaching accounting, 20-40 Grade 10 learners and 20-40 Grade 11 learners taking accounting.

   Period of research: From the date of signature of this letter until 30 September 2017 and again from 22 January to 31 March 2018. Please note the department does not allow any research to be conducted during the fourth term (quarter) of the academic year.

2. Should you fall behind your schedule by three months to complete your research project in the approved period, you will need to apply for an extension.
3. The approval is subject to the following conditions:
   - 3.1 The collection of data should not interfere with the normal tuition time or teaching process.
   - 3.2 A bound copy of the research document or a CD, should be submitted to the Free State Department of Education, Room 319, 3rd Floor, Old CNA Building, Charlotte Maxeke Street, Bloemfontein.
   - 3.3 You will be expected, on completion of your research study to make a presentation to the relevant stakeholders in the Department.
   - 3.4 The attached ethics documents must be adhered to in the discourse of your study in our department.

4 Please note that costs relating to all the conditions mentioned above are your own responsibility.

Yours sincerely

DR JEM SEKOLANYANE
CHIEF FINANCIAL OFFICER

DATE: 18/09/2017

RESEARCH APPLICATION FABER M PERMISSION EDITED 15 SEPT 2017
Strategic Planning, Policy & Research Directorate
Private Bag X20565, Bloemfontein, 9300 - Room 318, Old CNA Building, 3rd Floor, Charlotte Maxeke Street, Bloemfontein
Tel: (051) 404 9283 / 9221 **Fax:** (086) 6678 678

APPENDIX G – LETTER TO PRINCIPALS

P.O. Box 34
Jacobsdal
8710

1 August 2017

The Principal

Dear Sir/Madam

RE: Permission to undertake research at your school

I am a registered student for the master's degree at the University of the Free State. As part of my degree, I need permission to conduct a research project at your school in accounting education.

The title of my research is **An exploration of mobile learning in South African accounting classrooms: a case study**. The study aims to investigate the perceptions and experiences of accounting teachers and their students on the use of mobile technology in the classroom.

Data collection will be in the form of interviews with teachers and focus group discussions with learners. The study will be conducted on a confidential and voluntary basis, and extra care will be exercised to ensure that the teachers, learners and the schools' cultures and practices are respected. The exercise will be structured around the teachers' and learners' schedules so that they are not inconvenienced in their duties and responsibilities. Furthermore, the findings and recommendations from the study would be made available to the Education Office.

Thank you and I hope to hear back from you soon with a positive response.

Yours sincerely

…….	……..
Martelize Faber (Mrs)	Prof L P Louw: Supervisor
(MEd student)	

APPENDIX H – LETTER TO TEACHERS

P.O. Box 34
Jacobsdal
8710
20 September 2017

The accounting teacher

Dear Sir/Madam

RE: Invitation to participate in a study

I am a registered student for the master's degree at the University of the Free State. As part of my degree, I cordially invite you to participate in my research project.

The title of my research is **An exploration of mobile learning in South African accounting classrooms: a case study**. The study aims to investigate the perceptions and experiences of accounting teachers as well as their students on the use of mobile technology in the classroom.

Data collection will be in the form of interviews with teachers and focus group discussions with learners. The study will be conducted on a confidential and voluntary basis, and extra care will be exercised to ensure that the teachers, learners and the schools' cultures and practices are respected. The exercise will be structured around the teachers' and learners' schedules so that they are not inconvenienced in their duties and responsibilities. Furthermore, the findings and recommendations from the study would be made available to the Education Office.

Thank you and I hope to hear back from you soon with a positive response.

Yours sincerely

…….
Martelize Faber (Mrs)
(MEd student)

APPENDIX I – LETTER TO LEARNERS

P.O. Box 34

Jacobsdal

8710

1 August 2017

Dear Learner

RE: Invitation to participate in a study

I am a registered student for the masters' degree at the University of the Free State. As part of my degree, I am asking you to participate in a research project through a focus group discussion that will take place at your school. The focus group discussion will ask questions about your perceptions and experiences with mobile technology in the accounting classroom.

It is my hope that the answers from this focus group discussion will contribute to a better understanding of what mobile learning brings to a subject such as accounting in order to improve the way accounting is being delivered at high school level in South Africa. This will benefit you, your teachers, as well as other parties involved.

Thank you for your willingness and cooperation. I look forward to meeting you.

Martelize Faber

_____

STRICTLY CONFIDENTIAL

LEARNER ASSENT TO PARTICIPATE IN FOCUS GROUP DISCUSSION

I _____ (name and surname), aged _____ years, hereby assent/do not assent to participate in the focus group discussion on the use of mobile technology in the accounting classroom. I understand that participation in this study is voluntary.

_____ _____

Print Name and Surname Signature: Learner

Date: _____

APPENDIX J – PARENTAL CONSENT FORM

Dear Parent or Guardian:

My name is Martelize Faber and I am a master's degree student at the University of the Free State and I am asking you to participate in a research project. I am asking your permission for your child to participate in a focus group discussion that will take place at your child's school. The focus group discussion will ask questions about learners' perceptions and experiences with mobile technology in the accounting classroom. It is my hope that data from this focus group discussion will contribute to a better understanding of the complexities and challenges that mobile learning brings to a subject such as accounting. I hope that this information can be used to improve the way accounting is being delivered at high school level in South Africa, that will benefit the learners and the teachers, as well as other stakeholders.

Your child's responses in the focus group discussion will be kept as confidential as possible. This means that no one outside the focus group and the researcher will know who said what and no identifiable information will be kept. Only the researcher will know the identity of those participants in the focus group. However, the data collected may be used in publications or presentations.

Your consent and your child's participation are completely voluntary and your child may withdraw at any time. There is no reward for participating or consequence for not participating. Any risks associated with participation in the study are no greater than those of daily living. We will also seek your child's assent to participate before he or she begins the study.

For further information on this research please contact me at 072 624 8327 or marliamfaber@gmail.com.

There are two copies of this letter. After signing them, keep one copy for your records and return the other one to your child's school.

"By signing below I agree to allow my child to participate".

Signature: _____

Name (please print): _____

Date: _____

APPENDIX K – PROOF OF EDITING

PROOF OF LANGUAGE EDITING

Dr. L. Hoffman

Kroonstad

BA, BA(Hons), MA, DLitt et Phil

Member of the South African Translators' Institute

Cell no: 079 193 5256 Email: larizahoffman@gmail.com

DECLARATION

To whom it may concern

I hereby confirm that I have proofread and edited the language of the following dissertation, including the bibliography.

Title of dissertation

An exploration of mobile learning in South African accounting classrooms: a case study

Candidate

Martelize Faber

Lariza Hoffman

Kroonstad

25 June 2019

APPENDIX L – ETHICS CLEARANCE

UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA
UFS·UV
EDUCATION
OPVOEDKUNDE

Faculty of Education

19-Jun-2017

Dear **Mrs Martelize Faber**

Ethics Clearance: **AN EXPLORATION OF MOBILE LEARNING IN SOUTH AFRICAN ACCOUNTING CLASSROOMS: A CASE STUDY**

Principal Investigator: **Mrs Martelize Faber**

Department: **School of Education Studies (Bloemfontein Campus)**

APPLICATION APPROVED

With reference to you application for ethical clearance with the Faculty of Education, I am pleased to inform you on behalf of the Ethics Board of the faculty that you have been granted ethical clearance for your research.

Your ethical clearance number, to be used in all correspondence is: **UFS-HSD2017/0532**

This ethical clearance number is valid for research conducted for one year from issuance. Should you require more time to complete this research, please apply for an extension.

We request that any changes that may take place during the course of your research project be submitted to the ethics office to ensure we are kept up to date with your progress and any ethical implications that may arise.

Thank you for submitting this proposal for ethical clearance and we wish you every success with your research.

Yours faithfully

Dr. MM Nkoane
Chairperson: Ethics Committee

Education Ethics Committee
Office of the Dean: Education
T: +27 (0)51 401 9683| F: +27 (0)86 546 1113 | E: NkoaneMM@ufs.ac.za
Winkie Direko Building | P.O. Box/Posbus 339 | Bloemfontein 9300 | South Africa
www.ufs.ac.za