

UNIVERSITY OF KWAZULU-NATAL

**THE USE OF SOCIAL MEDIA AND INTERNET BY TERTIARY
STUDENTS AT A UNIVERSITY IN SOUTH AFRICA**

By

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ABSTRACT

Currently, technology plays a critical role and people have become reliant on its use, even for the most mundane of activities. Previous studies have demonstrated the effect of technology on education, which is dependent on the level of computer literacy of students. This level of literacy varies in developing countries such as South Africa. There exists contradictory arguments concerning the use of online tools such as eLearning for academia. Some of these arguments allude to the lack of social interaction, which stifles creativity and students have the risk of diverting from using social media for academic studies to personal communication. Other studies depict the use of social media and the internet in a more optimistic light, where students are not bound by a specific place and time unlike in face-to-face interaction. Online tools have also been found to promote critical thinking. This study focuses on the University of KwaZulu-Natal (UKZN), a South African tertiary institute, to determine the influence of social media and the internet on students ability and willingness to apply these tools to academia. The objectives of this study was to examine the level of technological knowledge and skills of students and the preferred methods for teaching and learning among students. A descriptive study was used to describe the prevailing situation by the behaviour and perceptions of students toward eLearning at UKZN by means of a personally administered questionnaire from a sample size of 212 respondents from the Social Science, Information Technology and Agricultural Engineering disciplines. The results display a difference in the level of technical skills amongst students at UKZN. It was also found that traditional methods of teaching and learning such as face-to-face interactions and hardcopy of notes appear to be the preferred method. However, there is an inclination toward online teaching methods. Respondents from the Social Science and Information Technology disciplines were more willing to try online teaching and learning methods, compared to respondents from Agricultural Engineering. Students are willing to try eLearning provided that sufficient support is provided during the process. More effort needs to be focussed on enhancing the eLearning experience to accommodate social media platforms. Traditional face-to-face interaction for teaching is still preferred since it prevents miscommunications and misunderstandings within different disciplines.

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CHAPTER ONE

Introduction

1.1 Introduction

Due to the increase in the second generation of web-based communities, there is a consequential rise in the popularity of social networking and online tools (Bosch, 2009). A number of studies have focused on the benefit of using online tools as a teaching method for tertiary students. Beldrain (2016) has also acknowledged the increase in the web-based learning and the need to constantly revise the delivery structures. A number of studies such as those conducted by Blankenship (2011), Bennett, Bishop, Dalgarno, Waycott and Kennedy (2012), Hrastinski and Aghaee (2012) have found the use of online tools to be highly beneficial to understanding and disseminating information at a tertiary level. Now, more than ever, the tertiary structure in which teaching and learning occur needs to be revised and strategies put in place so as to address the challenges such as the ongoing student protest. Therefore, more research is required to determine the effect of this form of learning in a South African tertiary institute. A better understanding of this dynamic will allow solutions to be obtained, which uses this ever-growing technology.

This study focusses on the influence of social media and the internet on eLearning of undergraduate students at the University of KwaZulu-Natal (UKZN). This chapter provides an introduction and the motivation for this research study. The specific focus of the study is discussed together with the aim and objectives. A brief description of the adopted methodology is provided and an outline of the key findings in each of the research chapters is presented.

1.2 Motivation for the Study

While numerous studies have undertaken to investigate eLearning at tertiary institutes in South Africa and globally, there is still limited research, which have been conducted at the University of KwaZulu-Natal (Bosch, 2009; Chen and Bryer, 2012; Leonard, Mokwele, Siebrits and Stoltenkamp, 2016). The effect of using eLearning methods by tertiary students for academic purposes is of particular interest with regard to the different disciplines, level of study, age and gender. There has not been any definitive correlations between these factors as the interaction varies according to the institute at which the research is conducted. It is envisaged that the results obtained from this study can be considered and used by UKZN to

plan, improve and implement future eLearning systems. This study provides insight to future developments into social media for teaching and learning purposes, which can be extended to other institutes.

1.3 Focus of the Study

This study focussed on using social media and the internet as a teaching and learning tool at UKZN. Of particular interest is the use of this technology by students from an academic stance as a study tool based on different disciplines, age and gender. The study focuses on whether social media and online tools can be integrated to tertiary level education and using it as a means to study in future. UKZN was selected as the setting to conduct the study as limited information is available regarding eLearning. Three specific disciplines, viz. Social Science, Information Technology and Agricultural Engineering were explored regarding eLearning and the preferred method of teaching and learning. These disciplines were selected for this study as they possess vast differences in the course content and academic focus area. This study focussed only on undergraduate students, omitting postgraduate students and faculty members.

1.4 Problem Statement of the Study

According to Cross and Adam (2007) South Africa has developed immensely in adopting information technology systems in schools. However, there is a lack of such policy frameworks and strategies regarding the tertiary education sector. There is a no 'one-fits-all' approach with regard to eLearning policies but is largely dependent on the institution at hand (Cross and Adam, 2007). Numerous studies have focused on eLearning at a number of South African tertiary institutes such as the University of Cape Town (Bosch, 2009), the University of Western Cape (Leonard *et al.*, 2016) and the University of South Africa (Ngubane-Mokiwa, 2017). However, limited research is available that focuses on eLearning as a whole at UKZN.

Students from previously disadvantaged schools may have only ever been exposed to a computer during their first year of admittance to a tertiary institute. This has far-reaching consequences in that these students have limited computer literacy skills, which already poses an academic disadvantage to these students.

It is unclear as to whether social media and online methods can bridge the gap between traditional methods of learning as opposed to new methods in South Africa. In addition, the role of computer literacy among students at campus and their ability to practice a virtual learning environment is unclear. This study will address social media and internet within the tertiary environment amongst undergraduate students.

1.5 Aims and Objectives

The aim of this study was to identify if social media and the internet could be used to support the traditional face-to-face methods of education at a tertiary level at UKZN. Undergraduate students within the institution would be able to provide information as to whether this is an option for future education models. The specific objectives of this study were to determine:

1. The level of technological knowledge and skill of students.
2. The preferred methods of teaching and learning for students.
3. If using social media and the internet is an effective learning tool among different disciplines, age groups, year of study and gender.
4. The use of social media by students.

1.6 Methodology

The Social Science, Information Technology and Agricultural Engineering disciplines from the University of KwaZulu-Natal (Pietermaritzburg) were selected for this study. Due to the wide range of disciplines on offer at UKZN it was feasible to select a small number of disciplines that were quite different from each other in content and method of teaching learning. Hence only 3 disciplines were selected to ensure the scope of the study was not too large or too small. The entry requirements for university was used as a guide to determine the disciplines. Agricultural Engineering requires a lot more points than the other two disciplines. Humanity students are generally students who just make into university and the Augmented programs are for students who are under privileged and do not meet university requirements.

The research approach adopted was an inferential quantitative study by means of a personally administered questionnaire. The population of 467 required a sample size of 212 at a confidence level or reliability of 95% and margin of error of 5%. The questionnaire was formulated with 21 questions comprising 20 closed questions and one open question. The initial questions were of the nominal scale to establish the demographics of the respondents

in terms of gender, age, level of study and academic discipline. The questionnaires were administered over a three-week period. The returned questionnaires were checked for completeness and then captured into the SPSS - Version 25 statistical software package. All personal information and identifiers (names, addresses, student numbers) associated with individual respondents were treated with confidentiality. All data in the form of soft and hard copies obtained from this study will be securely stored by the UKZN's Graduate School of Business for a period of five years as is stipulated in the UKZN Research Policy V - Research Ethics. This study received approval of the research protocol and ethical clearance by the UKZN's Humanities and Social Sciences Research Ethics Committee (Appendix B).

1.7 Chapter Outline

This study was conducted in a systematic manner following the research process guidelines provided by Kothari (2011). This process consisted of a series of actions or necessary steps to effectively conduct research. The following sequence of the research process was advised:

1. Define the research problem – Chapter 1.
2. Review the relevant literature – Chapter 2
 - 2.1 Review concepts and theories.
 - 2.2 Review previous research findings.
3. Formulate hypothesis (optional).
4. Design research – Chapter 3.
5. Collect data – Chapter 3.
6. Analysis of data – Chapter 4.
7. Interpret and report – Chapter 4 and Chapter 5.

An outline of each chapter is as follows:

Chapter One: forms the introductory chapter providing an overview of this research study including the research focus, problem statement, aim and objectives and a brief explanation of the adopted research methodology.

Chapter Two: provides a review of the relevant literature, which forms part of the foundation of this study. It is in this chapter where the research gaps are identified and the need for this research was acquired. The major uses of social media are highlighted and studies focusing on using social media and the internet as learning tools are revealed. Case studies in the South African context are discussed, which have been used as recommendations and

suggestions for this study and future related-studies contained in Chapter 5. This chapter then leads on to Chapter 3.

Chapter Three: includes a discussion of the most suitable techniques and methods used to conduct this research. The research design and paradigm are presented together with a description of the study location and setting, population and sample, sampling method, construction of the instrument, data collection and analysis methods as well as the ethical considerations. The methods discussed in this chapter were used to construct Chapter 4.

Chapter Four: provides a detailed explanation of the results obtained by analysis of the retrieved data. The findings are presented according to each objective of this study. Relevant literature has been used to substantiate the findings. In addition, the finds were used to provide suggestions and recommendations for future studies with a similar focus.

Chapter Five: forms the conclusion of the study by summarising the findings, which contribute to the recommendations for future studies.

1.8 Chapter Summary

This chapter provides the prelude to the current study. The motivation for the study was primarily due to the lack of literature regarding eLearning at UKZN. This is of particular interest since more tertiary institutes are heading toward eLearning. Therefore, research into this area is essential to keep UKZN on par with other tertiary institutes. The aim and objectives and a brief description of the methodology is provided together with an outline of each of the subsequent research chapters.

CHAPTER TWO

Literature Review

2.1 Introduction

This section critically reviews literature pertaining to the effect of social media, the internet and technology on students at a tertiary level. There are a number of conflicting views as to whether social media and the internet are beneficial and support educational learning or is detrimental and hinder the learning process. The sections contained in this chapter discuss the influence and effect of eLearning and online tools at tertiary institutes predominantly in South Africa. Conflicting views regarding the use of online tools are highlighted by introducing the benefits and challenges experienced thus far at institutes. The aspect of policy and strategies in higher education are mentioned, with a particular focus on the University of KwaZulu-Natal. Models, theories and techniques used in eLearning are also discussed.

2.2 Major Uses of Social Media and the Internet

Learning on demand is becoming a type of lifestyle in modern society (McLoughlin and Lee, 2007). People are often seeking information and due to the advancements of technology, this information is available at the click of a button. The search for information could be to address issues at work, school, to satisfy one's curiosity or even due to the convenience of the availability of information. The use of the internet is not only to seek information but also to share information amongst individuals. Therefore, it can be stated that the internet is not only subjected to passive information consumers but rather active consumers since they are the co-producers of the content available online. Furthermore, there are different forms of social media, which allow for peer-to-peer communication and bidirectional transmission, which allow for many to many media content. These tools have the potential to reshape communication methods and commence with online communication, which would in turn lower face-to-face interaction between individuals.

'Skype' is perceived as a useful communication tool, which allows for face-to-face communication with the aid of technology. This can also be used in the learning environment and allows for bidirectional communication. Learning in the context of social media has become self-motivated, autonomous and is an integral part of the college experience (Dabbagh and Kitsantas, 2012). However, at tertiary level, students primarily depend on

traditional methods such as course work and face-to-face interactive learning systems. This does not capitalise on the educational benefits of social media for example allowing students to manage and maintain a learning space that facilitates their own learning activities and social networks across a time and location. Personal learning environments can assist to integrate formal and informal learning and encourage self-regulated learning in higher education. There is evidence that social media can streamline personal learning environments, which would allow learners to participate collectively, share information, learning achievements and manage their own information intake and dissemination.

The concerns are whether learners can use social media and the internet as a tool for education at a tertiary level?

Will learners be able to manage their curriculum without the traditional methods of learning in classrooms?

Is this form of education beneficial or harmful to learners?

Students are often unable to attend lectures for various reasons, such as limited or no access to transport, family responsibilities or even protest action within tertiary institutions. This has a direct and oftentimes negative effect on students in that they are missing critical information and are unable to perform successfully in their field of study. On the other hand, devices, which provide access to social media and the internet are fairly expensive. Not all students may be able to afford these devices to study. Most individuals obtain a mobile phone as a means of communication, which can be used for social media as well as stream tutorials and would not impact on the cost of a separate device.

Figure 2.1 demonstrates the contribution of face-to-face, LMS (learning management system) and social media methods of learning toward the learning experience.

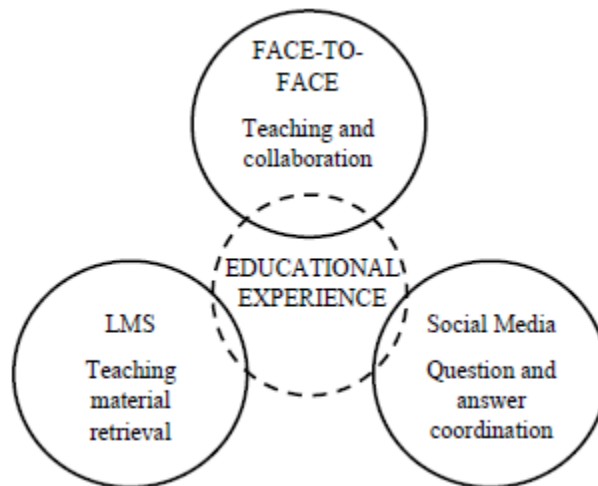


Figure 2.1 Face-to-face, LMS (learning management system) and social media contributions to the educational experience

Adapted from Hrastinski and Aghaee (2012).

A study conducted by Hrastinski and Aghaee (2012) found that instant messaging and E-mail was the main form of communication related to academic activities. E-mail was commonly used to exchange files, while instant messaging facilitated quick question and answer sessions. However, it was found that face-to-face meetings were superior for supporting education. Hrastinski and Aghaee (2012) discovered that students regarded social media as part of three key means of the educational experience together with face-to-face meetings and learning-management systems.

The term ‘Digital Natives’ was developed by Marc Prensky to portray the idea that a new generation of students, who were born after 1980, have been immersed in technology for majority of their lives, which has imbued them with technologically advanced skills and an aversion to the traditional mode of teaching and learning (Prensky, 2001; Bennett, Maton and Kervin, 2008; Leonard *et al.*, 2016). Due to the new generation of learners, a change in the current education system is required.

Social media provides users with an interface in which they have control of the data and information shared, gathered and disseminated (Cao, Ajjan and Hong, 2013). Some of these social media applications include, WhatsApp, BBM, Facebook, Twitter, LinkedIn, forums, Skype and many more that are being developed on a regular basis.

2.3 Internet-based Learning Program

The concept of eLearning or web-based learning or web-based education is learning enhanced with the aid of technology to access, create, distribute and retrieve digital content via desktop computers, laptops, mobile phones and tablets. This method has been implemented at the University of the Western Cape. The web, personal learning environments such as podcasts, screenshots, blogs and google applications, social media and learning management tools are categorised as eTools. This innovative method of teaching and learning can effectively enhance and facilitate the process. The current and possibly ongoing ‘#FeesMustFall’ student protest plaguing many South African universities has led to some universities such as the University of the Western Cape announcing an end to the 2016 academic year. This protest affected many of the staff and students, whether they were willing to be an active part of the protest or not. Students and lecturers alike were unable to attend lectures, tutorials and practicals. Academic course content was unable to be completed on a face-to-face basis. This then led to students and lecturers taking to online systems to engage and retrieve information for exam preparation.

All new first year students at the University of Cape Town (UCT) are required to take an online computer skills test so that the necessary training can be provided for those students who do not possess these skills. A study conducted by Nash (2009) revealed there is a definite lack in the computer literacy skills of first year university students. This can be largely related to the findings of Oyedem (2012), which stated that access to the internet beyond campuses, is challenging, revealing the digital inequality in South Africa.

Dabbagh and Kitsantas (2012) discovered that while internet-based learning can be adaptive depending on the student’s learning needs, not all of the students are equipped with the necessary skill set (knowledge and self-regulatory management) to effectively use this form of learning. As much as students require the technical skills, they also require a certain degree of self-efficacy and motivation. A framework for using social media to support self-regulated learning is composed of (1) personal information management, (2) social interaction and collaboration, and (3) information aggregation and management. Many tertiary institutes fail at implementing Information and Communication Technology (ICT) programs for teaching and learning due to the challenge of ICT to replicate their traditional methods of learning. These plans seem to be driven mainly by ICT and not on pedagogical rationale and focus (Sife, Lwoga and Sanga, 2007). Effective integration requires all

stakeholders to re-examine their existing structures and practices and make the necessary adjustments.

Figure 2.2 presents the complex intermingling of factors, which contribute to the importance of adopting online teaching and learning methods (Bach, Haynes and Smith, 2006).

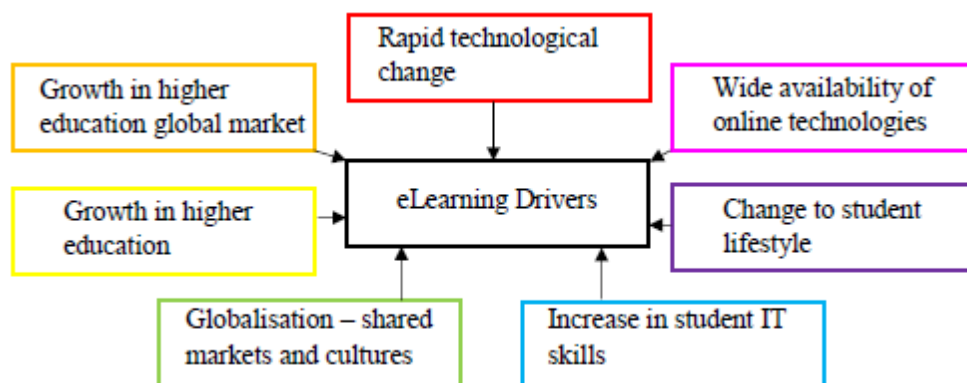


Figure 2.2 Drivers of eLearning

Adapted from Bach *et al.* (2006).

The shift from conventional and traditional teaching and learning methods to online methods is now more apparent than ever with the advancement of technology, rapid rise in online courses and the bombardment of information on a daily basis.

2.4 Case Studies of South African Universities

A study undertaken by Bosch (2009) at the University of Cape Town (UCT), South Africa, examined the use of Facebook as a tool for teaching and learning. This study found that while there are some potential benefits to using Facebook, there are also challenges. Some lectures found it more convenient to communicate information to students via Facebook as opposed to searching for students in class who may not be present at all. The main challenges include the level of ICT literacy of the students and the uneven access by students to online tools. Another challenge is the available bandwidth as more students online could potentially slow down the network. The distracting nature of Facebook has also been reported by some lecturers, which may hinder learning. The language barrier was also noted as a potential challenge since the predominance of English may not appeal to all students at UCT due to the multilingual landscape of the South African society.

The Digital Academic Literacy (DAL) Programme was developed in 1999 at the University of Western Cape (UCW) to deliver computer literacy skills to novice users at UCW (Leonard *et al.*, 2016). Table 2.1 presents the number of students that have been trained in the DAL Programme from 2005 to 2015.

Table 2.1 University of Western Cape students trained in the Digital Academic Literacy (DAL) Programme

Adapted from Leonard *et al.* (2016).

Digital Academic Literacy Programme											
Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Economic and Management Science	116	731	895	750	2136	1719	1777	1414	1791	2031	1983
Arts	187	374	121	497	587	355	398	400	434	433	386
Community and Health Sciences	781	413	303	375	530	475	516	452	406	403	384
Dentistry	31	33	26	28	27	126	135	106	152	121	156
Natural Sciences	97	116	0	0	0	0	0	0	0	123	109
Law	615	473	423	503	488	731	593	0	0	613	624
Education	0	0	0	0	0	620	815	386	304	401	349
	1827	2140	1768	2153	3768	4026	4234	2758	3087	4125	3991

The DAL Programme has been incorporated in a number of foundation courses and weighted up to 20%. The DAL team works collaboratively with the university faculties in a consultative manner. The content of this programme is to encourage eLearning but also to ensure that all students are at a similar computer literacy level with regard to academic purposes.

With the concept of the ‘Digital Natives’ as discussed in Section 2.2, the current educational landscape needs to be adapted to cater for this new generation. However, it is essential to note that access to ICT does not necessarily translate in to grasping or embracing of this technology (Leonard *et al.*, 2016). This is particularly evident in Africa, where adaptation of a Western theory is required before adoption. The findings of this study revealed that despite students being exposed to technology prior to entrance at university, there exists a need to train students on the basic digital literacy skills that is necessary at a tertiary level. This study

goes as far as stating that the Marc Prensky's theory of 'Digital Natives' cannot be fully accepted due to it being a blanket theory that pertains to an entire generation. The results from the study reveals that there are indeed exceptions to Marc Prensky's theory. Training students in the effective use of ICT tools improves their ability to cope academically and improves the potential of their employment (Leonard *et al.*, 2016).

South Africa as a country is no stranger to service delivery and trade union protests as well as political unrest such as the '#Black Monday', which took place on 30 October 2017, relating to farm killings in South Africa, which resulted in students not being able to attend their examinations (Hosken, Govender, Bhengu, Gous and Davids, 2017; Ngubane-Mokiwa, 2017). Therefore, the need to realise the adoption of teaching and learning that is not restricted to within walls is essential. This allows for teaching and learning to still take place irrespective of the perceived threat associated with a particular place. Students at the University of South Africa (UNISA) have been found to embrace technology and related social media tools (Ngubane-Mokiwa, 2017). However, a portion of the lecturers at UNISA have been found to 'resist' Open Distance eLearning (ODEL) as they are unfamiliar or do not possess an affinity for this form of technology. This discrepancy between the lecturers and students could result in UNISA being greatly disadvantaged in accessing opportunities of accessing Massive Open Online Courses, Open Educational Resources and simulation and gaming software to enhance the learning process. This would also prevent students and lecturers from effective communication and instant feedback. Ngubane-Mokiwa (2017) further states that developing an appropriate ODeL programme to gap the 'digital divide' between the lectures and students is required.

A study by Queiros and de Villiers (2016) undertaken at UNISA among undergraduate students highlighted essential connections of strong social presence, technological aspects and tools in using online methods. It was further found that many South African students reside in poor socio-economic conditions with limited access to the internet. However, eLearning is said to be able to reach these students. While Queiros and de Villiers (2016) argue that eLearning is a means for marginalised and disadvantaged students in South Africa to gain access to education, they acknowledge the fact that there are challenges especially in developing countries. It is recommended that higher education institutions be cognisant of their student's situation and create a system to accommodate both the disadvantaged and techno-savvy students (Queiros and de Villiers, 2016).

2.5 South African Higher Education Standpoint on ICT

Czerniewicz and Brown (2009) have identified the influential role played by institutional policies and organisational cultures in South African universities with regard to the adaptation and adoption of eLearning or ICT's for teaching and learning. It is important to note that South Africa does not have in place a formal national policy relating to educational technology. This implies that institutions are not incentivised to incorporate such strategies in their structural governance because the national government does not have any framework or driving force in place. Many of the South African institutions incorporated eLearning together with other policies or policies relating to eLearning in a draft format. On the other hand, eight institutions had no policies in place. At UKZN the eLearning platform is hosted by Information and Communication services (ICS). Moodle being the online course management system that is used. Principle no. 8 of the UKZN Policy on Teaching and Learning (Reference No. CO02031212) briefly addresses the idea of eLearning as follows, "Supporting multiple modes of teaching and learning, including experiential and on-line/e-learning". The procedures and guidelines for implementation states, "Advocate and ensure continuous provision of on-line/e-learning facilities and resources to stay abreast of best practices in technology for University teaching and learning", which is the responsibility of the Teaching and Learning Strategy Group (TLSG) and ICS. Policy review regarding eLearning can broadly be divided into two categories:- (1) concerns regarding the correct implementation of technologies (micro issues) and (2) politically orientated questions as to how and why eLearning technologies should be implemented (macro issues) (Wallace and Young, 2010). Some of the challenges identified in institutional policy formation relating to eLearning are as follows (Wallace and Young, 2010):

1. Management and organizational:
 - a. Integrating the new teaching/learning strategy with the institutions stated goals and priorities.
 - b. Administrative and approval processes from shifting a programme to a new method of teaching/learning.
 - c. Support in implementing and delivering this new style of teaching/learning.
2. Academic/ Faculty:
 - a. Establishing suitable assessment criteria for the programme/course.
 - b. Establishing suitable criteria for determining staff workload.
3. Students:

- a. Addressing student access.
- b. Providing support for students.

2.6 Factors Affecting eLearning

There is a myriad of studies highlighting the benefits and challenges of using social media and the internet as a teaching and learning tool with conflicting views. The use of technology in the higher education framework can be viewed as either an obstacle or opportunity (Thomas and Thomas, 2012). This section provides some of the benefits and challenges faced, which may be common to most of the tertiary institutes where these studies have been conducted or specific to a particular institute.

2.6.1 Benefits of eLearning

Table 2.2 summarises some of the benefits and challenges of eLearning.

Table 2.2 Benefits and challenges of eLearning

Benefits of eLearning	Challenges of eLearning
Learning is not restricted to time and place and accessible anywhere.	Contribute to the depowering if critical thinking
Flexibility for staff and students	Less human Interaction Hindered development of social skills
Minimizes costs of commuting	Collaboration is reduced among students
Build relationships of shared interests and knowledge communities	Risk of misunderstandings and miscommunications is higher
Communicate with likeminded individuals	Increase in students being distracted by social media
Students feel a sense of belonging	Limited internet access
Forums established for positive networking which promotes critical thinking	Resistance by academic staff to adopt online teaching methods
Highlight and showcase works conducted which can attract funding opportunities and research information	High initial cost, human support lack of social presence and learner demotivation.

Benefits of eLearning	Challenges of eLearning
Strengthen academic relationships and encourage networking	Lack of understanding the software required.
Immediate relevant updated information	
Timeliness, flexibility, accessibility, student-centred learning, cost effectiveness, collaboration and interaction.	

The use of technologies such as social media and internet-based learning is not restricted to time and place but rather is accessible anywhere with internet availability (Blankenship, 2011, Hrastinski and Aghaee, 2012). This allows for flexibility to both the staff and students (Graham, Allen and Ure, 2005). This minimises the cost of commuting and the associated challenges, which may hinder staff or students from attending the academic session, be it a lecture, tutorial or practical (Ndubisi, 2006). Students are able to build relationships of shared interests and knowledge communities (Selwyn, 2009). The ability to communicate with like-minded and subject-specific individuals has been noted as a fundamental aspect in the learning process (Thomas and Thomas, 2012). Learning communities or communities of practice allow students to feel a sense of belonging, as opposed to feeling a sense of isolation (Bennett *et al.*, 2012). In addition, staff (lecturer, tutor, professor) are able to establish forums for easy and positive networking with students (Ziegler, 2007). This also assists in the promotion of critical thinking (Bugeja, 2006). Social media can be used to highlight and show case the work conducted by students and staff. This can attract funding opportunities, comments and inputs from other relevant parties as well as for effective data gathering for research (Thomas and Thomas, 2012). This could possibly establish and strengthen academic relationships and encourage networking. Students will have almost immediate access to a substantial amount of relevant and updated information. Queiros and de Villiers (2016) concur with these findings stating that the advantages offered by eLearning is timeliness, flexibility, accessibility, student-centred learning, cost effectiveness, collaboration and interaction.

2.6.2 Challenges of eLearning

Ziegler (2007) argues that eLearning has the potential to contribute to the depowering of critical thinking with an ever-growing 'Google generation'. Contrary to what had been stated by Bennett *et al.* (2012), online-based learning lead to less human-interaction and hindered the development of social skills. The collaboration among students is reduced as students work individually on separate aspects of a project. The risk of misunderstandings and miscommunications is higher without face-to-face communication and input. The onset of Web 2.0 and social media as an eLearning tool could result in an increase in students being distracted and a tendency to divert by using social media for personal communication as opposed to academic. According to Bosch (2009) internet penetration is low in Africa, with only 9.4% of the population online. Therefore, the majority of the African population is limited with access to the internet. Thomas and Thomas (2012) found that the resistance by academic staff to adopt new methods of teaching is also a hindrance to online teaching and learning methods. This can be seen as a defence of the traditional face-to-face method. In addition, it was found that in many business schools, the face-to-face learning method is perceived as being of a higher quality, compared to online learning. Other disadvantages highlighted by Queiros and de Villiers (2016) is the high initial cost, human support, lack of social presence and learner demotivation. A lack of understanding the software required for online teaching and learning can result in frustration and anxiety.

2.7 Technology Adoption Theories and Models

The adoption of eLearning by universities worldwide has led to the development and investigation of a number of theories and models. These models, trends and theories undergo continuous change and adaptation due to student demographics, faculty effort, technology satisfaction, graduate competency, technology advancement, costs and availability of funds, national and institutional policies and many more (Park, 2009). Models, which have influenced the eLearning and eTool adoption at a tertiary level, are discussed in the proceeding sections. These models have been used in the planning and development of information technology systems in higher education to determine the effectiveness of adopting and implementing such methods of teaching and learning.

2.7.1 Technology Acceptance Model

The theoretical Technology Acceptance Model (TAM), which was originally proposed by Davis in 1986, is used to explain and predict the user's behaviour with regard to information

technology to investigate the eLearning process (Park, 2009; Park, Nam and Cha, 2012; Cheung and Vogel, 2013; Alharbi and Drew, 2014). This model is based on the effect of external variables on a user's belief, attitude and intention in usage (Park, 2009). Studies by Park (2009) found that eLearning self-efficacy was the most important construct in explaining the causal process in the model. However, a study conducted by Park *et al.* (2012), identified attitude as the predominant construct. These findings assist in identifying specific aspects that should be targeted to improve the student's eLearning uptake. For instance, Park *et al.* (2012) recommended that university staff should encourage students and help improve their attitudes regarding eLearning. In addition, resources such as high quality internet environments and inexpensive mobile devices be identified as necessary to support the eLearning process. TAM is not solely confined to students but also considers the willingness of academics to use online methods for teaching (Alharbi and Drew, 2014). Studies conducted by Park (2009); Park *et al.* (2012); Cheung and Vogel (2013) and Alharbi and Drew (2014) all concur the validity of using the TAM in the adoption of eLearning technologies.

2.7.2 Theory of Planned Behaviour Model

The Theory of Planned Behaviour Model (TPBM) comprises three aspects: (1) attitudes, (2) subjective norms, and (3) perceived behavioural control to explain behaviour related to eLearning (Cheung and Vogel, 2013). Attitude can be explained as the degree to which the user has either a favourable or an unfavourable evaluation. Subjective norms can be explained as the user's perceived social pressure to either perform or not. Behavioural control can be explained as the perceived ease or difficulty in performing (Ndubisi, 2006). A comparative study by Mathieson (1991) of the TAM and TPBM revealed that both models could effectively predict the users intention in using the information systems. However, the TAM was found to have a more empirical advantage. TAM was found to be easier to apply, whereas TPBM required more specific information, which could guide the development process. Ndubisi (2006) revealed similar findings in that the TAM was more robust, compared to the TPBM.

2.7.3 Unified Theory of Acceptance and Use of Technology

The Unified Theory of Acceptance and Use of Technology (UTAUT) is composed of four variables:- (1) performance expectancy, (2) effort expectancy, (3) social influence, and (4) facilitating conditions. In addition to these variables are four moderating variables:- (1)

gender, (2) age, (3) experience and (4) voluntariness of use (Im, Hong, Kang, 2011; Lewis, Fretwell, Ryan, Parham, 2013). Lewis *et al.* (2013) found that social influence had the most influence of technology adoption. Gender was also found to be a contributing factor in that female professors were found to be more likely to adopt online teaching due to social pressures, compared to their male counterparts. Contrary to this, findings by Wang *et al.* (2009) discovered that social influence was greater in men, compared to woman. This could be due to females not being exposed or being unfamiliar with certain relatively advanced eLearning systems, and are therefore less likely to be influenced (Wang, Wu and Wang, 2009).

2.7.4 Techniques in adopting online learning methods

According to Larson and Sung (2009) and Thomas and Thomas (2012) there are three technology-encompassing models for teaching and learning. The first is based on mainly traditional face-to-face with the inclusion of limited technological input. The second method is blended learning with a slightly more advanced technological input. The third method is blended learning with a powerful link to technology facilitated learning and ‘learning communities’.

2.7.5 Face-to-face with the limited technological input

Face-to-face learning deals with a direct interaction between the instructor and student and has been considered as a high quality mode of teaching/learning (Thomas and Thomas (2012). In this method, the professor is said to be the ‘architect’ of the instructional process and the students take on the role as the ‘apprentices’. Some research pertaining to face-to-face teaching/learning point in the direction of student preference as information is communicated more clearly and if not, then clarity can be sought almost immediately (Thomas and Thomas, 2012; Young and Duncan, 2014). Research-orientated professors have been found to be particularly resistant to social media and online technology, as it has been likened to “a young person’s game” and they have thus been active in using traditional methods of teaching with only limited technological support (Thomas and Thomas, 2012).

2.7.6 Blended learning

The inclusion of new teaching and learning methods to tertiary curricula is undoubtedly an incremental process. The predominant form of teaching in many South African universities is based on the traditional face-to-face method. However, another form of teaching has

entered into the curricular of many universities known as blended learning (Graham *et al.*, 2005; Wallace and Young, 2010). Blended learning can be defined as,

“... courses integrate online with face-to-face instruction in a planned, pedagogically valuable manner, and do not just combine but trade-off face-to-face time with online activity, or vice versa” (Vignare, 2007, cited by Wallace and Young, 2010).

The three main reasons argued by Graham *et al.* (2005) for implementing blended learning at a tertiary level are:- (1) to enhance flexibility and access, (2) to improve pedagogy and (3) to improve resource allocation and expenditure. This was also concurred by Thomas and Thomas (2012). Some studies have identified a significant difference in the success of students and student preference between face-to-face teaching/learning and blended learning techniques (Paechter and Maier, 2010; Young and Duncan, 2014). On the contrary, other studies have indicated no significant difference between blended and face-to-face learning methods (Larson and Sung, 2009; Thomas and Thomas, 2012). Larson and Sung (2009) suggested that the course design, selection of appropriate course content, instructor and student interaction, and/or student motivation might have a greater impact on the success of the student, compared to the mode of delivery. Paechter and Maier (2010) found that students preferred face-to-face learning for communication purposes and online methods for conceptual knowledge or when the application of one's knowledge has to be acquired. Furthermore, students advocated online learning with regard to acquiring skills related to self-regulated learning.

Social media is revolutionising the higher education landscape. Web 2.0 encompasses tools allowing publishing and sharing of information (images, audio and video) and the ability to create and manage online social networks (Bennett *et al.*, 2012). A study conducted by Bennett *et al.* (2012) found that tertiary students had limited exposure and experience with technologies for online learning. Furthermore, these students did not understand the value of using such technologies for teaching and learning. However, Thomas and Thomas (2012) state that those Web 2.0 technologies could prove to be valuable in establishing media relations and internal communications within universities.

According to Bach *et al.* (2006) it is difficult to distinguish a clear comparison between eLearning and face-to-face teaching/learning methods. Learning using online tools would prove to be more effective with students exposed to face-to-face teaching methods and

interactions. Figure 2.3 illustrates the complex coordination and management of different influential factors on eLearning.

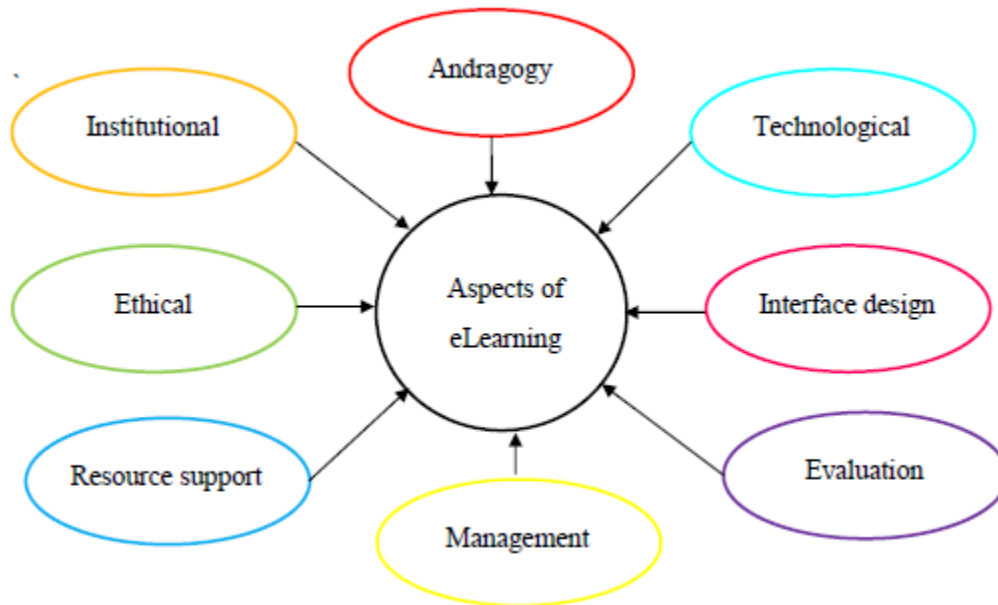


Figure 2.3 Complex nature and factors to consider for eLearning

Adapted from Bach *et al.* (2006)

2.8 UKZN’s Information Technology and eLearning Structural Framework

UKZN has adopted Web 2.0 technologies, which is revolutionising many of the core activities such as publishing and management of research information. In addition, platforms are being developed for online collaboration of virtual research communities. UKZN has a comprehensive information technology website that is update on a regular basis. The sections to follow encompass the main aspects of UKZN’s information technology system dedicated to eLearning.

2.8.1 Information technology infrastructure

UKZN’s Pietermaritzburg Campus has 16 student computer labs accommodating 7 to 60 students at a time. Students are able to access 11 of the labs 24 hours a day while the remaining five are accessible during specified office hours. Printing facilities are also available at each lab with software updates conducted on a regular basis.

WiFi is accessible to all registered staff and students of UKZN on most areas on campus and currently work is ongoing to ensure WiFi is accessible at all locations. Students are able to

download unlimited course material, which is monitored by information technology staff members. The E-mail system has been upgraded to Office 365, which allows the user access to Cloud services such as OneDrive for information/data storage of up to 30 Gigabytes. This information is accessible from any device provided that the user login details are valid. UKZN has a dedicated internet link, which links all the campuses (Howard College, Medical Campus, Edgewood, Westville and Pietermaritzburg), which uses up to date technology, such as fibre optics allowing for faster communication/transfer speed (1.0 Gigabyte per second). Satellite links are also established to remote areas such as Albert Luthuli Central Hospital, Greys Hospital and Northdale Hospital, which houses UKZN medical staff and students.

UKZN in collaboration with the National Student Financial Aid Scheme (NSFAS) has engaged in student laptop deployment in 2017. The ICS division has issued 9000 laptops to NSFAS students. This allows under privileged students who qualify for a bursary to obtain a communication device, which allows for easier access to eLearning tools and information.

The UKZN audio-visual department is predominantly responsible for video conferences, video streaming and live streaming of relevant events such as lectures, conferences and graduations directly to the device. These facilities can allow for future online teaching and learning methods.

2.8.2 Moodle online course management system

UKZN uses Moodle as an online management system. This allows for interaction between lecturers and students in the form of E-mail, messages, videos, course notes and useful links. Lecturers request for administrator rights and are able to create entire courses online with all relevant information. Lecturers can structure quizzes, which can automatically generate student scores based on their answers. Lecturers have the freedom to arrange the course material as they deem fit and which effectively encourages student input and engagement. Detailed instructions on creating a module is provided on the UKZN Moodle website (<https://learn.ukzn.ac.za/>).

2.9 Chapter Summary

Web 2.0 technologies has drastically altered the manner in which people communicate. This technology has also ushered in an innovative method of teaching and learning in higher

education. There are however, many conflicting views based on studies conducted at different tertiary institutes worldwide. Many researchers praise this form of teaching and learning stating that it is innovative and students perform better when exposed to eLearning. Furthermore, this form of teaching and learning offers flexibility and addresses logistical issues such as travel costs and protest action, which may hinder staff and students from attending formal lectures in classrooms. In contrast other researchers state that there is no significant difference in student performance and that the mode of delivery is not as important as other factors such as course design, selection of appropriate course content and student motivation.

Many of the current students at universities are born post 1980 hence in accordance to Marc Prensky's theory, this generation is known as 'Digital Natives' who are said to possess technologically advanced skills. However, this theory has been disproved by Leonard *et al.* (2016) and Queiros and de Villiers (2016) stating that many students lack the techno-savvy characteristic and tertiary institutions should bear this in mind if eLearning is considered as the main method of teaching and learning.

Published research studies on the effect of eLearning in South Africa were conducted mainly at UCT, UWC and UNISA. There is a dearth of research focusing on UKZN, which creates a niche for research to be undertaken at UKZN. Since UKZN is in the process of implementing eLearning and online learning platforms such as Moodle for teaching and learning, it is of significance to determine the level of technological skill possessed by students as well as the willingness of students to embrace eLearning. This research will facilitate in the planning and provide recommendations for future eLearning methods at UKZN.

CHAPTER THREE

Research Methodology

3.1 Introduction

The literature review detailed in Chapter 2 indicates that extensive work has been conducted in the field of eLearning at tertiary institutes. However, a limited number of literature focuses on the effect and inclusion of eLearning at the University of KwaZulu-Natal (UKZN). Furthermore, no conclusive deductions can be made on the effect of eLearning on student success and their willingness to embrace this form of learning without a focussed research study. This therefore creates an opportunity for the current study to delve in to the arena of eLearning at UKZN to determine if eLearning is a preferred and successful method of teaching and learning among undergraduate students from three academic disciplines.

This chapter provides an outline of the methodology and research design selected for this study. The aim and objectives are highlighted, followed by a description of the target population and explanation of the sampling procedure. The method of data collection and analysis mentioned in this chapter were selected based on it being unbiased and credible.

3.2 Aim of the Study

The aim of this study was to identify if social media and the internet could be used to replace the traditional face-to-face methods of education at a tertiary level at UKZN. Undergraduate students within the institution would be able to provide information as to whether this is an option for future education models. The specific objectives of this study are to determine:

1. The level of technological knowledge and skill of students.
2. The preferred methods of students for teaching and learning.
3. If using social media and the internet is an effective learning tool among different disciplines, age groups, year of study and gender.
4. The use of social media by students.

3.3 Research Design and Methods

According to Kothari (2011) the research design can be defined as the conceptual framework within which the study is conducted. The purpose of this research has been categorised as a descriptive research study, often termed *ex post facto research* in social science and business research (Kothari, 2011). This descriptive study will be used to describe the prevailing

situation by the behaviour and perceptions of students toward eLearning at UKZN by means of a questionnaire. The researcher has no control over the variables but can only report on the findings (Kothari, 2011; Sekaran and Bougie, 2013). The research approach adopted is an inferential quantitative study by means of a questionnaire. An inferential approach requires the formation of a database by which inference can be made about the population of interest based on the target sample by means of the questionnaire (Kothari, 2011). The sections to follow provide a detailed explanation of the methodology required for this study.

3.4 Research Paradigm

Sekaran and Bougie (2013) describe research paradigms as perspectives that researchers possess about the nature of knowledge. This perspective has a direct impact on the research process of adopting a suitable research design and methodology. The four perspectives on research commonly highlighted are positivism, constructionism, critical realism and pragmatism (Sekaran and Bougie, 2013). Positivists believe that an objective truth exists and that the world operates by laws of cause and effect that can be discerned by conducting scientific research. On the contrary, constructionism is in direct contrast to the positivism belief of an objective truth but rather these researchers aim to understand the rules people adopt to make better sense of the world. This form of research is often qualitative. Critical realism can be viewed as an intermediate view between positivism and constructionism. The goal of positivists is to uncover the truth, however, critical realists believe that it might not be possible to attain this goal; it is still possible to work toward it in a progressive manner (Sekaran and Bougie, 2013). Lastly, pragmatists believe that despite the method of research, useful knowledge can still be obtained, depending on the research questions. Another aspect of pragmatists is that they view the truth as tentative, which is subject to change over time. Based on these explanations, the best-suited paradigm for this study would be one of a pragmatist.

3.5 Study Location and Setting

UKZN was established in 2004 subsequent to the merge between the University of Natal and University of Durban located in Westville, South Africa (Kamwendo, Hlongwa and Mkhize, 2014). UKZN offers a wide range of programmes to both undergraduate and postgraduate students from a number of disciplines including architecture, arts, agriculture, engineering, social sciences, education, health-sciences, medicine, commerce, law, and natural sciences (Subbaye and Dhunpath, 2016). Currently UKZN is the only university in

South Africa that offers a four-year degree of Agricultural Engineering that is accredited by the Engineering Council of South Africa (ECSA) (Workneh and Senzaje, 2011). UKZN comprises of five main campuses viz. Howard College, Medical Campus, Edgewood, Westville and Pietermaritzburg. Four of these campuses are situated in Durban and one is based in Pietermaritzburg.

The study was conducted at the UKZN Pietermaritzburg Campus. Undergraduate students from the Social Science discipline were approached on the Golf Road Campus, while students studying Information Technology and Agricultural Engineering were approached on the Main Campus and the Life Sciences Campus, respectively. UKZN has been identified as the study setting as limited published research is available on this particular university. The exact location of the study area is contained in Appendix C. Since three different disciplines were selected, three locations have been identified on the map.

The researcher had minimal interference in the non-contrived research setting.

3.6 Population and Sample

Engineering has been classified as hard-applied knowledge, whereas humanities and social sciences can be classified as either soft-pure or soft-applied fields and information technology or computer science may fall in the context of hard-pure science (Neumann, Parry and Becher, 2002). Each discipline requires different cognitive skills and develops various skills of the student. Virtanen and Nevgi (2010) reported on the effect of discipline on the preferred method of teaching and learning. It was found that students pursuing studies in education preferred a teaching style, which motivated self-regulating learning, compared to engineering students. However, engineering students are required to conduct self-regulating learning due to the innovation and inventiveness required in assignments and projects. In addition, students studying behavioural sciences use self-regulated learning more than technology students, who have been reported to use this style of learning the least. Virtanen and Nevgi (2010) recommend that additional research be undertaken to determine congruity of a teaching and learning style with a particular discipline. Therefore, undergraduate students from the Social Science, Information Technology and Agricultural Engineering disciplines were targeted for this study as these disciplines possess vast differences in the course content and focus area. In addition, as mentioned in Section 3.5, since UKZN is the only university in South Africa, which offers an ECSA-accredited

Agricultural Engineering degree, it would be of interest to include this discipline in the current study.

A total of 502 students have registered for each of the abovementioned disciplines, depending on the programme as indicated in Table 3.2.

Table 3.2 Total number of students in each programme per discipline

Discipline	Programme	Number of Students
Social Science	Augmented programme	270
Information Technology	ISTN101*, ISTN212	86
Agricultural Engineering	Standard 4-year degree	146
Total		502

*ISTN: Information Systems and Technology.

The programmes for semester two of the 2017 UKZN academic year was conducted from 17 July 2017 to 27 November 2017. The programmes presented in Table 3.2 are the majors for each discipline. These correspond to the majority of student who enrolled for this particular programme. The program indicates the majors of each discipline (Table 3.2). These correspond to the majority of student who enrolled for this particular program. According to Krejcie and Morgan (1970) a population of 467 requires a sample size of 212 at a confidence level or reliability of 95% and margin of error of 5%.

3.7 Sampling Method

The sample frame, which is the number of students registered for each discipline according to the programme, was obtained from the administrators in each of the three disciplines. This list of students, which constitutes the sample frame is updated regularly. However, Sekaran and Bougie (2013) indicate that the discrepancy between the target population and the sampling frame may be negligible. The probability sampling method using simple random sampling was adopted for this study (Kotahri, 2011; Sekaran and Bougie, 2013).

3.8 Construction of the Instrument

A quantitative research approach aims to represent the population of interest by identifying a target sample in which the behaviour of that particular sample is measured and an attempt is made to form a generalised statement regarding the population (Wilson, 2014). Quantitative research studies are often used to define relationships to establish cause and

effect and follows a deductive statistical analysis. One method of quantitative research adopts questionnaires, which has been identified as a powerful research tool (Taherdoost, 2017).

A survey approach used in the form of a personally administered questionnaire to collect quantitative data from the intended participants was adopted. Questionnaires are a set of questions, either open or closed, in which respondents record their answers (Sekaran and Bougie, 2013). This method of data collection is generally less expensive and time consuming, compared to interviews and observations. Personally administered questionnaires are advantageous in that any doubts from respondents can be cleared immediately and the researcher is able to introduce the research topic and motivate respondents to provide honest answers (Kothari, 2011; Sekaran and Bougie, 2013).

Kotahri (2011) explains that a ‘good’ questionnaire should be relatively short. The questionnaire should also appear aesthetically appealing to the respondent. Closed ended questions allow respondents to make a quick decision in selecting the most appropriate answer. However, closed questions may confine and limit the answer. Therefore, many researchers end with open questions, which allow respondents to comment on aspects that required additional explanation (Sekaran and Bougie, 2013). Questions should also be short and to the point. Sekaran and Bougie (2013) recommend that questions should not exceed 20 words or exceed one complete line. The guidelines provided by Kothari (2011) were followed in constructing the questionnaire for this study.

The questionnaire was formulated with 21 questions comprising 20 closed questions and one open question. The initial questions were of the nominal scale to establish the demographics of the respondents in terms of gender, age, level of study and academic discipline (Sekaran and Bougie, 2013). The scaling methods used were predominantly closed questions with only one open question. The closed questions in which the respondents were made to choose from a limited number of potential answers comprised of a 5-point Likert rating scale. Respondents indicated the degree of agreement or disagreement with a statement and a semantic differential scale was also used in which respondents indicated how strongly they held an attitude (DeAndre, Ellison, LaRose, Steinfield and Fiore, 2012; Sekaran and Bougie, 2013; Taherdoost, 2017). Other questions included a dichotomous scale, which comprised either a ‘Yes’ or ‘No’ answer and some had customised options such as the type of social

media platform that was most preferred. The questionnaire in its entirety is contained in Appendix A.

3.9 Data Collection

The data collected were of a primary nature as opposed to secondary data, which is data already collected by another person (Kothari, 2011). One of the more popular methods of primary data collection is by administering questionnaires. Participation was voluntary and anonymous. All personal information and identifiers (names, addresses, student numbers) associated with individual respondents were treated with confidentiality. Anonymous return of completed questionnaires was conducted. The researcher will endeavour to convey the findings from the study to the relevant participants in a manner that they are able to understand and in a manner that is not harmful or discriminative.

The proposed work plan required that the questionnaires be completed within a three-week period, with one week allocated per discipline. It was decided that a hard copy of the questionnaire would be randomly handed out to students studying any of the three disciplines on their respective campuses. This would be the most efficient method of collecting sufficient responses within the allocated time with respect to the academic period. This would ensure randomisation. An online questionnaire was considered but not selected, as students may not be willing to complete the questionnaire due to other academic commitments such as submission deadlines.

3.10 Data Analysis

The returned questionnaires were checked for completeness and then captured into a statistical software package. The software package selected for the analysis of the data was SPSS - Version 25. However, before the data could be analysed it was first prepared. This preparation process included, coding, tabulations and then defining statistical inferences (Kothari, 2011). The first step in data preparation was coding, which involved assigning a number or symbol to a participant's response, which can be analysed by the software. Sekaran and Bougie (2013) recommend that at least 10% of the coded questionnaire must be rechecked to avoid human error. Once coding was complete, the data was then entered into the statistical software. The data was then edited by detecting and correcting illogical, inconsistent, illegal or omitted data entries. Depending on the scale of the measures, the mode, median and standard deviation was obtained to gauge the responses from the

participants (Sekaran and Bougie (2013). Frequencies, correlations and relationships of different variables were then obtained.

The chi-square test was developed by Karl Pearson in 1990 to determine the goodness of fit for frequency of curves (Franke, Ho and Christie, 2012). In 1904 he then adjusted it to accommodate for testing the independence between rows and columns in contingency tables. The chi-square test has become one of the most common methods adopted in the statistical analysis for determining the difference between categorical variables.

3.11 Reliability and Validity of the Study

Reliability indicates the degree to which the data is free of error (unbiased) or the accuracy and precision of the type of measurement (Kothari, 2011; Sekaran and Bougie, 2013). The standard error (σ) provides an idea about the reliability of the data, in that the smaller the standard error, the more uniform the data (Kothari, 2011). Cronbach's coefficient alpha is one of the popular methods of determining the reliability of the respondents' answers to all the items in a particular measure (Sekaran and Bougie, 2013). A reliability measure of less than 0.6 is considered inadequate, those values in the range of 0.7 are adequate, while those greater than 0.8 are good.

Validity is the criterion, which indicates the extent to which an instrument measures what it was initially designed to measure (Kothari, 2011). Content validity is a measure to which the instrument adequately covers the research topic whereas criterion-related validity relates to the researcher's ability to predict an outcome.

3.12 Ethical Considerations

Adhering to ethical concerns must be implemented at the commencement of research (Wilson, 2014). All staff and students of UKZN must strictly adhere to the university's Research Policy V - Research Ethics, inclusive of the Code of Conduct for Research, which is appended to the policy. Due to the fact that this study involves human subjects, ethical clearance from the university's Humanities and Social Sciences Research Ethics Committee (HSSREC) was crucial. A formal request enlisting the relevant but brief details of this research study, as contained in this document, was sent to the Registrar of the University based at the Westville campus. This study had been reviewed by the HSSREC, upon which full approval of the research protocol and ethical clearance was granted (reference number:

HSS/1504/017M). Permission granted by the Gatekeeper to conduct this research as well as research approval is contained in Appendix B.

All data in the form of soft and hard copies obtained from this study will be securely stored by the university's Graduate School of Business for a period of five years as is stipulated in the UKZN Research Policy V - Research Ethics.

3.13 Chapter Summary

This chapter presented the research methodology, strategy and techniques required to conduct this descriptive-type study. A justification on the use of a personally administered questionnaire was provided as well as the need for using quantitative data, compared to qualitative data. A pragmatist research paradigm was found most suitable to describe the researcher's perspective on obtaining the results. The study was conducted at the three UKZN campuses being the Golf Road Campus, Life Sciences Campus and the Main campus. These three campuses were selected due to the three disciplines of Social Science, Agricultural Engineering and Information Technology selected for this study. The population size and sample size were also mentioned. An explanation of the development of the research instrument being the questionnaire was also provided. This was followed by method used for data collection and data analysis. The next chapter, Chapter 4, will provide a detailed discussion of the results, which will link the theoretical literature review (Chapter 2) with the methodology of this study (Chapter 3) and the findings of this research.

CHAPTER FOUR

Presentation of Results and Discussion

4.1 Introduction

This chapter displays the primary data collected using the methods discussed in the previous chapter (Chapter 3) and analysed using the SPSS software. The exploration of the data is presented in sub-sections contained in this chapter. The first section being the manner in which the data was analysed followed by the reliability of the data. Thereafter, an analysis of the respondents' demographic information is presented. Finally, each objective of this study was discussed with regard to the relevant data analysis.

From a population of 502 students, a sample size of 212 was adopted with a 95 % confidence level and a margin of error of 5% (Krejcie and Morgan, 1970). The completion percentage of the questionnaire was 100%. The personally administered questionnaire was conducted over a period of three weeks. The average time taken to complete the questionnaire was determined to be 10 minutes per questionnaire. The quantitative data collected from the responses is presented and discussed systematically according to each stated research objective.

4.2 Treatment of Data

Preceding the data analysis, checking of the data was executed to ensure that questionnaires were successfully completed with no missing information. The data was then captured using specific coding into a software program (SPSS - Version 25). The data was thereafter analysed and presented in graphical and tabular form (bar graphs and tables) followed by a detailed explanation of the results. This style of presenting the data allows for easy interpretation and understanding of the results.

4.3 Reliability of the Questionnaire

The validity and reliability are the two fundamental elements in appraising a measurement instrument as stated by (Tavakol and Dennick, 2011). Cronbach's alpha (α) was formulated by Lee Cronbach in 1951 to express the internal consistency of a test or scale. Internal consistency should be defined before a test can be applied for research. Due to the nature of the questionnaire the data that was collected was a mixture of nominal and ordinal data (§3.8). The Cronbach's reliability test was used to determine the reliability of the information

provided. The α value is a number in the range of 0 and 1 with many researchers recommending a minimum α coefficient between 0.65 and 0.8 (or higher in many cases). A total of 212 participants completed the questionnaire. The data analysis produced a Cronbach's α value of 0.7, which according to Tavakol and Dennick (2011) and Sekaran and Bougie (2013) represents a reliable data set.

4.4 Respondent Demographic Information

The demographics of the students who have undertaken to voluntarily participate in this study are presented in this section. 212 questionnaires were completed by students on a voluntary basis. Table 4.1 indicates the distribution and composition (demographics) of the target sample.

Table 4.1 Target sample distribution and composition

Gender Breakdown	
Gender	Total Number of Students
Male	106 (50%)
Female	106 (50%)
Age Breakdown	
Age	Total Number of Students
17	2 (0.9%)
18	17 (8.0%)
19	32 (15.1%)
20	62 (29.2%)
21	48 (22.6%)
22	20 (9.4%)
23	13 (6.1%)
24	6 (2.8%)
25	4 (1.9%)
26	5 (2.4%)
Other	3 (1.4%)
Level of Study Breakdown	
Study Year	Total Number of Students
1st year	141 (66.5%)
2nd year	15 (7.1%)
3rd year	34 (16%)
4th year	22 (10.4%)
Discipline Breakdown	
Discipline	Total Number of Students
Social Science	84 (39.6%)
Information Technology	48 (22.6%)
Agricultural Engineering	80 (37.7%)

According to Table 4.1, both males and females shared an equal representation (50%) of the respondents who had participated in the questionnaire.

With regard to the age breakdown, only 0.9% of the respondents were 17 years of age, and 1.3% stated an age other than what was provided. This finding stands to reason, as many students are generally 18 years or older when registering for an undergraduate degree. The majority of students (29.2%) were found to be 21 years of age, followed closely by students 20 years of age (22.6%).

A total of 66.5% of the respondents were currently pursuing their first year of study, followed by third year students contributing to 16%, then fourth year students at 10.4% and finally second year students at 7.1%. The Social Science and Information Technology degrees are three years in length. However, Agricultural Engineering is a four-year degree, which accounts for the lower number of fourth year students.

Social Science and Agricultural Engineering are closely represented with 39.6% and 37.7%, respectively. The Information Technology students contributed 22.6% of the total.

4.5 Objectives of the Study

Each of the four objectives as mentioned in Chapter 1 (§1.5) and Chapter 3 (§3.2) have been aligned with certain questions and constructs in the questionnaire. This section aims to discuss each of the objectives based on the responses from the associated questions.

4.5.1 Objective 1: The level of technological knowledge and skill of students

Objective 1 seeks to determine the level of technological skill possessed by undergraduate students. This section discusses the significant interactions between different variables, which have an influence on the technological knowledge and skill of students.

Question 5 of the questionnaire required the respondents to indicate their level of skill from 'basic', 'intermediate' or 'advanced' with regard to internet usage. Question 1 allowed respondents to specify their gender. A chi square analysis of the data received from these responses is represented in Table 4.2 and Figure 4.1.

Table 4.2 Chi square test for technological knowledge and skill of students and gender

Chi-Square Test			
	Value	Degrees of Freedom	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.338 ^a	2	0,042

^a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 24.50.

The results indicate that there is a significant ($p \leq 0.05$) association between gender and the level of technological skill that the students possess due to a p value of 0.042. This was the only significant ($p \leq 0.05$) interaction between the technological knowledge and skills and either the respondent's age, discipline and level of study.

According to Figure 4.1 majority (>50%) of both males and females rated themselves as being at the intermediate skill level. It was also noted that slightly more females (53.8%) than males (52.8%) were found to be at the intermediate level. A similar trend was observed at the basic skill level with 29.2% females and 17.9% of males. However, 29.2% males stated that they were at an advanced level of technological skill, compared to only 17% or females.

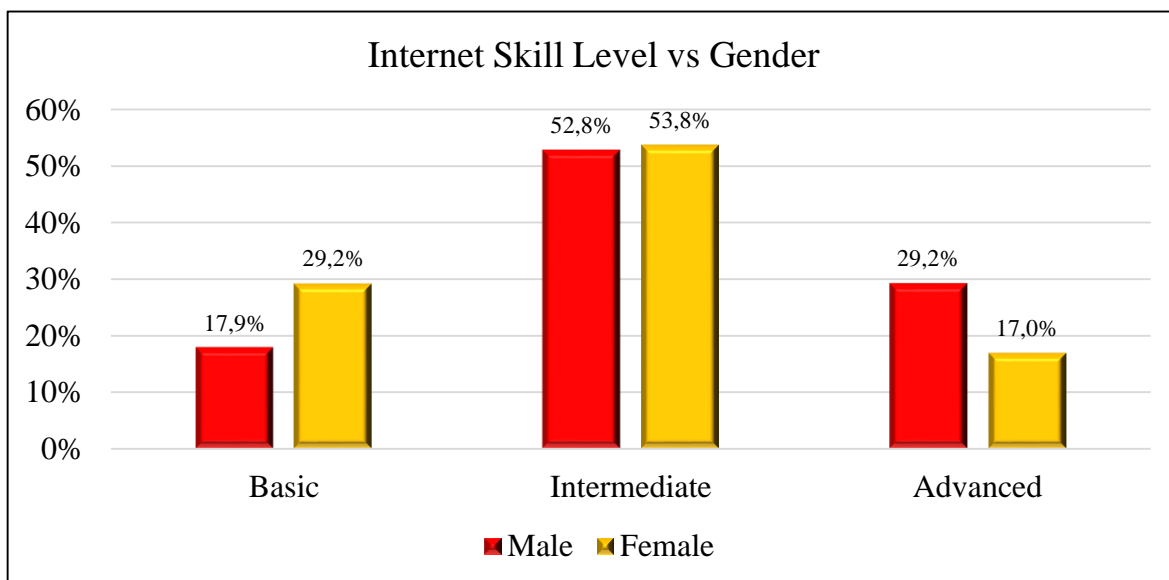


Figure 4.1 Responses according to gender and technological knowledge and skills of students

According to a study undertaken by Suri and Sharma (2013) there was no significant relationship between gender and the attitude towards computers and eLearning. In addition, the use of different eLearning tools did not bare a significant relation with gender. Wang *et al.* (2009) discovered that gender had an influence on online teaching and learning in that females were not as exposed or were unfamiliar with certain relatively advanced eLearning systems, compared to their male counterparts. The statements made by Chu (2010) concur with those made by Wang *et al.* (2009) that internet self-efficacy in females are weaker compared to males. This account for a lower percentage of females considering themselves as advanced in possessing technology knowledge and skill. The difference in information technology usage between males and females could be due to fundamental socioeconomic issue, which limits the frequent use of the internet by females (Chu, 2010). This may have an additional hampering effect resulting in males being more confident and thus progressing in the use of information technology. González-Gómez, Guardiola, Rodríguez and Alonso, (2012) also mention that a number of researchers agree that male adolescents possess greater technological and computer skill, compared to female adolescents.

The findings in this study indicate that females and males possess a similar level of intermediate technological skill. However, more males (29%) rated themselves as having an advanced skill level, compared to females (17%) who rated themselves in the advanced category. This is in line with the literature findings.

Question 6 of the questionnaire required respondents to indicate if they would prefer a help option on social media platforms using a dichotomous scale, which comprised either a ‘Yes’ or ‘No’. This interaction was found to be highly significant ($p \leq 0.05$) with a p value of 0.000 and a chi square value of 21.885 as indicated in Table 4.3.

Table 4.3 Chi square test for technological knowledge and skills of students and help option

Chi-Square Tests			
	Value	Degrees of freedom	Asymptotic Significance (2-sided)
Pearson Chi-Square	21.885 ^a	2	0,000018

Majority of the respondents who believed that they possessed a basic level of technological skill indicated that they would prefer a help option as observed in Figure 4.2. This amounted

to 90% of the respondents who had indicated positively with regard to the help option. This was followed by 70.8% of the respondents who indicated that they would prefer a help option and who possessed an intermediate technological skill level. It is important to note that majority of those students from the basic and intermediate skill level group would prefer a help option when using social media platforms. However, this difference is not as apparent in students with an advanced technological skill level. 53.1% of students who indicated an advanced skill level preferred a help option, compared to 46.9% of those students who did not prefer a help option. These values are not drastically different. This could possibly indicate that students may not be confident in their technological skill level even though they have indicated that they possess an advanced level. Tertiary institutes should be cognisant of this finding.

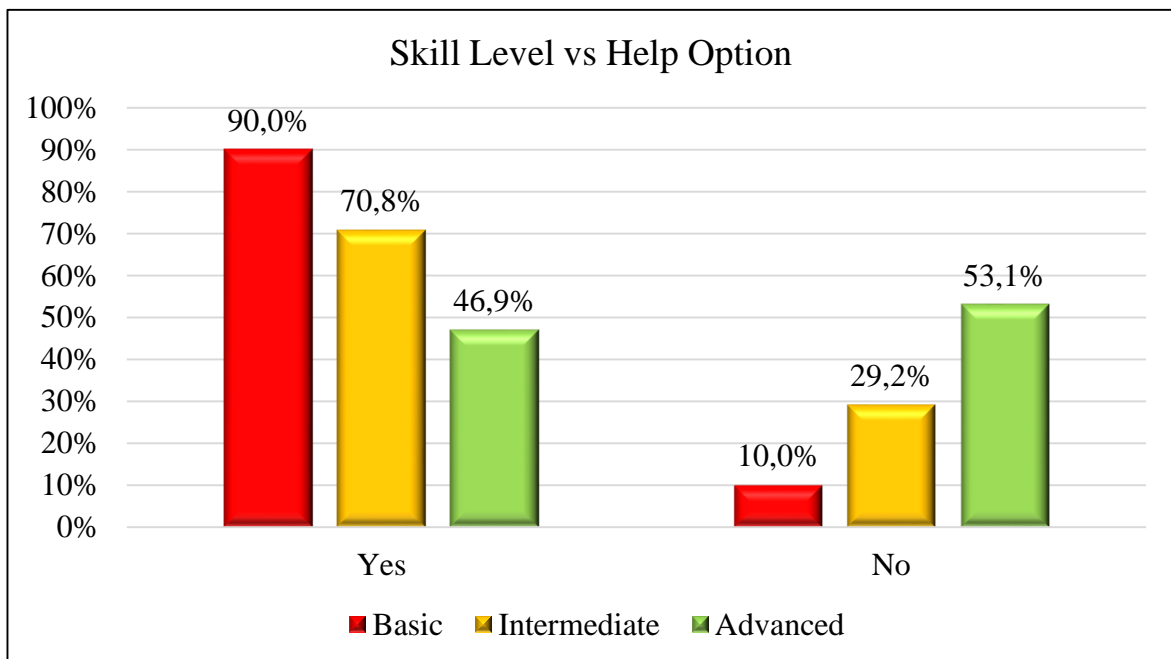


Figure 4.2 Responses according to requiring a help option and technological knowledge and skills of students

The Digital Academic Literacy (DAL) Programme, which was adopted by the University of Western Cape (UCW) was aimed at delivering computer literacy skills to novice users at UCW (Leonard *et al.*, 2016). This programme was incorporated into a number of academic programmes, which ensured that all students were at similar computer literacy levels with regard to academic purposes. Park *et al.* (2012) has indicated the importance of an institute's level of support on a student's use of information technology systems. Park *et al.* (2012) further elaborates that both offline and online support should be provided to improve the use

of eLearning systems by students and to increase their positive attitude toward eLearning and self-efficacy. A suggested online mentor system could be an effective resource for eLearning support. Lee, Srinivasan, Trail, Lewis and Lopez (2011) also agree that support in eLearning systems is crucial in providing an optimal student-learning environment. Instructors should make students aware of the different forms of support so that they are able to make use of these resources.

The findings indicate that students at basic and intermediate levels of technological knowledge and skill as well as students with an advanced level would prefer help options on online systems. This would be advantageous as students are able to determine how to effectively use the system as soon as they encounter a problem.

Question 8 of the questionnaire required respondents to indicate, using a dichotomous scale, if they owned a communication device. The term device was not restricted to mobile phones or smart phones but could also include laptops, tablets, Wi-Fi devices, network card and even modems. A cross tabulation between the technology skill level of the student and ownership of a communication device is presented in Table 4.4. The chi square value obtained was 16.94 with 2 degrees of freedom and a highly significant ($p \leq 0.001$) interaction with a p value of 0.000. 90.6% of the respondents have indicated that they own a communication device. The highest percent of students who own a device (98%) have indicated that they possess an advanced level of technological skill. On the contrary, only 76% of students who possess a basic technological skill level own a communication device. This could reveal that students who own communication devices are more familiar with how to operate and navigate through the various functions and applications, which could provide them with an advanced technological skill level.

Table 4.4 Technology skill level and ownership of a communication device cross tabulation

			Communication Device		Total	Chi - Square Value	Degrees Of Freedom	Asymptotic Significance (2-sided)
			Yes	No				
Internet Skill Level	Basic	Count	38	12	50	16.939 ^a	2	0,000
		% Internet Skill Level	76,0%	24,0%	100,0%			
	Intermediate	Count	106	7	113			
		% Internet Skill Level	93,8%	6,2%	100,0%			
	Advanced	Count	48	1	49			
		% Internet Skill Level	98,0%	2,0%	100,0%			
Total		Count	192	20	212			
		% Internet Skill Level	90,6%	9,4%	100,0%			

^a 2 cells (33.3%) have expected count less than 5. The minimum expected count is 4.62.

Oyedemi (2012) attributed the lack of computer literacy skills in first year students at UCW and the digital inequalities in South Africa to limited internet access beyond campuses. This was also concurred by Bosch (2009) at UCT. Thinyane (2010) states that students who have completed their pre-university studies at former Department of Education and Training schools and former House of Representative schools have been disadvantaged. This is due to these schools unable to secure computer-related resources of sufficient funding to purchase computer-related resources. The learner computer ratio in KwaZulu-Natal is reported to be 228:1, compared to Gauteng, which has a ratio of 65:1 (Cross and Adam, 2007). Therefore, many South African university students would have only gained exposure to computers once enrolled at a tertiary institute. However, 88.9% of students that were surveyed by Thinyane (2010) at two universities in the Eastern Cape of South Africa had unrestricted access to a mobile phone with a camera feature.

A study conducted at UKZN by Reynolds and Peters (2012) revealed that 50.2% of students owned a BlackBerry smartphone and 17.41% owned an android device. It was also found that 51% of students use their mobile phones to access the UKZN learning website.

The findings of this study indicate that almost all UKZN students have access to communication devices and this seems to affect their technological skill level. Universities should be cognisant of this and allow flexibility in designing online learning systems to be accessible to different communication devices.

4.5.2 Objective 2: The preferred methods of students for teaching and learning

This section discusses the preferred communication tools and the preferred teaching and learning methods of students. Question 9 required respondents to indicate which social media platform they found most suitable for sharing academic information. The respondents were to select an answer/s from the provided list of ‘WhatsApp’, ‘Facebook’, ‘E-mail’, ‘text messages’, ‘Moodle’ and ‘Twitter’. Many respondents selected more than one answer. Based on the analysis of frequencies, which is depicted in Figure 4.3, 28.3% of students preferred using E-mail, closely followed by WhatsApp at 27.7% and Moodle at 26.4% as the top three methods of sharing academic information. However, Facebook, text messages and Twitter were the least desirable methods at 9.7%, 5.2% and 2.6%, respectively.

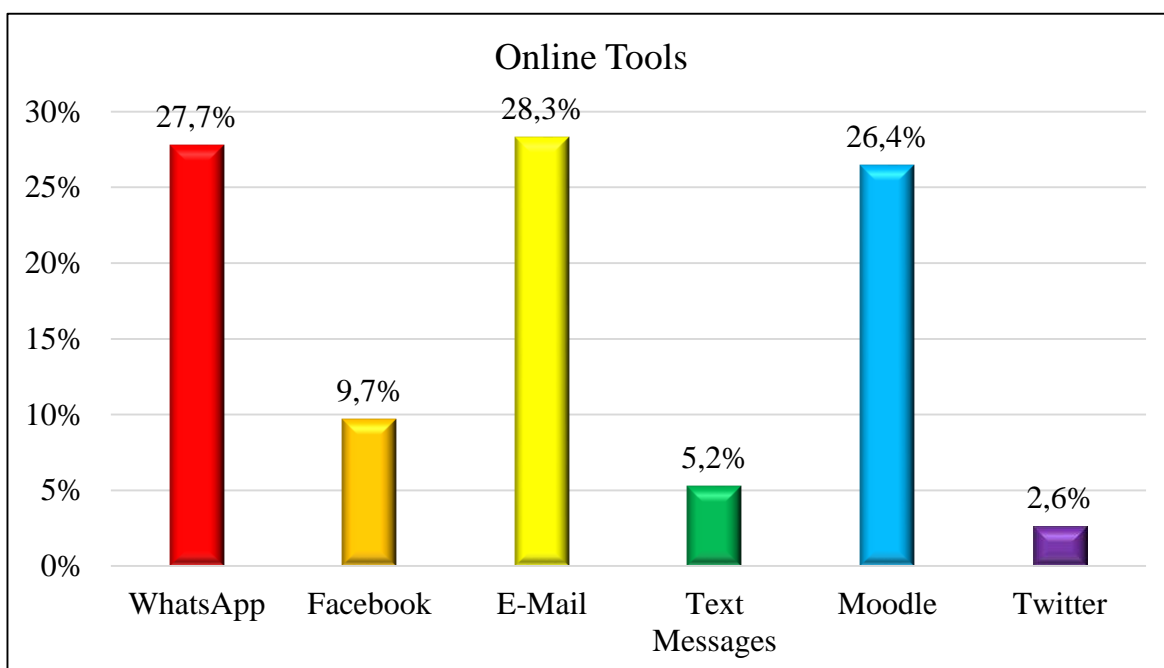


Figure 4.3 Responses according to the preferred communication tool for sharing academic information

Moodle is UKZN’s online management system as discussed in §2.8.2, therefore, seeing that students do prefer sharing academic information via Moodle is a good starting point. However, Moodle is still not the main platform that students prefer. Therefore, work needs

to be undertaken by the university to ensure that students are fully aware on how to use Moodle by providing them with training. In addition, Moodle should constantly be improved in terms of technology and the use-friendly nature of the system.

Similar findings were obtained by Reynolds and Peters (2012) who found that 87% of UKZN students valued E-mail as critical in their academic success followed by 70% who used the Learn@UKZN website. Rambe and Bere (2013) found that WhatsApp promoted student social constructivist learning by allowing them to invoke spontaneous discussions. Students were also not restricted to time and could engage with each other after hours, which bridged the information divide for students who could access certain academic information. WhatsApp allows students to view which other students are online and allows for almost immediate responses and real time communication. E-mail on the other hand does not necessarily allow for instant responses. Hrastinski and Aghae (2012) found that E-mail and instant messaging are the most common methods of communication that students use to pose questions, plan and organise group tasks and share information, which is in line with the findings of this study. Although with technology constantly being developed both E-mail and WhatsApp are rather similar in that students are notified immediately once they receive an E-mail on their smart phone, similar to WhatsApp. Facebook, Twitter and text messaging can be seen as associated with personal socializing. Bosch (2009) also makes mention of the distracting nature of Facebook, which could hinder learning. Standard text messages are somewhat limited with the content and size of the information that can be shared, which also poses a hindrance to learning. Thomas and Thomas (2012) state that Facebook and Twitter contain great potential for increasing the breadth of resources available to students to enhance their eLearning environment.

The findings indicate that students have been accustomed to using E-mail as the main online tool for sharing information since 2012 based on the research conducted by Reynolds and Peters (2012). In addition, WhatsApp and Moodle have been identified as major role players in academic communication. Students should be introduced to other online platforms, which may prove to be more effective with regard to academic communication.

Question 10 of the questionnaire asked students which method of teaching they prefer. The options provided were either 'face-to-face' or 'online'. Figure 4.4 illustrates the preferred

teaching method among students. There was no significant interaction ($p \leq 0.05$) between the preferred method of teaching and either the gender, age, year of study or discipline.

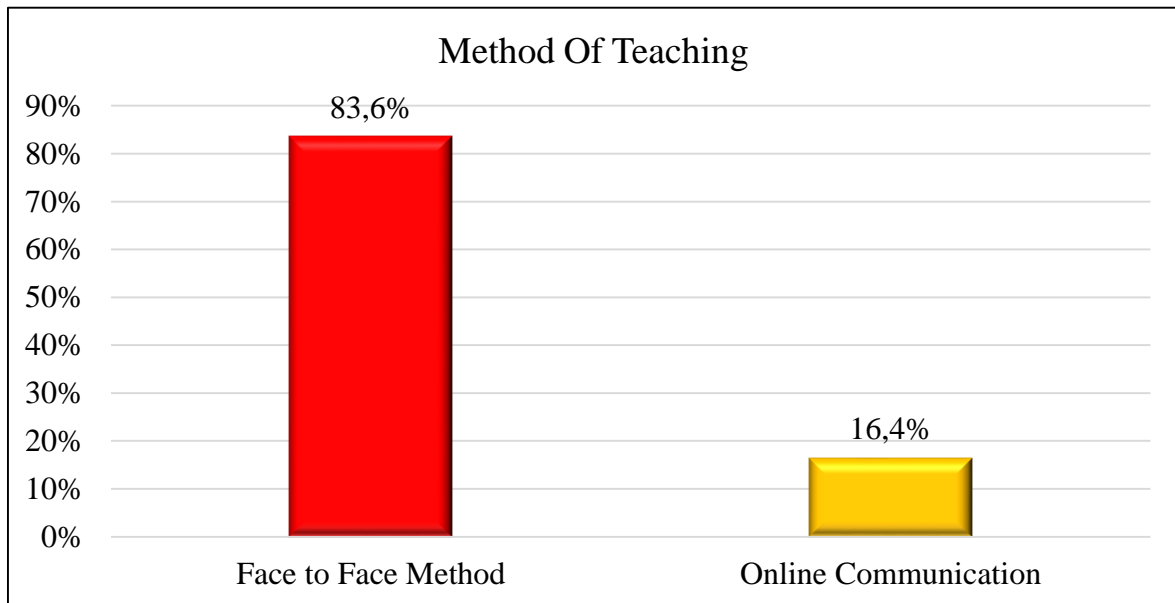


Figure 4.4 Responses according to the preferred method of teaching

Figure 4.4 indicates that even though there exists the option of online learning, majority of the respondents prefer the traditional face-to-face method of teaching and learning. In view of this, it would be challenging to eliminate the traditional method of teaching and learning. From the responses obtained, 83.6% preferred the face-to-face interaction as opposed to the 16.4% of the online teaching methods. This however, could be developing in future by introducing a greater focus on blended teaching methods where face-to-face traditional methods are combined with online teaching to improve teaching and learning and future growth (Paechter and Maier, 2010; Young and Duncan, 2014). Blended learning has improved the success rate of students, compared to face-to-face teaching. However, some researchers did not find that the teaching method affected the success rate of students (Larson and Sung, 2009; Thomas and Thomas, 2012).

The findings of this study indicate that more students prefer the face-to-face method of teaching and learning, compared to online communication and eLearning. The blended learning has been implemented in some of the UKZN programmes. However, more effort should be taken to implement and adapt the blended learning style to all programmes.

Question 12 of the questionnaire required students to select if they prefer receiving course notes in a hardcopy or softcopy format. Figure 4.5 represents the analysis of the responses. 53% of the students prefer to receive course notes in a hardcopy format, compared to 47% who prefer course notes in a soft copy format.

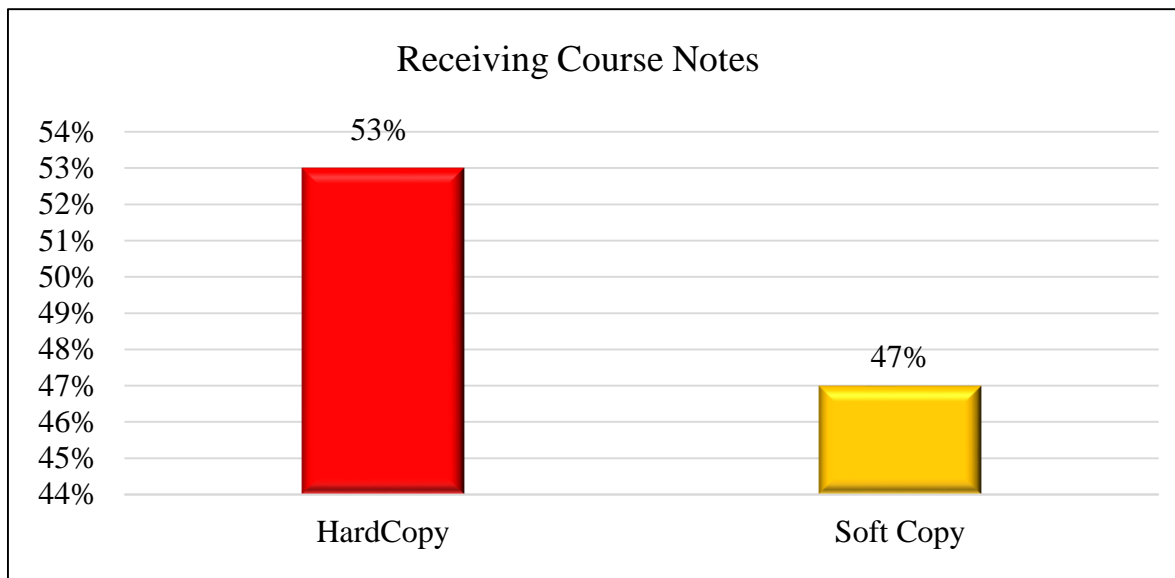


Figure 4.5 Responses according to the preferred method of receiving course notes

Figure 4.5 corresponds to that of Figure 4.4 in that a greater percentage of students prefer face-to-face methods of teaching, which is associated with receiving course notes in a hardcopy format. However, printing notes on paper is associated with high costs of paper and ink and is particularly detrimental to the environment as more paper is used. In addition, this can be time consuming for the instructor to print, organise and hand out the notes. Sending notes to students in a softcopy format is more efficient in saving time and effective in cost saving. Similarly, Berkovatz and de Guzman (2011) found that while there is an increase in the integration of technology in classrooms, students still prefer traditional hardcopy notes. The benefits of hardcopy of notes include retention and understanding of course material.

The findings of this study indicate that more students prefer receiving their notes in a hardcopy format. However, this might not be practical for large classrooms. These findings are in line with the results presented in Figure 4.4 where more students prefer face-to-face methods of teaching and learning.

Question 16 of the questionnaire required respondents to indicate, using a 5-point Likert scale, the level of agreement as to whether online learning would be more effective during protest action. Upon analysis, it was discovered that students prefer online methods of teaching and learning during protest action, the results of which are presented in Figure 4.6.

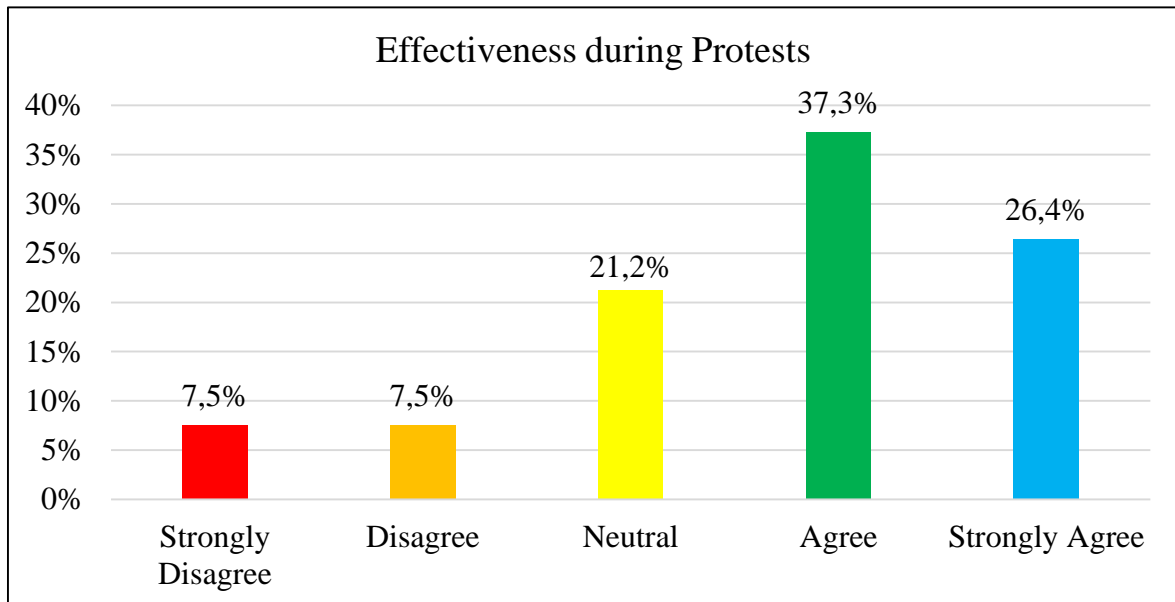


Figure 4.6 Responses according to the effectiveness of eLearning during protest

A majority of students with a percentage of 37,3% agree and 26,4 % strongly agree compared to the 7.5% who disagree and a further 7.5% strongly disagree with the statement made in Question 6. The remainder of the sample size preferred to be neutral with a value of 21.2%. It can be deduced that social media and the internet can be considered in future should universities be confronted with protest action to ensure that the curriculum is not compromised.

Limited research is available on protest action and the suitability of online learning during these upheavals. However, one can argue that online learning could indeed assist students who have been directly or indirectly affected by protest action such as the possibly ongoing ‘#FeesMustFall’, which mainly took place at the tertiary institutes and disrupted learning (Petersen, 2017). Students need not physically attend classes if they are in danger. They can instead access the relevant course material uploaded by the instructor.

The findings indicate that many students strongly believe that online learning can be effective during protest action. Hence, plans should be in motion to implement online learning in these cases.

4.5.3 Objective 3: If using social media and the internet is an effective learning tool among different disciplines, age groups, year of study and gender

This section discusses the willingness of students to try online classrooms according to their demographics as well as student suggests to be included in future online learning programmes.

Question 13 required students to indicate their level of willingness in adopting online teaching and learning methods. Figure 4.7 represents the analysis obtained from these responses based on the discipline to which the respondents belonged.

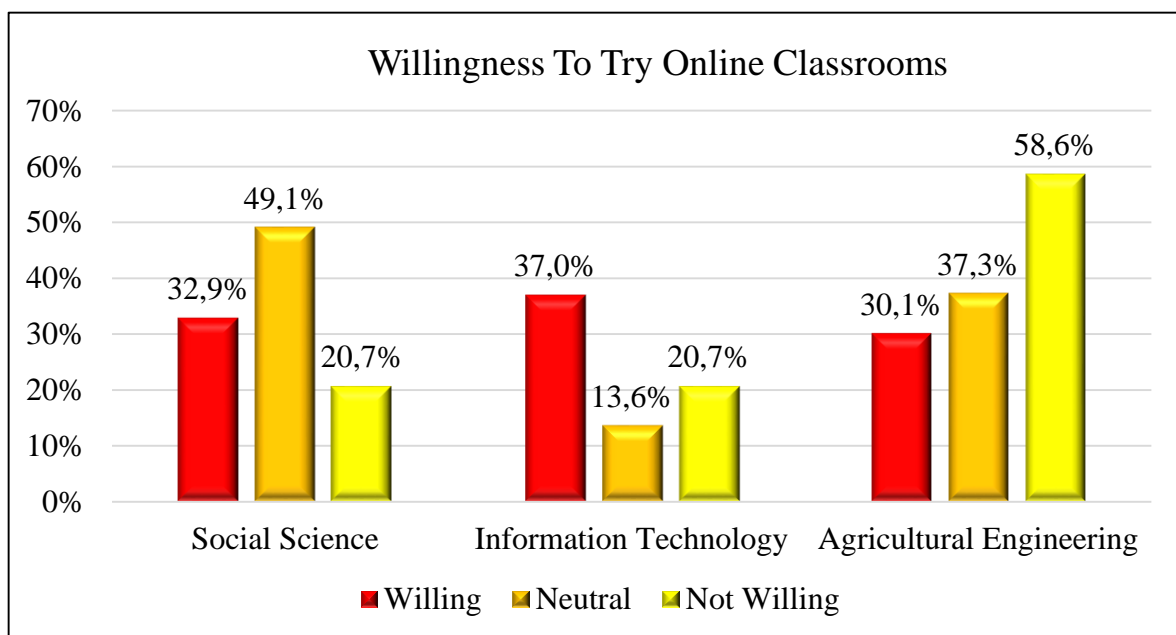


Figure 4.7 Responses according to the discipline in the willingness to try online classrooms

49.1% of the respondents from Social Science were neutral in their response. While 32.9% of the respondents were willing to try online classrooms, compared to 20.7% who were not willing. Most of the Information Technology respondents (37%) were willing to try online classrooms, compared to only 20.7% who were not willing. In contrast, 58.6% of the respondents from Agricultural Engineering were not willing to try online classrooms,

compared to only 30.1% who were willing. According to Neumann *et al.* (2002) engineering is considered as hard-applied knowledge. Understanding of the fundamental knowledge is core to being able to apply the concepts and this has been seen to be most effectively done through face-to-face methods as in the case of engineering (Mansor and Ismail, 2012). Mansor and Ismail (2012) found that the learning style did not influence engineering students' perception regarding online learning. However, it was stated that the idiosyncrasies related to engineering limit the use of online teaching methods. Virtanen and Nevgi (2010) discovered that the type of discipline influenced the preferred teaching method, which is in accordance with the findings in this study. It was also reported by Virtanen and Nevgi (2010) that students studying behavioural sciences use self-regulated learning more than that of technology students.

The findings indicate that more Social Science and Information Technology students are willing to try online classrooms, compared to Agricultural Engineering students. The hesitation portrayed by students in their willingness to try online learning may stem from them being accustomed to a specific method of teaching, thus they may not be fully aware of what online learning may entail.

Question 14 required respondents to indicate if social media could assist in teaching and learning, in particular the interaction between students and lecturers. The analysis of the responses are presented in Figure 4.8.

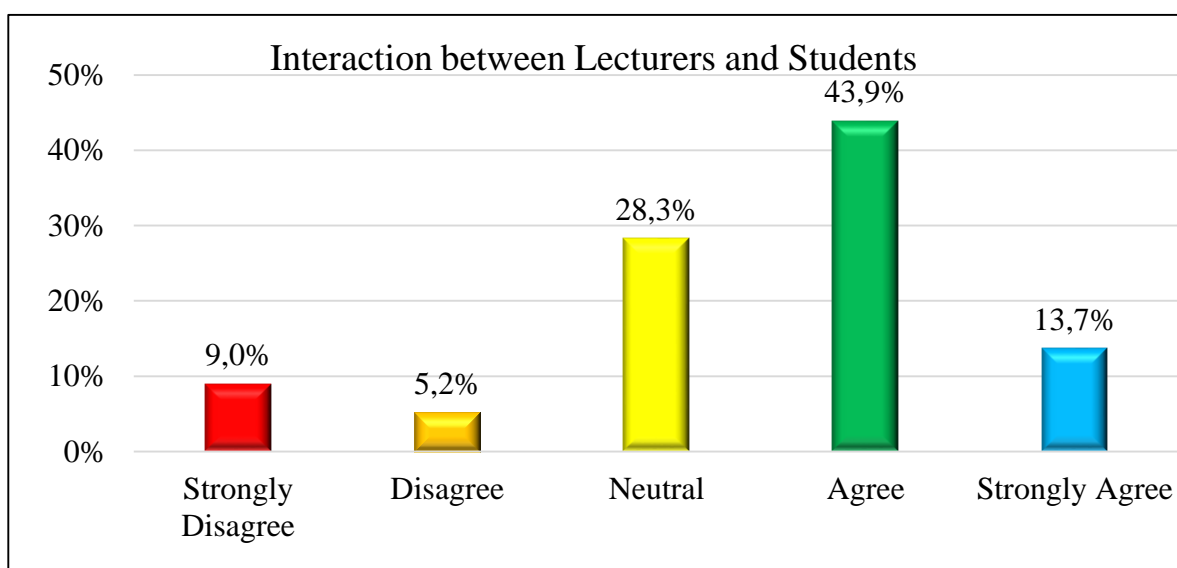


Figure 4.8 Responses according to the respondents wanting online interaction between lecturers and students

It can be noticed from Figure 4.8 that students believe that social media will assist greatly in teaching and learning with 43.9% agreeing and 13.7% strongly agreeing. In addition, the interaction between the lecturer and students via online social media would assist this process. A lower percentage of 5.2% and 9.0% disagree and strongly disagree, respectively. The remainder of the respondents chose to be neutral with a percentage of 28.3%. It can be concluded that there would be a positive association with the use of online tools for teaching and learning.

The current evolution into social media is drastically on the rise. This provides improvement of communication between teachers and students whereby interaction between them occurs more consistently and on a greater magnitude. Chen and Bryer (2012) found that ongoing communication between instructors and students on social media platforms created a sense of community and allowed for the establishment of professional connections for future career development and progression.

The findings reveal that some students would prefer online communication with lecturers. However, this method involves the lecturer having to receive some form of online communication from the students at varying times of the day. It is dependent on the lecturer to structure this form of communication to be beneficial to the students but also effective for the lecturer.

Question 17 required students to state, using a 5-point Likert scale, if social media and the internet will be a key enabler for future teaching and learning. The analysis of the responses are presented in Figure 4.9 where 48.1% agree and 19.3% strongly agree to social media being a key enabler for future teaching and learning. However, 7.1% disagree and a further 7.1% strongly disagree to this. The balance of the respondents chose to remain neutral with a percentage of 18.4%.

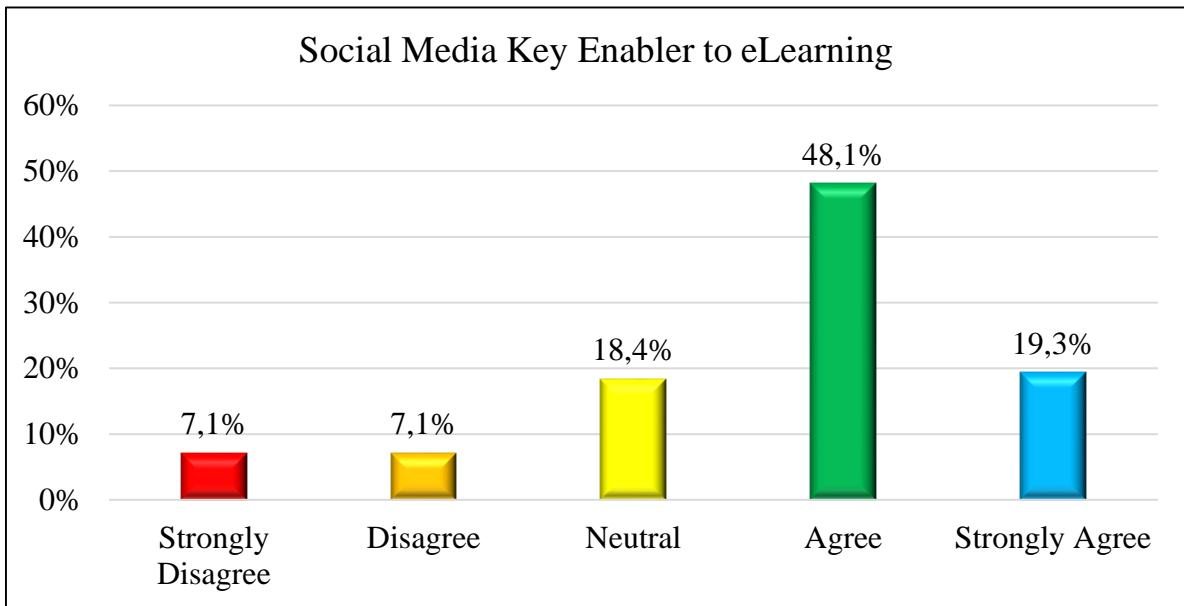


Figure 4.9 Responses according to social media and the internet as a key enabler to eLearning

The findings reveal that students agree that social media could play an important role in facilitating eLearning. This is crucial, as students will be willing to implement this method of teaching and learning in the academia.

4.5.4 Objective 4: The use of social media by students

This objective focuses on the frequency and the reasons why students use social media. The different responses obtained from the open question (Question 21 of the questionnaire) will be analysed as well as the frequency of using social media (Question 19) and if students believe that they are easily distracted by social media (Question 20).

Question 19 required respondents to indicate how often do they access social media from the given options of either ‘hardly ever’, ‘occasionally’, ‘sometimes’, ‘frequently’ or ‘almost always’. The analysis of the responses is presented in Figure 4.10. 36.8% and 34% of students indicated that they almost always and frequently access social media, respectively. Only 0.5% of the respondents indicated that they hardly ever access social media. These findings could possibly indicate the convenience of modern day technology. Students are able to carry their mobile smart phones and in an instant are able to message a friend in a different part of South Africa. The convenience contributes to the frequency of use (Thiyane, 2010).

The findings in this study indicate the diverse student population in the varying frequency by which students use social media. Universities need to bare this in mind when planning online teaching and learning systems.

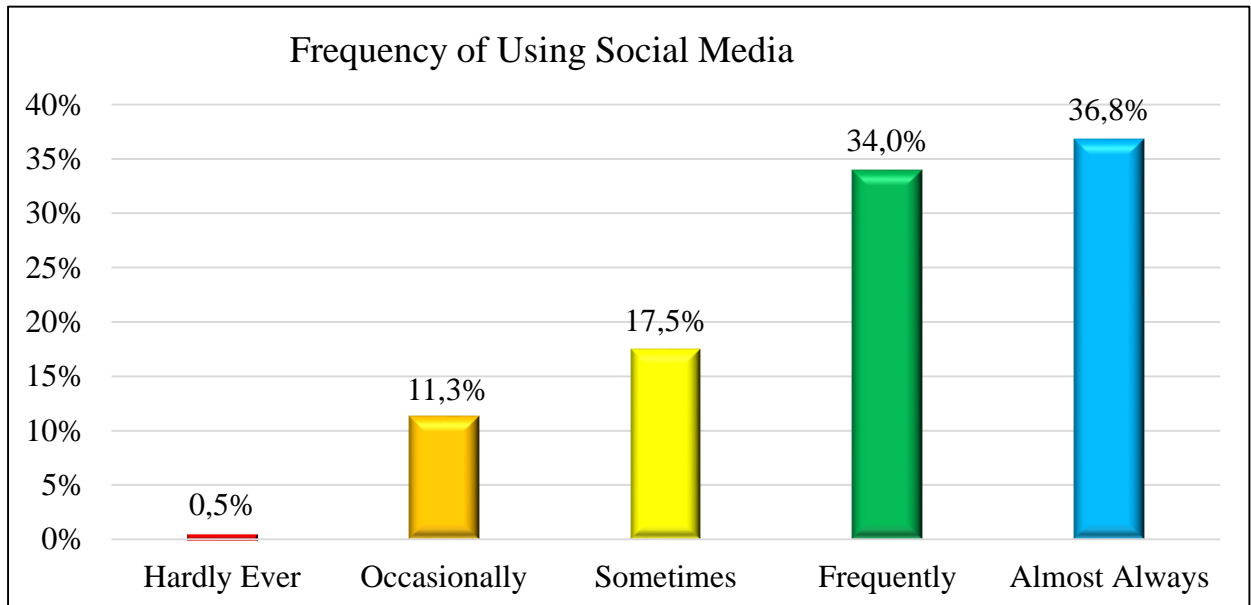


Figure 4.10 Respondents usage of social media

Question 20 of the questionnaire required respondents to indicate if they are easily distracted by the internet. The analysis of these responses are presented in Figure 4.11.

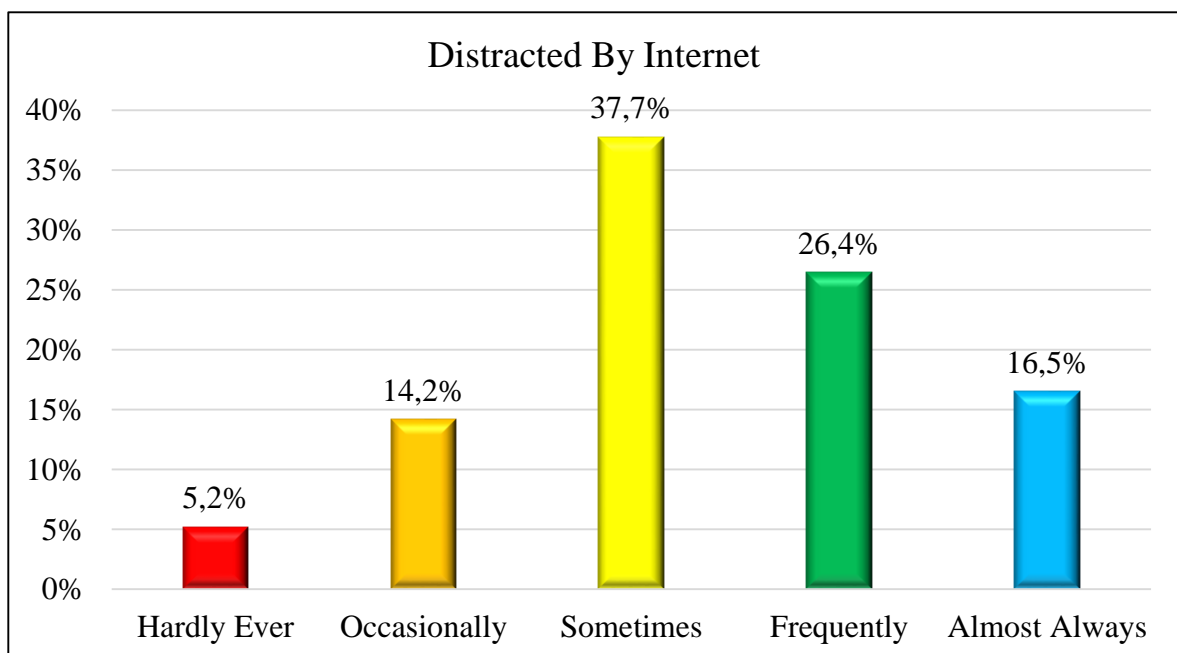


Figure 4.11 Responses on distraction by the internet

The internet has changed our lives and provided us with a new means of communication, which is accessible day and night with a click of a mouse or a touch of a screen. However, more often than not it is found to deviate from the topic or objective required. This is evident in the bar chart below from the responses received. Most responses indicated that students sometimes get distracted by the internet with a high of 37.7%, followed by 26.4% who frequently get distracted and 16.5% state that they are almost always distracted. However, the remainder of the responses being 14.2 % occasionally get distracted and 5.2% hardly ever get distracted by the internet.

Bosch (2009) stated that Web 2.0 and social media as an eLearning tool could result in an increase in students being distracted and a tendency to divert by using social media for personal communication as opposed to academic. This notion was also shared by lecturers in using Facebook as an eLearning tool, which may hinder learning.

The findings indicate that students are sometimes distract by the internet. This could potentially be a challenge when planning and implementing online teaching and learning systems as students do tend to get distracted.

Question 21 of the questionnaire was an open end question asking respondents to indicate their purpose of using social media. The analysis of the responses received are presented in Figure 4.12.

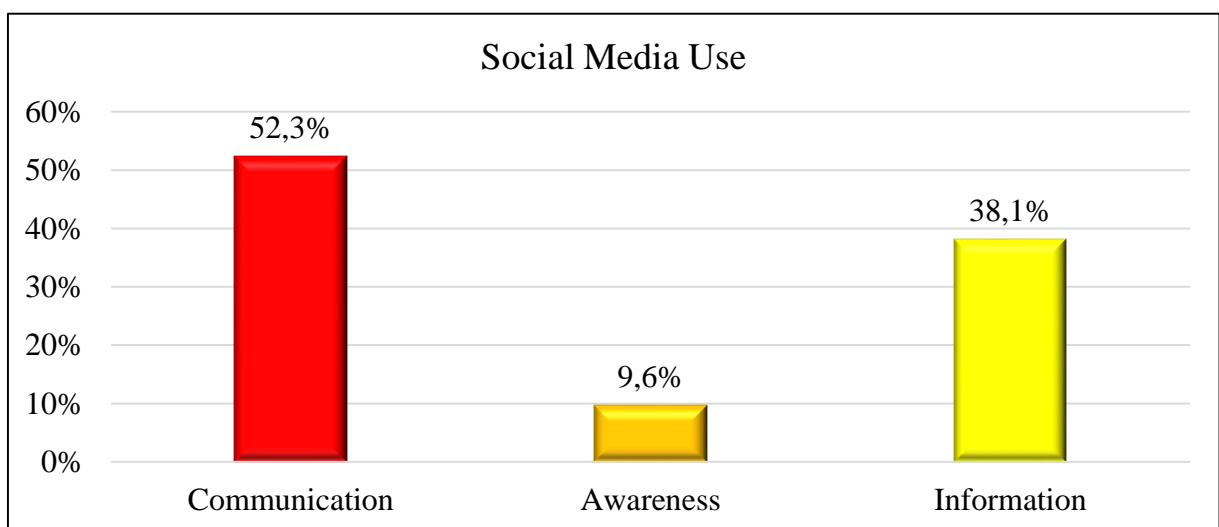


Figure 4.12 Respondents reasoning of using social media

Social media can be defined as online communication channels whereby users create online groups to share information, personal messages and ideas. This is widely used across the world. The responses received were either for communication, gaining awareness or accessing information. Majority of the responses, amounting to 52.3%, indicated that students accessed social media for communication purposes. This was followed by 38.1% for accessing information and only 9.6% for gaining awareness. Sponcil and Gitimu (2013) state that university students mainly use social media as a means of connecting with their friends and families with around 57% of social network users in the 18-29 age category.

The findings indicate that many students mainly use social media for communication. However, this communication can be extended to include academic content as students have indicated that they are willing to try online teaching and learning methods (Figure 4.7) and that social media is a key enabler for future teaching and learning methods (Figure 4.9).

4.6 Chapter Summary

This study was a descriptive type research study using quantitative data. The quantitative data was obtained by personally administered questionnaires to undergraduate students from the Social Science, Information Technology and Agricultural Engineering disciplines at the University of KwaZulu-Natal in Pietermaritzburg. The data was analysed at a 95% confidence interval and Cronbach alpha of 95% was calculated indicating a sufficiently high reliability of the results.

Cross tabulation using Pearson chi square and frequency were the main methods for data analysis. The results were presented in both graphical and tabular formats depending on which was most suitable. Only results that were found to be significant were presented and discussed. The researcher, under the guidance from an independent statistician, conducted the data analysis. The results were discussed according to each of the four objectives and substantiated by literature, which in some cases was also discussed in Chapter 2.

The subsequent chapter, Chapter 5, will provide the recommendations and draw conclusions based on the results discussed in this chapter. Suggestions for future research will also be discussed in the next chapter.

CHAPTER FIVE

Conclusions and Recommendations

5.1 Introduction

A review of literature in Chapter 1 has indicated the radical increase in the use of social media and the internet by students. More so, the use of social media and the internet has extended into the teaching and learning arena at tertiary institutes. Both faculty members and students alike have adopted social media and the internet for eLearning due to the many benefits such as the flexibility and convenience that it offers. Users are able to send and receive information from almost any location provided they have access to the internet. However, as with most innovative systems, there is a degree of scepticism. Some of the disadvantages highlighted by literature include limited access to the internet by certain users, such as those from disadvantaged backgrounds, which directly affects the usability and skill level of the student to be able to effectively adopt eLearning. Invasion of privacy has also been identified as a concern. Some studies conducted in the past five years have also indicated that students and faculty members still prefer using E-mail and face-to-face learning as the primary tool for transferring knowledge and information in teaching and learning (Hrastinski and Aghae, 2012; Cao *et al.*, 2013). Pedagogical theories have been based on the notion that social media can enrich student-learning outcomes and enhance the learning experience.

This study was aimed at determining if social media and the internet could be used to replace the traditional face-to-face methods of education at a tertiary level at UKZN. With the aim being the core driving force of the research, four objectives were developed as follows:

1. To determine the level of technological knowledge and skills of students.
2. To determine the preferred methods of students for teaching and learning.
3. To determine if using social media and the internet as an effective learning tool among different disciplines, age groups, year of study and gender.
4. To determine the use of social media by students.

The discussion of this chapter revolves around these four research objectives. The key findings of each objective is provided together with the recommendations for future research. The implications of this research study and the limitations are also discussed. This chapter

aims to link all the chapters of this document from the introductory chapter (Chapter 1) to the discussion of results presented in Chapter 4.

5.2 Conclusion

This study has achieved the aims and objectives outlined in Chapter 1 and Chapter 3 and further discussed and validated in Chapter 4. In general, students are willing to try eLearning provided that sufficient support is provided during the process. E-mail has been found to be the main application for sharing of academic information. More effort needs to be focussed on enhancing the eLearning experience to accommodate social media platforms.

5.3 Key Findings

This section briefly discusses the key findings of each objective based on the data analysis and results provided in Chapter 4. Recommendations are then provided based on the literature reviewed in Chapter 2.

5.3.1 Objective 1

Objective 1 sought to determine the level of technological knowledge and skills of students. A significant ($p \leq 0.05$) interaction was observed between student gender and the level of technological skill possessed by students due to a p value of 0.042. The findings in this study indicate that females and males possess a similar level of technological skill. However, more male students rated themselves as having an advanced skill level (29.2%), compared to their female counterparts (17%). In general, more female than male students rated themselves as possessing a basic and intermediate technological skill level.

It was also established that majority of students at the basic, intermediate and advanced skill level preferred a help option on social media platforms. This could indicate the lack of confidence that students possess with regard to their abilities at using social media platforms or even information technology systems as a whole. This could translate directly to adopting eLearning platforms at tertiary institutes.

90.6% of the respondents have indicated that they own a communication device with the remaining 9.4% not owning a communication device. Related to this finding was that majority of the students who owned a communication device rated themselves as having an advanced level of technological skill.

The level of technological skill of students have a profound effect on their ability to effectively adopt eLearning systems. The recommendations, which can be made are that:

- UKZN should take into account the gender discrepancy between males and female as well as the historical background of the student as this has an impact on the level of technological skill possessed by the student. Programmes can be implemented at the first year level upon entry into a tertiary institute to acquaint students with eLearning systems s that all students are at a similar level of technological skill such as the DAL Programme adopted by the University of Western Cape (Leonard *et al.*, 2016).
- Since majority of students own a communication device, UKZN can establish an eLearning system or forum that can be accessible from multiple communication devices.
- UKZN could create a portal for registered users at a reduced data rate.
- For students who do not own a communication device, the device expense could be included in the fees for the duration of their study.
- Incorporation of a help option could be effective as students are able to troubleshoot and seek help if they encounter difficulty with using the eLearning system. This could be in the form of an online mentor system could be an effective resource for eLearning support (Park *et al.*, 2012).

5.3.2 Objective 2

Objective 2 was formed to determine which methods of teaching and learning students prefer. Students preferred using E-mail, WhatsApp and Moodle for sharing academic information at 28.3%, 27.7% and 26.4%, respectively. This indicates that students have been accustomed to using E-mail as the main online tool for sharing information since 2012 based on the research conducted by Reynolds and Peters (2012). With regard to the preferred teaching and learning method, 83.6% of the students preferred face-to-face interaction as opposed to the 16.4% for online teaching methods. Linked to this method of teaching and learning, more students (52.4%) preferred receiving course notes in a hardcopy format, compared to softcopy format (47.6%). However, the difference in the percent of students was not drastically different. The recent and possibly ongoing ‘#FeesMustFall’ protests has sparked the use of online tools for teaching and learning when access to the physical classroom was prevented. 37.3% of students agree and 26.4% of students strongly agree that

implementing online learning methods would be beneficial during protest action. While 7.5% of students disagree and 7.5% of students strongly disagree that online learning methods would not be beneficial during protest action.

Based on the results obtained from Chapter 4 and the literature reviewed in Chapter 2 the following recommendations can be made:

- Implementing blended teaching methods, which involves traditional face-to-face and online teaching, could be used to improve teaching and learning and future growth (Paechter and Maier, 2010; Young and Duncan, 2014).
- Due to the significant dearth of literature available on the implementation of social media and eLearning during protest action, it is recommended that additional research should be undertaken in this area.
- Academic content, such as the course notes for instance, could be uploaded at a lower quality to reduce the data charges when downloading required information.

5.3.3 Objective 3

Objective 3 focussed on determining if using social media and the internet as an effective learning tool among different disciplines, age groups, year of study and gender. The results indicate that more Social Science and Information Technology students are willing to try online classrooms, compared to Agricultural Engineering students. This could be due to the difference in content among each of the investigated disciplines. Agricultural Engineering is categorised as a hard applied knowledge and understanding of the fundamental knowledge is core to being able to apply the concepts and this has been seen to be most effectively done through face-to-face methods as in the case of Engineering (Mansor and Ismail, 2012). However, research conducted by Mansor and Ismail (2012) revealed that Engineering course can adopt an online structure. In general, 48.1% of students agree and 19.3% of students strongly agree that social media could be a key enabler in future teaching and learning methods. This is crucial as students are aware of the impact that social media has in academia.

43.9% of students agree that increased interaction between lectures and students could improve the eLearning experience for students. However, this would require that the lecturer's be engaged with students at odd hours of the day, which is not feasible. It is recommended that the lecturer set up forums and online questions and answer sessions at

specified times to address students concerns. Due to the willingness of students to try Learning and their awareness of social media, it is up to the universities to establish suitable and user-friendly online methods to facilitate the eLearning process. It is recommended that one programme from each faculty pilot an online teaching and learning method that can be adapted to other programmes within the faculty so that challenges can be dealt with on a micro scale as opposed to a macro scale across the entire faculty.

5.3.4 Objective 4

Objective 4 dealt with determining the use of social media by students. The frequency at which students access social media and the level of distraction afforded by eLearning was investigated within this objective. The results indicate a diverse student population with regard to the frequency at which students use social media with 36.8% and 34% of students indicating that they almost always and frequently access social media, respectively. Only 17.5% and 11.3% indicating that they access social media sometimes and occasionally. This finding is in line with the results indicating that a higher percentage of students being distracted by the internet.

This could pose a potential challenge when students use eLearning in that they could be distracted and divert to using the internet for other non-academic purposes. It is recommended that social media platform that will not be used for academic purposes be blocked by the university. Alternatively, the pop-ups associated with social media platforms be limited.

5.4 Limitations of the Study

The scope of this study was confined to the University of KwaZulu-Natal (UKZN) in Pietermaritzburg. This study could be extended to include the other four campuses viz. Howard College, Medical Campus, Edgewood and Westville. The study focused on three disciplines, which were Social Science, Information Technology and Agricultural Engineering. This could also be extended to encompass other disciplines from the education, health-sciences, medicine, commerce, law, and natural sciences programmes offered at UKZN.

The time of year at which the study was conducted posed a slight challenge in that students were preparing for examinations and many did not attend classes. However, the sample

population size was achieved as the questionnaire was administered over a three-week period. This study was limited only to undergraduate students.

The questionnaires were administered in English. This may have posed a challenge to non-English speaking students.

There was a degree of subjectivity of students rating themselves in their skill level of using the internet (Question 5 of the questionnaire).

5.5 Recommendations for Future Studies

The findings and limitations of this study lead to the development of the following recommendations for future research:

- Insufficient research has been conducted on eLearning at UKZN. Therefore, additional research should focus on UKZN so that suitable plans can be developed to effectively implement online learning networks, systems and methods.
- Limited research is available on the effect of online learning methods during protest action specifically that of the ‘#FeesMustFall’ student protest prompting further research to be conducted in this area. The success of pilot studies could possibly attract sponsorship of communication devices, which can be distributed to students upon registration.
- The success of blended learning on different disciplines should be further investigated, as more disciplines are moving toward the integration of face-to-face and online teaching and learning. Therefore, Question 10 of the questionnaire should include blended learning as one of the options.
- Due to time limitations, an in-depth study on the effect and requirements of eLearning on different disciplines could not be investigated. However, this creates an opportunity for future studies to include this aspect.
- Questionnaires should be administered in different languages to accommodate the various ethnic backgrounds of the students.
- Inclusion of postgraduate students to such a study would be beneficial.
- This study focussed primarily on the undergraduate student. Future studies could include faculty members to provide an all-inclusive indication of eLearning at UKZN.

5.6 Chapter Summary

This chapter forms the final link between the preceding chapters and this chapter. The aim and objectives for this study had been achieved. It is advised that UKZN provide access programmes for students who are not familiar with social media or come from disadvantaged backgrounds to ensure a standard skill level amongst the students. The study provides some insight to future developments into social media for teaching and learning purposes. It also provides a means to overcome loss of curriculum during challenging protest action times. Future blended teaching methods need to be implemented which incorporate traditional face-to-face and online methods of teaching. Other outcomes that had provided some insight was that social media is a key enabler in future teaching and learning. In addition, social media distracted majority of students. This allows for future developments and research into this area. The study utilized multiple appraising techniques to ensure the credibility and reliability of the results. The findings were substantiated with relevant literature. The proceeding chapter provides a list of the literature used for this study, which are contained in the References Section and supplementary documents needed for this study, which are contained in the relevant Appendices.

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APPENDICES

Appendix A: The Questionnaire



**UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP**

MBA Research Project

Researcher: Mr Asif Satar (033 260 5045)

Supervisor: Dr Muhammad Ehsanul Hoque (031 260 8690)

Research Office: Ms P Ximba (031-2603587)

Ethical Clearance No: HSS / 1504 / 017M

Dear Respondent,

I am an MBA student, at the Graduate School of Business and Leadership, of the University of Kwa-Zulu Natal. You are invited to participate in a research project entitled **The Use of Social Media and Internet by Tertiary Students to Disseminate and Understand Information**. The aim of this study is to identify if social media and the internet could be used to replace the traditional face-to-face methods of education at a tertiary level at UKZN.

Through your participation I hope to understand the level of student technological skill within the selected disciplines at UKZN. In addition, the extent and the willingness of students to use social media and the internet for learning will be determined. The results of the survey are intended to contribute to the improvement and advancement of future learning methods and evolve current teaching and learning methods at UKZN.

Your participation in this project is voluntary. You may refuse to participate or withdraw from the project at any time with no negative consequence. There will be no monetary gain from participating in this survey. Confidentiality and anonymity of records identifying you as a participant will be maintained by the Graduate School of Business and Leadership, UKZN.

If you have any questions or concerns about completing the questionnaire or about participating in this study, you may contact me or my supervisor at the numbers listed above.

The survey should take you about 10 minutes to complete. I hope you will take the time to complete this survey.

Sincerely

Investigator's signature

Date : 03-10-2017

This page is to be retained by participant



**UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP**

MBA Research Project

Researcher: Mr Asif Satar (033 260 5045)

Supervisor: Dr Muhammad Ehsanul Hoque (031 260 8690)

Research Office: Ms P Ximba (031-2603587)

Ethical Clearance No: HSS / 1504 / 017M

CONSENT

I..... (full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

SIGNATURE OF PARTICIPANT

DATE

.....

.....

This page is to be retained by researcher



UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

MBA Research Project

Researcher: Mr Asif Satar (033 260 5045)

Supervisor: Dr Muhammad Ehsanul Hoque (031 260 8690)

Research Office: Ms P Ximba (031-2603587)

Ethical Clearance No: HSS / 1504 / 017M

Instructions

Please make use of a pen to complete the questionnaire

Select **ONE** appropriate answer and indicate with a **TICK**. (✓)

1. Please indicate your gender

Male Female

2. Please select your age

17 18 19 20 21
 22 23 24 25 26

3. Please select your level of study

1st Year 2nd Year 3rd Year 4th Year

4. Please indicate the discipline to which you belong to

Social Science Information Technology Horticulture

5. How would you rate your skill level in using the internet?

Basic Intermediate Advanced

6. Would you prefer a help option on a media platform?

Yes No

7. Do you have access to social media and the internet?

Yes No

8. Do you own a communication device?

Yes No

9. Which type of social media or online tool do you find suitable for sharing academic information?

WhatsApp Facebook E-mail

Text Messages Moodle Twitter

10. Which method of teaching do you prefer?

Face-to-face traditional Online Communication

11. What is the preferred teaching method in your discipline?

Face-to-face traditional Online Communication

12. How would you prefer to receive module notes?

Hardcopy Softcopy

13. Rate your willingness to try a complete online classroom

Willing Neutral Not Willing

14. Would social media assist in teaching and learning, e.g.: interaction with lecturers/ students?

Strongly Disagree Disagree Neutral

Agree Strongly Agree

15. Please state to what extent do you agree or disagree with the following statement:

Social media and online tools allow for more flexibility in learning.

Strongly Disagree Disagree Neutral

Agree Strongly Agree

16. Please state to what extent do you agree or disagree with the following statement:

Online classrooms will be more effective during protest action.

<input type="checkbox"/> Strongly Disagree	<input type="checkbox"/> Disagree	<input type="checkbox"/> Neutral
<input type="checkbox"/> Agree	<input type="checkbox"/> Strongly Agree	

17. Please state to what extent do you agree or disagree with the following statement:

Social media and the internet will be a key enabler for future teaching and learning.

<input type="checkbox"/> Strongly Disagree	<input type="checkbox"/> Disagree	<input type="checkbox"/> Neutral
<input type="checkbox"/> Agree	<input type="checkbox"/> Strongly Agree	

18. Please rate the effectiveness of academic communication done by Moodle?

<input type="checkbox"/> Very Poor	<input type="checkbox"/> Poor	<input type="checkbox"/> Average
<input type="checkbox"/> Good	<input type="checkbox"/> Excellent	

19. How often do you access social media?

<input type="checkbox"/> Hardly Ever	<input type="checkbox"/> Occasionally	<input type="checkbox"/> Sometimes
<input type="checkbox"/> Frequently	<input type="checkbox"/> Almost Always	

20. How often do you access social media?

<input type="checkbox"/> Hardly Ever	<input type="checkbox"/> Occasionally	<input type="checkbox"/> Sometimes
<input type="checkbox"/> Frequently	<input type="checkbox"/> Almost Always	

21. What do you find social media useful for?

Appendix B: Ethical Clearance



4 August 2017

Mr Asif Satar (SN 211560748)
Graduate School of Business and Leadership (GSB&L)
College of Law and Management Studies
Westville Campus
UKZN
Email: satar@ukzn.ac.za hogue@ukzn.ac.za

Dear Mr Satar

RE: PERMISSION TO CONDUCT RESEARCH

Gatekeeper's permission is hereby granted for you to conduct research at the University of KwaZulu-Natal (UKZN), towards your postgraduate degree, provided Ethical clearance has been obtained. We note the title of your research project is:

"The use of social media and internet by tertiary students to disseminate and understand information".

It is noted that you will be constituting your sample by handing out questionnaires to Social Science, IT and Horticulture discipline students on the Pietermaritzburg campus.

Please ensure that the following appears on your notice/questionnaire:

- Ethical clearance number;
- Research title and details of the research, the researcher and the supervisor;
- Consent form is attached to the notice/questionnaire and to be signed by user before he/she fills in questionnaire;
- gatekeepers approval by the Registrar.

You are not authorized to contact staff and students using 'Microsoft Outlook' address book. Identity numbers and email addresses of individuals are not a matter of public record and are protected according to Section 14 of the South African Constitution, as well as the Protection of Public Information Act. For the release of such information over to yourself for research purposes, the University of KwaZulu-Natal will need express consent from the relevant data subjects. Data collected must be treated with due confidentiality and anonymity.

Yours sincerely

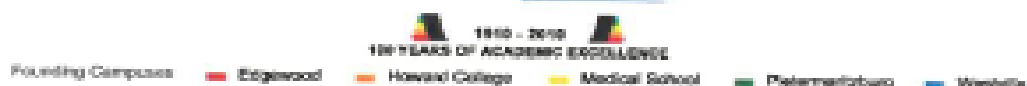

MR SS MOKOENA
REGISTRAR

Office of the Registrar

Postal Address: Private Bag X54001, Durban, South Africa

Telephone: +27 (0) 31 260 8005/2206 Facsimile: +27 (0) 31 260 7824/2204 Email: registrar@ukzn.ac.za

Website: www.ukzn.ac.za





28 August 2017

Mr Asif Satar (211560748)
Graduate School of Business & Leadership
Westville Campus

Dear Mr Satar,

Protocol reference number: HSS/1504/017M

Project title: The use of social media and internet by tertiary students to disseminate and understand information

Full Approval – Expedited Application

In response to your application received on 21 August 2017, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and FULL APPROVAL for the protocol has been granted.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully



Dr Shamila Naidoo (Deputy Chair)

/ms

Cc Supervisor: Dr Muhammad Hoque
Cc Academic Leader Research: Dr Emmanuel Mutambara
Cc School Administrator: Ms Zarina Bullyraj

Humanities & Social Sciences Research Ethics Committee

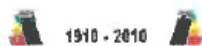
Dr Shenuka Singh (Chair)

Westville Campus, Govan Mbeki Building

Postal Address: Private Bag X54001, Durban 4000

Telephone: +27 (0) 31 260 3587/8350/4557 Facsimile: +27 (0) 31 260 4608 Email: ximbap@ukzn.ac.za / snymam@ukzn.ac.za / mohunp@ukzn.ac.za

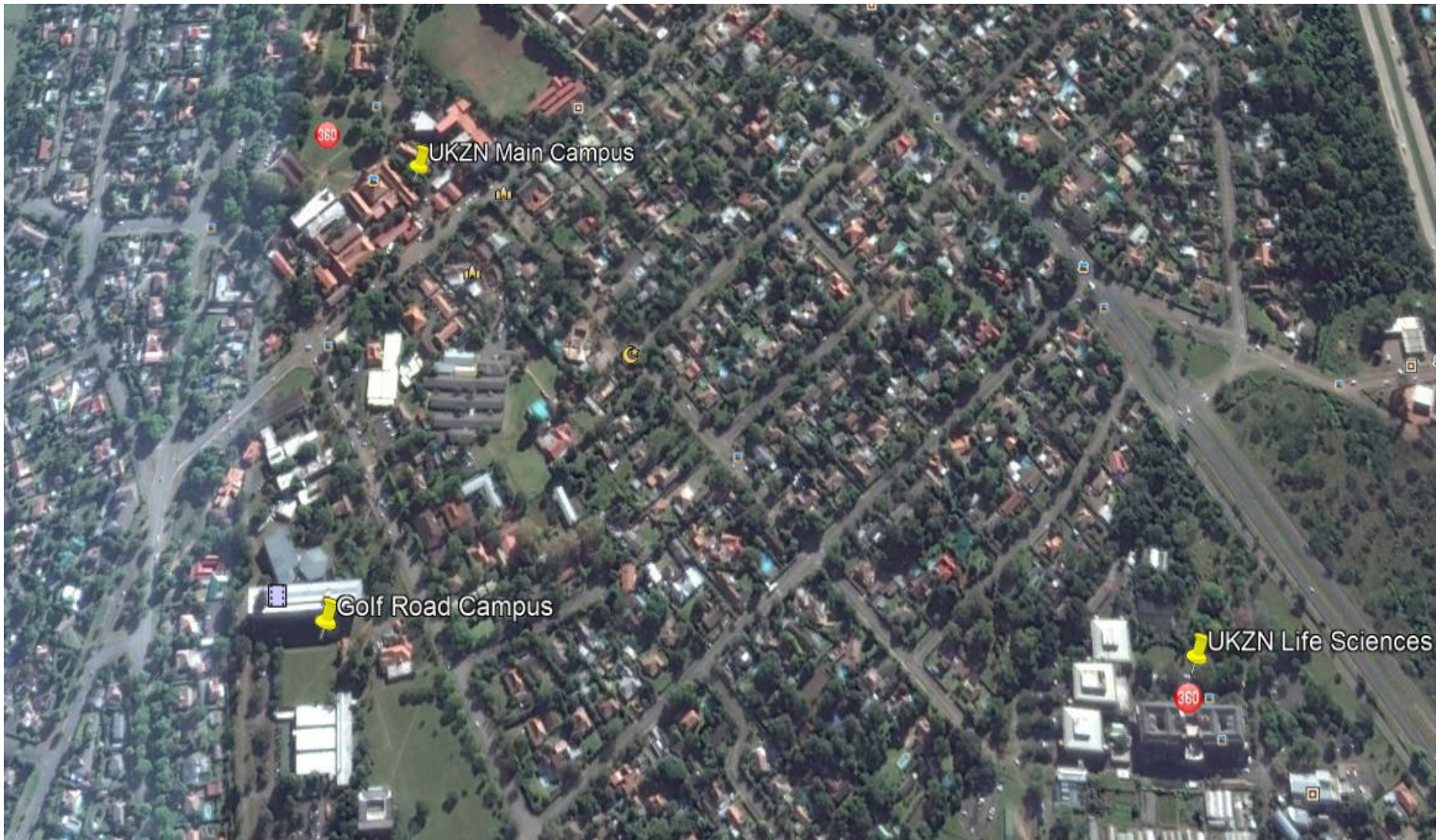
Website: www.ukzn.ac.za



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Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

Appendix C: Study Area – University of KwaZulu-Natal (Pietermaritzburg)



Appendix D: Turnitin Report

THE USE OF SOCIAL MEDIA AND INTERNET BY TERTIARY STUDENTS TO DISSEMINATE AND UNDERSTAND INFORMATION

ORIGINALITY REPORT

0%

SIMILARITY INDEX

0%

INTERNET SOURCES

1%

PUBLICATIONS

0%

STUDENT PAPERS

MATCH ALL SOURCES (ONLY SELECTED SOURCE PRINTED)

1%

★ Dabbagh, N.. "Personal Learning Environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning", The Internet and Higher Education, 201201

Publication

Exclude quotes On

Exclude matches < 1%

Exclude bibliography On