



THE USE OF MESSAGING SERVICE APPLICATIONS AS AN EDUCATIONAL SUPPORT TOOL IN HIGHER EDUCATION INSTITUTIONS

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(Baccalaureus Technologiae in Information Technology)

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ABSTRACT

The Green Paper for Post-School Education and Training states that higher education and training institutions are faced with the challenge of teaching underprepared students. Vaal University of Technology (VUT) Ekurhuleni has experienced an increase in the number of underprepared first year students from basic education to higher education, similar to other higher education institutions (HEIs) and training centres, and most of these students are familiar with messaging service applications. The purpose of this research is to determine if messaging service applications have a constructive role to play in supporting tertiary education.

A variety of journals, books and other online materials were reviewed to learn and confirm the current information on messaging service applications and electronic communication interaction in higher education. A mixed methods research methodology has been adopted comprising of both qualitative and quantitative research. Data was collected through semi-structured interviews as well as questionnaires with structured questions to address the objectives of the study. A total of 250 questionnaires were distributed to students and the sample (N=212) resulted in a response rate of 84.8%. Interviews were conducted targeting students doing a bridging course in Information Technology. In addition, data was collected from one of the messaging service applications, *Whatsapp*, for one semester with one class. For the analysis of the data, two theories—Social Presence Theory and Context Awareness Theory—were adopted.

This research found that students who partook in the study displayed a positive perception of using messaging service applications in an educational environment. Furthermore, the textual interaction analysis indicates that students were able to successfully interact and use messaging services as educational supporting tool outside the classroom. From the findings a model has been developed which demonstrates how student learning outside the formal classroom learning environment can be supported through the use of messaging service applications.

The research contributes to a better understanding of using of messaging service applications as an educational supporting tool in higher education. Messaging service applications enable students to forget about gender and cultural differences; it encourages them to work together as an online community.

This research furthermore provides a basis for HEIs and academic leaders to initiate the discussion and consider the possibility of introducing messaging service applications as educational supporting tool outside the classroom.

Keywords: *Students, educational support, messaging service applications, higher education institutions (HEIs), electronic interaction.*

DECLARATION

I, Walter Matli, hereby declare that the work which is submitted here is the product of my own independent research and that all the sources I have used and quoted have been pointed out and acknowledged by means of complete references. In addition, I declare that the work is submitted for the first time at this university/faculty towards the Masters Technologiae (MTech) degree in the Information Technology department and that it has never been submitted to any other university/faculty for the purpose of obtaining a degree.

.....
Walter Matli

April 2016

.....
Date

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DEDICATION

To my late mother who died prematurely at the age of 37 when I was only 15 years old, it is a recurring regret that she never lived to see me succeed beyond my basic education learning.

And also as a token of appreciation I would like to dedicate this research to my grandmother while she is still alive.

- *You have taught me the greatest lesson on this earth. At the beginning it felt like you were too strict, but today I reap the benefits of your efforts of giving me basic education. You treated me as your child all the way and I just want to take this opportunity to tell you that I love you with all my heart. The discipline you implanted in your children has inspired me to carry on with my life.*

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GLOSSARY

| ABBREVIATIONS | DEFINITION |
|----------------------|---|
| RSA | Republic of South Africa |
| DHET | Department of Higher Education and Training |
| HEIs | Higher Education Institutions |
| ICT | Information and Communications Technology |
| IT | Information Technology |
| ICASA | Independent Communication Association of SA |
| SMS | Short Message Services |
| MMS | Multi Media Services |
| BBM | Blackberry Messaging |
| LMS | Learning Management System |
| VUT | Vaal University of Technology |
| OBE | Outcomes-Based Education |
| HRDCSA | Human Resource Development Council of SA |
| CAD | Centre for Academic Development |
| HE | Higher Education |
| BIS | Blackberry Internet Service |

CHAPTER 1: ORIENTATION OF THE STUDY

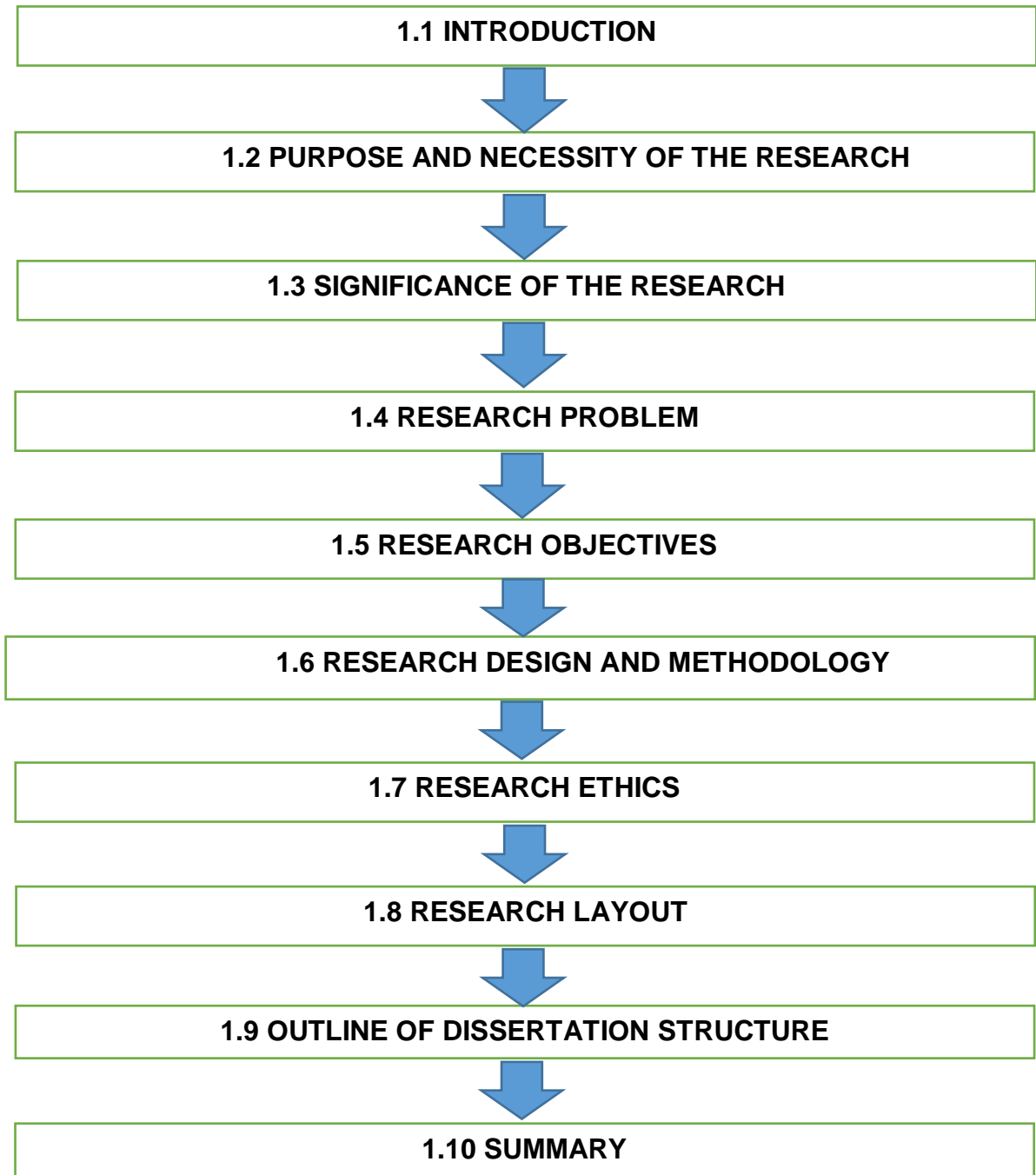


Figure 1.1: Graphical representation of Chapter 1

1.1 Introduction

Higher education institutions (HEIs) in South Africa are faced with many challenges having a detrimental effect on the learning experience of students. One major

challenge is classrooms that are overpopulated with students (De Jager & Nassimbeni 2005) which contributes to some students not receiving the full attention they need and deserve from their lecturers. Although Renzi and Klobas (2000) indicate that it is within the capability of HEIs to make use of computer-supported collaborative learning to enhance the learning experience of students in overpopulated classes, these technologies are still greatly underutilised.

The current generation of students enrolled at HEIs have access to digital technologies that could not even have been imagined by previous generations (Duncan-Howell & Lee 2007). Lecturers in HEIs are faced with the challenge of educating a generation of students who find technology extremely appealing. This compels HEIs to find ways in creatively using digital technology as educational supporting tool.

There are more than two million students in South Africa enrolled at HEIs with about 95% of them now owning a mobile phone (Nix, Rusell & Keegan 2008). Students are familiar with sending and receiving SMS text messages on their mobile phones. This is an important indication that students might not need extensive training on the functionalities of messaging services. Messaging service applications are alternatives to communication methods such as voice calls, and this is mainly due to the ease of use and low cost (Nix *et al.* 2008).

Messaging services have the wonderful opportunity of being positioned as one of the online elements that can be utilised to support teaching and learning in HEIs. The advancement of smart mobile phones therefore enables students to have messaging service applications and the Internet available at their fingertips.

Messaging services such as SMS's have shown a greater response among academic staff and students as a way of learning outside the classroom than other messaging services (Grosch 2013). This is mainly because other messaging services do not support low-end technology mobile phones. The findings of Nix *et al.* (2008) conclude that with SMS's, the university was able to reach a higher number of students compared to other means of communication such as emails.

According to Duncan-Howell and Lee (2007), the current generation of students in higher education depends on their mobile phones to stay in touch with family and

fellow-students 24/7 at affordable rates, and use various applications such as the camera, calculator, calendar and mobile banking, among others. It is important that HEIs take advantage of using mobile technology as a way of supporting the learning process of current students.

According to Keegan (2004), mobile phone technology has been growing rapidly in recent years; the number of users is also increasing. Institutions of higher learning need to find ways of supporting students through the use of technological tools and techniques, more so now that the world we live in revolves around technology.

The level of student participation in learning is very important (Strydom & Venter 2002). To motivate students to participate in learning, HEIs need to identify the level of student involvement. Since the 1990s, higher education teaching has seen a cultural change, moving from a content-based to a student-centred approach (Robertson 2001).

1.2 Purpose and necessity of the research

Student learning is essential to the credibility of any HEI, and learning forms the primary part of any institutional strategy that seeks to maintain and enhance the value of learning. Institutions and academics connect in continuous learning and address new challenges of learning. Supporting any strategy of learning is important, hence this investigation into messaging service applications and whether these applications could playing a constructive role as educational supporting tool, especially outside the classroom.

Research is described as a broad indication of what the researchers desire to accomplish in their study (Mouton 1996). According to Thomas (2013), the researcher's circumstances affect the purpose of the research. The purpose of this research is to determine if messaging service applications could be used successfully as an educational supporting tool in HEIs. Higher education institutions in South Africa aim to find innovative ways of supporting teaching and learning through technology; the aim of this study is well aligned to this.

1.3 Significance of the research

Although research studies show an increasing interest in the concept of electronic learning (e-learning), most still focus on online distance education and online learning management systems (LMS) (DHET 2014; Daniel 2011; Subotzky & Prinsloo 2011).

The significance of this study is the creation of a greater awareness of the constructive influence messaging service applications can have in supporting teaching and learning in HEIs. Current higher education (HE) students need to be educated in ways which are more appealing and interactive. There are many challenges affecting learning (Walton 2009), some of which include:

- i) The time spent in the classroom is not sufficient for academic staff to address students (learning should not be limited to the classroom only).
- ii) Urgent educational notification/communication between the instructor/lecturer and the students (the instructor should not have to wait until the next scheduled classroom session to communicate with students).
- iii) Individual students have individual problems in terms of learning (academic staff should be afforded opportunities and time to dedicate to individual students in understanding the learning material).

Lecturers, students and HEIs are the ultimate beneficiaries of this research. The main benefit is that the interaction among students and with their lecturer(s) will not be limited to class contact sessions. Messaging service applications has the potential to enable learning beyond the classroom which means that lecturers would not have to depend on classroom learning alone. For example, lecturers could be afforded sufficient time to discuss learning content with the students using messaging service applications, and then deal with more challenging learning material during classroom sessions. Students would thus be afforded the opportunity to prepare in advance for a classroom session. In addition, messaging service applications could also offer the lecturer the opportunity to interact with students through one-on-one communication beyond the classroom. If applied correctly and optimally, messaging service applications could play an important role as educational supporting tool in HEIs.

1.4 Research problem statement

Challenges such as overpopulated classrooms prompt HEIs to find innovative ways of using new technologies to support teaching and learning. Most students in South Africa, whether underprivileged or privileged, have mobile phones (Foko 2009) which facilitate messaging service applications. By incorporating messaging service applications into traditional teaching methods, interaction between students and lecturers as well as teaching and learning does not need to be limited to the classroom.

1.4.1 Primary research question

The problem statement is encapsulated in the following primary research question (PRQ):

PRQ: How can the use of messaging service applications play a constructive role as educational supporting tool in HEIs?

1.4.2 Secondary research questions

The secondary research questions (SRQs) underpinning the study are stated as follows:

SRQ1: Which messaging service applications are most used by students in HEIs?

SRQ2: What are the perceptions of students regarding the use of messaging service applications as an educational supporting tool in HEIs?

SRQ3: What are the perceived benefits of incorporating messaging service applications as an educational supporting tool in HEIs?

SRQ4: What are the challenges of using messaging service applications to support teaching and learning at HEIs?

SRQ5: What model can be proposed to incorporate messaging service applications as an educational supporting tool in teaching and learning at HEIs?

1.5 Research objectives

According to Mouton (1996), research objectives give a broad indication of what the researcher wishes to accomplish. For this study the research objectives are divided into two categories, namely primary and secondary objectives.

1.5.1 Primary research objective

The primary research objective of this study is to determine how messaging service applications can play a constructive role as an educational supporting tool in HEIs.

1.5.2 Secondary research objectives

The research has the following set of secondary research objectives:

- i) To determine which messaging service applications are most used by students.
- ii) To determine the perceptions of students regarding the use of messaging service applications as an educational supporting tool in HEIs.
- iii) To determine the benefits of using messaging service applications as an educational supporting tool in HEIs.
- iv) To determine the possible challenges of using messaging service applications to support teaching and learning at HEIs.
- v) To present a model that will incorporate messaging services as an educational supporting tool in teaching and learning at HEIs.

1.6 Research design and methodology

Mouton (1996) describes research design as a detailed photographic plan of work to be carried out for the research. According to Mouton (1996), the research design consists of the following:

1.6.1 Research philosophy

The researcher investigates the use of messaging service applications to support the current learning practices at an HEI in South Africa. Research philosophy necessitates a logical solution to why the research study is conducted (Holden & Lynch 2004).

Research philosophy consists of two branches, ontology and epistemology. Ontology incorporates critical realism and idealism (Ritchie & Lewis 2003, as cited in Mkansi & Acheampong 2012). According to Thomas (2013), ontology relates to investigating various types of evidence already existing in the social world. The emphasis of epistemology is based on the capability to address social science, which provides a platform for using numerous methods (Ritchie and Lewis 2003, as cited in Mkansi & Acheampong 2012). Mkansi and Acheampong (2012) state that epistemology is viewed as the capability to take a realistic stance by pointing out the limitations of positivism and interpretivism respectively. Thomas (2013) is of the opinion that epistemology focuses on the 'how' of what is known to people.

For this research, the ontological stance adopted is subjectivist and epistemological stance is interpretivism.

1.6.2 Research paradigm

Research paradigm is described as the way researchers research the world and the way they apply their mind (Thomas 2013).

This research study aligns itself with an interpretive research paradigm. This approach enables the researcher to analyse and explain data that have been collected from studying how students conduct themselves when using messaging service applications.

In order to guide data collection and set limits to the scope of the study, the proposition put forward relates to messaging service applications in supporting HEIs.

1.6.3 Research methodology

This research study is aligned with the mixed methods research methodology, thus, the data collected are both quantitative (questionnaires for statistical analysis) and qualitative (interviews and textual interactions) in nature.

1.6.4 Data collection

The social sciences study environment affords the researcher the opportunity to select various data collection methods which include experiments, surveys, archival analyses and case studies, among others, for application of the research (Yin 2009). The major source of data collection is often gained by means of interviews and questionnaires (Bless & Higson-Smith 1995). Babbie (2004) reveals that self-administered questionnaires are given to participants to complete the answers themselves without any influence from the researcher. According to Creswell (1994), data collection involves (i) setting the boundaries for the study, (ii) collecting information through observations, interviews, documents and visual material, and (iii) establishing the protocol for recording information.

Data collection was conducted in three consecutive phases over three years:

Phase 1: Data collection by means of a questionnaire (2012)

Phase 2: Data collection by means of interviews (2013)

Phase 3: Textual interaction drawn from the messaging service application *Whatsapp Group Chat* (2014)

The participants for each of the three phases have been selected from the population of all undergraduate students who studied at VUT Ekurhuleni campus in South Africa in 2012, 2013 and 2014 respectively.

a) Self-administered questionnaires

In 2012 during the winter season, the researcher distributed 250 questionnaires to undergraduate students at VUT Ekurhuleni. The 250 students were conveniently selected from the total population of undergraduate students studying at this campus. Of the 250 questionnaires distributed, 212 students returned a completed questionnaire (see section 3.5.6 for a discussion on how the convenience sampling

selection was applied). The researcher made students aware of the purpose of the study conducted by means of an enclosed covering letter attached to the questionnaire form (see Annexure B).

b) Interviews

During the first semester of 2013, data was collected through semi-structured interviews from a sample group of 20 students enrolled for an IT bridging course at VUT Ekurhuleni. All IT bridging course students (90 in total) were first identified through convenience sampling from the total population of undergraduate students studying at VUT Ekurhuleni. From this group, 20 students were randomly selected to conduct the interviews (see section 3.5.6 for a discussion on how the random selection was applied).

The use of semi-structured interviews is ideal because of the greater ease of comparative analysis (May 2001). Semi-structured interviews enable the analysis of information gathered using a critical approach to establish the validity of the source. Participants are more willing to respond by talking and reacting verbally than to writing down responses to questions (Burns 2000). Researchers often prefer to use partially structured interviews to obtain information from participants. This approach secures compliance for both the researcher and participants (Greeff 2002).

The purpose and context of the research conducted was explained to the participants. The interviews were designed to be 10 to 15 minutes in duration to allow time for discussions and addressing any additional issues raised by the participant.

The researcher used a tape-recorder and obtained permission from students to record the interview. Tape recording is the advised method to use for such interviews as the raw information remains unchanged for later analysis as it releases the researcher from taking notes and affords the researcher the opportunity to have an in-depth discussion with students.

c) Textual interaction (Whatsapp transcript)

The students for this phase of the research project were selected through convenience sampling from the population of all undergraduate students who studied at VUT Ekurhuleni in 2014. Data were collected from the *Information Systems 2*

Module 2 students. All the students (38 in total) enrolled for this module as well as their lecturer were part of a *WhatsApp Group Chat*. Data was collected over the period of a semester (six months) in 2014.

1.6.5 Data analysis

The researcher adopted both qualitative and quantitative data analysis techniques. According to de Vos, Strydom, Fouché and Delport (2005), data analysis is a qualitative inquiry that involves a two-way approach. The first approach contains data analysis away from the site, following a period of data collection. Data analysis starts by going back to the purpose of the study (Greeff 2002) which, in this study, is to determine the significance of messaging service applications as constructive supporting tool for teaching and learning at HEIs in South Africa. Zikmund and Babin (2010) describe data analysis as the application of reasoning to understand that data has been gathered.

All the data gathered from the research was analysed through a process of triangulation. Triangulation is the use of a multiplicity of methods to collect and analyse data (Wiersma & Jurs 2009). The researcher used questionnaires, interviews and textual interaction during data collection, and compared the analysed results of all three these methods to ensure reliable and scientific findings. The researcher adopted two theories for the analysis, namely Social Presence Theory and Context Awareness Theory (see sections 3.6.1 and 3.6.2). Conclusions and recommendations were made based on the findings.

1.7 Research ethics

According to Blumberg, Cooper and Schindler (2005), ethics relates to how research must be conducted and in which behaviour. Furthermore, Phurutsi and Kekwaletswe (2013) state that ethics focuses on the right behaviour to be followed when conducting research. The code of ethics normally ensures that the students participating in the research are not harmed in any sort (Welman, Kruger & Mitchell 2012). Thus, good governance and acceptable behaviour are important components when conducting research. In this research was important for the researcher to ensure that no participants were harmed in any. The researcher acknowledged the inputs of all the participants during data collection.

1.7.1 Confidentiality and anonymity

The results of the study are reported anonymously. The researcher took all the necessary measures to ensure the participants remained anonymous by removing their names and mobile numbers from the textual interaction (Whatsapp script). The questionnaire did not ask students for personal information such as names, identity numbers or even student numbers. This was to make it mitigate the risk of participants being traced. During the interviews, the researcher started the recording when explaining to the interviewees the purpose of the research and their right to anonymity. The researcher requested participants not to mention their names during the recording of the interview, and the questionnaire did not require participants to state their names.

1.7.2 Informed consent

Informed consent is a process of information exchange in which participants are provided with accurate information in order for them to understand the risks and benefits, and the assurance that withdrawal is possible at any time without consequences. According to LoBiondo-Wood and Haber (2010), people must be treated as independent persons who have the freedom to convey their thoughts without external controls. Participants must not be influenced when contributing during data collection.

The researcher gave a copy of the informed consent form to all participants before the interview. The researcher read through the informed consent form with the participants to ensure that the participants understood the purpose of the study and the contribution the study could offer to teaching and learning in their institution.

1.7.3 Scientific reporting

The researcher maintained confidentiality and all the findings were reported on fully, without adjusting any significant data. The researcher made an effort to ensure that the collected data from participants did not influence the interpretation.

1.8 Outline of the dissertation

This dissertation has six chapters.

Chapter 1: Introduction to the research and background is provided for the reader to have a better understanding of the research. The research problem statement and objectives are stated. The significance and data methodology adopted for this research is indicated. The research ethics considerations are outlined.

Chapter 2: An extensive literature review is conducted. The chapter starts by introducing the reader to the HEI learning environment and offering a clear understanding of who the students in HEIs are. This is followed by literature related to technologies, specifically messaging services in HEIs, and the myths of adopting the use of messaging services in HEIs. Literature related to supporting teaching and learning using technologies as an educational supporting tool, is discussed, complimented by issues related to supporting the unprepared students in HEIs. The chapter is closed with a summary.

Chapter 3: In this chapter the research design and methodology are discussed. The purpose for collecting data over three phases is outlined. The research approach and paradigm is explained. The data analysis, in which two theories have been adopted, is outlined. The research sample is presented. Chapter 3 provides the reader with a better understanding of how data was collected and the entire research process followed.

Chapter 4: The results from the three phases are provided, discussed and interpreted. The significance of data obtained through different data collection methods is explained.

Chapter 5: In this chapter the researcher demonstrates how the messaging service *Whatsapp Chat Group One* has been used during the study as an educational supporting tool in the HE sector in South Africa. A model that incorporates messaging services as an educational supporting tool in teaching and learning at HEIs is presented.

Chapter 6: This chapter provides the conclusion of the research, aligned with the objectives stated in Chapter 1. It shows how the objectives were met. The limitations and recommendations are outlined. The chapter closes with a reflective conclusion.

1.9 Summary

This chapter introduced the reader to key concepts that will be unpacked in more detail in the following chapters. The research topic, problem statement, objectives and research methodology have been outlined.

In Chapter 2, the literature that has been reviewed by the researcher in the area of messaging service applications and the use of messaging service applications in education, are presented.

CHAPTER 2: LITERATURE REVIEW

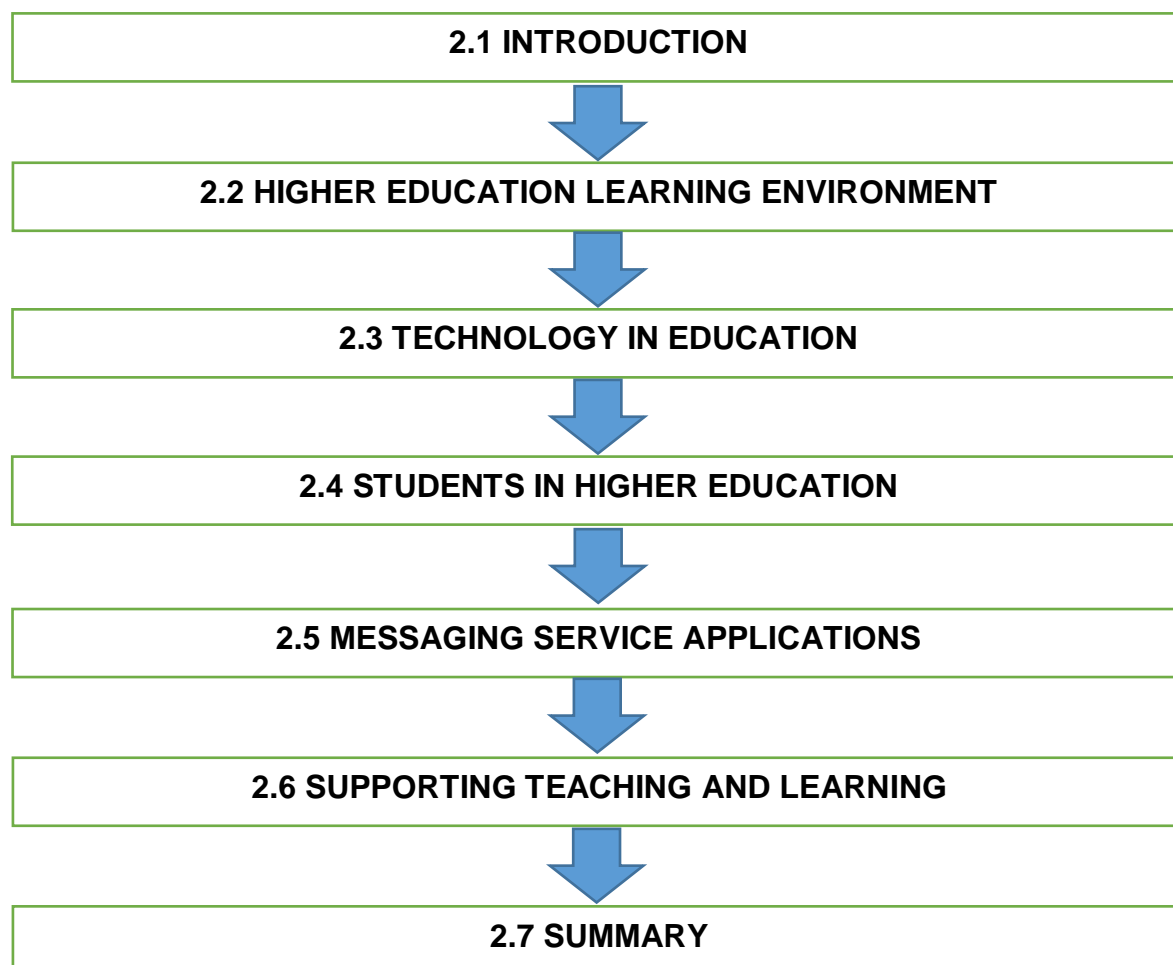


Figure 2.1: Graphical representation of Chapter 2

2.1 Introduction

The preceding chapter provided an introduction to the study. The purpose of this chapter is to build the theoretical foundation upon which the research is grounded. The researcher reviewed and reported on literature relevant to the field of messaging service applications and the use of messaging service applications in education. Finally, this chapter looks at the different types of messaging service applications mostly used by students in HEIs.

2.2 Higher education learning environment

Learning in general is commonly known as a process that involves acquiring new knowledge. Learning is a systematic process in which an individual acquires

knowledge or behaviour for the long-term (Evans, Nel & Van der Linde 2004). Furthermore, Kekwaletswe (2007) states that face-to-face learning at HEIs transpires at an agreed scheduled venue where the students and lecturers discuss learning activities and share information and resources to gain new knowledge. For learning to happen in a contact session learning environment, there must be a lecturer to facilitate the class. This basically means that learning must take place in a specific venue (Evans *et al.* 2004).

Messaging service applications grant the administrator the opportunity to monitor what transpires in a group chat. Based on data collected using *Whatsapp Group Chat*, it is the view of the researcher that learning does not have to depend on class contact sessions only. Due to the nature of messaging service applications, learning is a social process that is exciting and meaningful through interaction with students among themselves and their lecturers.

2.2.1 South African higher education learning environment

The merging of HEIs in South Africa has brought with it additional problems for various stakeholders involved in the higher education environment (DHET 2013). These additional problems relate to, among other things, accountability concerns about the nature of administration skills required for the economy of knowledge, social and economic problems, uncertainty regarding the employability quality of graduates, as well as the current transformation of higher education in the country (DHET 2013; Kruger & Ramdass 2011; De Jager & Nassimbeni 2005).

There are numerous challenges that the higher education sector in South Africa is facing. HEIs are challenged with increasing competitive business of education in today's world (Sirvanci 2004). Most HEIs in South Africa, like elsewhere in the world, are increasing their efforts to produce good quality teaching and learning. To be acknowledged as a competitive higher education institution, some scholars and policy creators have developed quality methods that are common in today's world (Sayeda, Rajendran & Lokachari 2010). Availability of ICT infrastructure and adequate resources enable institutions to be competitive. Nonetheless, there are still unresolved debates among scholars and policy makers about the effect of the quality of learning in HEIs. This is mainly because the institution leaders can set goals, organisational values and performance expectations which are not the same. In

addition, the institutions have different priorities and goals (Sirvanci 2004). Research findings vary from one researcher to another concerning issues of quality of learning in higher education (Akinyemi & Abiddin 2013; De Jager & Nieuwenhuis 2005; Sayeda *et al.* 2010; Sirvanci 2004).

The higher education sector needs institutions of knowledge with highly trained people required in South Africa to be able to compete successfully in an ever changing international context (Cloete & Bunting 2000). HEIs should continuously improve their quality of teaching and learning through training and other means associated with continuous development. Higher education systems refer to “machinery of manpower creation” of the nation to embrace quality on a continuous basis to be able to be and stay in touch with the realities in today’s technological, sociological and economical dimensions (Akinyemi & Abiddin 2013). This contributes to HEIs becoming competitive worldwide when they are leading quality service providers.

The higher education system in South Africa has been influenced by international movements (Sutherland 2009; De Jager & Nassimbeni 2005). HEIs are facing numerous challenges, including a lack of skilled academics and appropriate teaching tools as well as underprepared students. These challenges arise from the impact of globalisation, the increasing importance of knowledge as a principal driver of growth, and the information and communication revolution (De Jager & Nassimbeni 2005). New types of HEIs are driving traditional HEIs to revise their methods and approaches of delivery of teaching to students and to take advantage of the rapid advancement of information and communication technologies (The World Bank 2002). With the technology we currently have, higher education has to reposition and transform itself to suit the current generation of students.

The historical background of the South African higher education landscape, which includes universities, universities of technology, and technical and vocational education and training (TVET) colleges, has been characterised by the cultural divisions and geo-political conflict along nationalities and tribalism (DHET 2013).

One of the current economic challenges facing South Africa is the high rate of unemployment, which relates to some aspects of “skills mismatch” (Diko & Meyiwa 2012). South Africa, like most developing countries, is not coping with the high rate of

unemployment, which unfortunately also includes university graduates (Diko & Meyiwa 2012). The crucial debate for universities should therefore be on how to incorporate the skills and knowledge the industry needs in an attempt to deliver employable and competitive graduates through continuous engagement with industry to address the incongruence in terms of what HEIs deliver and what the demand is in the market.

Most of the students enrolling in higher education in South Africa are underprepared (De Jager & Nassimbeni 2005); this is caused by inadequate life skills input at basic educational levels of schooling (Sutherland & Waetzel 2005). Basic education schooling does not prepare students fully for higher education schooling; therefore most students cannot cope with the pressure of higher education, which results in students underperforming at first year level, dropping out and “course touring” i.e. changing courses every year.

The nature of diversity in the higher education sector (i.e. the differences between universities) is one of the factors contributing to students not performing adequately, especially at first year level. First year students coming from outcomes-based education (OBE) in secondary education to higher education learning need support to cope with the transition.

The education system plays a crucial role in combating unemployment. South Africa is in demand of new types of workers in a manner that they should be equipped to contribute to the economic growth (Diko & Meyiwa 2012; Breier & Mabizela 2008). The university agents have a crucial role to play in supporting first year students, remarking that it is at first year level that students are exposed to studies relating to their career of choice. It is also important to note that these students find themselves in situations where they have to adapt easily and at a fast pace so that they can focus on their studies and succeed.

The Human Resource Development Council of South Africa (HRDCSA) is in the driving seat to seek better ways of improving the conditions of the teaching profession. The HRDCSA is tasked to deliver proficient human resources to improve conditions related to employment of teachers for South Africa by 2030 (Ntombela (2012, as cited in Diko & Meyiwa 2012).

The increase of opportunities to access higher education will help in improving employees' opportunity of employability and promotion (Letseka & Pitsoe 2013). Access to higher education has increased post-apartheid in South Africa; twenty-two years into democracy, organisations—including political organisations—have been vocal on the access to education and with campaigns related to free education. More black students now have access to higher education, which was not fully available to black people pre-apartheid. Consequently, the basic education system does not prepare students from previously disadvantaged high schools for post school education. Students from previously disadvantaged high schools might adapt slower and over a longer period of time than their counterparts.

The current state of the South African education system and strategies were employed by the Department of Basic Education to address challenges which include, but are not limited to, quality to basic education and equipping students with best information (Ntombela 2013). The basic education system must have a robust engagement on how they can contribute to the preparation of students for a university environment. Issues relating to a university environment must be communicated and discussed with learners in high school already. This will play a significant role in students' post school environment and experiences because students will be more informed and have an idea of what a university environment is. In the process, students will be more able to prepare themselves for the transition from high school to university.

2.2.2 Types of learning environments in higher education

According to Kekwaletswe (2007), learning in a HEI which focuses on face-to-face contact can take place in one of the following three ways:

- **Formal context:** Students meet at a specific scheduled venue and time with their lecturer who then facilitates learning. Normally in this type of learning environment students are given time tables to keep track of the particular day and time they must attend modules.
- **Semi-formal context:** Students meet at the library or another predefined venue as a group to discuss a group assignment or practicing an aspect related to what

the lecturer has taught in class. Students usually arrange among themselves to meet at the library or decide individually to make use of the library.

- **Informal context:** This is when a student is learning outside the peripherals of academic environment, for example, students studying for a test in the comfort of their home. Again, it is at the discretion of the student as an individual to allocate sufficient time to study for the test.

Students can through messaging service applications communicate among themselves and with their lecturer both outside the university peripherals and within the university space. Thus, these types of applications can support students learning and blend in well with all three learning environment contexts.

2.3 Technology in education

This section focuses on the use of technology in HEIs and literature related to the benefits of using messaging service applications. Some of the initiatives that may support the use of messaging service applications are also highlighted.

2.3.1 Technology in the higher education system

Since the 1980s, HEIs started to increase their use of online technology to reorganise their teaching and learning (Siemens 2004). Technology enables HEIs to be innovative in the ways in which they provide their services. Technology is viewed as the most often utilised teaching and learning strategy tool as most students in higher education now have access to digital technology devices (Duncan-Howell & Lee 2007). The availability of technology devices enables HEIs and students to strengthen interaction among themselves and with one another.

Nicholson, Macleod and Haywood (2005) are of the opinion that the use of mobile technology provides both opportunities and challenges when it is used for learning. This offers researchers the opportunity to further investigate the success and quality of tertiary online technology usage. Siemens (2004), Duncan-Howell and Lee (2007) and Nicholson, Macleod and Haywood (2005) agree that the use of technology constitutes the foundation of great development in the way HEIs engage in teaching and learning.

There has been a growing interest of researchers focusing their studies on new technology trends that are integrated into the traditional teaching methodology (Duncan-Howell & Lee 2007; Brown 2005; Matli, Conradie & Sibiya 2013). The findings of Matli *et al.* (2013) give an indication that students in higher education are familiar with using mobile technologies. Duncan-Howell and Lee (2007) indicate that there has been an increase in digital technology use by the current students in HEIs. Online technology has significant potential in improving the quality of teaching in higher education, and has a positive impact in supporting teaching (Simuth & Sarmany-Schuller 2012). The usage of technology in the e-learning educational sector provides room to benefit teaching and learning, especially in HEIs (UNESCO Institute for statistics 2009). Mobile-learning, also known as M-learning, plays a crucial role in supporting formal learning (class contact sessions); it extends learning to be successful in informal and semi-formal (beyond class contact sessions) settings (Winters 2006).

In the past, university teaching required a lecturer to be a master of the content in the prescribed book, but now lecturers find themselves in situations where they have to adapt to the language that the current generation understands better and use technology to support students' learning. Technology has the potential of changing the model of higher education from the old-style class contact session framework to an asynchronous anytime-of-the-day-or-night mode (Rennie & Morrison 2014). Students will succeed in the university learning environment only if they are taught to learn for the future and with technologies that make sense of new, ever-advancing technological knowledge (Robert 2005).

Higher education is a highly competitive environment in South Africa. Universities of Technology (UoTs) have the potential to reposition themselves within the HE landscape through emerging ICT tools that could be incorporated in teaching and learning. The adoption of technological instructional tools such as messaging service applications is highly recommended particularly at UoTs as these tools can assist HEIs to cope with extra teaching workload (Upadhyay 2006). Technological devices such as mobile phones can offer support to students in the process of learning (Upadhyay 2006). In today's educational environment technology is rapidly changing. Innovation and the willingness of a higher education institution to incorporate technology tools is one of the important factors that make a higher education

institution competitive. Universities and UoTs across the country are implementing and continuously finding new practices to enhance and support the academic excellence of students. These practices are aimed at intervening to improve the learning and outcome of students.

HEIs in South Africa encourage academic departments to apply Information and Communications Technology in promoting teaching quality. The current generation of students enrolled at HEIs has more access to digital technology than ever before (Duncan-Howell & Lee 2007).

2.3.2 Benefits of messaging service applications

Jones and Jo (2005) describe ubiquitous learning environment (ULE) as any form of arrangement that provides students the accessibility to learn, irrespective of time and place. This allows students unlimited access to education and therefore the opportunity to learn in a flexible way.

“ULE provides learners with easy and flexible ways to access education in the right place at the right time” (Phurutsi 2013:21).

The researcher views ULE as a catalyst that allows students to connect and learn in an environment that does not require students to be in the same venue for them to learn among themselves and with their lecturer. Students are able to share resources, learn from each other, connect and discuss issues related to their education, and importantly, gain new knowledge to have a better understanding of what they are learning (Cheng *et al.* 2005). Ubiquitous learning allows adaptability in different ways, which include offering support to students and becoming aware of the behaviour of students.

Figure 2.2, adopted from Rakib (2011), is a good example illustrating the use of smart mobile phone users in a ubiquitous environment where users in a remote area can use their mobile devices to interact with other people and objects not in the same area in terms of demarcation. Users are able to communicate with other people and use the same smart mobile phone to perform operations which include but are not limited to chatting either with individuals or group chats on different messaging service applications. The users are furthermore able to communicate through voice calls with other people having access to mobile phones, irrespective of region.

Another benefit is that it allows users to conduct live streaming, from a soccer game to news, to channels related to education. Students can also create group chats on messaging service applications and engage in learning by creating their own learning community through the group chats.

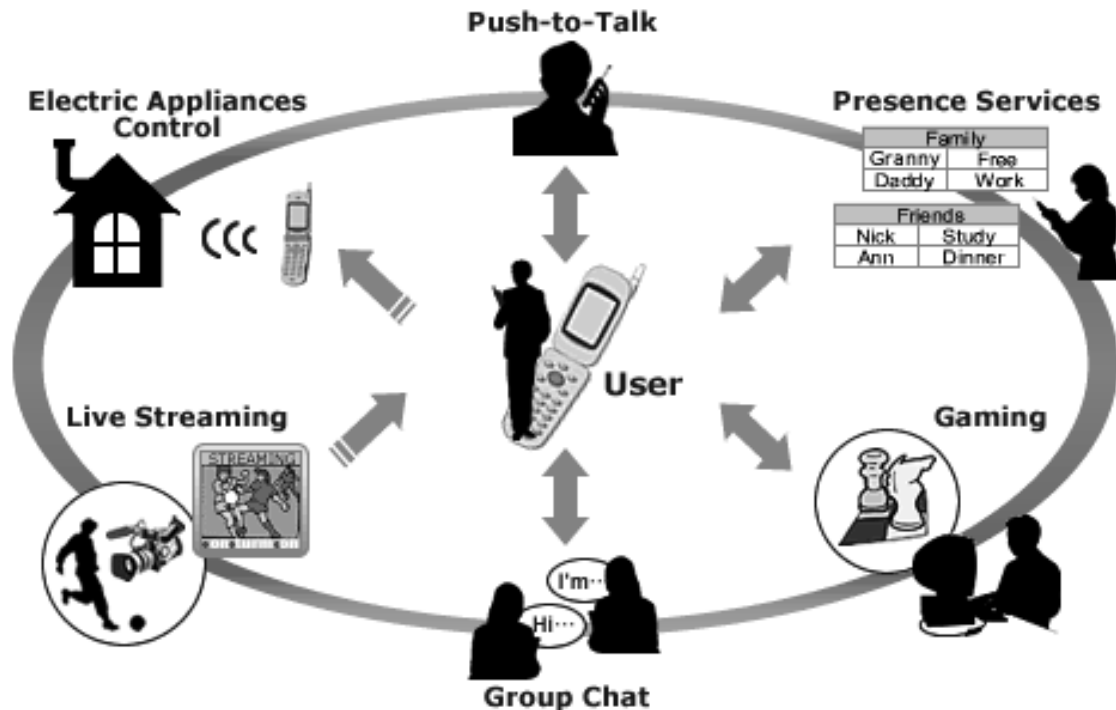


Figure 2.2: Smart phone user
(Source: Rakib 2011)

The integration of the online environment in teaching and learning at HEIs extends the ways in which students can interact and learn (Jones & Jo 2005). The adoption of the use of messaging service applications as an educational supporting tool in HEIs enriches communication among students and with their lecturer by extending interaction outside the classroom or institution (Harris 2008). Messaging service applications provide flexibility when compared to Learning Management Systems (LMSs) such as Sakai or Blackboard. With LMSs, students are required to go through long processes of authentication before accessing the system as compared to messaging service applications such as Whatsapp where after the user unlocks the mobile phone, the application is immediately accessible (LaRue 2012).

There are potential benefits of increasing interaction among students and with their lecturer when using messaging service applications as an educational supporting tool (Brady, Holcomb & Smith 2010). Because of the nature of messaging service applications it enables students in remote environments to interact and assist in

students building their own knowledge (LaRue 2012). Texting has become fashionable to the current generation, particularly the youth and young adults to such an extent that one can brand them as “generation text” (Thurlow 2003). Messaging service applications foster users to text more often because of the instant messaging communication allowing people to use different applications using texting. Greenhow, Robelia and Hughes (2009) and Rosen (2010, as cited in Mills 2011) describe the current generation of online interaction users as the “iGeneration” due to the rapid enhancement of communication through technology.

According to Gonzalez (n.d.), researchers need to pay attention to how people interact on messaging service applications particularly that the mechanism is affected by latest technology applied to ease communication. The technology in messaging service applications has affected the way in which young people communicate; more young people prefer to communicate through messaging service applications rather than making time to meet face-to-face and communicate verbally. There is an increasing problem of young people using unstandardised language when texting using messaging service applications (Murphy & Loveless 2005). It is the experience of the researcher that young people shorten words when texting their peers. Unsurprisingly, often the receiver of these types of messages also understands the shortened words.

Greenhow *et al.* (2009) are in agreement with other authors that there are benefits of using messaging service applications as an educational supporting tool in HEIs to support the “iGeneration” students. The researcher concurs with Barnes, Marateo and Ferris (2007) that making use of messaging service applications does not only support student learning, it also creates a friendly environment as it draws students closer to each other and to their lecturer. Mills (2011) is concerned with the accuracy of research on student’s participation in group chats because of the possibility that some students could feel intimidated participating in a group chat, fearing that they might communicate something other students find senseless or useless.

2.3.3 Initiatives having positive impact on messaging service applications

According to Independent Communications Authority of South Africa (ICASA), Public schools and Technical Vocational Education and Training colleges must be granted fifty percent discount from the total cost charged. This applies to Electronic

Communications Service (ECS) and Electronic Communications Network Service (ECNS). Service providers must provide discounted rates to the public education entities in South Africa (ICASA 2009). ICASA understands the importance of education entities in the country having access to the Internet.

The students from the Net generation are familiar with and use numerous technologies, such as social network applications, in their lives in general and in their academic studies (Tapscott 2009). The findings by Tapscott (2009) complement the views by Oblinger and Oblinger (2005) who state that students from the Net generation are familiar with using technology from both their basic schooling and at home before enrolling to higher education. The findings by Tapscott (2009) and Oblinger and Oblinger (2005) also reflect the case of students in HEIs in South Africa, based on findings in Chapter 4 of this dissertation.

There are numerous challenges that affect the education system in South Africa, like elsewhere in the world. Some common challenges include lack of textbooks, computers with Internet access and poor academic performance by students (Walton 2009). The use of online technology tools has the potential to help in eradicating some of these challenges. According to the Minister of Economic Development, Mr Ebrahim Patel (Mail & Guardian 2014:4):

“At a basic level, we see iPads and Apps and live streaming, among other things, being used widely at schools”.

Over the past years the educational system in South Africa has experienced a growth of online applications and most of them are supported by mobile technology devices. The statement by Minister Patel affirms that the South African government has acknowledged the contribution information technology makes to the world we live in today. Connectivity is expanding higher education access for people and vastly contributes to the quality of teaching and learning in higher education. The power of connectivity is advancing the lives of citizens all over the world, whether privileged or underprivileged.

The deadline for schools and health facilities in South Africa is to have one hundred percent connectivity access with at least 10Mbps speed is 2015, Patel stated in the Mail & Guardian (2014). This initiative will benefit schools and health facilities, more so those in rural, townships and other disadvantaged areas in the country. The

researcher concurs with the view of Minister Patel that it is through partnership that the government's National Development Plan (NDP) goal will be achieved successfully. The government should work hand-in-hand with private entities in making sure that they reach their targets. The government cannot successfully achieve the targets on their own, especially in the light of possible challenges the NDP might encounter. Government need to involve all important stakeholders and ensure that they deliver successfully and accordingly. Over the past twenty years the population of South Africa has grown at a moderately high rate; the country experienced the migration of people from other countries to South Africa. This migration might affect the service delivery that the NDP has in plan for the country. Another challenge is technology; it is rapidly changing—what is viewed as the best today will be 'old' within the next few years.

2.4 Students in higher education

This section covers literature focusing on the student as entity in higher education to provide the reader with a better understanding of the background of students. The three generations into which students can be categorised, are elaborated on.

2.4.1 Understanding who the students in higher education are

A university student is a learner who successfully completed secondary school and has been accepted by a higher education institution for a specific qualification. A first year student must have personal interaction with lecturers and fellow students (Hassim, Strydom & Strydom 2013). One of the fundamental aspects affecting first year students is the broad and complex university environment compared to the relatively uncomplicated high school environment. This affects the adaptation of the first year student to the university environment and in the process has an influence on the student's studies (Subotzky & Prinsloo 2011, as cited in van Schoor 2012).

The transition from high school life to university life is seen to be a complex process for nearly all first year students (Sharma 2012). Universities should have support systems in place for assisting with the transition of students at first year level, the challenges they are likely to face, and supporting them in their personal growth and development as they become adults in society (Sharma 2012). The first year students are affected by social change as much as they are affected by teaching and

learning (Sharma 2012). The university community is much more versatile and different from high school, thus, first year students find themselves having to adjust both socially and academically during the first year of their studies.

First year students need to learn skills that will assist them to control themselves when they are angry and resolve clashes with other students (Payton, Weissberg, Durlak, Dymnicki, Taylor, Schellinger & Pachan 2008). These lifelong skills are equally important because students will make use of it even after university studies. It is of the utmost importance for society and the education sector to rely on research-based findings to ease first year student experiences at universities (Payton *et al.* 2008). The society needs to encourage first year students to partake in structures that are put in place as supporting structures by the university.

2.4.2 Types of generations

There are currently three types of generations related to the use of technology according to Schroer (2013), classified as:

Generation X: These are people born between 1966 and 1978. The Generation X population is estimated to be forty one (41) million in America. These students were not exposed to too much technology while they were in higher education.

Generation Y: These are people born between 1977 and 1994. The Generation Y population is said to be seventy one (71) million in America. The students currently in HEIs belong to this generation and they are exposed to technology. These students are known as incredibly sophisticated and technology wise.

Generation Z: These are children born between 1995 and 2012. Their population is estimated to be twenty three million and growing rapidly in America. These children will be future students in higher education and they need to be prepared. HEIs have to have higher levels of technology that will make significant inroads in academics for this generation who will be enrolling in higher education in a few years from now. Generation Z kids are growing up with a highly sophisticated media and computer environment and they will be more Internet savvy and experts than their Generation Y forerunners.

Higher education has to acknowledge the current generation of students and adapt to what is appealing to the primary stakeholders, which are the students. Students spend most of their time on smart mobile phone applications reading and chatting to other friends, students, family and their virtual friends, most of which they have not met physically. As HEIs we need to use the same space and time they spend chatting, in an attempt to engage them not only in their social lives but also in the use of technology for academic engagement and effective learning.

Higher education has to be flexible and adapt seamlessly to accommodate different students entering and exiting educational institutions. At present, higher education is more mobile and connected to the Internet than a decade ago. With the fast globalisation of the economy and technology, higher education systems have to transform to keep up with these changing times. It is the view of the researcher that HEIs need to pay attention to the role they play in our societies. The current high rate of unemployment includes HE graduates. It is worrying that in all provinces in South Africa the rate of unemployment is more than double that of adults (Statistics South Africa 2014). It has become difficult for HEIs to focus on their traditional core business of teaching, learning and research; this is caused by what the market expects them to be in most cases. HEIs and the business sector should have continuous engagements that will assist HEIs to focus and revise their programmes to respond to market needs.

It is the view of the researcher that Generation X mostly depended on an auditory style of learning because the types of educational tools were limited and did not complement learning styles other than blackboard and chalk teaching. With Generation X, higher education in South Africa was not faced with the issue of student diversity due to the apartheid regime. HEIs were traditionally categorised by the colour of the students, either black, white, coloured or Indian.

For Generation Y, the HEIs were and still are able to support students with tools that not only the auditory student type benefits from, but also the visual student type through tools such as PowerPoint presentations. Currently the HEIs are vastly diverse because of the post-apartheid era that commenced in 1994 in South Africa. One of the challenges for post-apartheid HEIs is to accomplish equality in the enrolment of students, thus no discrimination of race or colour.

For Generation Z, the researcher cannot argue or make fundamental claims as the first Generation Z group enrolled in higher education for the first time in 2014. Within the South African context, the researcher determined this using the following formula: Normally, learners commence with Grade 1 at the age of seven, and by the time they complete Grade 12 (known as matric), they are 18 years old. A person born in 1995 and who has not repeated any grade in basic education should have entered higher education in 2014.

2.5 Messaging service applications

This section covers a review of the literature with the focus on messaging service applications. The evolution of messaging services is presented first, followed by definitions of messaging service applications. In the third subsection the researcher discusses messaging service applications with a focus on learning.

2.5.1 Introduction

The idea of electronically linking people to have discussions on issues and interests was established long ago in the early years of the Internet, where it was acknowledged as a process of forming computer-generated communities accessible to only a few individuals, who were mostly business people (Phurutsi & Kekwaletswe 2013). Computer-generated communities, also called Web communities or online communities, depict an environment where people and business meet in a computer-generated environment and have discussions on issues of common interest (Rheingold 1993).

The presence of social networks and its revolution has to some extent affected how people communicate. Businesses have taken advantage of social sites and use the same space that people spend most of their time on to advertise and market their different products and services, and to some degree conduct their surveys (Qualman 2011). This is not surprising because businesses are able to reach a high number of people within a short period of time on social sites.

2.5.2 Definitions for messaging service application terms

Kaplan and Haenlein (2010:61) define the social media sites as “Internet-based applications that build on the ideological and technological foundations of Web 2.0”.

This provides users with the opportunity to create and share content. Due to the evolution of social sites, more and more young people prefer to text each other through social media sites rather than using the traditional way of texting by means of short message services. Social sites are described as a group of Internet websites that enables users to collaborate and share information (Junco, Heiberger & Loken 2010). Messaging service applications can be in a collaborative form such as Facebook or other social sites, or content groups such as YouTube (Kaplan & Haenlein 2010). The messaging service applications allow students to be in a sharing environment setting and involve the process of creating trustworthiness among each other (Mason & Lefrere 2003). The use of messaging service applications gives students the chance to share their own understanding and interpretations when discussing matters related to education. Students may interpret the same answer to a question differently and that grants other students in the group the opportunity to have a better understanding when forming their own interpretation of a certain question. In the process of using messaging service application group chats as an educational supporting tool, some students learn to build better friendship and trust with their classmates.

Instant messaging is a form of synchronous online communication that allows users to communicate across a network connection (Jeong 2007, as cited in Rennie & Morrison 2014). Instant messaging is primarily in text format, however due to the advancement of technology, instant messaging has led to many instant messaging services which include audio and the ability to set a status message, among other benefits (Jeong 2007). The great benefit of instant messaging is that it offers prompt feedback and the convenience of being available from various locations (Rennie & Morrison 2014; Jeong 2007).

Definitions of some of the most popular messaging service applications include, but are not limited to, the following:

- Kirschner and Karpinski (2010) indicate Facebook as one of the messaging service applications used in a social context because of the way it was created—to encourage interaction among users worldwide
- Rennie and Morrison (2014) describe Wikipedia is an online encyclopaedia that allows users to edit content

- Java, Song, Finin and Tseng (2007) affirm that Twitter enables users to text and broadcast their updates with other users instantly; however the user may also select who can view their status
- Cheng *et al.* (2005) indicate that YouTube allows people to create and share their short videos with the rest of the world, and in a similar manner allows people to view videos uploaded by other people

Social messaging service applications focus on functionalities that include, but are not limited to, conversation, sharing, presence, building relationships, and groups to cultivate online interactions (Pereira, Cecilia, Baranauskas & da Silva 2010). Since its origin, messaging service applications have encountered criticism especially if adopted as a tool in education, one of the reasons being the addictiveness of using it (Phurutsi & Kekwaletswe 2013). The researcher concurs with Phurutsi and Kekwaletswe (2013) that messaging service applications have a way of making students regularly check their status and view what other people are saying. Studies carried-out in the United States have highlighted how disconnected from the world students feel if they cannot access messaging service applications such as Facebook (ICMPA 2012). Figure 2.3 indicates various categories and types of social media sites used in virtual environments for different purposes.

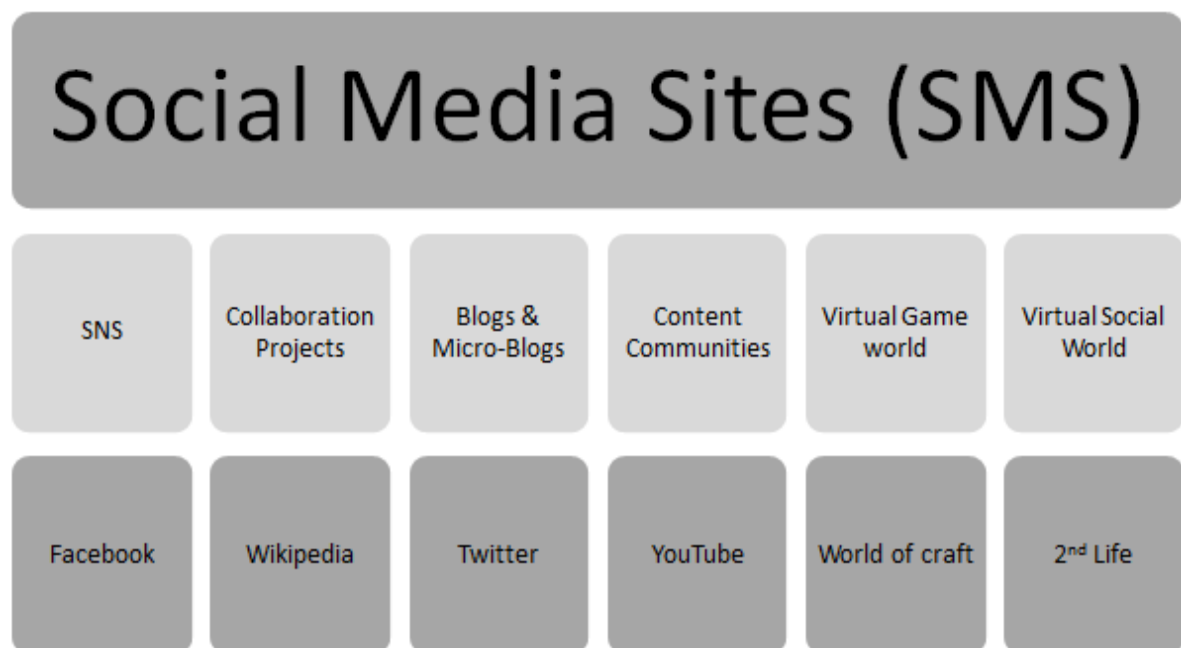


Figure 2.3: Categories and types of social media sites
(Source: Phurutsi & Kekwaletswe 2013)

2.5.3 *Messaging service applications in learning environments*

The use of messaging service applications in higher education provides students with the opportunity to be creative and the feeling of belonging (Fogg & Eckles 2008). Messaging service applications are rapidly expanding the universe of technology and include everything from social network applications to oodles of blogging sites. As these applications and services grow in popularity, there is much speculation about who uses them, how frequently, and for what purposes (Reich, Murnane & Willett 2012). Communication has vastly improved through the advances of social media technologies (Tutty & Klein 2008). As a result, family, friends and strangers are all connected in an instant and information is flexible to and from the recipient.

Mobile phones allow access to countless freely available applications ('apps') which can easily be incorporated into the education system (Dede 2000; Fonseca, Marti, Redindo, Navarro & Sancec 2013). Academic staff in HEIs face the challenge of educating the Net Generation of students who find IT appealing, and students have made IT part of their lives (digital natives). Importantly, it is envisaged that students will find learning through using mobile messaging applications more interesting than using older methods of teaching without any IT component. Mobile technology is drastically changing the world we live in; with mobile technology people are able to do nearly all functionalities which were previously only available on personal computers. It is postulated by Siemens (2004) and Darrow (2009) that the incorporation of powerful mobile messaging applications into teaching and learning is necessary and that it enables new ways of teaching and learning.

Mobile messaging applications can play a critical role in supporting teaching and learning in HEIs. Students prefer to communicate using text rather than verbally (Rennie & Morrison 2014; Schwarz 2011). The approach of using mobile messaging applications can be successfully implemented in both face-to-face and open and long distance learning. The HEI where the research was undertaken is traditionally a face-to-face learning environment which requires a new approach when considering the incorporation of mobile devices in teaching and learning. Potential benefits of mobile messaging applications include:

- No additional technological training is required as students are already using mobile messaging applications for social and personal purposes

- Mobile messaging applications will keep communication costs low, unlike phone calls or other communication forms outside the classroom
- Mobile messaging applications will force users to express themselves concisely because of the nature of messaging services
- It is a dominant tool for extending educational awareness in communities
- Will increase the time students interact with academic staff
- Allows for urgent and short notice messages. Academic staff do not have to wait for the next class to communicate with students

A smart mobile phone is defined as a mobile phone which integrates the technology of multimodal connectivity to the Internet and runs different applications on complete operating system software, as one would on a normal computer (Zhong 2013; Schroeder 2010). The use of smart phones is one the most exciting innovations of the 21st century; smart phones allow users to access information online, and it is portable which gives users the opportunity to carry the device with them wherever they go. Smart phones afford the users a new type of computer-mediated communication (Ling 2008). Smart phones emerged from the technology mobile phones which does not include modern technology and is used only for text messages and voice calling.

Critics on using messaging technologies in academia are of the view that messaging service applications may cause students to expect immediate feedback (from the lecturer) every time they make use of these technologies (Rennie & Morrison 2014; Carlson 2005). With the use of smart phones, students are able to access information using their mobile phones and communicate beyond the classroom with their peers and lecturers. Upadhyay (2006) concurs with supporters of using smart phones as learning tool in HEIs that technological devices such as smart phones can offer support to students in the process of learning. Smart phones offer students the privilege of accessing the Internet at their finger-tips at any time. Previously students needed a computer with Internet access to be able to conduct searches on the Internet. With smart phones, students do not need a hardcopy of notes from the academic staff to study from; the lecturer can email notes or slides to students which can be accesses on their mobile phones and read at their own convenience.

As these applications and services grow in popularity, there is much speculation about who uses it, how frequently, and for what purposes (Reich *et al.* 2012). Technology should be rooted to support education by encouraging the development of ground-breaking technological solutions to educational issues through ICT-enhanced learning opportunities. Computer-based training was introduced to enable a student to progress at his/her own pace and receive a pre-determined response (Rennie & Morrison 2014).

Mobile technology devices such as smart mobile phones and tablet devices are widely available and accessible to the current generation of students, which was not the case with the previous generation of students in higher education. The readily and extensive availability of mobile technology has opened doors for developers, especially those that focus on mobile applications commonly known as 'mobile apps'. HEIs have to a great extent integrated mobile technology and made online learning part of their priority (Matli & Conradie 2013).

2.5.4 Texting and chat language

For this study, the researcher studied the current literature related to the topic of texting and 'chat language' where most people send and receive text using well-known short messaging services such as SMS and instant messaging such as the Whatsapp application. The available literature that was consulted assisted the researchers in developing a good understanding of, and insight into, previous research (Welman, Kruger & Mitchel 2012). In addition, online articles were used to broaden the researcher's background and provide insight into the latest developments regarding the topic.

Published research papers give a clear indication of countless inventions attempting to acknowledge and implement a chat language which is daily used by young people; however, with the fast pace technology of texting is moving, these attempts are unsuccessful. There is however a gap in available literature specifically on the use of texting and chat language. Extensive research focusing on chat language is much needed, specifically in the area of standardising this type of 'language'.

The word "texting" is described as the use of abbreviations of words and other techniques to craft texting when sending an SMS and instant messages (Vosloo

2009). Furthermore, texting does not blindly follow the standardised English language rules. It has become rare to find young people texting each other and not using abbreviations and other techniques of crafting text. Stemmet (2009) concurs with the view of Vosloo (2009) that texting is used mostly by young people and furthermore describe texting as written *lingua franca*. The concept of “text” has become immensely used in the world we live in today, and in the process it has developed a remix of words (Lankshear & Knobel 2007).

Ever since the dawn of online texting, people communicated using chat language on different texting applications. Most people did not think the language would grow so extensively over the years. Most people, particularly academics and parents, come from a perspective that young people in the 21st century should be conservative and uphold their old method of writing. Therefore, academics and parents blame texting for what they describe as “corruption of language and the degradation in spelling of youth writing” (Brown-Owens, Eason & Lader 2003, as cited in Vosloo 2009). It is not unexpected that academics describe chat language as corruption of language; young people making use of this language when texting become addicted to the language to such an extent that some of them end up using this language in their academic school work. Gonzalez (n.d.) defines “chat” as informal exchange of communication, frequently composed of short phrases and a “chat lingo”. There exists a moderate quantity of published research that examines texting using chat language, but to date limited research has been conducted on establishing whether there is a link between chat language and literacy (Thurlow & Poff 2009).

The MXit social media application is popular among young people and a proudly South African application. The application is alleged to have ten million user accounts and its implementers claim that users send about two hundred and fifty million messages on a daily basis using the MXit platform (Stemmet 2009, as cited in Vosloo 2009). According to Gonzalez (n.d.), communication in the form of texting in an online learning environment is important for students learning to read and write the English language in this day and age, even more so now that most institutions around the world have incorporated an element of online tools in their face-to-face and long distance learning.

Facebook is the most dominantly used social media application not only by young people but also adults; the growth in use of this application by adults has been noted

over the past few years (Mazer, Murphy & Simonds 2007, as cited in Matli & Conradie 2013). The reasons vary for people having an account on Facebook; primarily it seems to be used for staying in contact with other people. The researchers concur with this view as over the past few years it has been noted that organisations are moving to promote their business on Facebook targeting not only young people but also adults.

2.5.5 Most popular messaging application (Facebook)

In 2006, MySpace.com was an extremely popular application that allowed users to set up unique personal profiles which could be linked through friends; however, in 2008 the popularity declined and it was overtaken by Facebook (Rennie & Morrison 2014).

Facebook is one of the most used messaging service applications. It was created by a group of students from the Harvard University and led by the student Mark Zuckerberg (Roblyer, McDaniel, Webb, Herman & Witty 2010). The messaging service application started growing and gained popularity in the academic environment (LaRue 2012). In 2006, Facebook started unlocking its service to everyone in the world who wanted to become a user. The application was then moved from the Harvard University network to a public network to cater for all users around the world (Hew 2011).

The messaging application Facebook enables users from all parts of the world to communicate virtually; however, all users must have a virtual profile (Mazer *et al.* 2007). For any person to become a user on Facebook they must first create a profile of their own. According to Lampe, Ellison and Steinfield (2007), a user profile on Facebook requires a user to provide information that includes the gender of the user, schooling of the users, and employment details of the user. Grosseck, Bran and Tiru (2011) furthermore elaborate on Lampe *et al.* (2007) by indicating that the creation of a user profile on Facebook includes uploading a profile picture, providing contact details such as email address and mobile number, and writing about what the user is interested in.

For someone to have a Facebook account and make use of the application, access to the Internet is important, and the user is required to have an email address or use

a mobile number to become a user (Cain 2008). As a user on Facebook, one is granted the opportunity to post whatever information one wishes. It is important for users to understand that not all information people write on their profiles is true and that Facebook does not take the responsibility for falsification of information (Nadkarni & Hofmann 2012). Facebook users must be careful of the information they provide about themselves and not believe everything they read on the profiles of other users. Facebook cannot be held liable and does not validate the information on user profiles.

A Facebook user is able to search for other users by information such as names or schooling information. A user can search for and send friend requests to other users. It is at the discretion of the user receiving the invite to accept or ignore the request. Facebook further allows users to create groups to communicate; the user creating the group is called the group administrator and can give other users in the group selected administrative rights (LaRue 2012). In the context of this research, a Facebook group can be created as an educational supporting tool and the lecturer can monitor who becomes part of the group. The Facebook application allows the group administrator to delete, add and invite other users. Therefore, if used as an educational supporting tool the administrator, preferably the lecturer, can manage what is being posted and delete what other students have posted.

Facebook affords the group administrators the opportunity to choose by means of settings issues relating to security (Facebook 2012). If the user selected the group to be open, any user of Facebook can view information in the group and join if interested. If the user selected the group to be closed, other users can see the group, however the posts in the group are not open to non-group users. For a user to become part of a secret group, the group administrator must approve the request to join the group.

In an academic environment the lecturer can experiment using a group and setting the group security level to high. The use of messaging service applications in HEIs is to encourage interaction among students and with their lecturers, although there are mixed evidence in literature in terms of whether students have a preference for messaging services over face-to face contact (Rennie & Morrison 2014). *Facebook Group Chat* enables people to chat while on the move; for that reason it may possibly be effective as an educational supporting tool. In the same way that Facebook users

create groups to discuss and share socially, it can also be used as an educational supporting tool in education.

2.6 Messaging service applications as support for teaching and learning

Teaching is when the lecturer engages with students to practice the level of cognitive thinking needed in order to accomplish the planned outcomes of the module (Biggs & Tang 2007). Teaching theory relates to how students learn when they are being taught and what transpires when learning takes place (Knight, Tait & Yorke 2006). According to Dewey (1916, as cited in Starkey 2014), “the purpose of school is to develop educated individuals”.

Lecturers have the responsibility of teaching and understanding students so that they will be able to identify at risk students and put processes in place to assist them (Biggs & Tang 2007; Fry, Ketteridge & Marshall 2009). Self-evaluation is critical for new lecturers so that they can improve the ways in which they teach (Knight *et al.* 2006). Teaching theory refers to how students learn when being taught and what transpires when learning takes place (Knight *et al.* 2006). Lecturers teaching first year students should consider accommodating both auditory and visual students by using tools that will complement and enhance the learning process. The use of messaging service applications as an educational supporting tool might offer a solution to this requirement. It is important to know that there are different tools provided for users to manage and organise their messaging service applications, which offers flexibility in the way it can be used as a learning tool (Rennie & Morrison 2014).

Assessment is the process whereby students’ performance is audited. In the education environment, assessment is the process where the lecturer measures the student’s progress of learning (Ewan & White 1984). The methods used to assess Generation X students cannot be used successfully for Generation Y and Z because technology changed and is still advancing rapidly. Assessing students in HEIs has significantly changed the old system of teaching and learning; this in turn provides educational opportunities to students and academic staff to enhance their way of teaching (Alant & Casey 2005).

According to Hassim *et al.* (2013), for first year students to cope with university studies, students must be resilient. With a comprehensive support structure, most first year students are likely to succeed with their studies. Assessment of student learning, especially in the first year, is described as pragmatic for the development or formative purposes to inform and strengthen learning (Biggs & Tang 2007; Rust 2002). It is important for lecturers to provide students with feedback after every assessment; this will assist students in measuring their own learning and performing (Race 1995). It is through feedback that students put in more effort to improve their performance and become more committed. Messaging service applications could prove to be valuable as a feedback tool to students.

Blended learning encompasses different teaching and learning practices that combine face-to-face teaching with online resources (Rennie & Morrison 2014). The use of blended learning allows students to learn from different types of modes and to be flexible. Messaging service applications could be considered as an online resource in blended learning.

There is a suggestion that the school environment should link up with the environment at home in terms of warmth, love, understanding and encouragement (Karande & Kulkarni 2005, as cited in Rammala 2009). The researchers acknowledge that the university environment should be welcoming to first year students. There must be a certain level of understanding and support by the university to first year students. In the process of university support, students must learn to adapt to the complex academic environment. The sustainability of first year students' development should be a priority to the university. The use of messaging service applications could provide the support first year students need to adapt to a new academic environment through notifications for both administrative and academic purposes.

Group work is increasingly being used for face-to-face full-time students or on a learning management system (LMS) such as Sakai and Blackboard. Academic staff must be creative with methods that will engage students to partake in what they are being taught (Halic, Lee, Paulus & Spence 2010). Group work has the potential to be effective for student learning especially if tools such as messaging service applications are used. Messaging service applications can ease the sense of isolation that is common among students.

The lecturers should view students as contributors to their own learning and for that reason allow students to participate in the creation of building new knowledge (Rennie & Morrison 2014). Some time ago, teaching at a university required a lecturer to be a master of the content in the prescribed book. But now lecturers find themselves in situations where they have to adapt to the language that the current generation better understands. Students will succeed in the university learning environment if they are taught to learn for the future and use the latest technologies as learning tools, especially because higher education is a competitive environment in South Africa (Robert 2005). Messaging service applications can also be used by students to search for specific content.

Communication has been vastly improved by the advances of social media technologies (Tutty & Klein 2008). The current generation of students depend on their mobile phones to communicate, make booking services, and do online transactions, among others. HEIs should take advantage of using smart phones to support teaching and learning. Most students have smart mobile phones access; it is important to find ways of using mobile phones to enhance learning in higher education. With mobile phones, students are able to learn beyond the scheduled classroom sessions and the lecturer can communicate with students regardless of time and location.

The integration of formal and informal learning through messaging service applications has implications for lecturers because of the analogous nature of the informal learning ecosystem (Cross 2007, as cited in Rennie & Morrison 2014). Lecturers should provide an environment conducive to learning in the classroom during contact sessions, and in virtual learning space by ensuring that students feel their contributions are important and that mistakes are part of learning. Lecturers, through institutional policies, should provide an environment where students learn and feel that they are equal irrespective of gender and skin colour. This is very important because of the diversity of students in HEIs. Teaching in an online environment must be implemented in a manner that allows all students to fully partake freely in all online activities.

With technology advancing at a rapid pace, lecturers need to use the tools that are common in the social context of the day as this determines how people learn (Johnson & Johnson 2004). Lecturers should be fully trained to facilitate in an online

environment so that they are able to create and encourage a good working relationship among students and with their lecturers. HEIs must be flexible to adapt to new trends of online learning tools. We live in a time where the HE environment is changing, a multiplicity of roles is emerging and more is expected from lecturers than ever before (Bitzer 2009). Therefore, higher education lecturers need to frequently attend professional development courses focusing on how to use technology as a tool that will contribute to advanced teaching (Bitzer 2009).

Learning is important to the credibility of any higher education institution. It forms a primary part of any higher education strategy that seeks to maintain and enhance the value of learning. The time spent in the classroom is not enough for lecturers to address students; learning does not have to be limited to the classroom only (Matli & Conradie 2013). With the rapid advancement of technology, online learning tools are becoming more relevant to be used as a measure of supporting learning to the current generation of students.

Twenty-two universities (traditional universities, comprehensive universities and universities of technology) in South Africa have established centres responsible for supporting ICTs in teaching and learning (SAIDE 2007). It is therefore not surprising that most HEIs are utilising the power of online learning as a tool to support students' learning.

2.7 Summary

This chapter reviewed the literature related to technology tools, the background of higher education, the trends of technology use in education, and who the students are in higher education. The review pointed out the benefits and challenges of using technology as an educational supporting tool, with the emphasis on messaging service applications.

The next chapter provides an in-depth discussion on the research design and methodology for this research study.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

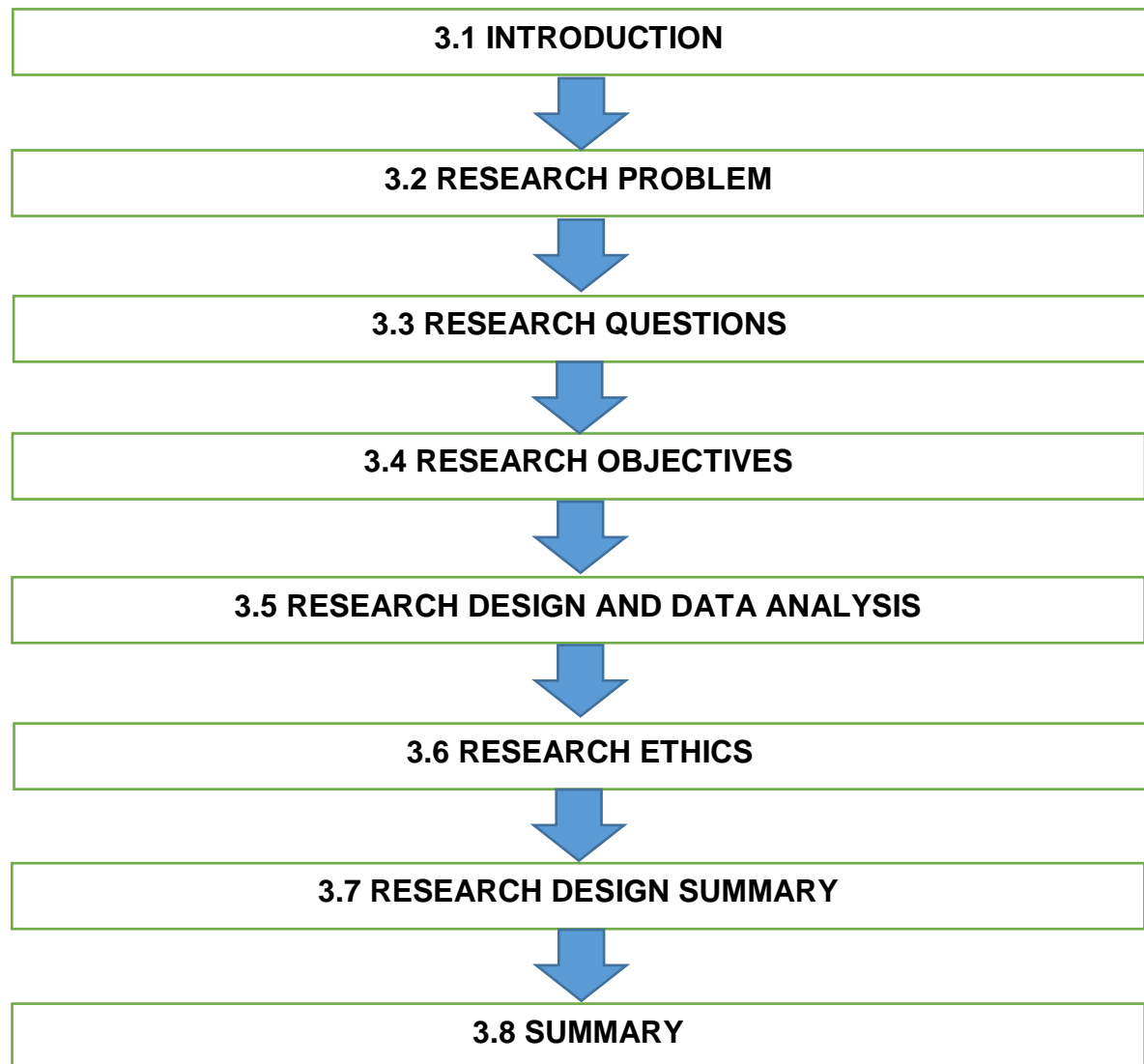


Figure 3.1: Graphical representation of Chapter 3

3.1 Introduction

This chapter starts with a discussion on the research problem, questions and objectives. Next the research design is elaborated on, which includes the research philosophy, research paradigm, research approach, research methodology, research strategy, data collection, sampling and data analysis. Finally, the research ethics are focused on, where after the research design is summarised in table format, and the chapter ends with a summary.

3.2 Research problem

“A good part of the research process deals with obtaining good answers” (Wiersma & Jurs 2009).

It is therefore important for the researcher(s) to have a clear understanding of the research problem.

Due to challenges such as overpopulated classrooms, HEIs need to find innovative ways of using new technologies to support teaching and learning. Most students in South Africa, whether underprivileged or privileged, have mobile phones (Foko 2009) which facilitate messaging service applications. By incorporating messaging service applications into traditional teaching methods, interaction between students and lecturers does not need to be limited to the classroom.

3.3 Research questions

The problem statement is encapsulated in the following primary research question (PRQ):

PRQ: How can the use of messaging service applications play a constructive role as educational supporting tool in HEIs?

The secondary research questions (SRQs) underpinning the study are stated as follows:

SRQ1: Which messaging service applications are most used by students in HEIs?

SRQ2: What are the perceptions of students regarding the use of messaging service applications as an educational supporting tool in HEIs?

SRQ3: What are the perceived benefits of incorporating messaging service applications as an educational supporting tool in HEIs?

SRQ4: What are the challenges of using messaging service applications to support teaching and learning at HEIs?

SRQ5: What model can be proposed to incorporate messaging service applications as an educational supporting tool in teaching and learning at HEIs?

3.4 Research objectives

The primary research objective of this study is to determine how messaging service applications can play a constructive role as an educational supporting tool in HEIs.

The secondary research objectives of this research are:

- i) To determine which messaging service applications are most used by students.
- ii) To determine the perceptions of students regarding the use of messaging service applications as an educational supporting tool in HEIs.
- iii) To determine the benefits of using messaging service applications as an educational supporting tool in HEIs.
- iv) To determine the possible challenges of using messaging service applications to support teaching and learning at HEIs.
- v) To present a model that will incorporate messaging services as an educational supporting tool in teaching and learning at HEIs.

3.5 Research design

Research starts with a research problem and in the process develops sub-questions from the main question being investigated or studied (Cooper & Schindler 2011). Research is furthermore described as a process with numerous phases that the researcher must follow in the process of completing the study (Saunders, Lewis & Thornhill 2003). Research design is viewed as a master plan which lays down the methods and procedures that have to be followed to gather and analyse the needed material (Zikmund & Babin 2010). Zikmund and Babin (2010) state that the advantage of a research design is the framework of the action plan. Research design provides an extensive assumption of what the researcher desires to accomplish (Mouton 1996).

It is often difficult to align the research design questions with the methods of data collection until the research questions have been defined (Gerring 2007). It is important that the researcher, particularly novice researchers, take note of research findings and recommendations by other researchers in the related focus area (Oliver 2010). The findings and recommendations by other researchers help current researchers draw their research questions, compile their research design, and conduct their research in an appropriate manner. According to Ridley (2008), it is imperative for researchers to discuss any relevant theories they anticipate to draw on in order to provide direction for the research. Researchers need to read through available information within the current body of knowledge to broaden their knowledge and understanding of what the research study entails (i.e. conducting a thorough literature review).

Research is the process of finding scientific knowledge through numerous objective methods and processes (Welman *et al.* 2012). Research allows people to not only recognise the research being carried out for the present, but also to assist people in predicting future research (Oliver 2010).

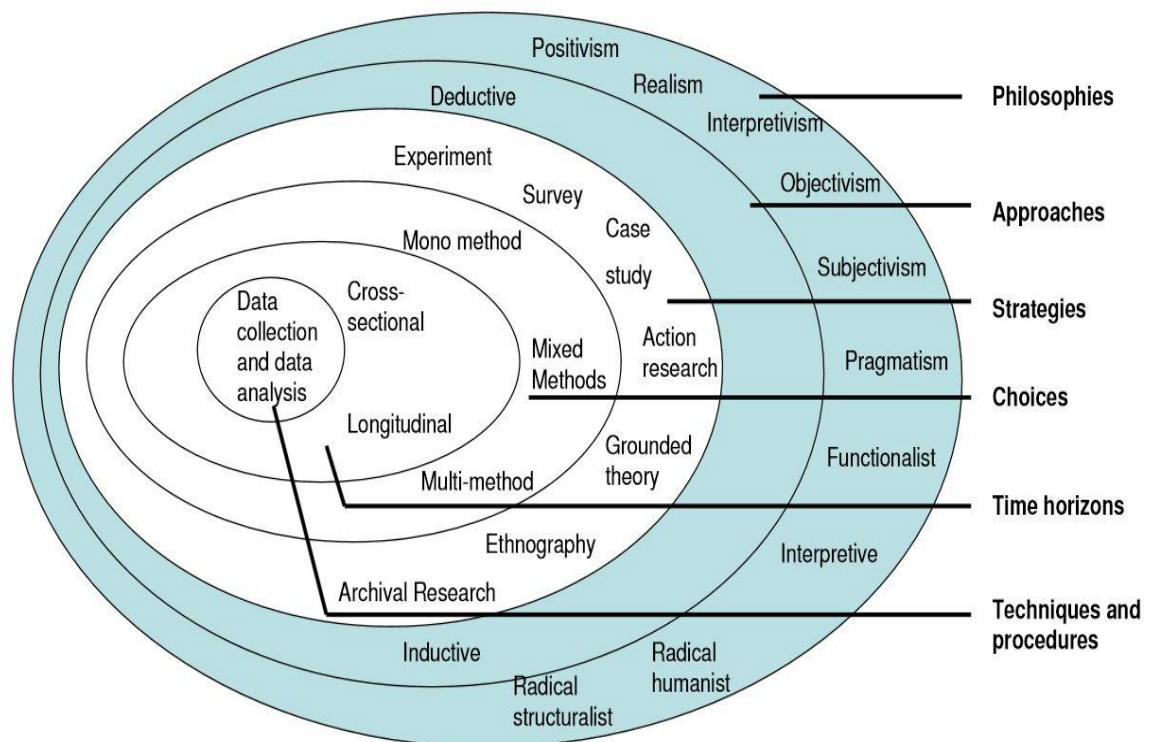


Figure 3.2: Research onion
(Source: Saunders, Lewis & Thornhill 2009)

The concept of the 'research onion' (Figure 3.2) was developed by Saunders, Lewis and Thornhill (2007), who define and describe a set of layers to guide the researcher through developing an effective and acceptable research design for a study. The research onion concept is important because it enables the researcher to clearly show the different layers of the research path and describe them, working from the outer layer towards the centre.

The remainder of the chapter will focus on the research onion concept of Saunders *et al.* (2009).

3.5.1 Research philosophy

According to Baker (2001, as cited in Kulatunga, Amaratunga & Haigh 2007:481), the two common philosophies in research are interpretivism and positivism. Saunders *et al.* (2009) mention the other philosophies used in research, which include subjectivism, objectivism and constructivism, among others (see Figure 3.2).

Maree (2007:54) explains the term **interpretive** as:

“...human life can only be understood from within; social life is a distinctively human product; the human mind is the purposive source of origin of meaning; human behaviour is affected by knowledge of the social world and the social world does not exist independently of human knowledge”.

Interpretivism can therefore be summarised as the influential power that the mind has towards the way that humans behave, as only a human being can understand human life. In a simpler context, living in reality makes one understand the feelings of other human beings.

According to Holden and Lynch (2004), **subjectivism** aims to give details and have a clear understanding of the “what to research” in its context. Holden and Lynch (2004) continue by stating that, in subjectivism, the observer, in most cases being the researcher, carrying out the research interacts with the subject that is being observed. For this study, the researcher observed how students used the *Whatsapp Chat Group* application in textual context (see section 3.5.5). This enabled the researcher to observe the interaction among students and with their lecturer on a messaging service application platform.

The aim of **objectivism** focuses fundamentally on the relationship that exists between society and human beings, where a certain pattern is followed in which human beings behave according to specified laws (Holden & Lynch 2004). With regard to this research study, a pattern of greetings have been followed (see annexure A) because students grew up in a society where it is expected to greet each other when entering into a conversation. When researchers are able to put aside what is of interest to them, the research methodology becomes objective (Holden & Lynch 2004).

Positivism “creates a body of research that can be replicated by other researchers to generate the same results” (Wikipedia 2015). It allows researchers to imitate what already exists in an attempt to affirm the known research findings. In addition, positivism relates to the empirical research, thus, measurable data. Literature consulted by the researcher highlights that Facebook was the most used messaging service application (see section 2.5.5).

According to Knol (2011), **constructivism** indicates in which way humans contribute to the construction of a particular fact of reality. Human beings, either independently or in a group, play a significant role in how a fact is constructed. Interestingly, interpretivism is reliant on constructivism (Goldkuhl 2012). Thus, to some extent the construction of reality works in parallel with interpretation.

Ontology and epistemology, viewed as the two branches or subdivisions of philosophy, contribute in shaping the researcher’s views relating to both qualitative and quantitative research. Undoubtedly, it provides guidance in leading the study on how to attain knowledge. According to Burrell and Morgan (1979, as cited in Holden & Lynch 2004), ontology is linked to the natural surroundings of reality. Epistemology focuses more on the relationship relating to the researcher and the topic (Saunders *et al.* 2007).

3.5.1.1 Ontology

The philosophy of ontology focuses on the authenticity of nature, and needs reflection by researchers on how the world functions (Phillimore & Goodson 2004). Ontology allows researchers to study facts about nature by applying different methods, and in the process reflect on the findings. According to Phillimore and Goodson (2004), objectivism, subjectivism and constructivism are the three

philosophies associated with ontology. Monette, Sullivan and de Jong (2005) are of the opinion that the two main philosophies associated with ontology are constructivism and positivism (see Section 3.5.1). For this study, the ontology adopted is subjectivism.

3.5.1.2 Epistemology

Epistemology is a subdivision of philosophy that focuses on studying the methods and limitations of human knowledge (Wiersma & Jurs 2009). The philosopher focuses on the facts by means of examining the information that is acceptable because of extensive testing and proven results that remain constant (Norris 2005). Positivism and interpretivism are some of the philosophies associated with epistemology (Norris 2005).

For this study, the epistemology adopted is interpretivism in order to understand the importance of the subject (messaging service applications) and the views of the students. This view, expressed by Maree (2007), relates to the researcher having to understand the subject being researched (which is the use of messaging service applications in education) from the student's point of view before generalising the results.

3.5.2 Research paradigm

Expanding further from the discussion on research philosophies related to quantitative and qualitative methods, it is important to elaborate on the researcher's worldview (paradigm) which assists in structuring the research. Paradigm is the progress of scientific practice related to people's assumption and their philosophies involving the world as well as the nature of knowledge; in short, it is about how research is conducted (Collis & Hussey 2003). There are two main research paradigms, also referred to as philosophies, namely the positivist (quantitative) and the interpretive (qualitative) paradigms (Collis & Hussey 2003). The research paradigm is a set of philosophies that offers guidance to help the researcher with which actions to follow (Creswell 2007).

According to Kulatunga, Amaratunga and Haigh (2007), an interpretive paradigm "sought to explain the behaviour of the subject under research...through observable reality".

For this research, the researcher adopted an interpretive paradigm because of the ability to observe the behaviour of students on using Whatsapp textual interaction (see Annexure A) and conducting semi-structured interviews (see Annexure B).

3.5.3 Research approach

Research approach can be either deductive or inductive, and both are important to the development of science and knowledge. This view is supported by Saunders *et al.* (2009) who state that for a good research study, the researcher must adopt one of the two approaches, or both if needed.

3.5.3.1 Deductive research approach

A deductive research approach towards a research study begins with a question and/or statement to be investigated in order to find an answer (Brace 2008). The researcher studies general theories and then tests these theories in the research being carried out (Kothari 2004). Furthermore, a deductive approach constructs the theory from a basis of current existing theories to adopt a research approach to examine that theory (Silverman 2013). This statement is in agreement with the views of Wiles, Crow and Pain (2011), who report that a deductive approach is ideal when the focus of the research study is on determining whether what is observed, is aligned with the expectations based on what has previously been reported.

3.5.3.2 Inductive research approach

An Inductive approach is when the researcher conducts research with an understanding that a theory has to be developed upon conclusion as part of the research (Brace 2008). For an inductive approach, the research starts with observations; thereafter the researcher identifies patterns that emerge from the observations (Beiske 2007). With an inductive approach, there is no prescribed structure entailing how data must be collected (Flick 2011). The researcher draws a parallel with the views of Flick (2011) by using three research strategies (during three phases) (see section 3.5.5) which were not influenced by the nature of the research. Interviews are conducted and literature is examined to support emerging information from the interviews (Flick 2011).

3.5.3.3 Applicable research approach for this research

This research aligns itself with an inductive research approach. The researcher collected data through experimenting with *Whatsapp Group Chat* and proposed a model (see section 4.2.3 and 5.3). Through an inductive approach, findings are derived and then used to develop a theory (Creswell 2009) (or model).

3.5.4 Research methodology

Research method implies that the results of the key section of the research conducted can be described (Zikmund & Babin 2010). Creswell (2003) describes research methodology as a specific method of data collection and analysis. Research can be categorised into two methodologies, namely qualitative or quantitative (Bless, Higson-Smith & Kagee 2006).

3.5.4.1 Qualitative research

The purpose of qualitative research is to understand a dominant phenomenon (Creswell 2005). Qualitative research uses description in the form of words to record resulting findings from a research study (Denzin & Lincoln 2005). The statement by Bryman (2004) is similar to that of Denzin and Lincoln (2005), who state that “qualitative research is a research strategy that usually emphasizes words rather than quantification”.

Qualitative research has a ‘softer character’ of communicating findings than quantifying research results. The ‘softer character’ of describing qualitative research is derived from Leedy (1993) who says that qualitative research is a “warm” methodology approach.

3.5.4.2 Quantitative research

Quantitative research is a practice which is systematic in its nature; it uses numerical data collected from a specific targeted population to generalise the results (Zikmund & Babin 2010; Creswell 2005; Creswell 2003). According to Kruger (2003:18), quantitative research:

“...allow[s] us to summarize vast sources of information and facilitate comparisons across categories and over time”.

The significance of quantitative research is that it affords other researchers to do comparisons of their findings with existing data.

3.5.4.3 Mixed methods research methodology

Qualitative and quantitative research methodology can be combined to take advantage of the strengths of the two-method paradigm (Johnson & Onwuegbuzie 2004). A mixed method research methodology approach, combining quantitative and qualitative research, reduces the respective individual weaknesses and at the same time maximises the combined strengths of the two methodologies. Punch (2005) supports the view of Johnson and Onwuegbuzie (2004) that the combination of both qualitative and quantitative research strengthens the weakness of each other. Multiple methodologies of combining qualitative and quantitative approaches are important because they contribute to providing a better understanding of processes underlying messaging service applications (Adato, Carter & May 2006). The combination of qualitative and quantitative research assists in collaborating results and guarantees that qualitative research results compliment the quantitative research results (Curry, Nembhard & Bradley 2009). Mixed methods research is moderately new in terms of research paradigms and is therefore creating new knowledge by building on both the quantitative and the qualitative approaches (Creswell, Plano Clark, Gutmann & Hanson 2003). Mixed methods research decreases the limitations that are most likely to occur when using a single method design.

For this research, a mixed methods research methodology has been adopted.

3.5.5 Research strategy

The environment of social science study affords a researcher the opportunity of choosing different data collection methods including, but not limited to, experiments, surveys, archival analysis, history and case studies for application of the research (Yin 2009).

A **survey** research strategy is the practice of collecting data by means of asking questions and in the process feedback is recorded (Whiteley 2002).

According to Saunders *et al.* (2009), a **case study** research strategy allows the researcher to ask emerging questions from existing theories. In addition to Saunders

et al. (2009), Yin (1994) states that case study research becomes applicable if it can be researched in an actual situation. Case studies focus on what a researcher wants to investigate from existing theories.

An **experimental** research strategy is a process of investigating the effects of using new ingredients and/or innovative approaches (Wiersma & Jurs 2009). In a simpler context, Wiersma and Jurs (2009) explain experiment as “something [which] is tried to determine the effects”. An experimental research strategy enables the researchers to apply emerging ways of doing things in order to see the impact.

According to Wiersma and Jurs (2009), **action research** strategy “focuses on the solution of day-to-day problems at the local level”. Action research strategy enables the researcher to conduct research on a problem that is affecting a certain population in a specific area. For example, the problems experienced by lecturers at HEIs in rural areas might not be the same as those experienced by lecturers in urban areas in their day-to-day lecturing.

The research strategy adopted for this study is data collection by means of more than one method (interviews, questionnaires, textual interactions), thus mixed-methods.

3.5.6 Sampling

Selecting a sample is a fundamental element of a positivistic study (Collis & Hussey 2003). A sample is made up of some of the members of a population consisting of a predetermined number—the sample size—of randomly selected sampling units from the population (Zikmund & Babin 2010). A population can refer to a body of people or any other collection of items under consideration for research.

Sampling plays an important role in identifying the “what” or “who” that was studied. According to Bless *et al.* (2006), sampling involves a person or object with whom/which to carry out the study. It is important for the researcher to identify relevant methods and techniques that best suit targeted participants. For this study, the messaging service applications represent the “what” and students in higher education represent the “who”.

The two main categories of sampling are probability and non-probability sampling. Probability sampling involves random selection and non-probability does not (Trochim 2006).

Random sampling is the most popular method of probability sampling as each member in the population has an equal chance to be selected. The process is easy and simple, and each participant is selected independent form the others in the population (Explorable.com 2009; Trochim 2006).

“Convenience sampling is a non-probability sampling technique where subjects are selected because of their convenient accessibility and proximity to the researcher” (Explorable.com 2009).

For Phase 1 of this research (self-administered questionnaire), convenience sampling was used to select participants from the population of all undergraduate students (i.e. all students from all disciplines excluding Masters and Doctoral students) at VUT Ekurhuleni to assemble a sample size of 250 participants. In 2013, the researcher lectured a module called *English Development Language* to four groups of students namely (i) Information Technology, (ii) Auditing, (iii) Tourism and (iv) Marketing. It was convenient to involve the students from all four groups into the sample due to the accessibility and proximity of the researcher. The questionnaires were distributed in hard copy all 250 students.

For Phase 2 (semi-structured interview), two sampling techniques were applied. Firstly, convenience sampling was used to select a specific group of students from the population of all undergraduate students at VUT Ekurhuleni. The 90 students in the Information Technology bridging course were selected due to the accessibility and proximity of the researcher who was lecturing this group at the time of the data collection phase. Secondly, random sampling was used with all the students in the IT bridging course to identify a final sample size of 20 participants. A list of all possible units that could be analysed (i.e. a name list of all the IT bridging course students) was compiled and a random number generator used to select the subjects. These subjects were then invited for an interview in a dedicated classroom during scheduled time slots.

For Phase 3, convenience sampling was used to select the only group of *Information System 2 Module 2* students from the population of all undergraduate students at VUT Ekurhuleni in 2014. All 38 the students enrolled for this module as well as their lecturer were part of a *WhatsApp Group Chat*. It was convenient to involve the students from this group as the researcher was also their lecturer.

To compile these three sample groups, the researcher used convenience sampling to identify an HEI in Gauteng (VUT Ekurhuleni campus) which is not overly debilitated by red tape. Part of the motivation for opting to sample from this HEI was due to financial limitations, as this research study was not financed.

3.5.7 Data collection

According to Creswell (1994), data collection involves setting the boundaries for the study, collecting information through observations, interviews, documents and visual material, and establishing the protocol for recording information.

This section discusses the data collection that was conducted for the three phases from 2012 to 2014.

3.5.7.1 Phase 1: Self-administered questionnaire

Data collection using questionnaires is referred to as the process that seeks to obtain written or verbal replies from students to a set of questions on paper (Parahoo 1997). A questionnaire is a list of carefully constructed questions, chosen after considerable testing, with a view to select reliable responses from a chosen sample (Collis & Hussey 2003).

Descriptive research is centred on both open-ended and close-ended questions that must be collected in a way that the frequency at which the central phenomena occur can be described (Creswell 2009). The researcher designed a questionnaire with both open-ended and close-ended questions. The questionnaire consists of three sections. Section A entails the biographic profile of the student which includes gender, age, population group and level of study. In Section B, an effort was made to gain information regarding the current use of messaging service applications by students. Section C of the questionnaire (See Annexure B) is made up of open-ended and close-ended questions. The purpose of the open-ended questions was for

the researcher to gain information on the perceptions of students relating to the use of messaging service applications to support teaching and learning. The data collected through open-ended questions was analysed qualitatively. The close-ended questions were quantified.

In 2012, the researcher distributed 250 questionnaires to undergraduate students VUT Ekurhuleni campus. Of the 250 questionnaires distributed, 212 students returned a completed questionnaire. The researcher found it appropriate to make use of a questionnaire as data collection instrument to obtain feedback from a high number of students within a short period of time. The researcher explained the procedures and guidelines written on the cover of the questionnaire (see Annexure B), which ensured that students gave their informed consent. The participating individuals were assured that their anonymity and privacy will be protected. The students responded to the questionnaire individually.

The questionnaire addresses most of the research objectives that were articulated through the research question and sub-questions in Chapter 1. The manner in which the researcher asked questions directed participants towards providing answers to the research objectives without diverting to insignificant information. The questionnaire design was guided by the literature (Creswell 2003; Leedy & Ormrod 2005), which emphasises the relevance of the research problem, provides the basics for the research questions, and assists in explaining the results of the study.

3.5.7.2 Phase 2: *Semi-structured interviews*

Semi-structured interviews are ideal because of the greater ease of comparative analysis (May 2001). When using semi-structured interviews, the researcher evaluates the information gathered during a critical approach. Participants are also more willing to respond by talking and reacting verbally (Burns 2000; Greeff 2002). It focuses, in an unstructured way, on the participants' perceptions of themselves and their experiences. The students are likely to show their true feelings during the interview. The presence of the interviewer may also positively affect the student's feedback (Bless *et al.* 2006).

Data was collected from a sample group of 20 students enrolled for an Information Technology bridging course in 2013, first semester, at VUT Ekurhuleni. The 20 students were randomly selected from a population group of 90 students in the IT

bridging course, meaning there was no system of selecting students either by gender or age group. The interviews were conducted in a systematic way, which implies the researcher formulated a pre-defined process that was followed during interviews. The researcher followed a certain pattern of asking questions during the interviews. According to Kerlinger and Lee (2000, as cited in Wiersma & Jurs 2009), research is in itself a systematic process. The purpose of the research and the context was clearly explained to the students before commencing with the interviews. The interviews were designed to be 15 to 20 minutes in duration to allow time for probing. The researcher made use of a classroom that was on the same floor where the bridging course students attended most of their classes. Students were interviewed individually. Using interviews as a data collection method allowed the researcher the opportunity to understand the students' constructions of reality regarding the use of messaging service applications as an educational supporting tool. Zikmund and Babin (2010) state that, when conducting interviews, the researcher must make sure that he/she does the recording during data collection by making use of a tape-recorder or writing down the conversation. The purpose of using the tape recorder was explained to the students and permission to record was obtained from the students. Utilising a tape-recorder releases the researcher from taking notes and affords the researcher the opportunity to participate more fully in the conversation. Semi-structured interviews allow the students to respond freely, based on their state of understanding (Flick 2009). The researcher gave students the opportunity to apply their own perceptions to support the qualitative data collection method.

During data collection through conducting interviews (Phase 2), the researcher explained to the students the reasons for the research and how their fair feedback could contribute towards supporting teaching and learning using messaging service applications. Data collected through interviews was analysed qualitatively.

3.5.7.3 Phase 3: *textual interactions*

All the students of the sample group selected (i.e. *Information Systems 2 module 2*) as well as their lecturer were part of the *Whatsapp Chat Group*. Data was collected from textual interactions on a messaging service application over the period of one semester (six months) in 2014. For the chat group, there were no formal instructions or rules to adhere to when communicating via texting. The messaging service application (*Whatsapp Chat Group*) was used to extend communication among

students and with their lecturer. The researcher employed the use of the Whatsapp group messaging application because all the students had access to it. The group application used was administrated by one of the students to make students feel part of the group. At the end of the semester the researcher saved data from the group for analysis at a later stage. In this research, analysis of textual interactions implied that textual data was generated.

Data collected through textual interaction (Phase 3) was interpreted in a qualitative manner.

3.5.7.4 Triangulation

Triangulation refers to the combination of two or more methodologies which include qualitative and quantitative approaches (Fink 2005). According to Denzin (1978, as cited in Wiersma & Jurs 2009):

“...triangulation can take many forms, but its basic feature will be the combination of two or more different research strategies...”

Triangulation enables the researcher to compare information in determining whether or not there is justification for what is being said (Wiersma & Jurs 2009). Triangulation becomes important to assessing the sufficiency of data in a research study because it strengthens the problem of what to believe or not. Fink (2005) uses an example to simplify the term triangulation by stating that it involves the understanding of a single set of data using several research methods. Triangulation is when the researcher, during the process of data collection, uses different methods to gather data (Wiersma & Jurs 2009).

The researcher employed triangulation by collecting data using different data collection methods, which included questionnaires, interviews and textual interaction. According to Fink (2005), it is important to note that there is no single data collection methodology that has more quality or is fundamentally superior to another.

The rationale for collecting data by means a questionnaire was to collect data from participants within a short period of time. Conducting interviews with the participants enabled the researcher to have a better understanding of their opinion of messaging service applications as an educational supporting tool. It is important to highlight that during the interviews, the researcher gained valuable information from participants

which assisted in building new knowledge of the research. The importance of using textual communication is that it encourages interaction between the people involved (Richardson & Swan 2003) and enables the researcher to collect a large amount of information.

3.5.8 Research design summary

Table 3.1 below summarises the research process by indicating the core research design components in the left column, and the research activity in the right column.

Table 3.1: Research design summary

| Research design components | | Proposed method |
|----------------------------|--------------|--|
| Research philosophy | Ontology | Subjectivism |
| | Epistemology | Interpretivism |
| Research paradigm | | Interpretive |
| Research approach | | Deductive |
| Research methodology | | Mixed methods (both qualitative and quantitative) |
| Research strategy | | Mixed-methods strategy |
| Data collection | | Self-administered questionnaires |
| | | Semi-structured interviews |
| | | Textual interactions |
| Sample technique | | Phase 1: Convenience Phase 2: Convenience; random Phase 3: Convenience |
| Population | | All undergraduate students who studied at VUT Ekurhuleni during 2012, 2013 and 2014 respectively |
| Sample and sample size | | Phase 1: 250 undergraduate students from four disciplines Phase 2: 20 Information Technology bridging course students Phase 3: 38 <i>Information Systems 2 Module 2</i> students |

3.6 Data analysis

The researcher adopted two theories for this research, namely Social Presence Theory and Context Awareness Theory. The two theories as well as the reason why the researcher decided to apply theories are discussed below.

3.6.1 Social Presence Theory

Social Presence is a theory suitable to do the comparison of text-based email and voice files attached to the email when giving students their feedback (Keil & Johnson 2002). In a study, Keil and Johnson (2002) found that a number of students favoured text-based email because it enables them to have access to the printed format at a later stage. This research study relates to Rourke, Anderson, Garrison and Archer (2001) who used three types of social presence indicators in a qualitative study, namely (i) interactive, (ii) affective and (iii) cohesive indicators.

Interactive social presence indicators focus on (a) the asking of questions, and (b) participants complimenting each other. Low interactivity may damage the social presence, particularly when feedback is needed (Tu & McIsaac 2002). In an interactive social presence environment, a response is expected by the person posing a question. The following examples confirm that students asked questions and gave compliments using the Whatsapp application:

Question: 8:28AM, 31 Mar -: *Are we still writing the test?*

Compliment: 10:20PM, 9 Apr - : *Thanks **** U such a darling.*

Affective indicators include a sense of humour and the expression of emotions. Swan and Shih (2005) indicate that with affective indicators, the student expresses emotions or feelings in his/her response. Some examples indicating sense of humour or expression of emotion include:

Humour: 7:26PM, 2 Apr -: *Memory full!*

Emotion: 7:35PM, 2 Apr -: *9 chapters including diagrams this is a torture...*

And finally, *cohesive* indicators include using inclusive pronouns and salutations in the group. Cohesive indicators may be easily recognised through vocatives, salutations, and addressing the group as “we”, “us” and “our” in the used medium (Rourke, Anderson, Garrison & Archer 2001). Examples of using inclusive pronouns and salutations include:

Pronoun: 6:52PM, 14 Apr -: *We will use Desmond tutu or C block (those small classes).*

Salutation: 7:51AM, 2 Apr -: *Soares Pai Do Bebe: Good morning!*

3.6.2 Context Awareness Theory

The theory of Context Awareness was established in the 1990s on the basis of the interactions of people and computers with technology (Aryana 2008). Because of the diversified, universal computer environment, there has been greater interest in the theory of Context Awareness (Yilmaz & Erdur 2012).

Dey (2001:3) defines Context Awareness Theory as:

“...any information that can be used to characterise the situation of an entity (entity is a person, place, or object that is considered relevant to the interaction between a user and an application)”.

The researcher found the definition appropriate for this research study in the following manner: part of the data that was analysed (Phase 3) focused on how students communicated on *Whatsapp Group Chat* with one another and also with their lecturer. In addition, students were able to interact irrespective of place and time. Relating to the entities by Dey (2001), person can be referred to as student/lecturer, place refers to the higher education learning environment, and objects refer to the messaging service application. In addition, place may refer to formal or semi-formal contact class sessions (for example group discussions in the library) or to an informally setting (for example in the comfort of the students home), but learning is taking place. Henriksen, Indulska and Rakotonirainy (2002:169) bring a new angle to the definition of Context Awareness Theory:

“...for each participant, they require knowledge about the participant's activities (both current and planned)....”

When aligning the definition of Henriksen *et al.* (2002) to this research study, the information should have the potential to assist the students with what they need to successfully complete whatever current task they are working on.

For example, Student 1 asked: *7:33PM, 2 Apr -: ERD, DFD and USE-CASE... Or it's just the theory???*

Student 2 responded: *7:34PM, 2 Apr -: Everything.*

This example of context awareness, generated from textual interaction between students (Annexure A), shows how the respondent had knowledge of a question

posed by the first student. The timeframe between when the question was asked and when it was answered suggests that the respondent was informed on the contents of the question. Flick (2009) describes analysis of documentary evidence, which is qualitative research, as an approach used to complement the collection of data through ethnography.

3.7 Research ethics

Permission was obtained from the university to conduct this research.

The researcher followed the principle of ethics while collecting data using questionnaires (Phase 1) and interviews (Phase 2). During data collection, the researcher ensured that none of the discussions led to psychological stress for the students. The researcher was committed in making sure that the required data was not falsified during data collection (Creswell 2003). In order to objectify the ethical considerations, the researcher upheld the confidentiality of participants (Burns 2000). The ethical procedures followed during data collection in Phases 1, 2 and 3 are discussed below.

3.7.1 Phase 1

In 2012 the researcher collected data using a questionnaire from undergraduate students at an HEI in Gauteng. The front cover of the questionnaire used (Annexure B) indicated the purpose of collecting data from the students and assured anonymity.

3.7.2 Phase 2

When the researcher collected data through semi-structured interviews, it was clearly stated to the students that the participation is voluntarily and the purpose of the researcher making use of the tape recorder was to assist when transcribing all the information discussed during the interview.

3.7.3 Phase 3

It is important to note that in the reporting of results from the messaging service application used to collect data, i.e. mobile numbers and in some instances names of students, are hidden in the transcript to protect the privacy of the participants.

In conclusion, the researcher made every effort to represent the collected data in such a way that it does not make it easy for any person to trace information back to specific students.

3.8 Summary

In this chapter the researcher discussed the research philosophy, approach, paradigm, methodology, strategy, and environment. An extensive explanation of the data collection methods and sampling were provided, where after the data analysis and theories adopted for this research, have been elaborated on. Finally, the research ethics for the project was considered. The chapter concludes with a summary of the research design process in table form.

CHAPTER 4: RESULTS AND DISCUSSION



Figure 4.1: Graphical representation of Chapter 4

4.1 Introduction

The previous chapter focused on the research design and data analysis of the research study. In this chapter the researcher reports on the results obtained from the data collected during the three phases (see section 3.5.7). The results are interpreted and the researcher explains how the research question was answered in all three phases. The chapter closes with a summary.

4.2 Results, findings and interpretation

4.2.1 Phase 1

The results obtained from the questionnaires were analysed with Microsoft Excel. Primarily, biographical information of participants such as gender, age and race were analysed and descriptive statistics were examined. Findings were derived and conclusions and recommendations were made regarding the use of messaging service applications among university students. In this section, the significant and non-significant findings of the descriptive data analysis on the messaging service applications and HEIs are discussed. The researcher explains the parametric statistical procedures used to test evidence, significance and non-significant variances among and between the selected variables. The findings are presented and interpreted, and summative discussions thereof are provided.

The total sample of respondents (N=212) resulted in an 84.8% response rate of the 250 questionnaires distributed. The focus was on a self-administered questionnaire to collect data. The findings were divided into three sections, namely biographical information (Questionnaire Section A), students' experience with messaging service applications (Questionnaire Section B) and students' perception of messaging service applications (Questionnaire Section C). The biographical information of participants and the descriptive statistics were examined.

i) Questionnaire Section A

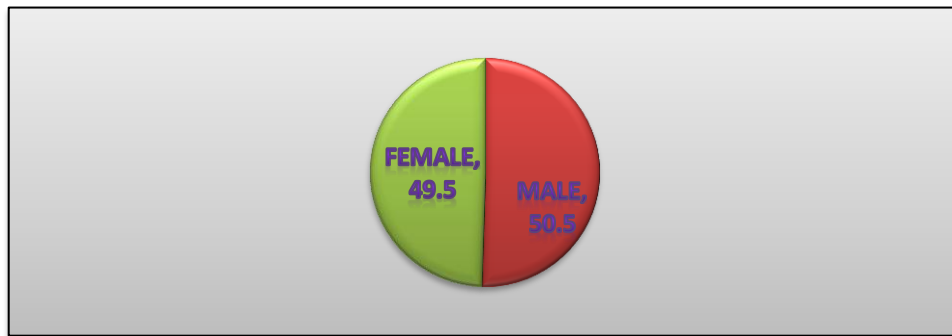


Figure 4.2: Gender distribution

Male = 107; Female = 105 and N total = 212. Figure 4.2 indicates the gender distribution of the participant sample. Out of 212 students, 105 were female (49.5%) and 107 were male (50.5%). The pie chart indicates that the majority of respondents were male.

Table 4.1: Age category

| Age (years) | Frequency | Percentage |
|---------------|-----------|------------|
| Below 18 | 0 | 0 |
| 18 – 20 | 87 | 41 |
| 21 – 23 | 110 | 51.9 |
| 24 – 26 | 11 | 5.2 |
| Older than 26 | 4 | 1.9 |
| Total | 212 | 100 |
| Missing | 38 | 15.2 |

As seen in Table 4.1, the age group *21-23 years* comprised the highest percentage of participants (51.9%), followed by the age group *18-20 years* (41%), and age group *24-26 years* (5.2%) has a higher participant percentage than age group *older than 26 years* (1.9%).

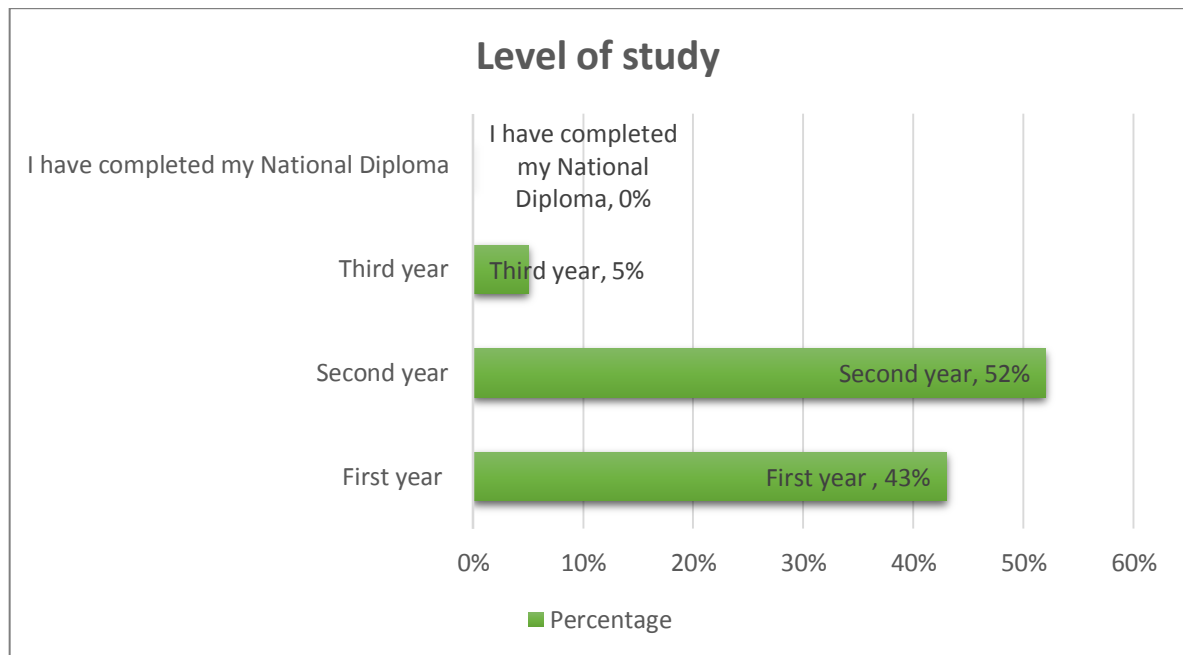


Figure 4.3: Level of study

Figure 4.3 summarises the participants' level of study. Most students who took part in the research in Phase 1 were in their second year of their studies, followed by first year students.

Table 4.2: Population group

| Population group | Frequent | Percentage |
|------------------|----------|------------|
| African | 211 | 99.5 |
| White | 1 | 0.5 |
| Indian | 0 | 0 |
| Coloured | 0 | 0 |
| Other | 0 | 0 |

Table 4.2 summarises the ethnicity of students who took part in the research study. Most participants were African.

ii) Questionnaire section B

This section explores the participants' experience with using messaging service applications.

Question 1: *Do you own a cell phone?*

Table 4.3: Ownership of cell phone

| Do you own a cell phone? | Percentage |
|--------------------------|------------|
| Yes | 96 |
| No | 4 |

There are more than two million students in South Africa enrolled at HEIs with about 95% of them now owning a mobile phone (Nix *et al.* 2008). The research results in Table 4.3 affirm the statement made by Nix *et al.* (2008).

Question 2: *If you answered yes in 1, are you using a smart mobile phone? (Smart phone is a phone with powerful computer functions and Internet access).*

Table 4.4: Student using smart mobile phones

| Smart mobile phone usage | Frequency | Percentage |
|--------------------------|-----------|------------|
| Yes | 166 | 78 |
| No | 46 | 22 |

In 2012, seventy eight percent (78%) of students reported that they are using smart mobile phones compared to twenty two percent (22%) using low-end technology mobile phones. These results indicate that a large number of students at HEIs are in possession of **smart** mobile phones (Table 4.4).

Question 3: Are you accessing messaging service applications on your phone?

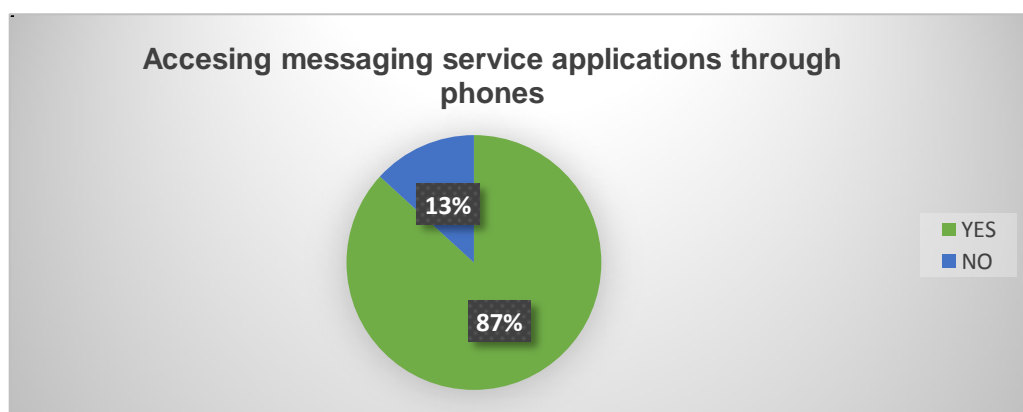


Figure 4.4: Accessing messaging service applications through phones

As indicated in Figure 4.4, a large number of students indicated that they access messaging service applications using their phones. Referring to Table 4.4, only seventy eight percent reported they own smart mobile phones. The researcher

concludes that those who indicated they do not own smart mobile phones but do access messaging service applications through phones might be accessing this through a mobile phone they do not own.

Question 4: *Indicate by (X) which messaging service applications do you have an account with.*

Table 4.5: Usage of messaging service applications per student

| Message Application | Percentage Usage |
|----------------------------|------------------|
| Facebook | 100 |
| MXit | 58 |
| Whatsapp | 26 |
| BlackBerry Messaging (BBM) | 17 |
| Twitter | 15 |
| MySpace | 3 |

Table 4.5 illustrates messaging service application categories and the number of respondents in each category. Most of the respondents (N=212; 100%) are using Facebook, followed by MXit (N=123; 58%). The smallest number of the respondents (N=7; 3%) represented MySpace usage. The above results compliment findings by Rennie and Morrison (2014), who state that Facebook became the most used and popular messaging service application in 2008, and still is. It is therefore not surprising that all participants in Phase 1 and Phase 2 indicated they are using Facebook.

Question 5: How often do you use the messaging service applications?

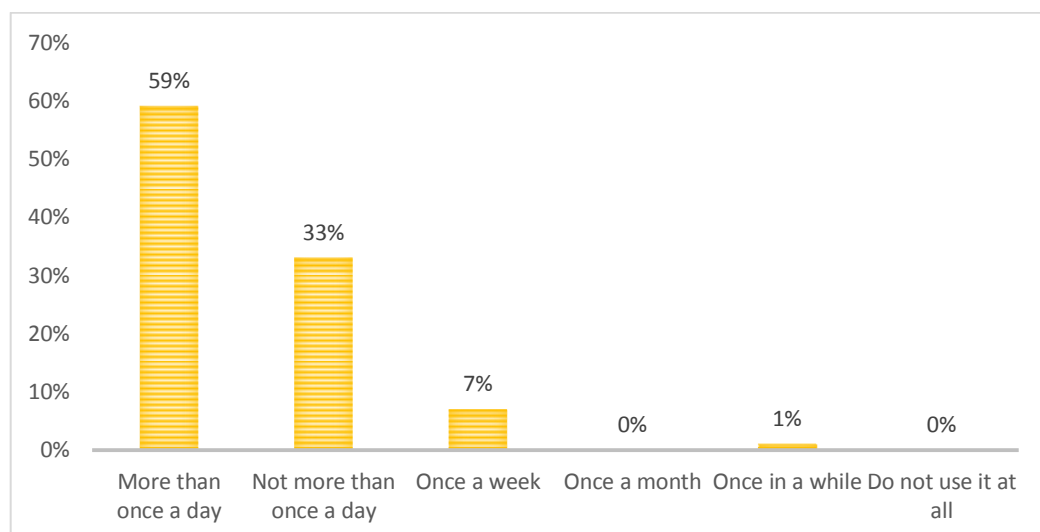


Figure 4.5: using of messaging service applications

Referring to Figure 4.5, fifty nine percent (59%) of students said they actively use messaging service applications more than once a day, followed by thirty three percent (33%) who indicated they do not use the messaging service application more than once a day. Figure 4.5 shows that ninety two percent (92%) of respondents indicated they access messaging service applications once or more per day.

iii) Questionnaire Section C

Table 4.6: Student perceptions of using messaging service applications in HEIs

| | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|--|--------------------------|-----------------|----------------|--------------|-----------------------|
| 6. Messaging service applications can play a role in supporting education in tertiary education. | 16 8% | 6 3% | 24 11% | 94 44% | 72 34% |
| 7. There are benefits of using messaging service application in tertiary education. | 12 6% | 10 5% | 42 20% | 106 49% | 42 20% |
| 8. Messaging service applications can be successfully implemented in tertiary education. | 6 3% | 24 11% | 58 27% | 74 35% | 50 24% |
| 9. Will there be challenges of using messaging service applications in tertiary education? | 18 9% | 28 13% | 56 26% | 66 31% | 44 21% |

As indicated in Table 4.6, students seem to be more positive than negative in considering the use of messaging service applications to support teaching and learning in higher education. Forty four percent (44%) of students agree and thirty four percent (34%) of students strongly agree that messaging service applications can play a role as an educational supporting tool in HEIs.

i) **Comments: Challenges of using messaging service applications to support teaching and learning in tertiary education**

Respondent 1: “You will find that technical errors/network problem happens which will lead to message failure”.

The researcher concurs with the student that the network signal may affect the effectiveness of messaging service applications.

Respondent 12: “...people can’t read, and that will lead to misunderstanding”.

Misunderstanding when people communicate does occur; the probability therefore that people may have a misunderstanding, does exist.

Respondent 153: "...students might take the [sic] advantage by chatting while they are supposed to study".

This statement is the reason and motivation for conducting the research. Since students like online chatting, it could be beneficial for them to use the same platform as an educational supporting tool in a regulated manner.

Respondent 125: "...if you don't have money to buy airtime or subscribe to BIS..."

Internet access is needed to make use of messaging service applications. However, there are *wifi* areas where one can obtain access to the Internet. There are mechanisms in place to increase Internet access to people (see section 2.3.3).

Respondent 17: "...I will have to spend more time on my phone than my books".

Students are already spending time on their mobile phones (see Figure 4.5). Students will not only be using messaging service applications for social purposes only but also for learning.

ii) Comments: The benefits of using messaging service applications to support teaching and learning

The following positive aspects were mentioned by respondents when asked how they felt about the incorporation of messaging service applications as an educational supporting tool.

Respondent 34: "...able to share valuable information and create a friendly environment for learning".

Messaging service applications are already used by students to share information in a social online environment. *Whatsapp Group Chat* (see Annexure A) confirms the view of the student.

Respondent 30: "...broadens teaching methods and resources".

Messaging service applications extend the resources of teaching and educational supporting tools.

Respondent 29: "...applications can be used for further assistance to students from the lecturer even outside the classroom".

The researcher, in his capacity as lecturer, fully agrees with this view. The lecturer will be able to respond to students outside the classroom.

Respondent13: "...it can be used to pass information across from students to lecturer vice-versa [sic]".

The researcher, in his capacity as lecturer, agrees with Respondent 13 because students interact among themselves and with their lecturer, and in the process, information is transferred from one student to another.

iii) Further comments on the research

Respondent 103: "...messaging services should be introduced in institutions but with restriction".

The respondent did not elaborate more on what is meant by restrictions.

Respondent 162: "...messaging services is good in tertiary because every student knows how to use messaging applications".

Respondent 208: "...students wait a long time for certain documents to arrive example printing problems".

With messaging service applications, HEIs have the opportunity of supplying students instantly with information such as test and examination results, among others. Most messaging service applications allow the sender to add an attachment in a form of audio, document, video and location.

Respondent 34: "...should be tried and tested".

4.2.2 Phase 2

The results were obtained from conducting semi-structured interviews analysed through the use of Microsoft Excel. Primarily, biographical information such as the student's age, gender, and high school information were analysed and descriptive

statistics were examined. This enabled the researcher to derive findings, conclusions and recommendations based on the results.

All of the research participants were registered for an IT bridging course known as Boot Camp, which is a semester programme. The interviews were conducted with 20 students—15 male and 5 female.

Table 4.7: Provinces and countries of respondents' secondary school

| Demarcation of high school | Percentage |
|----------------------------|------------|
| Gauteng | 55% |
| Limpopo | 30% |
| Kwazulu-Natal | 5% |
| International | |
| Angola | 10% |

Table 4.7 illustrates that the university has a diverse cohort of students in terms of where the students attended high school. The HEI where the research was carried out is in Gauteng. The highest percentage of participants (55%) completed their high school education in Gauteng, followed by students from Limpopo at 30%, and 5% of the participants indicated that they have completed their high school in Kwazulu-Natal. It is the view of the researcher that people from African countries send their children to further their studies in South African post-school education. There may be various reasons why students from other countries do their post-school education in South Africa. This may include, although not limited to, South Africa being a democratic country, the high standard of education compared to other African countries, and opportunities for students with a South African qualification.

The participants of the university where the research was conducted included students from other countries, for example, ten 10% of the participants indicated that they were from Angola. The HEI is located close to the largest Airport in Africa (OR Tambo Airport), the gateway to Africa.

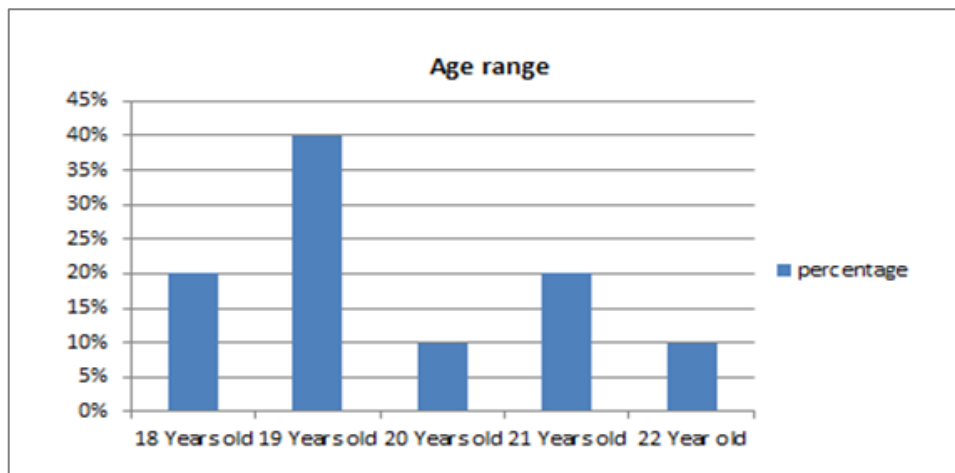


Figure 4.6: Frequency table for age

The ages of the participants ranged from 18 years to 22 years. These are students who enrolled for the first time in higher education. The results are depicted in Figure 4.6. Forty percent (40%) of the participants were 19 years of age—the highest percentage. This was not unanticipated as the researcher expected most students completing high school to be between 18 and 19 years old. The estimation by the researcher is based on the assumption that most students start grade one at the age of 6 or 7; by the time the pupils complete grade 12, they are 18 or 18 years old.

As indicated in Figure 4.6, the two age groups 18 years and 21 years each followed with twenty percent (20%), at second highest on the frequency table. The age group 18 years as the second highest category was not surprising to the researcher, as already outlined in the assumption above with the 19 years group. There may be numerous reasons why some students go to university at the age of 21; some may have repeated grades in basic education; some might have taken a year or more sabbatical after matric; financing their post-school studies might have been a challenge; and some students might have changed study courses.

The lowest ranking age categories were participants in the 20 years and 22 years age categories, with 10 percent (10%) each.

The interview consisted of seven questions which are discussed next.

Interview Question 1: What is your feeling of using messaging services applications to support teaching and learning in higher education institutions?

When considering participants' perceptions on introducing mobile messaging service applications as educational supporting tool for teaching and learning at HEI in South Africa, some of the responses include:

Respondent 1: "...it's actually very helpful because it is always here, it comes in very handy".

Most people access their messaging service applications on their mobile phones rather than on desktop computers (see Figure 4.4).

Respondent 2: "It helps us to share information, if you have a problem u can post a question and others can help you".

The researcher concurs with this view when considering for example Phase 3 (see section 4.2.3)—through the use of *Whatsapp Group Chat* students were able to ask questions and within a short period of time receive feedback. Sharing of information among students is important as this allows students to build their own knowledge from information gained from other people. Students seem to feel they have support from other students and the lecturer through non-classroom communication.

Respondent 6: "I think we will benefit from it, we learn how to communicate".

Through texting, students might be able to improve their communication skills and improve their texting pace, however, often people use 'chat language' and not the normal English standard of writing. Chat language includes abbreviation of words (see section 2.5.4).

Respondent 10: "Some people might find Internet café expensive for them and libraries are too far where they stay".

There are indeed students who cannot afford internet access, and this will exclude them from using messaging service applications as an educational supporting tool.

Respondent 16: "It is a quick way and safes [sic] time. And if you want to make announcement it will be a good way to use Messaging applications, people will get information quick and not come in person".

This student has highlighted the importance of messaging service applications—feedback is quick, and for interaction to take place people do not have to be in the same place. Irrespective of time and place, students will be able to communicate among themselves and with their lecturers.

Respondent 20: “It’s a nice tool to be used in order to enhance our education and a chance to get better marks”.

Interview Question 2: *Roughly how often do you use messaging service applications?*

Most of the students spend their time chatting on various messaging service application platforms. During the interview, almost all of the respondents indicated that they use it regularly. Messaging service applications are convenient for students because it is instant and the cost is lower than alternative instant communication such as voice calling. The regular time spent on messaging service applications indicates that students want to keep in touch and updated with what is happening in the world.

Respondent 11: “Practically every day”.

Respondent 13: “Every 20 minutes I am using it”.

Respondent 17: “I am full time on messaging services”.

Respondent 2: “Now and then I am using them”.

The above comments support the results in Phase 1 (see Figure 4.5) that students use messaging service applications frequently.

Interview Question 3: *What type of mobile phone do you use? Smart mobile phone (has Internet connection with powerful computer functions) or do you use the low-end technology mobile phones (with no Internet and powerful computer functions)?*

From the interview findings, eighty five percent (85%) of participants indicated they are using smart mobile phones, while fifteen percent (15%) use low-end technology mobile phones. With technology rapidly changing and the price of smart phones becoming more affordable, a further upward trend in the use of smart mobile phones seems plausible. Eight five percent (85%) of participants using smart mobile phones

indicated that there is an evolution with users moving from low-end technology mobile phones to smart mobile phones.

This finding also indicates that mobile phones could be further utilised to support teaching and learning, since mobile phones are widely available to students. HEIs need to conduct their own studies on the use of messaging service applications as educational tools, because what may work for students in HEIs located in Gauteng might not be successful for HEI in the Limpopo province due to the different communities surrounding the institutions.

Interview Question 4: *What source do you use to access information on the Internet?*

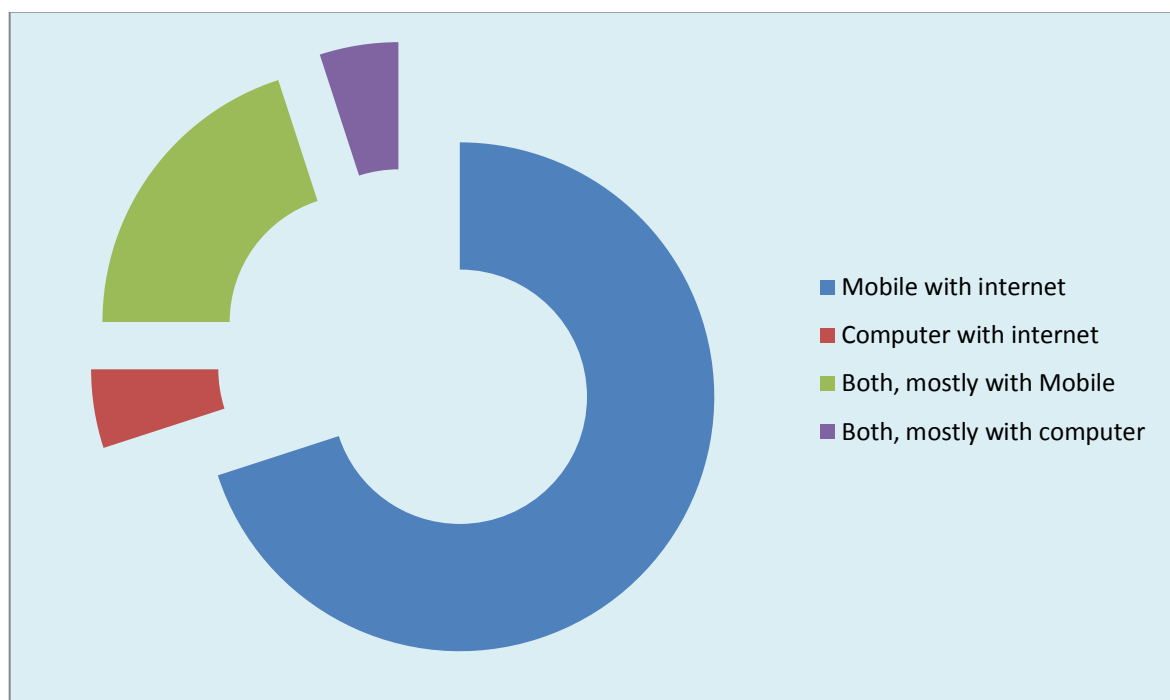


Figure 4.7: Access to the Internet

What was also critical for the researcher was to establish how the participants accessed the Internet to gain information. The results depicted in Figure 4.7 indicate that most participants in the study utilised mobile phones to access Internet. The cost of access to the Internet is a challenge to most organisations and individuals, especially those that cannot afford it financially. As much as students have the privilege of accessing the Internet through *wifi* while on campus, the minute they step off campus, the reality is that they become disadvantaged in terms of technology. Seventy percent (70%) of students indicated they access the Internet through their

mobile phones. This was followed by twenty percent (20%) of participants indicating that they access the Internet using both their mobile phones and computers, however mostly with their mobile phones. Five percent (5%) pointed out they access the Internet from their computers, and five percent (5%) said they access the Internet from both their computers and mobile phones, but mostly from their computers.

The researcher felt it was important to gain knowledge on how students access the Internet. The use of messaging service applications requires a person to have access to Internet to actively make use of the applications. With the above results the researchers draws conclusion that ninety percent (90%) (i.e. 70% plus 20%) of the participants are able to access the Internet from their mobile phones. This is a positive indication because if the use of messaging services is adopted as an educational supporting tool, these students will have access to instant communication. Furthermore, the 5% of students accessing the Internet from their computers will benefit if messaging service applications be used as an educational supporting tool.

Interview Question 5: Name all the messaging service applications you currently use (have an account for).

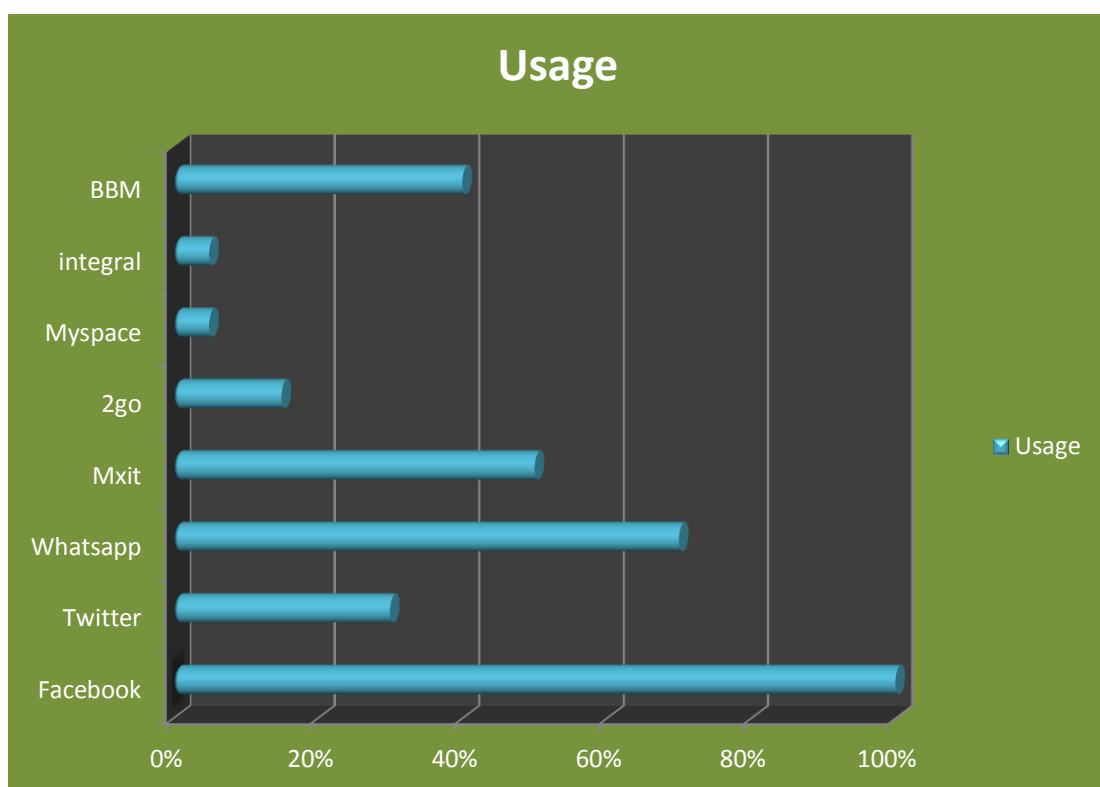


Figure 4.8: Usage of message applications

The purpose of this question was to provide the researcher insight into which messaging service applications are most used by students. From the results obtained (Figure 4.8), participants had an account with more than one messaging service. All the participants were using Facebook. This was to be expected as Facebook is the most used messaging service (see section 2.5.5). Whatsapp was used the second most, with 70%. The researcher selected Whatsapp as an educational supporting tool for this study, not only because all the participants had access to this application, but also because students preferred to use it. MXit was third with 50%, followed by BBM in forth position with 40%. The results indicate that 30% of the participants had an account with Twitter, 15% were using the 2go messaging service, and Instagram and MySpace were the least used by participants with 5% percent each.

Interview Question 6: What do you think might be the challenges of using messaging services applications in higher education institutions?

The researcher explored the challenges that students thought might be encountered when using messaging service applications as an educational supporting tool. The following verbatim quotes highlighted some of the challenges:

Respondent 20: "The security issue, basically".

The researcher shares the same sentiments base on the viewpoint that we cannot be sure who has access to the cloud storage used by messaging service applications providers. The conversations might be deleted from our devices, but there is no guarantee that it is also deleted from the service provider's storage devices. However, this should not discourage people from using the messaging service applications. There is currently a growing interest in big data and more research is needed in that area.

Respondent 11: "Yes, some students will misuse the messaging services and post unlawful comments that will harm other students".

There is always a possibility of some students abusing the messaging service, however the group administrator has the right to remove or add people to the group. It is therefore important to engage with students before using the messaging services to set out the rules.

Respondent 16: “Yes, because not all students have smart phones, unless institutions buy for them”.

It is possible that not all students have smart phones, hence it will be important that the lecturer determines how many students have mobile phones, and which application they prefer to use. There is a current trend where institutions provide students with devices such as tablets when they register. This has a positive impact to the research study as it extends access to smart devices for students.

Respondent 1: “Yes, not everyone will have access to Internet; it might be a problem if we decide to use it academically”.

The researcher acknowledges the possible challenge of access to the Internet. However, there are plans to increase Internet access (see section 2.3.3). As much as students may feel hampered by not having access to Internet connectivity, most universities have *wifi* connectivity and other public areas such as shopping malls provide free *wifi*.

Respondent 2: “No, none that I can think of”.

Respondent 15: “They can be addictive”.

Interview Question 7: Which mobile application (from all) do you think can be used effectively to support education?

Respondent 1: “...I think BBM because its instant, they sent you a message and I see when you have read it and when you replying”.

Respondent 8: “...Facebook because it is easy for everyone”.

Facebook is the most popular messaging service application therefore most people are familiar with using it.

Respondent 10: “...Facebook, when I did high school we used Facebook to comment to an educational programme on television”.

This statement affirms that there are other people who have already taken the advantage of using messaging service applications to interact academically.

In conclusion, it is important to note that the researcher attempted to conduct the interviews in a non-threatening environment for students to respond freely to questions during the interviews.

4.2.3 Phase 3

The messaging service application *Whatsapp Group Chat* was used as an educational supporting tool with the *Information System 2 module 2* in during semester 1 of 2014. Students asked questions and, of great importance, they were able to receive prompt responses. Below are some of the questions asked, generated from the transcript (Annexure A), affirming that messaging service applications do play a role in supporting students' learning.

9:05PM, 31 Mar -: Guys the semester test what are the chapters

9:06PM, 31 Mar -: Check ur study guide

The above shows how quick students were able to get feedback after asking a question. In this instance, the student asking the question was not sure of the chapters to be covered for the test. In less than two minutes the student received valuable feedback.

7:33PM, 2 Apr -: ERD, DFD and USE-CASE... Or it's just the theory???

7:34PM, 2 Apr -: Everything

The student needed clarification and asked the question to the group; within a short period of time the lecturer answered the question. This also assisted other students in the group who might not have been certain of what section of the work to expect in the test.

10:07PM, 9 Apr -: Should enterprise attempt to control all risk? Explain [5]

10:19PM, 9 Apr -: Should enterprises attempt to control all risks? Explain.

There are so many potential risks that it impossible to control all of them. To be cost effective, enterprises should concentrate on the most significant risks. The significance of a risk is determined by (a) its impact on the organisation, and (b) the likelihood of it occurring. Management may choose not to control risks that have a

low impact and a low likelihood of occurrence. Risks that have a high impact and a high likelihood of occurrence must be carefully controlled. The key is identifying and controlling the most material risks in a manner such that the benefits of controlling the risks exceed the costs of the controls

*10:20PM, 9 Apr -: Thanks ***** U such a darling*

*10:21PM, 9 Apr -: U welcome ******

This is a perfect example showing that students assisted one another in the chat group. At “10:07pm” the student asked the question and within a short period of time the question was answered by another student. The student asking the questions thanked the student who assisted.

7:24PM, 3 Apr -: U will get the assignment on Monday to do

7:24PM, 3 Apr -: Ok

In the above transcript extract, the lecturer was able to notify students instantly without having to wait until the next class contact session.

From the transcript, the researchers noticed that ‘chat language’ was widely and frequently used when texting and included a mixture of unstandardised words. In some instances students used abbreviations and shortened Standard English language words, for example:

11:33AM, 2 Apr -: mobile number: LoL

The expression “lol” (“laughing out loud”), was one of the most used in the chat group. The word “lol” is one of the words that have become a household term when texting on social media application platforms.

Another example:

8:08AM, 5 Apr -: mobile number: Guys do we hv cisco 2dy [sic]

The word “hv” instead of “have” was also used a number of times in the transcript. Although the group was for *Information System 2 module 2*, students infrequently chatted about information related to other subjects.

Making use of 'slang' language:

7:51AM, 2 Apr-: mobile number: Ta

The word "Ta" is used instead of the normal way of greetings such as "Hello" or "Hi". The word "Ta" is frequently used by people in the ghetto greeting each other, especially males. The word "Ta" is also used to show gratitude towards a person or thank someone.

4.3 Conclusion

In this chapter, findings were drawn and interpretations were made for all three data collection phases. The chapter provided the reader with the results of what transpired during the three years of data collection. The next chapter will look at the proposed model for this research study.

CHAPTER 5: PROPOSED MODELS OF MESSAGING SERVICE APPLICATIONS IN EDUCATION

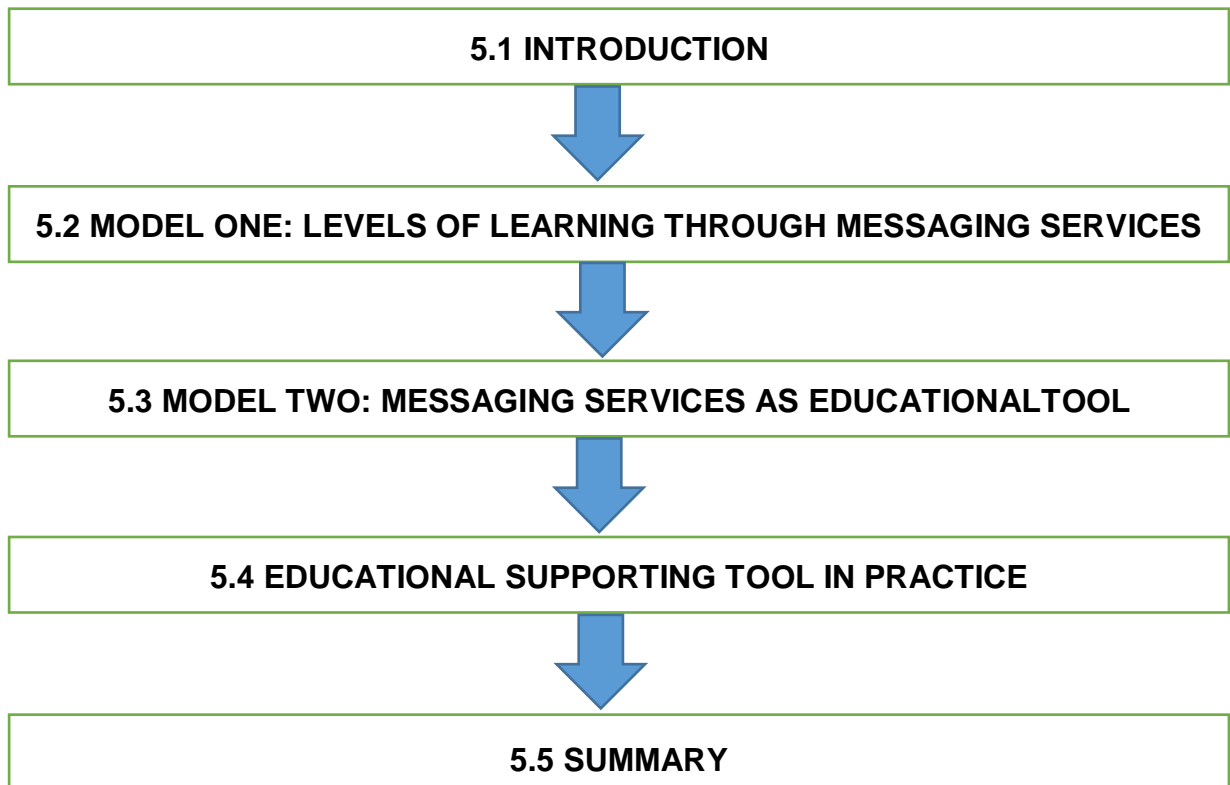


Figure 5.1: Graphical representation of Chapter 5

5.1 Introduction

In this chapter the researcher introduces models that indicate how the use of messaging service applications can play a role as educational supporting tool in HEIs. The development of the proposed model (see section 5.3) is based on the new knowledge that the researcher has gained through this research and also influenced by the model of Seagraves and Boyd (1996) (see section 5.2). The proposed model takes a bottom-up approach, followed by an analysis. In terms of giving meaning to and conclusions on the proposed model, interpretations are applied to both models. This chapter also presents a graphical representation of the proposed educational tool model.

According to Asher (1983):

“We all employ models by which we operate our world. Our models are our conceptual understanding of the parts important to us...”

Models are of significance as they provide a direction to be followed to accomplish a certain task. The researcher concurs with Asher (1983) who believes that as human beings, we often follow a certain traditional trend in performing routine activities. The trends people use to function are models influenced by a specific community. Similarly, technological models in education represent practices that may assist the educational system to benefit from using technology to support learning.

5.2 Model One: Levels of learning through messaging services

Table 5.1 proposes three different levels on which students learn through the use of messaging service applications. The table provides a clear indication of how students make use of the messaging services applications they mostly use for social purposes, as a supporting tool in education.

Table 5.1: Learning for, at, and through rubric
(Source: Seagraves & Boyd 1996)

| Type | Explanation | Example |
|--|--|---|
| Learning for the future | This prepares students for the future by using technology to interact. Messaging service applications in education may improve the communication and writing skills of students. | 8:16AM, 16 Apr-: NB: JAVA TEST IS CANCELLED, WE ARE WRITING WHEN WE REOPEN 8:16AM, 16 Apr-: Yepppy |
| Learning in a virtual environment | Allows students to interact with one another in an online environment. | 10:15AM, 15 Apr-: Are u ppl still coming? 10:16AM, 15 Apr-: Yes Sir 10:15AM, 15 Apr-: Yes sir 10:16AM, 15 Apr-: I am C block. |
| Learning through messaging service applications | Learning takes place through the use of messaging service applications that enable students to have engagement among themselves and with their lecturer. | 10:05PM, 9 Apr -: Can someone help me with the answer No.6 question 3 10:07PM, 9 Apr -: Should enterprise attempt to control all risk? Explain [5] 10:12PM, 9 Apr -: The answer is No 10:16PM, 9 Apr -: Explain There are so many potential risks that it impossible to control all of them. To be cost effective, enterprises should concentrate on the most significant risks... 10:20PM, 9 Apr -: Thanks ***** U such a darling |

Learning for the future: This enables students to make use of electronic communication tools such as messaging service applications. In the process, it may improve students' typing skills and enables students to gain knowledge on using messaging services. The future of technology in HEIs is unpredictable mainly because of technology that continuously changes and advances. The example from Table 5.1 affirms that messaging service applications can be used beyond social purpose, as an educational supporting tool.

Learning in a virtual environment: The role of messaging service applications allows students to interact in an online environment and within a short space of time due to the instant nature of these services. Students do not have to be in a classroom to learn and interact among themselves and with their lecturers. Therefore, the nature of a virtual environment allows students to communicate successfully without physically being in the same place.

Learning through messaging service applications: Students learn through making use of messaging service applications. Students are able to interact and share their knowledge through messaging service platforms. Thus, students in a chat group gain new knowledge through interactions with the group members and lecturer(s).

5.3 Proposed Model Two: Messaging services as educational tool

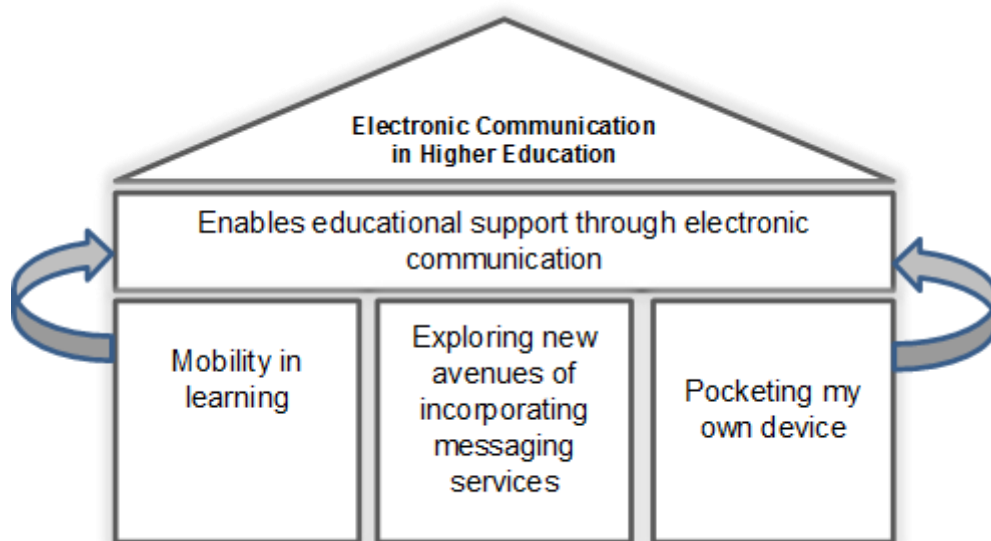


Figure 5.2: Proposed model for the use of messaging services applications as educational supporting tool in HEIs

The researcher proposes the model indicated in Figure 5.2, which facilitates a bottom-up approach and indicates how messaging service applications can play a role as educational supporting tool in HEIs.

5.3.1 Bottom layer of model

Mobility in learning: mobility in learning is the ability of a student to effectively learn and not be affected by movement. The use of mobile phones is one of the most exciting innovations in the 21st century. It allows students to access information online and because mobile phones are portable, students can take them everywhere they go. Mobile phones offer users a new type of computer-mediated communication (Ling 2008). Electronic learning through mobile phones allows students to gain access to learning irrespective of place and time.

Before the emergence of smart mobile devices, low-end technology mobile phones were utilised as an educational supporting tool by HEIs. A research study conducted by Nix *et al.* (2008) showed how one of the HEIs in Gauteng in 2002 successfully used SMS's to communicate with students because these students, who were mostly teachers from rural schools, had access to low-end technology mobile phones. The mobility of mobile phones allowed the students access to communication from the HEI without them being positioned full-time at the university.

The use of mobile phones enables students to interact with learning material and HEI stakeholders in a flexible way because the users are free to move while using the platform. This freedom of movement while using mobile devices provides an opportunity to HEIs to find ways of integrating mobile devices into teaching and learning processes at academic institutions.

Exploring new avenues of messaging service applications: Higher education students spend most of their time using electronic communication media, which includes online media, especially messaging service applications. This generation of students, described as the Generation Y (Schroer 2013), currently in HEIs enjoys online chatting through various messaging service platforms. One major benefit to HEIs is that it is not necessary to train students in the use of messaging service applications as they are already using these platforms and services for social purposes. For the few 'digital strangers', training will however be needed.

Pocketing my own device: The concept of '*pocketing my own device*' presents an ideal opportunity to change the role of lecturers in higher education. The researcher noted that students are always in possession of their smart devices. Smart mobile devices are portable and allow the user computer functionality and Internet access in a convenient way. The ease of smart mobile device access enables users to use messaging service applications anytime and anywhere it suites them. Technology has become part of our day-to-day activities; if not all then most students will be bringing their own devices such as iPads, laptops, and smart phones to the classroom. These devices have the ability to support collaboration among fellow students and with their lecturers.

5.3.2 Middle layer of model

The incorporation of available technological tools has the potential to contribute towards educational support in HEIs. This means finding innovative ways to integrate electronic communication tools in supporting teaching and learning. The middle layer of the model focuses on finding common ground for a platform that enables educational support.

5.3.3 Top level of model

It is important to filter what is in the middle layer, to feed into the top layer of the model. In the top layer the focus is on finding a single faceted route to support electronic and online communication in HEIs, and subsequently leads to HEIs establishing controls that will ease the monitoring and assess the impact of using electronic communication tools.

Although electronic communication tools such as messaging service applications have the potential to be used as an educational supporting tool, there are also challenges that need to be addressed. Some of the critical challenges include the cost of Internet connectivity and accessibility of smart devices to students (see section 4.2.2). A mobile device policy management tool, which is a framework for the implementation of standards and procedures, may contribute to the success of using messaging service applications in HEIs if the environment and infrastructure support e-communication.

5.4 Educational supporting tool in practice

In this section the researcher demonstrates how messaging service applications can play a role as an educational supporting tool.

It is important to have controls in place that will monitor the implementation and monitoring of using messaging service applications in HEIs. What must be prioritised is for the lecturer in the classroom to assess how many of the students have access to the proposed tool. The lecturer needs to investigate what tool is viable for the students. The benefit of using what the students are already familiar with is that no training is required. It is important for the lecturer to make students part of the process by not only selecting what to use, but also considering the students' views on what tool to select. This will let the students feel valued and their opinions respected.

It is suggested that ground rules be discussed; this includes encouraging students not to use offending words against other students. Based on the findings from this research study (see Figure 4.2 and Table 4.7), HEIs in South Africa are diverse. What might be offensive to one student might not be invasive to another student. The lecturer should maintain a distance (virtually) so that students first engage among themselves. For example, one student asked a question and the response was provided by other students in the group (see Annexure A).

One important aspect when using messaging service applications as educational supporting tool in the classroom is to allow students to take the lead. Lecturers are faced with teaching various modules while at the same time furthering their own studies and delivering research outputs. The perception might be created that using controls such as messaging service applications will add to the lecturers' existing responsibilities. A possible solution is to assign a student to create and administer the selected messaging service application. This initiative will contribute to ensuring the tool is centred on the students and not on the lecturer.

The research study focused on textual interaction in the form of *Whatsapp Group Chat* (see Annexure A). There were no formal instructions and restrictions on how and when to use the service platform. This allowed students to text and interact freely in the group chat. Students were texting not only information related to the

Information Systems module, but also information related to other course modules (see Annexure A). In addition, it was interesting to observe the level and extent of students making use of and understanding 'chat language'.

5.5 Summary

In this chapter the researcher introduced a model supported by a discussion on what the researcher has learned throughout the research and literature. The model demonstrates how messaging service applications can be used to support teaching and learning in HEIs. In addition, the importance of allowing students to feel part of the process was discussed. This was followed by a discussion on the use of messaging service applications in HEIs in practice. The next chapter will focus on the findings, recommendations, limitations, and conclusions of the study.

CHAPTER 6: CONCLUSION, RECOMMENDATIONS AND LIMITATIONS

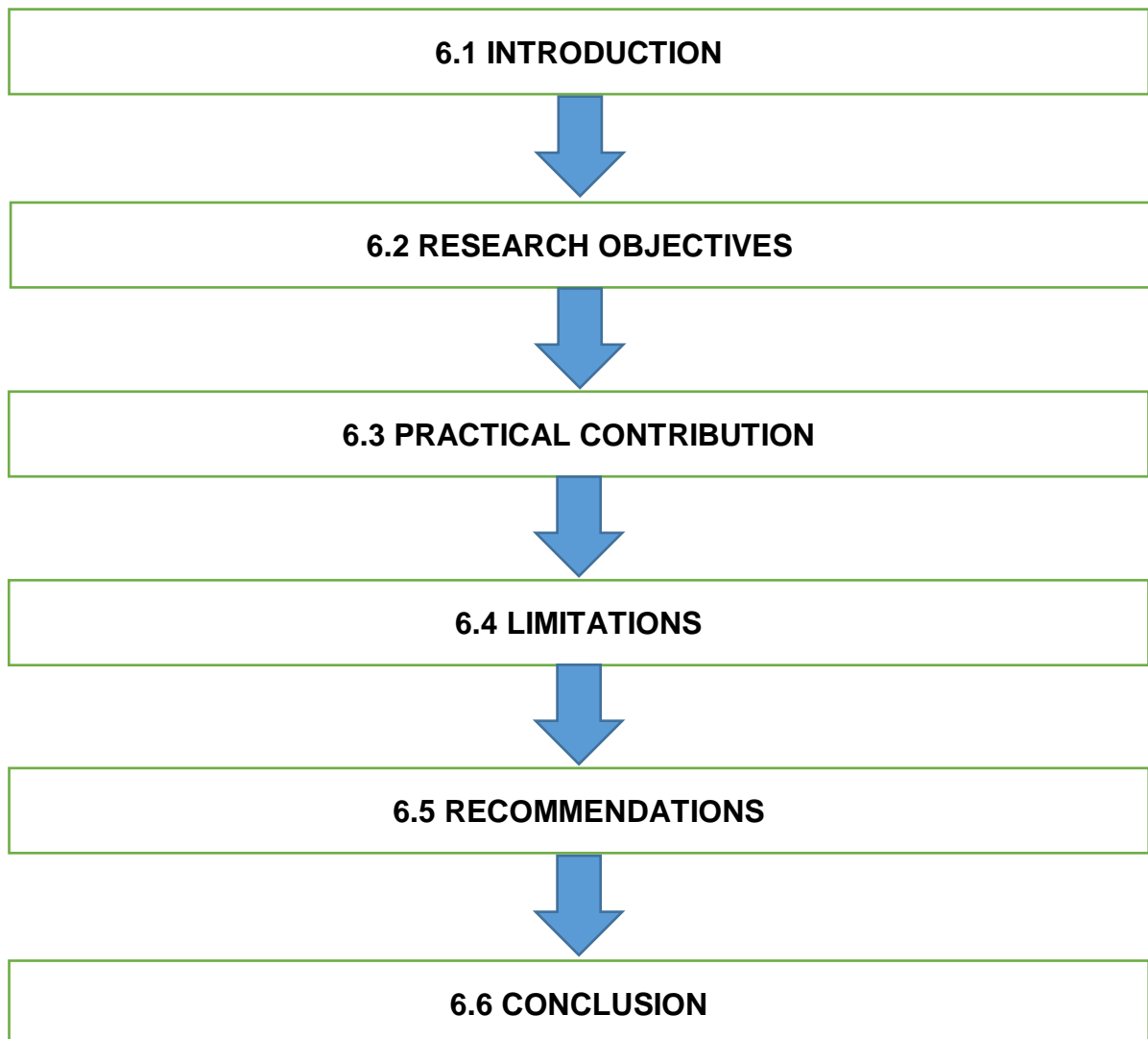


Figure 6.1: Graphical representation of Chapter 6

6.1 Introduction

As stated throughout the dissertation, the purpose of the research is to determine if the use of messaging service applications can play a constructive role as educational supporting tool at HEIs in South Africa. Chapter 1 discussed the research objectives, research questions, purpose and necessity of the research, significance of the research, research methodology that was followed, and research ethics.

In Chapter 2, the researcher conducted a literature review to provide the reader with an overview of the main concepts of the research. The literature firstly provided an

overview of the higher education learning environment in general, followed by HEIs in South Africa, including where the research was carried out. Next, literature related to technology in education was discussed, followed by students in HEIs, where after messaging service applications were addressed, in which the researcher provided rich literature for the reader to have a good basic understanding of messaging service platforms.

In Chapter 3 the researcher discussed the research methodology that was followed to conduct the research. A description of the research environment was provided, followed by the research approach, research paradigm, theories adopted, data collection methods, and data analysis techniques. This was followed by a description of the research ethics.

In Chapter 4, the research findings were discussed and an interpretation was provided from the results obtained in Phase 1 (self-administrated questionnaire in 2012), Phase 2 (interviews in 2013), and Phase 3 (*Whatsapp Group Chat* in 2014).

Chapter 5 proposed a model on the use of messaging services applications as an educational supporting tool in HEIs. The model was discussed and with findings from the research study. The chapter further provided a framework for using messaging service application in practice.

The interest in this topic relating to messaging service applications started with the researcher observing how students are spending most of their time visiting a variety of messaging service platforms for social purposes whereas they should be using the time to study and learn. Research conducted by various researchers indicates that many students need educational support to prepare them for higher education ((Walton 2009; DHET 2013, Sirvanci 2004). The rationale for having conducted this research is to determine how messaging service applications can play a constructive role as an educational supporting tool in HEIs.

6.2 Research Objectives

6.2.1 Primary objective

Primary research objective: To determine how messaging service applications can play a constructive role as an educational supporting tool in HEIs.

Recent research conducted by Grosch (2013), Smith, Salaway and Caruso (2009), and Nix *et al.* (2008) validate that messaging service applications, i.e. social media platforms, play a role in supporting education. The findings by these researchers affirm that this research is relevant and can contribute to constructive teaching and learning at HEIs (see annexure A).

In Phase 1, the researcher collected data by means of questionnaires from undergraduate students registered at a selected HEI in South Africa. Most of the participants were positive about using messaging services, especially since they confirmed that they spend most of their time visiting social platforms. Based on the results of the study, a large number of students agreed that messaging service applications do have a role to play as an educational supporting tool during their studies at HEIs (see section 4.2.1).

In Phase 2, the researcher collected data through interviews from students who were registered for an Information Technology bridging course (Boot Camp). The researcher used a tape recorder during the interviews with the students' permission. The findings indicate that students were more than willing to use messaging service applications as educational supporting tool and gave valuable supporting information on how the messaging service applications can play a supporting teaching and learning role in HEIs (see section 4.2.2).

In Phase 3, the researcher collected data from one group of IT students through *Whatsapp Group Chat*, one of the messaging service applications. Looking at the transcripts, there is proof that students were able to post questions to the group and within a short period of time receive feedback from fellow group members (see Annexure A). Reflecting on the results from the analysis of the textual interaction, it is evident that students benefitted constructively from the chat group.

6.2.2 Secondary objectives

6.2.2.1 Secondary objective 1: To determine which messaging service applications are most used by students

Research carried out by researchers such as Reich *et al.* (2012) gives an indication that messaging service applications are growing in popularity. There is much speculation about who uses these platforms, how frequently, and for what purposes.

Statistical findings by Duff (2013) validate that Facebook is the most used social media application in the world. Duff (2013) reports that Facebook has 9.4 million users in South Africa and, interestingly, eighty seven percent (87%) of these users access Facebook from their mobile phones. The second most used application is MXit with 7.4 million users. The outcomes of this research study concur with the findings of Duff (2013) that Facebook is the most used messaging service application by students, followed by MXit (see section 4.2.1).

Table 4.5 illustrates categories of the number of messaging service applications used by respondents. All of the respondents (n=212; 100%) indicated that they are using Facebook, followed by MXit with 58% (n=123), while the smallest number of respondents (3%) said they are using MySpace. The results in section 4.2.2 validate the findings that Facebook is the most used messaging service application.

In Phase 2, the researcher determined which mobile phone messaging service applications are popular among students. Hundred percent (100%) of the students indicated that they use Facebook on their mobile phones; Whatsapp is in second position and MXit is third (see section 4.2.2). Students are also beginning to use emerging messaging service applications such as the 2go application. This indicates the growth and new developments in messaging service applications worldwide.

When comparing the results of data collected in Phase 1 (in 2012) with Phase 2 (in 2013), it can be noted that Facebook has been, and still is, leading as most popular messaging service application. Facebook seems to have maintained its popularity from 2012 to 2013 as most used messaging service application. In Phase one, **MXit** was the second most used, and in Phase 2, **Whatsapp** was the second most used. This gives an indication that Whatsapp has gained more popularity with students from 2012 to 2013.

For Phase 3, the researcher employed the use of the Whatsapp group messaging application because all the students had access to it. *Whatsapp Group Chat* was administrated by one of the students to make students feel part of the group.

6.2.2.2 Secondary objective 2: To determine the perceptions of students regarding the use of messaging service applications as an educational supporting tool in HEIs

Based on the questionnaire opinions and responses obtained from the participants in Phase 1, students are already using messaging service applications for social purposes. Table 4.5 shows that the participants seemed to be optimistic about the adoption of messaging service applications as an educational supporting tool.

In Phase 2, the participants were mostly positive about using messaging service applications as a tool to support teaching and learning since students are already using it for social purposes and sometimes for academic purpose with their peers.

Results obtained from data collected during Phase 3 have led the researcher to conclude that students have a positive perception of using messaging service applications as an educational supporting tool in HEIs. This is based on the observation that there was sufficient student participation in the *Whatsapp Group Chat* intervention and the enthusiasm students showed when the lecturer proposed the use of messaging service application for the class.

6.2.2.3 Secondary objective 3: To determine the benefits of using messaging service applications as an educational supporting tool in HEIs

Research carried out by Traxler (2009), Winters (2006), Nix *et al.* (2008), and Duncan-Howell and Lee (2007) further validates that there are benefits of using messaging service applications in HEIs. Winters (2006) reports that students can easily access the messaging service applications on their mobile phones, and messaging service applications play a critical role in “supporting learning in informal settings”. Nix *et al.* (2008) support this assertion and state that “95 percent of students in HEIs education own mobile phones”. According to Duncan-Howell and Lee (2007), there is no better tool than mobile phone applications to support teaching because it is readily available to students, and messaging service applications have a lower communication cost than other communication channels. Duncan-Howell and Lee (2007) further support the research by Nix *et al.* (2008) that the current generation of students in HEIs depend on their mobile phones to run their daily activities. According to Traxler (2009), messaging service applications are one of the new ways that supports student collaborative learning. In addition, messaging service

applications may be used to extend communications outside formal settings effectively (Gitau, Marsden & Donner 2010).

In Phase 1, the researcher provided space for students on the questionnaire to indicate the benefits they think they would obtain by using messaging service applications to support teaching. One of the benefits mentioned by Respondent 34 is:

“Students and lecturers will be able to share information and create a friendly environment for learning”.

In his capacity as lecturer, the researcher concurs with this view. Communication among students and with their lecturers should not be confined to formal contact sessions in lecture rooms. Most students take time to make friends with their class mates as they are meeting for the first time in a cross-cultural environment; this leads to some students finding it intimidating to ask questions and participate in the classroom with the lecturers.

Messaging service applications can be used as tools that support teaching resources and methods. The use of messaging service applications in education brings innovative ways of extending methods of learning. Given the findings from this study as well as other research reports, the use of messaging service applications as an educational teaching and learning supporting tool should be considered by HEIs to align new technologies with new ways of learning.

In Phase 2, the researcher asked students what some of the benefits of using mobile messaging service applications as an educational supporting tool would be to them. The response was that these service applications are helpful, handy and assists in sharing information.

HEIs should take advantage of most students accessing messaging service applications on their mobile phones (see section 4.2.1). The easy access of mobile phones affords students mobility of use anywhere and everywhere. Using messaging service applications will be a quick way to communicate messages to the students so that the lecturer does not have to wait for class contact sessions to address students, especially for urgent announcements.

Based on the textual interaction analysis, there is significant evidence that students have benefited from using *Whatsapp Group Chat* during Phase 3. Learning took place and students displayed similar emotions as in a class contact session although the textual emotions were expressed differently than during class contact sessions.

6.2.2.4 Secondary objective 4: To determine the challenges of using messaging service applications to support teaching and learning in HEIs

As much as there are great benefits of using messaging service applications in supporting education, there are also challenges (Kantore 2011). Messaging service application users come from both privileged and underprivileged backgrounds. Access to applications are limited for students from a poor background who use affordable mobile phones, while students from privileged backgrounds are able to access more applications because they can afford expensive mobile phones and Internet connectivity (Gauteng ICT Summit 2012). The Gauteng ICT Summit (2012) acknowledged the challenge of a lack of Internet connection in the province; hence the Gauteng Department of Finance has a goal to provide 100% broadband access to its citizens by 2020. This validates findings from this research study that it is expensive for some underprivileged students to access the Internet.

In Phase 2, challenges pointed out by students include security issues and possible

Based on the textual interaction analysis in Phase 3, the researcher acknowledges that there were some challenges.

The normal standard of English writing was compromised by the use of abbreviations and acronyms; also, capital letters for names have been omitted frequently.

Students could not participate for a specific period of time because of non-functionality (for example 'jamming' of the phone, not the application, and no signal).

Another general challenge was 'low batteries' of mobile phones and no chargers closeby; this was relevant especially because students seem to spend most of their time visiting messaging service platforms, which contributes to running down mobile phone batteries fast.

6.2.2.5 Secondary objective 5: To present a model that will incorporate messaging services as an educational supporting tool in teaching and learning in HEIs

In the previous chapter, the researcher introduced a model that is novel and relevant to this research (see section 5.2), adopted from Seagraves and Boyd (1996).

Learning through messaging service applications: *Whatsapp Group Chat* was used to collect data for this research while simultaneously affirming that students can learn constructively using messaging service application platforms. Students were able to post questions and within a short period of time fellow group members responded (see section 4.2.3). The instant nature of Whatsapp enables fast responses. Furthermore, texting is 'fashionable' for the current generation to such an extent that they are referred to as "generation text" by Thurlow (2003) (see section 2.3.2).

Learning in a virtual environment: According to Kekwaletswe (2007), virtual environments support 'contact session learning' in HEIs, thus learning takes place in an informal and semi-formal context in addition to a formal setting (see section 2.2.3).

The analysis of the model (see section 5.2) together with literature consulted and the findings derived (see section 4.2.1, 4.2.2 and 4.2.3), has led to the following conclusions (see Figure 5.2):

Mobility in learning

- Seventy percent of students during semi-structured interviews indicated that they make use of mobile phones to access the Internet (see section 4.2.2).
- From data collected through semi-structured interviews, eighty-five percent (85%) specified that they are using smart mobile phones while fifteen percent (15%) were still using low-end technology mobile phones (see section 4.2.2).
- The use of smart phones is one of the most exciting innovations in the 21st century (Ling 2008) (see section 2.2.1). HEIs are becoming innovative and use smart phones to reach out to students. The researcher used *Whatsapp Chat Group* as a supporting tool because all students had access to the application, and the application is easy accessible (see section 4.2.3).

- M-Learning plays a role in supporting semi-formal and informal learning settings (Winters 2006) (see section 2.3.1). The researcher (lecturer) was able to trace and notify students about related information (see Annexure A).
- There are both opportunities and challenges when employing mobile technology for learning (Nicholson, Macleod & Haywood 2005) (see section 2.3.1). Challenges include security related issues and the reality that not every student can afford Internet access (see section 4.2.2). However, there are initiatives to enable Internet access for as many people as possible, for example the NDP government document addressing corporate companies to assist with the challenge of providing Internet access widely (see section 2.3.3).

Exploring new avenues of incorporating messaging services

- HEIs should take advantage of messaging service applications (Rennie & Morrison 2014). Schwarz (2011) reports that students prefer communicating via texting to verbal interaction (see section 2.2.1).
- There is an increased use of electronic technology to reorganise learning (Siemens 2004) (see section 2.3.1).
- The availability and accessibility of mobile phones enable access to countless applications which may be innovatively incorporated as a learning supporting tool (Dede 2010; Fonseca, Marti, Redindo, Navarro & Sancec 2013) (see section 2.2.1).

Pocketing my own device

- With mobile phones, students among themselves and with their lecturers are able to transfer knowledge and information informally outside the classroom (see section 4.2.1).
- Carrying a smart device in the pocket is likened to carrying a flexible computer in the pocket (see section 1.1).
- Prompt response time—after posting a question on a messaging service platform, fellow group members are able to instantly read and respond accordingly (see section 4.2.3).

Procedures and standards

The third layer of the proposed model (see section 5.3) is where controls for electronic communications in HE are implemented. It is important for every tool adopted to have documented procedures and standards.

- There is little literature available on procedures and standards of using electronic communication such as messaging services in the HE sector. Challenges to implement electronic communication in HE include unreliable IT infrastructure and the high cost of Internet connectivity (see section 2.3.1). On the brighter side, HE enables exploration, researching and testing, and it is through experimenting and engaging extensively in literature that HEIs deliver significant and high-quality research results and outputs. This study is an example of research conducted on messaging service applications at a selected HEI.

6.3 Conclusions on findings

Table 6.1: Conclusions on findings

| FINDINGS | REFERENCE |
|--|-------------------------------------|
| The current generation of students enrolled at HEIs have access to messaging services applications. | See section 1.1 and section 4.2.1 |
| According to Nix, Rusell and Keegan (2008), there are more than two million students in South Africa enrolled at HEIs, with about 95% of them now owning a mobile phone. Phase 2 of the study proved that most students in HEIs are owning mobile phones. | See section 1.1 and section 4.2.2 |
| According to Keegan (2004), mobile phone technology has been growing rapidly in recent years; the number of users is also increasing. The results obtained affirm that there are more people now using smart mobile phones than low-end technology mobile phones. | See section 1.1 and section 4.2.2 |
| Students' perceptions of using messaging services as supporting tool in HEIs are similar to the view of Duncan-Howell and Lee (2007). | See section 2.3.1 and section 4.2.2 |
| People are able to interact with one another regardless of distance. | See section 2.3.2 and Figure 2.2 |
| Messaging service applications provide flexibility when compared to LMSs. | See section 2.3.2 |
| The use of messaging service applications in higher education provides students with the opportunity to be creative and the feeling of belonging (Fogg & Eckles 2008). Students were freely using the so called "chat language" that contributed to making them feel comfortable and accepted. | See section 2.5.3 and Annexure A |

| FINDINGS | REFERENCE |
|---|---|
| With the use of smart phones, students are able to access information using their mobile phones and communicate beyond the classroom with their peers and lecturers. Communication occurs beyond class contact sessions, including over weekends. | See section 2.5.3 and Annexure A |
| As messaging service applications grow in popularity, there is much speculation about who uses it, how frequently, and for what purposes (Reich <i>et al.</i> 2012). This research indicates that students in HEIs make frequent use of social applications. | See section 2.5.3 and section 4.2.2 |
| In 2008, Facebook became the most used application (Rennie & Morrison 2014; Roblyer, McDaniel, Webb, Herman & Witty 2010). Data from Phases 1 and 2 indicated that all participants have an account on Facebook. | See section 2.5.5, section 4.2.1 and 4.2.2 |
| Communication has been vastly improved by the advances of social media technologies (Tutty & Klein 2008). Some of the students' texts were written in proper English language on an acceptable standard, while spelling errors were detected from other students. | See section 2.6 and Annexure A |
| The use of messaging service applications broadens teaching methods and resources. The lecturer was able to use it as an educational supporting tool. Students believe it can be used successfully as an educational supporting tool. | See section 4.2.1, Annexure A and section 4.2.2 |
| Respondents spent most of their time on different messaging service platforms. The findings conclude that students were able to obtain feedback within a short period of time. | See section 4.2.2 and Annexure A |
| Students learn how to communicate in an online environment. | See section 4.2.2 |

6.4 Practical contributions

The DHET (2013) White Paper for Post-School Education and Training indicates that higher education and training institutions are faced with the challenge of teaching underprepared students. This research proposes a direction to follow to support student learning outside the formal classroom learning environment. The findings of this study can assist HEIs wishing to use social media as an educational supporting and/or benchmarking tool.

The outcomes of this research can be used in a pilot project for other HEIs; the successes and failures will assist other researchers in the same focus area.

The research outcomes can assist messaging service application developers in developing applications less complicated than most LMSs, which are accessible by students on their mobile phones, especially via Blackberry Internet Service (BIS).

Currently students cannot access LMSs through using BIS, which is the most affordable way for students to access the Internet.

Overall, this research has the potential to contribute to higher education in supporting student learning and the growth and development of the economy in the country (as this can be taken as a business idea).

HEIs have the expertise to develop applications that run on mobile phones. These applications need to provide support by means of virtual communities where students can interact and share knowledge in a setting which simulates class contact sessions. The applications should be simple and used for textual interaction.

Messaging service applications can contribute to the students' learning and interaction among themselves and with their lecturers in a virtual community. The use of messaging service applications broadens teaching methods; it influences how students learn and their learning experience. Furthermore, it affords academic staff the opportunity to communicate interactively with their students outside a formal classroom environment.

6.5 Limitations

The research was delimited to one HEI in South Africa, located in Gauteng. Similar studies conducted at other HEIs in South Africa should be conducted to confirm or add to the findings of this study.

The researcher encountered problems ranging from non-completion of questionnaires to erroneous information which needed to be validated. During interviews, some students have not elaborated on their answers and opted to provide only "yes" and "no" answers to some of the questions.

It was found that the questionnaire seemed to have had limitations relating to the structure, which impacted on the response rate as it was "too broad" and "complicated" for some students.

The researcher employed the use of messaging service applications to one class only.

The use of messaging service applications is still very limited in HEIs in South Africa as it is a new tool, thus, further research is needed.

6.6 Recommendations

6.6.1 *Recommendations from research findings*

Based on the research findings, the following recommendations are made:

- Students at HEIs in South Africa are already using messaging service applications for social purposes. HEIs should make use of this opportunity to introduce messaging service platforms as educational supporting tool within a teaching and learning environment. Findings derived from the data analysis of the three phases clearly indicate that students are continuously accessing messaging service platforms throughout the day. Phase 3 provides evidence that messaging service applications can play a constructive role as an educational supporting tool in HEIs.
- One of the fundamental problems in HEIs is the use of Learning Management Systems (LMSs) to support teaching and learning for under-prepared students. Most students become more vulnerable when they have to cope with the high standard of learning material and workload, and at the same time having to understand and use LMSs such as Sakai and Blackboard. The researcher recommends that HEIs use tools that students are already familiar with; tools that will not require training for usage, especially for first year students. Messaging service applications are tools that most students are already familiar with.
- No or insufficient Internet connection is a major problem, not only at the HEI where the research was carried out, but also in other HEIs in South Africa. Many students cannot afford Internet access on their communication devices. Currently most students rely on the Blackberry Internet service (BIS) because it is one of the cheaper ways to access the Internet for a full month; the price for BIS is less than R60 per month. During the Gauteng ICT Summit, hosted by the Gauteng Finance Department, it was discussed how the province plans to develop sustainable ICT infrastructure and build a connected province. Government has realised the impact insufficient Internet connection has in the

province and is working to address this challenge. The province is working on a strategy to provide 100% broadband access to its citizens by 2020 (Gauteng ICT Summit 2012). It is therefore recommended that schools and HEIs aim towards becoming wifi zones (preferable free). This will allow students easy access to their messaging service applications, even when off campus by accessing the wifi at schools close to their homes.

6.6.2 Recommendations for future research

- Further research can focus on the readiness of lecturers to use messaging service applications to support teaching and learning.
- Research similar to this study could be conducted at other HEIs throughout South Africa to compare the results and findings.
- The same research study can be repeated at the same HEI to determine whether the use of messaging service applications continues to grow in popularity among students, and to determine which messaging service applications are more used by students.
- Collaboration with local messaging service application providers such as MXit or Student Village companies might lead to incorporating these platforms into the HEI environment in South Africa as supporting tools for teaching and learning.

6.7 Conclusion

The primary aim of this research was to determine if messaging service applications can play a constructive role in supporting education at HEIs in South Africa.

Students at HEIs in South Africa have more access to mobile phones than to computers, and subsequently they access the Internet on their mobile phones more often than on computers and other electronic devices. HEIs need to utilise tools which are readily available to students to enhance teaching and learning, especially since the students are already using messaging service applications and therefore do not need training on using these platforms. This research has found that students opt to interact with their classmates more outside the class contact environment through various messaging service applications than during classroom sessions.

Results from this research further indicate that messaging service applications can indeed enhance and support students' learning if the relevant requirements are met by the institution. Messaging service applications appear to have a possible future in education, especially in supporting teaching and learning beyond the classroom.

In conclusion, HEIs need to take the lead in conducting research on the introduction and use of technology and relevant online platforms to support teaching and learning.

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ANNEXURE A: TRANSCRIPT FROM WHATSAPP CHAT GROUP

11:16PM, 19 Mar - *****: changed the subject to "Infor System 2.2"

11:17AM, 20 Mar - *****: ***** joined

11:23AM, 23 Mar - *****: ***** joined

1:25AM, 23 Mar - *****: ***** joined

1:28AM, 23 Mar - *****: ***** joined

1:32AM, 23 Mar - *****: ***** joined

1:36AM, 23 Mar - *****: ***** joined

1:38AM, 23 Mar - *****: ***** joined

1:39AM, 23 Mar - *****: ***** joined

1:41AM, 23 Mar - *****: ***** joined

1:43AM, 23 Mar - *****: ***** joined

1:47AM, 23 Mar - *****: ***** joined

1:58AM, 23 Mar - *****: ***** joined

1:17AM, 31 Mar - ***** joined

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1:17AM, 31 Mar - *****: ***** joined

1:17AM, 31 Mar - *****: ***** joined

1:17AM, 31 Mar - *****: ***** joined

8:28AM, 31 Mar - *****: Are we still writing the test?

9:24AM, 31 Mar - *****: Yes

6:29PM, 31 Mar - *****: Evening every1 pls add this person wago tshaba skolo

9:05PM, 31 Mar - *****: Guys the semester test what are the chapters

9:06PM, 31 Mar - *****: Check ur study guide

9:06PM, 31 Mar - *****: Please just tell me

7:51AM, 2 Apr - *****: Good morning!

7:51AM, 2 Apr - *****: Ta

7:51AM, 2 Apr - *****: What time are we writing the class test?

7:53AM, 2 Apr - *****: Are we following the time table?

7:53AM, 2 Apr - *****: It says 12:00, just wanted to make sure

7:53AM, 2 Apr - *****: Reminder: We are writing this friday our last SEMESTER test. And submission part 2 on monday 7 April.

7:54AM, 2 Apr - *****: Ok

11:30AM, 2 Apr - *****: Can anyone please tell me if we are still writing the class test?

11:31AM, 2 Apr - *****: Class test??? We writting last semester test got it no more class test

11:31AM, 2 Apr - *****: Only Friday test

11:32AM, 2 Apr - *****: But we were supposed to write a class test about dfd and use-case

11:32AM, 2 Apr - *****: So it is cancelled then

11:32AM, 2 Apr - *****: Right?!

11:33AM, 2 Apr - *****: We wrote it on monday

11:33AM, 2 Apr - *****: Jst study 4 de Friday test wena

11:33AM, 2 Apr - *****: LoL

11:33AM, 2 Apr - *****: Thank you!

11:35AM, 2 Apr - *****: Ds Friday test its 2 much only did 2 chapter already exhausted , scope it ur ***** plzzz

11:35AM, 2 Apr - *****: Jst study 4 de Friday test wena

11:36AM, 2 Apr - *****: Theory part phela de study guide gvs us heading of de entire book chapter aowi

11:55AM, 2 Apr - *****: ***** r we having a class 2day ?

3:32PM, 2 Apr - *****: Sorry for late response,

3:32PM, 2 Apr - *****: Will give u guidelines tomorrow. Let push the reading, I know its bit too much.

4:11PM, 2 Apr - *****: Yew

4:19PM, 2 Apr - *****: Yippy

4:20PM, 2 Apr - *****: Yebo

7:24PM, 2 Apr - *****: As u studying hope u also pushing your projects part 2 submission due on Tuesday next week. As I am not available from 9,10,11 (away), and 14 (graduations) April. So when we meet on the 16 April we will be signing for year marks and having optional test as stated in the guide.

7:25PM, 2 Apr - *****: I'll be honest with you sir

7:25PM, 2 Apr - *****: We won't be able to study all these chapters

7:25PM, 2 Apr - *****: Don't be,

7:25PM, 2 Apr - *****: Lo,

7:25PM, 2 Apr - *****: Try

7:25PM, 2 Apr - *****: I'm still trying

7:26PM, 2 Apr - *****: But I can't even remember what's in the previous chapters

7:26PM, 2 Apr - *****: Memory full!

7:26PM, 2 Apr - *****: Hahahaha

7:26PM, 2 Apr - *****: That's is true *****

7:26PM, 2 Apr - *****: I call it overload of information

7:26PM, 2 Apr - *****: Its tough, let's push! 3.1 IS will be less work.

7:27PM, 2 Apr - *****: Can't we divide the test???

7:27PM, 2 Apr - *****: Like..,

7:27PM, 2 Apr - *****: Sir this chapters are too much

7:27PM, 2 Apr - *****: I wish,

7:27PM, 2 Apr - *****: We write 3 chapters on Friday and the other three we write next week?

7:28PM, 2 Apr - *****: Please sir!

7:29PM, 2 Apr - *****: Keep studying, tomorro u will get guide lines.

7:31PM, 2 Apr - *****: Hao kante how many chapters must be covered??.Dnt 4get to pray guys

7:31PM, 2 Apr - *****: And we are also doing the diagram... Right?

7:32PM, 2 Apr - *****: I believe u will pass, I hav faith. God does miracles but we need to play our part. Let's push hard...

7:33PM, 2 Apr - *****: ERD, DFD and USE-CASE... Or it's just the theory???

7:34PM, 2 Apr - *****: Everything.

7:34PM, 2 Apr - *****: Great

7:34PM, 2 Apr - *****: Yoyoyoyo.

7:35PM, 2 Apr - *****: Mo thng wil gt taff moo.

7:35PM, 2 Apr - *****: 9 chapters including diagrams this is a torture□□

7:37PM, 2 Apr - *****: Sir are u sure u won't make it an open book test

7:37PM, 2 Apr - *****: 9 chapters is not a child's play

7:40PM, 2 Apr - *****: If others manage to pass, we will also manage. Let's study

7:41PM, 2 Apr - *****: Ok sir

7:43PM, 2 Apr *****: If you give us guidelines as promised, Im sure we will pass

11:25PM, 2 Apr - *****: Guys which chapter that sir said that we must jump

8:36AM, 3 Apr - *****: "jump??"□"skip" u mean...

8:38AM, 3 Apr - *****: Goodmorning *****..will there be class at 10am 2day?

1:08PM, 3 Apr - *****: Sir its past one

1:34PM, 3 Apr - *****: Sir we are waiting

1:39PM, 3 Apr - *****: Yes

2:04PM, 3 Apr - *****: Promises were made..

2:51PM, 3 Apr - *****: Guys no scope

2:54PM, 3 Apr - *****: He'll send it gee.. relax ur face man

3:22PM, 3 Apr - *****: Ok

6:51PM, 3 Apr - *****: Ta

6:51PM, 3 Apr - *****: My phone jammed earlier.

6:51PM, 3 Apr - *****: Ok, so sir wts de scope den.

6:51PM, 3 Apr - *****: ?

6:53PM, 3 Apr - *****: Erd, Use case, Dfd let's try collect marks there

6:53PM, 3 Apr - *****: What about the theory?

6:54PM, 3 Apr - *****: Ya sir atlis half of theory den cz we wont score totals @ practicals sir.

6:54PM, 3 Apr - *****: We will have an assignment and class exercises which are critical that u write and submit all

6:54PM, 3 Apr - *****: Ok sir

6:55PM, 3 Apr - *****: And dey will contribute nyana mos.

6:56PM, 3 Apr - *****: Will there be theory on tomorrows test?

7:00PM, 3 Apr - *****: Ya it will,

7:01PM, 3 Apr - *****: Which chapters should we focus the most?

7:04PM, 3 Apr - *****: This bluetooth thing, is it possible to sent u something now?

7:05PM, 3 Apr - *****: Email it to me, I ll distribute it

7:05PM, 3 Apr - *****: *****

7:06PM, 3 Apr - *****: Nope, it wont e-mail or 4tos via whatsapp.

7:07PM, 3 Apr - *****: Yah

7:07PM, 3 Apr - *****: Send it here sir

7:07PM, 3 Apr - *****: Lol sir u cn snd it here on dis grp...

7:08PM, 3 Apr - *****: Let's just keep reading,

7:09PM, 3 Apr - *****: Sir we need some direction now, pls

7:09PM, 3 Apr - *****: I wanted to sent u more past papers on erd, dfd and use case. Since he said we need to focus on past papers.

7:15PM, 3 Apr - *****: Send those previous q papers sir pls

7:17PM, 3 Apr - *****: So we can base ourselves on the question papers instead of reading 6 chapters

7:17PM, 3 Apr - *****: Ya, no guide lines, he changed his mind. Let's give everything to God and do our best.

7:17PM, 3 Apr - *****: And we know we won't have much time for the theory

7:17PM, 3 Apr - *****: I will give u. The assignment. On monday

7:19PM, 3 Apr - *****: Previous question papers pls

7:22PM, 3 Apr - *****: Sir u mean submission d8 4 assignment is monday?

7:24PM, 3 Apr - *****: U will get the assignment on monday to do.

7:24PM, 3 Apr - *****: Ok

7:24PM, 3 Apr - *****: Main camp test 1 average is 49,

7:24PM, 3 Apr - *****: But u also tried on test 1,

7:25PM, 3 Apr - *****: Ok

7:25PM, 3 Apr - *****: So daz dat assnment stant 4

7:26PM, 3 Apr - *****: ? Not following *****,

7:27PM, 3 Apr - *****: Lol i mean wt will it b for

7:27PM, 3 Apr - *****: The theory for tomorw or smtng else

7:29PM, 3 Apr - *****: The assignment will be on diagrams, I guess they important to pass 2.2,

7:29PM, 3 Apr - *****: K sir

7:30PM, 3 Apr - *****: Let's push.. Push... Phones off, and tomorro we pass,

7:29PM, 3 Apr - *****: Ok

7:56PM, 3 Apr - *****: Sir, may u please give us some guidelines

8:21PM, 3 Apr - *****: God bless our test before we write Amen!

8:24PM, 3 Apr - *****: Walter just give us the scope, maybe sum of us we will start to believe in god

8:18AM, 4 Apr - *****: Time And Venue?

10:12AM, 4 Apr - *****: ***** left

11:24PM, 4 Apr - *****: Lekker test we had,

11:25PM, 4 Apr - *****: Will start marking tomorrow,

8:08AM, 5 Apr - *****: Guys do we hv cisco 2dy

8:13AM, 5 Apr - *****: No

8:13AM, 5 Apr - *****: Yes

8:13AM, 5 Apr - *****: Huh?

8:16AM, 5 Apr - *****: Yah,U do

12:17PM, 5 Apr - *****: Cool,

12:18PM, 5 Apr - *****: What's the problem?! He is just mentioning the student number

12:19PM, 5 Apr - *****: Please continue sir

12:19PM, 5 Apr - *****: Lol

12:19PM, 5 Apr - *****: U cn continue sir..

12:23PM, 5 Apr - *****: Lol

12:24PM, 5 Apr - *****: ***** this group is not to expose our marks U said U wanna give us class work and update us on school work ,so please stop what ur doing or else we deactivate it coz im no comfortable about being expose in this group

12:25PM, 5 Apr - *****: If I want someone to see my mark ill show them not U telling them whole class

12:27PM, 5 Apr - *****: ***** , nobody forced you to join this grp, if u dnt lyk wats done, then leave

12:28PM, 5 Apr - *****: I don't see any problem ***** , because ***** is not mentioning the names

12:30PM, 5 Apr - *****: Hey wena terms and conditions for group never mention to expose anybody's marks so ***** to be on safe side he must keep it formally

12:30PM, 5 Apr - *****: Student number is the problem

12:32PM, 5 Apr - *****: Then tell him not to mention urs

12:38PM, 5 Apr - *****: Remember we have a default password.

12:40PM, 5 Apr - *****: ***** , sorry then. I forgot about the password. Accept my Apology ***** and others. Enjoy ur weekend,

12:41PM, 5 Apr - *****: By mentioning student no, u give us access 2 other students its. So ***** ur right, that's being exposed.

12:46PM, 5 Apr - *****: Yea..bt he said sorry n stopped guyz...so lets drop it..we'll get our marks in class...

12:49PM, 5 Apr - *****: So now some of people gonna access our its and ser how much we owing and all that is confidential to our its and there some who feel like they are genius enough in such a way that if their marks are in public they ok with it ,some of ur we not

12:51PM, 5 Apr - *****: Its under construction / maintenance currently.

12:51PM, 5 Apr - *****: So how are we going to publish Marks? Year Marks,

12:53PM, 5 Apr - *****: For year marks we will use student number, I think its best everyone change his/her password before we publish year marks.

12:54PM, 5 Apr - *****: Ok, dats if everyone agree.

12:55PM, 5 Apr - *****: That one is different ***** ,so can we just keep this formally and stop telling Vincent how we obtain marks on erd and so forth

12:58PM, 5 Apr - *****: Is he telling me or the whole group?

12:58PM, 5 Apr - *****: Ape walter is nt telling vincent is telling de group. Nd he nw stopped. Says jan. Any queries ask jan.

12:59PM, 5 Apr - *****: 1. I have stopped. 2. I am friendly advising you to change your password on ITS because ALL Year Marks including other subjects will publish year marks using student numbers. I don't see how is that difficult to change ur own password,

1:13PM, 5 Apr - *****: Phew! M so relieved now, thanks 4 stopping I was about to support *****.
A blessed weekend to every1

4:13PM, 5 Apr - *****: I believe I am fair enough to give zero for crossing lines when drawing
relationships on ERD. We have dealt with that many time. I guess this is
one of the part time students.

4:18PM, 5 Apr - *****: U will get ur scripts monday during class let's meet at 8h30. And
submission of ur project latest is tuesday 11h00, however u can submit
monday if u want to.

4:19PM, 5 Apr - *****: Ok mineer

4:21PM, 5 Apr - *****: Ok *****

9:19PM, 5 Apr - *****: We done, □ took us the whole day.

9:21PM, 5 Apr - *****: @sir *****. Meaning?

9:22PM, 5 Apr - *****: Marking dawg, from 10h00am, stress less, will see on modanaty

9:26PM, 5 Apr - *****: Ihaaa lolzz ok.

9:42PM, 5 Apr - *****: "We done"?! what we?

11:15AM, 7 Apr - *****: ***** ,Are you still at school..sum of us ddnt get our scripts.

9:32PM, 7 Apr - *****: NB Msg: "The project document including submission 1 and 2 will
contribute 50% and another 50% will come from the presentation. The
presentation will be from 15 to 17 April 2014. It is clear that some
students just copy and paste without understanding. The presentation will
assist most of the students. My focus areas will be on the diagrams esp
the ERD. Tomorrow do not forget, 2nd part of assignment should be
submitted by 11am "

12:43PM, 9 Apr - *****: I need ***** number

4:09PM, 9 Apr - *****: Does anybody have B.A TEST 2 2013 Question paper?

4:30PM, 9 Apr - *****: No

4:30PM, 9 Apr - *****: I dont have

8:46PM, 9 Apr - *****: ***** invite me so that I may send u

8:46PM, 9 Apr - *****: Now

8:47PM, 9 Apr - *****: Send it 2 me 2 plz

8:47PM, 9 Apr - *****: Ok

9:30PM, 9 Apr - *****: And me aswel plz

10:05PM, 9 Apr - *****: Can someone help me with the answer No.6 question 3

10:05PM, 9 Apr - *****: Class test please

10:06PM, 9 Apr - *****: Post the question here ?

10:07PM, 9 Apr - *****: Should enterprise attempt to control all risk? Explain [5]

10:12PM, 9 Apr - *****: The answer is No

10:16PM, 9 Apr - *****: Explain

10:19PM, 9 Apr - *****: Should enterprises attempt to control all risks? Explain.

There are so many potential risks that it impossible to control all of them. To be cost effective, enterprises should concentrate on the most significant risks. The significance of a risk is determined by (a) its impact on the organization, and (b) the likelihood of it occurring. Management may choose not to control risks that have a low impact and a low likelihood of occurrence. Risks that have a high impact and a high likelihood of occurrence must be carefully controlled. The key is identifying and controlling the most material risks in a manner such that the benefits of controlling the risks exceed the costs of the controls.

10:20PM, 9 Apr - *****: Thanks ***** U such a darling

10:21PM, 9 Apr - *****: U welcome *****

7:55AM, 12 Apr - *****: Do we hcv cisco 2dy

7:56AM, 12 Apr - *****: yes

7:56AM, 12 Apr - *****: Yebo sesi

7:56AM, 12 Apr - *****: K thnx

7:24AM, 14 Apr - Lerato: Hey guyz can we cum do cisco 2day..is ***** gna be around?

7:24AM, 14 Apr - *****: No

7:25AM, 14 Apr - *****: There is a graduation I don't think so

7:25AM, 14 Apr - *****: Oh oryt..thanx..

8:05AM, 14 Apr - *****: I think ***** will be on campus,

8:06AM, 14 Apr - *****: Don't forget abt IS. Presentations

8:07AM, 14 Apr *****: When are we presenting?

8:11AM, 14 Apr - *****: 15 to 16 April.

8:14AM, 14 Apr *****: Why do we have to present coz the last time I check you said we sticking to study guide and I didn't see any where talking about presentation

8:18AM, 14 Apr - *****: Morning every1, do we have class 2day?

8:21AM, 14 Apr - *****: We not having IS class graduations

8:22AM, 14 Apr - *****: Oh ok thnx

8:24AM, 14 Apr - *****: Eh first born. Its not fair to only mark what seems to be copy and paste. I need ppl to agree, concur and demonstrate that they understand what they submitted. Its up to u as in individual if u present or not. We agreed last week that 60 percent will be presentations and 40 will be ur document.

8:25AM, 14 Apr - *****: Ok

8:26AM, 14 Apr - *****: Aah sir u said 50 doc n 50 presentation

8:28AM, 14 Apr *****: Do we have to wear formal ?

8:28AM, 14 Apr - *****: Let's make it the same with 2.1 they also presenting. I said its 40 doc and 60 individual. So I can use the same rubric

8:28AM, 14 Apr - *****: And ***** o ring ka taba elol

8:28AM, 14 Apr - *****: Okay

8:31AM, 14 Apr - *****: Tjo ai school thou

8:31AM, 14 Apr - *****: Lo, what's up with *****? U said we must not listen to main campus. So that is what I am doing

8:31AM, 14 Apr - *****: Sir, how will i know whether my group presents on the 15th or 16th?

8:33AM, 14 Apr - *****: Sir, the presentation will start frm wht time until wht time?

8:34AM, 14 Apr - *****: 9am to 2pm

8:35AM, 14 Apr - *****: Something like 30min each group

8:35AM, 14 Apr - *****: So we can do 9 groups tuesday and the remaining on wednesday

8:36AM, 14 Apr - *****: K cool,sir

8:36AM, 14 Apr - *****: Maybe 2.1 can come listen to your presentation and learn

8:37AM, 14 Apr - *****: Sir, I wanna know the exact time and date 4 each group's presentation

8:38AM, 14 Apr - *****: U wil today later

8:38AM, 14 Apr - *****: ok.

9:22AM, 14 Apr - *****: Ok

10:32AM, 14 Apr - *****: Sir the study guide says nothing about presenting or presentations, now we don't know how we have to present n how marks will be allocated depending/looking at which main points in the presentation, of which will lead to a lot of us failing to score higher marks cause we don't know what exactly to focus on when presenting to give out information as u expect it. So since you your self came up with such a concept just cause you say u wana see how much we understand, its like you over the rules and regulations of VUT. And if us(students) also do presentation we'll be also violation the rules and regulations, being led with our own lecturer. Does that mean the student can also come up with a concept to make all of us qualify even though it violates the rules and regulations? Since this time it was our lecturer who did

6:40PM, 14 Apr - *****: help wat tym a we goin 2 present 2mrw?

6:41PM, 14 Apr - *****: Hw do we knw we gнна present 2mrrw or wednesday?

6:42PM, 14 Apr - *****: I mean which group will present wt tym n whn?

6:48PM, 14 Apr - *****: Eh *****,

6:52PM, 14 Apr - *****: Presentation focus area will be on the diagrams especially ERD.

6:52PM, 14 Apr - *****: We will use Desmond tutu or C block(those small classes).

6:52PM, 14 Apr - *****: I will in 2 hours sent u group presentation times. I am still graduation party.

6:53PM, 14 Apr - *****: LoL enjoy sir

6:53PM, 14 Apr - *****: Erd, DFD and Use case only

8:58PM, 14 Apr - *****: What are u attending tomorro?

8:58PM, 14 Apr - *****: We have 14 groups, and I do not want to temper with other lecturers

8:58PM, 14 Apr - *****: Sme of us ar qrtng ado frm 8

9:00PM, 14 Apr - *****: My group has no class 2mor

9:08PM, 14 Apr - *****: We do *****

9:10PM, 14 Apr - *****: Its up to a group to decide what time they wanna present, the sooner the better...

9:11PM, 14 Apr - *****: I will be on campus till 3 or 4pm.

9:11PM, 14 Apr - *****: Let's say u can come anytime when u free to present when u free from 8h30 to 3h30.

9:12PM, 14 Apr - *****: <Media omitted>

9:13PM, 14 Apr - *****: Should the whole group be there or its also up to the group to decide who present the project ?

9:16PM, 14 Apr - *****: 60 percent is individual, so the group member who decides not to come will get a zero for individual mark

9:16PM, 14 Apr - *****: Reminder bring your own fully charged laptop

9:16PM, 14 Apr - *****: I will be controlling the presentation.

9:16PM, 14 Apr - *****: K sir so if we want we can cme on wnsday aftr 12

9:25PM, 14 Apr - *****: Will do all groups tomorro.

9:25PM, 14 Apr - *****: Ok no prblm

9:26PM, 14 Apr - *****: Maar u said Tues n wed

9:27PM, 14 Apr - *****: Better u come early as I have simple questions later I will have not difficult but challenging questions

9:27PM, 14 Apr - *****: U said 15 and 16

9:28PM, 14 Apr - *****: Tjo and they just told u that Ado its at 8 and its 2hrs

9:29PM, 14 Apr - *****: To 3hrs lol tjo maar

9:32PM, 14 Apr - *****: ***** phela according to the study guide there's no need for presentation cause there's no marks 4 it. So please go easy on us

9:38PM, 14 Apr - *****: Sweet tee, I will be on campus till 3h30. So u have enough time

9:38PM, 14 Apr - *****: Nah, we will finish tomorro. I still have 2.1 IS, they will present on wednesday

9:40PM, 14 Apr - *****: Sir, why are you keep on changing?

9:42PM, 14 Apr - *****: ***** I hear u saying "u better come early coz I'll have easy qs then later it wil I be challenging" that's unfair

9:42PM, 14 Apr - *****: <Media omitted>

9:43PM, 14 Apr - *****: Ai it seems like u had too much from the graduation party

9:46PM, 14 Apr - *****: Lol, Walter the 1st picture its on 2.1 study guide not for us at all

8:38AM, 15 Apr - *****: I am C block

8:39AM, 15 Apr - *****: From now till late, the earlier the better.

9:05AM, 15 Apr - *****: Do we focus just on the diagramz sir?

10:15AM, 15 Apr - *****: Are u ppl still coming?

10:16AM, 15 Apr - *****: Yes Sir

10:15AM, 15 Apr - *****: Yes sir

10:16AM, 15 Apr - *****: I am C block.

10:16AM, 15 Apr - *****: Yes are u still at blockC

10:16AM, 15 Apr - *****: Yes

10:16AM, 15 Apr - *****: Me n olga are cuming...sum are writing cisco

10:18AM, 15 Apr - *****: Yes Sir. We r coming ryt nw

8:09PM, 15 Apr - *****: For year marks, I am going to use student numbers, I hope u manage to change ur ITS passwords.

8:09PM, 15 Apr - *****: Its the procedure, I am following, I will deem surnames and names.

8:10PM, 15 Apr - *****: When?

8:10PM, 15 Apr - *****: Will paste them tomorrow after 10h00.

8:11PM, 15 Apr - *****: R they on ITS yet ?

8:11PM, 15 Apr - *****: Please read your study guide religiously so (like u read your bible) with understanding.

8:12PM, 15 Apr - *****: Optional test will be offered to students with year mark of 45_49. The optional test covers all the chapters, and u will only get 50 year mark if only u pass the optional test.

8:13PM, 15 Apr - *****: Ok sir. Its all clear

8:14PM, 15 Apr - *****: Good luck, no bad feelings... I will email our famous ***** the marks tomorrow to put on ITS, as I am unable to enter marks for 2.2!

8:14PM, 15 Apr - *****: Its is not working

8:15PM, 15 Apr - *****: I hope, we'll all qualify Mr *****

8:15PM, 15 Apr - *****: Sir where r u gonna post the marks on campus coz I never saw a notice board?

8:16PM, 15 Apr - *****: Then u can view ur year marks any time from tomorrow or when u open on the 5 May.

8:18PM, 15 Apr - *****: ***** , come to my office to view and sign. Please do enjoy your holidays... U can view your year mark when we open on the 5 May.

8:19PM, 15 Apr - *****: Ohk, thank u sir

8:24PM, 15 Apr - *****: Good luck to those writing, perhaps we can have ERD revision classes, today we did 2.1 ERD's on the board. We need to be extra ready.

8:25PM, 15 Apr - *****: Benz_ " the best of nothing"

8:27PM, 15 Apr - *****: Hahahahaha "the best OF nothing"

8:27PM, 15 Apr - *****: So do also 2.2's all of em qualify

8:27PM, 15 Apr - *****: Hahahahah wat sir?

8:27PM, 15 Apr - *****: Unfortunately NO. I would have love to see u all writing and passing

8:30PM, 15 Apr - *****: Aaa, mara sir.

8:33PM, 15 Apr - *****: ***** I told u who u waiting for,
8:33PM, 15 Apr - *****: U will pass next semester
8:34PM, 15 Apr - *****: Aaa mara sir ape we mst qualify sir.
8:34PM, 15 Apr - *****: We will see next semester.
8:34PM, 15 Apr - *****: Lol sir ao fair wich ***** u talkin about?
8:38PM, 15 Apr - *****: Aowa sir y nt dis semester sir?
8:38PM, 15 Apr - *****: He knows himself
8:39PM, 15 Apr - *****: All the best, it was great testing 2.2 IS with you.
8:48PM, 15 Apr - *****: Jah neh!
8:49PM, 15 Apr - *****: @***** ke mathata fela wa nyewa strng
8:59PM, 15 Apr - *****: Sir u marked first test out of wht? nd 2nd out of?
8:59PM, 15 Apr - *****: ***** , which is surname?
9:01PM, 15 Apr - *****: Over 80, reduced from 90.
9:02PM, 15 Apr - *****: That is the first test we wrote
9:02PM, 15 Apr - *****: Ok thnx
9:17PM, 15 Apr - *****: Surname its ***** sir...
9:34PM, 15 Apr - *****: Thanks

8:16AM, 16 Apr - *****: NB: JAVA TEST IS CANCELLED, WE ARE WRITING WHEN WE REOPEN
8:16AM, 16 Apr - *****: Yepppy
10:15AM, 16 Apr - *****: Sir whr r u we are looking for the year marks
10:16AM, 16 Apr - *****: I am coming
10:16AM, 16 Apr - *****: Was in am meeting,
10:30AM, 16 Apr - *****: Ok
5:00PM, 16 Apr - *****: Year marks on the window, should u want to see them tomorrow. Officially on holidays, enjoy your easter holidays.
5:02PM, 16 Apr - *****: Ok sir
6:06PM, 16 Apr - *****: *****
6:08PM, 16 Apr - *****: Guys Who saw da year marks????
6:08PM, 16 Apr - *****: Me
6:10PM, 16 Apr - *****: Hw do dey luk?
6:10PM, 16 Apr - *****: Its print black on a white paper
6:11PM, 16 Apr - *****: No man i mean hw do da results luk gud or bad
6:12PM, 16 Apr - *****: Bad
6:12PM, 16 Apr - *****: Oh that em... I only chck mine sorie I think sir can ans that
6:57PM, 16 Apr - *****: The results are moderately fine. Not Good or too Bad.

8:17AM, 17 Apr - *****: Taxi ke R14

5:46AM, 22 Apr - *****: ***** left

10:22AM, 2 May - *****: Mrng sir...r we still writting the test on Monday whn we open?

10:22AM, 2 May - *****: Which test?

10:23AM, 2 May - *****: Aren't we done with IS?

10:23AM, 2 May - *****: Or you are talking about the optional test?

10:23AM, 2 May - *****: Yep

10:27AM, 2 May - *****: Ok

11:58AM, 2 May - *****: The optional test will be written before friday. Those who QUALIFY to write as per list of Year Marks.

11:58AM, 2 May - *****: Ok sir

11:59AM, 2 May - *****: I will confirm with ***** today before 2pm. So u prepare robustly so. All chapters no guidelines.

12:08PM, 2 May - *****: Olryt

12:19PM, 2 May - *****: Ok

8:39AM, 3 May - *****: For now check the date on ur study guide for optional test. ***** hasn't replied to my email.

8:42AM, 3 May - *****: At main camp thy rytn on friday

8:43AM, 3 May - *****: And what does ur study guide say?

8:44AM, 3 May - *****: Didn't check

8:44AM, 3 May - *****: Chck

8:45AM, 3 May - *****: Ek sal

5:36PM, 4 May - *****: Update abt the test sir

6:02PM, 4 May - *****: We writing the optional test as per study guide. Check the date there. I will tell u time tomorro, I am not in position of a study guide.

6:04PM, 4 May - *****: Oh ok!

6:01PM, 5 May - *****: 4 people are not writing on friday meaning they got less than 45.

6:02PM, 5 May - *****: However I am not going to adjust marks for them only. I will add 5marks for everyone for the project mark. Its only fair I do that. BUT if still u less than 45, NOTHING more I will be able to do.

6:03PM, 5 May - *****: So will paste last version of preliminary results tomorrow morning.

6:04PM, 5 May - *****: Business rule: an ingredient is purchased from one or many suppliers.

6:09PM, 5 May - *****: Add atleast 10% for everyone

6:09PM, 5 May - *****: Ya it will boost us

6:13PM, 5 May - *****: Avoid the last text "business rule".

6:22PM, 5 May - *****: I am done, I am emailing Cornel to enter on ITS, I am struggling to enter on ITS 2.2 marks, so check tomorrow and good luck to those writing, I did my best. Nothing more, no more changes. So do check tomorrow afternoon if u can access them on ITS, time I focus on logic.

6:22PM, 5 May - *****: He got replied, and says he will enter after 13h00 class, so check ur marks on ITS after 2pm or 3pm tomorrow.

6:22PM, 5 May - *****: Any mistake on ITS u can come Thursday we verify I will print myself one copy. Although I doubt he will make mistakes

6:34PM, 5 May - *****: So the opt test is on friday?

12:13PM, 6 May - *****: ***** *** joined

4:28PM, 6 May - *****: Where are the year marks cause they not on ITS ?

4:29PM, 8 May - *****: What time we writing 2mor

7:33PM, 8 May - *****: 11

8:52AM, 9 May - *****: Sir there's a unisa strike @ skul r we still writing

9:26AM, 9 May - *****: Nooooooooo

7:24PM, 9 May - *****: Guys de wont be a cisco class 2mrw

7:24PM, 9 May - *****: Ok, thnx.

7:30PM, 9 May - *****: Crus?

7:30PM, 9 May - *****: Say who?

7:49PM, 9 May - *****: R u sure

8:43PM, 9 May - *****: Yes they said we must not come tomorrow

8:44PM, 9 May - *****: Who said that, actually who are "they" ?

5:57AM, 10 May - *****: Oily said so bt if u wnt 2go plz be my gues an go oily wnt b der

6:47AM, 11 May - *****: Morning, Dial *100*600# and get 1gig data for day on vodacom just thought should tel u if u nt aware

7:22AM, 11 May - *****: Dankie ***** I can't believe this hey

7:34AM, 11 May - *****: Lol ***** lolst ajo

12:43PM, 12 May - *****: Is exam time table out?

3:41PM, 12 May - *****: Yea

4:48PM, 12 May - *****: Where ?

4:59PM, 12 May - *****: I believe ITS wnt let u down
6:25PM, 12 May - *****: Lol ***** it didnt

7:27PM, 16 May - *****: <Media omitted>
7:37PM, 16 May - *****: What's happening?
7:38PM, 16 May - *****: Wrong text sorrrry. Great weekendD
9:10AM, 17 May - *****: <Media omitted>

9:12AM, 17 May - *****: Lol
9:16AM, 17 May - *****: Lol

ANNEXURE B: QUESTIONNAIRE FORM

The application of messaging service applications for educational support in tertiary education institutions

You are kindly requested to complete the questionnaire below. The purpose of this research is to investigate if messaging service applications has a role to play in supporting tertiary education and the perception of students regarding using messaging service applications to support learning and teaching in higher education. The writer also plans to find out from this research what are the benefits and barriers in using messaging service application in supporting tertiary education from participants.

The research will also show if the introduction of messaging service applications in tertiary education is ready to be used. The research findings will indicate whether the population presented by the participants is ready for the introduction of messaging service applications in supporting teaching and learning in tertiary education.

Please note: The information you provide will be anonymous because you are not required to give your names and it will be treated with confidentiality because your individual responses will not be disclosed to anyone.

We want to hear from you as a student your perception of using messaging service applications to support tertiary education. Please answer the following questions by crossing (X) in the appropriate block or by filling in your answer in the blocks provided. It is estimated to take you five minutes to complete this questionnaire.

The questions start on the next page.

SECTION A

This section seeks some biographical information of participants. This information will assist the researcher to compare groups of participants.

1. Gender

| | |
|--------|--|
| Male | |
| Female | |

2. Age (years)

| | |
|----------|--|
| Below 18 | |
| 18 – 20 | |
| 21 – 23 | |
| 24 – 26 | |
| Over 26 | |

3. Name of institution

| |
|--|
| |
|--|

4. Course which you are registered for

| |
|--|
| |
|--|

5. Level of study

| | |
|--------------------------------------|--|
| First year | |
| Second year | |
| Third year | |
| I have completed my National Diploma | |

6. Population group

| | |
|----------|--|
| African | |
| White | |
| Indian | |
| Coloured | |
| Other | |

SECTION B

This section explores your experience with using messaging service applications.

1. Do you own a cell phone?

| | |
|-----|--|
| Yes | |
| No | |

2. If you answered yes in 1, are you using a smart mobile phone? (Smart phone is a phone with powerful computer functions and Internet access).

| | |
|-----|--|
| Yes | |
| No | |

3. Are you accessing messaging service applications on your phone?

| | |
|-----|--|
| Yes | |
| No | |

4. Indicate by (X) which messaging service applications do you have an account on.

| | |
|----------|--|
| Facebook | |
| Twitter | |
| Whatsapp | |
| MXit | |
| MySpace | |
| BBM | |
| Other: | |

Specify: _____

5. How often do you use the messaging service applications?

| | |
|--------------------------|--|
| More than once a day | |
| Not more than once a day | |
| Once a week | |
| Once a month | |
| Once in a while | |
| Do not use it at all | |

SECTION C

This section explores your perception of using messaging service applications to support tertiary education.

Please indicate with (X) the extent to which you agree or disagree with each of the following statements.

| | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|--|-------------------|----------|---------|-------|----------------|
| 6. Messaging service applications can play a role in supporting education in tertiary education. | | | | | |
| 7. There are benefits of using messaging service application in tertiary education. | | | | | |
| 8. Messaging service applications can be successfully implemented in tertiary education. | | | | | |
| 9. Will there be challenges of using messaging service applications in tertiary education? | | | | | |

Comments:

Challenges of using messaging service applications to support teaching and learning in tertiary education

.....

Benefits of using messaging service applications to support teaching and learning in tertiary education

.....

Further comments on the research

.....

Thank you for your time and efforts in completing this questionnaire enclosed

ANNEXURE C: INTERVIEW QUESTIONS

1. What is your feeling of using messaging service applications to support teaching and learning in higher education institutions?
2. Roughly how often do you use messaging services applications?
3. What type of mobile phone do you use? Smart mobile phone (has Internet connection with powerful computer functions) or do you use the low-end technology mobile phones (with no Internet and powerful computer functions).
4. What source do you use to access information on the Internet?
5. Name all the messaging service applications you currently use (have an account for)?
6. What do you think might be the challenges of using messaging services applications in higher education institutions?

ANNEXURE D: PEER-REVIEWED PUBLICATIONS FROM THIS RESEARCH

Matli, W. & Conradie, P. 2013. The use of mobile messaging service applications as an educational supporting tool. *Proceedings*. The 15th Annual ZAWWW Conference, Cape Peninsula University of Technology, 10 September.

Matli, W. 2013. Using M-learning to support teaching and learning in Higher Education. *Proceedings*. The 3rd QS-Maple Conference, Johannesburg, South africa, 7-8 May.

Matli, W. & Conradie, P. 2013. The use of messaging service applications as an educational supporting tool. *Asian Journal Of education and E-Learning*, 1(4): 166-171.

Matli, W. & Conradie, P. 2013. The use of social network applications as an educational supporting tool. *Proceedings*. The 18th WACE World Conference on Co-Operative & Work-Integrated Education, Durban, South Africa, 24-27 June.

Van Rooyen, H. & Matli, W. 2014. Using electronic interaction as an educational supporting tool in higher education: students perceptions on using M-learning and the lecturers' reflections. *Journal of Education and Vocational Research*, 5(2):33-42.

2015: CURRENTLY UNDER REVIEW

Matli, W. & Ntombela, B. 2015. The contributions of online learning to support teaching and learning in higher education. *Journal of Learning for Development*.

Matli, W. 2015. *The digital language of texting students' make use in an online environment: examining how undergraduate students used the so called "chat language" on Whatsapp Group Chat for academic purpose*. South African International Conference on Educational Technologies, South Africa, 19-21 April.

Matli, W. 2015. Exploring the psychological impact of the university environment towards the first year students' sustainable development: the transition from high school to university education. *Special Issue of the Journal of Learning and Development*.

Matli, W. 2015. *The adoption of basic concepts and principles of E-learning for Technical and Vocational Education and Training in advancing sustainable development*. The 5th African Unity for Renaissance Conference, Johannesburg, South Africa, 22-25 May,

ANNEXURE E: LANGUAGE EDITING LETTER



MEMORANDUM

TO WHOM IT MAY CONCERN

FROM: CS van Wyk

SUBJECT: Language Editing

DATE: 7 August 2015

The following dissertation was received for final language editing on the above date:

Candidate : W Matli

Qualification : MTech: ICT

Dissertation title : The use of messaging service applications as an educational support tool in higher education institutions

The dissertation is ready for submission.

A handwritten signature in black ink, appearing to read 'CS van Wyk'.

CS van Wyk
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