The use of the Internet by first-year undergraduate students in the College of Agriculture, Engineering and Science at the University of KwaZulu-Natal, Pietermaritzburg Campus

By:

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Submitted in partial fulfilment of the requirements for the degree of Masters of Information Studies (Course Work) School of Social Science, College of Humanities, University of KwaZulu-Natal, Pietermaritzburg.

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Declaration

I, **Bashimbe Baganda** declare that:

(i) The research reported in this dissertation, except where otherwise indicated, is my original work.

(ii) This dissertation/thesis has not been submitted for any degree or examination at any other university.

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Dedication

This study is dedicated to my wonderful family, my wife Mapendo Kito Mushi and our children Akonkwa Nicholas Baganda, and Mwamini Caroline Baganda for their love, support, understanding and acceptance of the time that I had to spend on my studies. I also dedicate it to my mother Munyerenkana Ernestine Mwilarhe (the late) and my father Nyakiriza Cyprien Baganda (the late) who will always be remembered.

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Abstract

The purpose of this study was to investigate the use of the Internet by first-year undergraduate students in the College of Agriculture, Engineering and Science at the University of KwaZulu-Natal, Pietermaritzburg campus. The study sought to address the following questions: what do first-year students use the Internet for?; what are the most Internet sources first-year students use?; how often do first-year students use the Internet?; do first-year students have adequate skills to use the Internet?; what challenges are experienced while using the Internet?

The study population comprised 880 College of Agriculture, Engineering and Science first-year students. The sample size of the population was 269 students from which 169 first-year undergraduate students responded, which gave a response rate of 69%. The researcher employed the quantitative approach where data were collected using the questionnaire. The quantitative data was analysed using SPSS. To ensure validity and reliability, a pre-test of the questionnaire was done using ten first-year students selected randomly from the college of law and management at the UKZN, PMB campus.

The study' results showed that most first-year in the CAES students used the Internet for learning purposes such as searching for information related to academic work, doing their assignments, e-mailing lecturers on academic-related matters and finding information for their research work. The most relevant Internet services used were social networks, E-mail, Web, telnet, and FTP. Nevertheless, the most used Internet services were the Web, e-mail, and social networks. In addition, the study's results showed that the majority of students used the Internet services daily. There were a number of challenges students experienced regarding the use of the Internet. Such challenges included difficulty in locating information, inaccuracy of information, unreliability of source, network signals, and the viruses challenges. Based on the results recommendations included the upgrading of computers, software, and the Internet in all LANs for good Internet connection; the integration of ICT in all field of study at UKZNP, and the improvement of wireless connection around campus to improve connectivity.

List of abbreviations and acronyms

ARPANET: Advanced Research Projects Agency Network

CAES: College of Agriculture, Engineering and Sciences

DHE: Department of Higher Education

DSL: Digital Subscriber Line

E-mail: Electronic mail

FTP: File-Transfer Protocol

ICT: Information and Communication Technology

IT: Information Technology

LAN: Local Area Network

PMB: Pietermaritzburg

SA: South Africa

SADHET: South Africa Department of Higher Education and Training

SPSS: Statistical Program for Social Science

TCP/IP: Transmission Control Protocol and Internet Protocol

URSS: The Soviet Union

UKZNP: University of KwaZulu-Natal, Pietermaritzburg

USA: United State of America

WI-FI: Wireless Fidelity

WWW: Web or World Wide Web

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CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

The Chapter introduces the study and states the background to the problem, the purpose of the study and the research questions. Broader issues concerning the Internet are also discussed in this chapter. The chapter also includes the rationale of the study and the conceptual framework. The same chapter covers the limitation and delimitations of the study.

According to Asibey, Agyemang and Dankwah (2017:2), the Internet is a global network "information superhighway" that enables computers and other communication gadgets to communicate directly and transparently. Thus, the authors define the Internet as a global broadcasting capability, a system for information broadcasting, and a means for interaction and collaboration between individuals and their communication devices irrespective of their geographical location.

Biddiscombe and Upton (2010:3) argue that many computers connected to the Internet contain information resources. For example, you can access museums, art galleries, national libraries and special collections. These resources can be accessed using Internet programs such as the World Wide Web. Dogruer and Eyyam (2012:4) further argue that Internet has some functions, especially in education, and these can be listed as, the storehouse of information, communication without boundaries, online interactive learning, electronic/online research, innovation in the new world, promoting global education, and information catalogues. Orham and Yilmaz (2014:2) believe that the Internet provides not only social connection and entertainment, but also academic and scientific information as well. Thus, it is vitally important to encourage students to use this invaluable source to get any information they need in their academic studies because the development of the Internet would be meaningless if it is not used appropriately in education. Further, Parks, Stein and Reading (2015) state that the current generation of learners has been referred to as 'digital natives' in reflecting their apparent ease and familiarity with digital technology. However, questions remain about how prepared students are for university e-learning environments. Thus, first-year students are chosen for this study since some of them have used the computer and the Internet before in their respective schools but did not acquire adequate skills for advanced academic search.

Once at the university, some of these first-year students acquire computer and Internet skills. However, determining their use of the Internet and for what purpose are crucial at this level of their studies before they embark on advanced research during their time at the University.

According to the Concise Oxford English Dictionary (Stevenson and Soanes: 2004), the term "use" means to take, to hold, or deploy as a means of achieving something. It means the power or the ability to exercise or manipulate something. Thus, "use" means the purpose for or a way in which something can be used. In this context, "use" relates to how the Internet is "put into service or action; employed for a given purpose" by first-year undergraduate students in the College of Agriculture, Engineering and Science.

According to Davis (1989) as cited by Cheng (2014), perceived usefulness and ease of use are two key factors in determining one's acceptance of using new technology for a specific purpose. Perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance", whereas perceived ease of use is defined as "the degree to which a person believes that using a particular system would be free of effort" perceived satisfaction, on the other hand is defined by Liaw (2013) as user acceptance of information systems and the degree of comfort involved in using them. Thus, a greater degree of satisfaction toward Internet use by students implies a higher degree of willingness to use it.

Several studies have been done on Internet use by students in general and students from the second year up to the postgraduate level. For instance, studies were done by Kheswa (2010) on third-year students at the university of KwaZulu-Natal (UKZNP) as well as the survey of Harerimana (2018) on undergraduate nursing students at UKZN. However, the current study focuses on the College of Agriculture, Engineering and Science at the University of KwaZulu-Natal, Pietermaritzburg campus. The focus on students at CAES is informed by the fact that the Internet is a driver of innovation, creativity, teaching, learning and new thinking is very critical for students in the fields of Agriculture, Engineering, Pure Sciences and beyond. Accordingly, an improved understanding of the use of the Internet by various strands of users such as students for academic and non-academic contexts is essential.

Studies have been done using third year and postgraduate students in the college of humanities at UKZN. It is fundamental to monitor even slight differences in the data collected from first-year students compared with the other level of students at UKZN for new insights to emerge.

The results of most previous studies reported on the frequency of the Internet use, its purpose and the services. Often, such studies did not report much on difficulties that first-year students encountered at the university in using the Internet. For instance, Kheswa (2010) surveyed the use of the Internet by third-year undergraduate students in the College of Humanities. His study results focused more on the frequency, search engines and the purpose of Internet use. Accordingly, the present study is investigating the Internet use of first-year students at the university. It is important to know how these students with different economic, social and cultural backgrounds react to the use of the Internet at the university.

Higher education institutions continue to offer important infrastructure providing students with access to Internet-based information such as e-journals, virtual learning environments (VLEs), databases, e-books, moodle and other forms of e-learning facilities. Eynon and Malmberg (2012: 514) argued that the majority of research on online information-seeking focus on two areas. The first is the skills required to effectively search for and deal with online information; the second examines how students use and benefit from online information. Fasae and Aladeyini (2012) state that the Internet plays a major role in helping undergraduate researchers access a large number of materials from different parts of the world. With its introduction, lecturers and students can work together without physical interaction and achieve the same objective as the traditional way of studying in higher institution. Most universities now have an Internet connection and a broad array of educational technology in classrooms, libraries, student residences and other public campus areas. Similarly, most degree programmes contain an information literacy component where students are trained to effectively search and critically evaluate Internet-based information. The benefits associated with the Internet oblige first-year students at the university to use the Internet as a source of information.

There are initiatives and interventions to enhance the use of the Internet at the University of KwaZulu-Natal and other establishments. There are also issues of Internet abuse and the negative social impact and other psycho-social behaviour and harm associated with the use of the Internet which is not the emphasis of this study.

Thus, the study aims to explore the use of the Internet among the first-year undergraduate students in the College of Agriculture, Engineering and Science (CAES) at the University of KwaZulu-Natal, Pietermaritzburg Campus. The CAES was chosen because other studies that have been done were at the College of law and management studies, and the college of Humanities at the UKZNP. From this background, it could be argued that there is a need to

gain a detailed understanding of the realities of Internet use by first-year students in order to find out context-specific issues so that appropriate interventions can be designed.

1.2 Research problem

The most effective communication resources such as computers, a network and theInternet are part of our daily lives and have become an important tools in education. The Internet helps transfer information between different points. Studies have been conducted to identify the use of the Internet among students in institutions of higher education. Among these studies, findings revealed that the Internet was used for social, educational and entertainement purposes. Orham (2013) for instance argued that students integrate technology into all aspects of their lives for multiple purposes, particularly socializing, researching and doing homework by using the Internet. At the University of KwaZulu-Natal, first-year students like the others in part access their lecture notes and complete their assignment using the Internet. The Internet is thus absolutely crucial in terms of their academic success. Failure not to make efficient and effective use of the Internet may jeopardize their academic performance. First-year students come from different backgrounds where some were not exposed to computers with the Internet. In this light, the study seeks to investigate the use of the Internet by first-year undergraduate students in the CAES at the Pietermaritzburg campus.

Precisely, the study sought to figure out the purposes for which first-year CAES students use the Internet, what Internet search engines are relevant to them and mostly used and, importantly, identify the challenges they experience when using the Internet.

1.3 Purpose of the study

The study seeks to investigate the use of the Internet by first-year undergraduate students in the College of Agriculture, Engineering and Science at the University of KwaZulu-Natal, Pietermaritzburg Campus.

1.4 Objectives of the study

The objective of this study are to:

1. Determine the reasons for using the Internet by first-year students
2. Examine the most Internet sources first-year student use

3. Find out the frequency of Internet use by first-year students
4. Assess the skills first-year students have to adequate use the Internet
5. Explore the challenges first-year students are experiencing when using the Internet

1.5 Research questions

The following research questions guided this study:

1. What do first-year students use the Internet for?
2. What are the most frequently used Internet services by first-year students?
3. How often do first-year students use the Internet?
4. Do first-year students have adequate skills to use the Internet?
5. What challenges do first-year students experience when using the Internet?

1.6 Broader issue to be investigated

The broader issues in this research revolve around the digital divide (DD). According to Zoroja and Bach (2013), the term covers a wide range of things such as ICT (Information Commucation and Technology), the Internet, the computer, information literacy, access and accessibility, internet connectivity, etc. There are many definitions of the digital divide (DD). Zoroja and Bach (2013) assert that the term refers to the gap between individuals, companies, regions and countries in accessing and using information and communication technology. The concept of the DD can be used to explain the socioeconomic differences arising from ICT use and social, demographic and economic characteristics of the users. The phenomenon of the DD can reveal inequalities across global information society which affect the economic growth and development of many countries.

The term is further described by Norris (2011) as the existing inequalities between the information-rich and the poor. According to him, a social divide is apparent between rich and poor within each nation. A global divide is evident between industrialised and developing societies. In short, the DD is used to describe the discrepancy between people who have access to and the resources to use new information and communication tools, such as the Internet, and people who do not have the resources and access to the technology. The term also describes the discrepancy between those who have the skills, knowledge and abilities to use the technologies and those who do not. Meeplat and Dahalin (2016: 1) argue that the digital divide means the gap between people who have the opportunity to use computers and technology and

those whose opportunities are limited or non-existent because of various factors such as low incomes, living in a rural area, lack of connectivity or electricity.

From these definitions of the digital divide, it is clear that first-year undergraduate students at the University of KwaZulu-Natal may be experiencing the divide such as lack of skills to use technologies, inadequate computers and limited connectivity. Mogano and Oyedemi (2017) during their survey on 156 first-year students from the University of Limpopo revealed that 73 per cent of students had no access to computers at their high schools and 82 per cent of students from rural high schools had no computer access and internet at their schools. The same study revealed that many students gained access to computers and the Internet for the first time at the university. Thus, they entered the university digitally disadvantaged.

As far as the use of the Internet by first-year undergraduate students is concerned, computer literacy is important since students need skills to participate effectively in the academic requierements. For students to retrieve and share knowledge, they must be computer literate. Dewah (2014) states that computer ,literacy is the ability to utilise computer technology to find information and communicate. In addition, Schmitt, Debbelt and Schneider (2018) state that the Internet provides huge amounts of varied information and people with requisite litracy will not find this medium challenging. The difficulty to evaluate and select relevant information on the Internet increases as more and more diverse sources and content become available leading to information overload. According to Schmitt, Debbelt and Schneideras (2018) information overload is a state in which the informational input exceeds the human information processing capacity. The authors argue that information overload results in ineffective information processing and confusion. To overcome this situation, first-year students have to be information literate. Cordell (2013) defines information literacy as a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use the required information effectively.

1.7 Rationale of the study

The Internet has bought about improvement in communication services and is also useful for education purposes. Lecturers can make use of the Internet by giving students extra digital resources and material such as interactive lessons and educational games. Moodle and e-learning management system (LMS) at UKZN can also be accessed via the Internet by students. Kilfoil (2017) argued that many college courses use a "hybrid" model where many lessons are

done online, requiring fewer in-class meetings. This saves students from having to travel to campus carrying textbooks every day. Moreover, tests and research can all be done from any computer with Internet access.

The current study focuses on first-year undrgraduate students because some come from disadvantaged schools where they have not been exposed to computers and Internet. This research intends to find out how first-year students use the Internet. It seeks to understand purposes these students use the Internet for and the information sources that are relevant and most important to them. Since the use of the Internet by first-year undergraduate students has not been conducted in CAES Pietermaritzburg campus before, it is expected that this study will provide a starting point for future surveys on the use of the Internet by first-year students. This can help inform Internet skills development for their academic purposes. In short, the current study contributes in three ways which are: filling the gaps missing in literature; improve and support the policy of the university; and lastly influencing practices in regards to the research findings.

1.8 Delimitation of the study

The study will be restricted to the Pietermaritzburg Campus and focus specifically on the first-year undergraduate students in the CAES at the University of KwaZulu-Natal for 2018. This research is not focusing on the Internet use to access library electronic materials.

1.9 Conceptual framework

For this study, a conceptual framework was adopted in network literacy, which is the ability to identify, access and use electronic information from the network. McClure (1994) states that network literacy is the quality or state of identifying, accessing and using electronic information from the network. He also adds that the basic components of network literacy are relevance, use, skills and knowledge. This means the perceived relevance of information sources, the skillful use of information and communication technology, the skill in using computer-mediated communication tools, and most importantly knowledge of information resources available on the Internet. The network literacy model is selected because its four dimensions apply to first-year students when using the Internet for their school work.

Network literacy is further defined by Murphy, Walker and Webb (2011) as the ability to navigate through Websites, use the services of online stores and have conversations with other Internet users. This conceptual framework has been useful and effective in answering the research questions listed earlier as their formulation is based on this framework. The network literacy concept was also supportive when analyzing data based on the four dimensions (knowledge, skills, relevance and use). According to Ngulube et al. (2009), knowledge is the awareness of information resources available on the Internet. Skills are just expertise of using ICT to access information on the Internet. Relevance concerns the usefulness of the information sources. Lastly, use is the application of the information obtained by students. Figure:1.1 below illustrates the interconnection between the four dimensions.

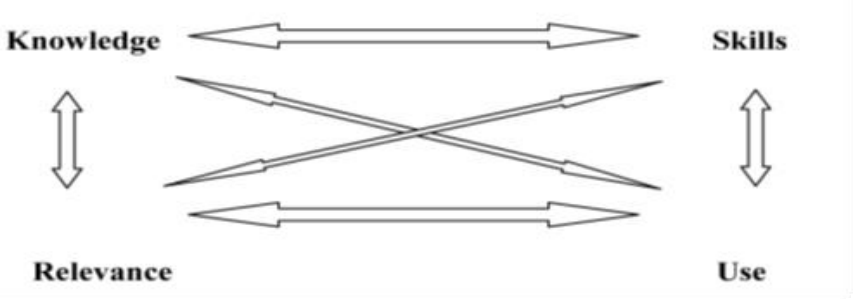


Figure 1.1: Network literacy model (adopted from Kheswa, 2010)

(Adopted from Ngulube, Shezi and Leach, 2009)

1.10 Definition of key terms

The following are the key terms used in the study which are briefly defined:

Information: Data that has been processed into a meaningful form to the recipient and is of real or perceived value in current or prospective actions or decisions (March and Smith, 2010: 251).

Information Commnunication and Technology (ICT): ICT refers to technologies that provide access to information through telecommunications. It is similar to Information Technology (IT), but focuses primarily on communication technologies. This includes the Internet, wireless networks, cell phones, and other communication mediums (Dewah, 2014: 9).

Information overload: a state in which the informational input exceeds the human information processing capacity or exposure to or provision of too much information or data. (Schmitt, Debbeltb and Schneideras, 2018)

Internet: The Internet, sometimes called simply "the Net," is a worldwide system of computer network, or a network of networks in which users at any one computer can, if they have permission, get information from any other computer (and sometimes talk directly to users at other computers) (Dogruer and Eyyam, 2012: 608)

Use: as mentioned early, use is defined by Stevenson and Soanes (2004) as to take, to hold, or deploy as a means of achieving something. In this context,"use" relates to how the Internet is put into action; employed for a given purpose by first-year undergraduate students in the CAES.

World Wide Web (WWW): The World Wide Web (abbreviated WWW or the Web) is an information space where documents and other web resources are identified by uniform resource locators (URLs), interlinked by hypertext links, and can be accessed via the Internet (Handley and Crowcroft, 2015: 31).

1.11 Summary of the chapter

This chapter covers the research problem, the purpose of the study and the research question, the rational of the study, research objectives, research questions, delimitation, broader issues and the conceptual model.

Chapter Two is the literature review which encompasses books, journals, articles and conference proceedings related to the topic. Chapter Three discusses the methodology and methods used in the study. In addition, it discusses the population of the study, the sampling procedure and the data collection instruments, data collection procedure and data analysis. Chapter Four presents the findings. Chapter Five discusses the results. Chapter Six presents the conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of related literature relevant to the use of the Internet by undergraduate students. The researcher offers both a summary and explanation of the complete and current state of knowledge concerning the Internet use by undergraduate students as found in academic books and journal articles. In addition, the literature review gives readers easy access to research by selecting articles or studies that are meaningful, important and valid and summarizing them into one complete report. The literature review presented in this Chapter addresses the key research questions as outlined in chapter one. Other issues considered in the literature review are a brief history of the Internet, its evolution, use and access. Further, issues such as use of the Internet in education, frequency of Internet use and challenges encountered by students when using the Internet are also considered.

2.2 Overview

According to Cooper and Hedges (2014: 4), common to all definitions of literature reviews is the notion that they are not based primarly on new facts and findings, but on publications containing such primary information, whereby the later is digested, classified, simplified and synthesised.

Razi (2014) states that the literature review is a logical and organized exploration of information that has already been brought in front of the audience by famous scholars and researchers on any topic as per the hypothesis or the desires of the researcher. It helps in gaining knowledge in our required research field. Fink (2005) further adds that a literature review is a systematic, explicit, and reproducible method for identifying, evaluating and interpreting the existing body of recorded work produced by researchers, scholars, and practitioners.

Considering the definitions above, it is clear that literature review reports on knowledge and ideas that have been established on a particular topic, including their strengths and

weaknesses. The same knowledge and ideas allow the researcher to discover the agreed academic opinion on the topic while at the same time letting the researcher find out the disagreements on the same subject.

Papaioannou and Sutton (2013) outline the importance of the literature review in research. According to the authors, the literature review positions your research project within the body of literature and thereby provide perspective for the reader. It also demonstrates your knowledge of the subject area and determines what each source contributes to the topic. The literature review helps to understand the relationship between the various contributions. It further helps to identify and (if possible) resolve contradictions; and determine gaps or unanswered questions. The literature review mostly justifies your choice of research design; for instance, your choice of qualitative over quantitative approaches, or your method of data analysis. Furthermore, the literature review clarifies how your work fills a gap in the scholarly literature. Through the literature review, the researcher gains expertise in scanning the literature on a particular topic efficiently (Papaioannou and Sutton, 2013).

The literature review assists the researcher to fully understand whether he/she is still on track; whether what the researcher is doing is worthwhile, and whether what the researcher is doing has a contribution. This chapter thus presents the literature review regarding the use of the Internet by first-year undergraduate students as they progress into the high level of the research domain. It also examines terminologies used in related research and generally assists in developing a framework for this research. Through available literatures, this chapter also examines the use of the Internet by students globally and within the local African South African context to place this study in perspective.

Over the years, Internet has been a very important instrument for facilitating academic activities in tertiary institutions. Ivwighreghweta and Igere (2014) stated that there had been a tremendous growth in the use of the Internet and the World Wide Web to find and share information. According to the authors, the Internet is the transport vehicle for the information stored in files or documents on a computer. It carries together various information and services, such as electronic mail, online chat, file transfer, interlinked Web pages and other World Wide Web documents. According to Ogedebe (2012), the Internet is a powerful and efficient tool for searching, retrieving, and disseminating information, significantly

impacting students and scholars worldwide. Dogruer and Eyyam (2012) are also of the view that the growth of the Internet in the world provides many opportunities to many people worldwide in many different ways. However, the Internet provides not only social connection and entertainment, but also academic and scientific information. Additionally, the Internet can be used as a tool to read the latest news worldwide and get any information that serves different purposes. Therefore, it can be said that the Internet is the source of spreading information quickly to a large audience and of going beyond the limitation of time and space. In the light of the above information, it is very important to encourage students to use this valuable source to get any kind of information they need in their academic studies.

Dewah (2014) argued that the Internet could be used to collect information from around the world. This information could relate to education, medicine, literature, software, computers, business, entertainment, friendship, tourism, and leisure. People can search for information by visiting various search engines such as Google, Yahoo, etc. Mwilongo (2015) is also of the view that the use of Information Communication Technologies (ICTs) in education is growing in all parts of the world. The author added that Africa has also witnessed the development of these ICTs in various sectors including education. These ICTs are increasingly becoming prevalent in our society, and consequently, they entail new conditions and opportunities for the teaching and learning processes. ICTs have a positive motivating impact on students and has been useful for promoting education by open and distance learning courses in low-income countries especially the sub-Sahara Africa (Mwilongo, 2015).. Furthermore, Ogedebe (2012) argued that Internet and mobile phone-based social interaction has increasingly become popular in the last two decades. Thus, the Internet allows easy access to e-mail and various chatting and networking sites such as WhatsApp, IMO, Facebook, Twitter, Instagram, YouTube and LinkedIn attracting young people including tertiary students.

Moreover, Nair and Santha (2017) state that with the introduction of the Internet, learners have instant access to information on virtually any subject they had to be physically near the information they wished to learn earlier. The Internet has succeeded libraries as a source for information gathering and research. Online learning facilitates the students to learn whatever they want, provides comfort, helps to acquire an online degree from a prestigious university

at a low cost, self-paced learning etc. The variety of sources allows students to pursue the subject in much greater detail rather than being limited to classroom learning. Accordingly, the current study addresses the issue of the use of the Internet by first-year undergraduate students in CAES at UKZN.

2.3 Brief history of the Internet

Dewah (2014) describes the Internet as a public, cooperative and self-sustaining facility accessible to millions of people worldwide. Physically, the Internet uses a large portion of the total resources of the currently existing public telecommunication networks. Technically, what distinguishes the Internet from other networks is its use of a set of protocols called TCP/IP (Transmission Control Protocol/Internet Protocol). The system that makes up the Internet may be owned and maintained by different companies. But messages and data move across all of them without regard to ownership because they all use the same protocol or language to communicate (Slevin, 2002).

Brugger and Goggin (2017) state that the history of the Internet is complex and involves many aspects such as technological, organizational, and community. Its influence reaches the technical fields of computer communications and throughout society as we move toward increasing the use of online tools to accomplish information acquisition for community operations.

Slevin (2002) states that the origin of the Internet is firmly rooted in the circumstances of the Cold War between the United State of America (USA) and the Soviet Union (USSR). Further Slevin (2002) states that the Internet was conceived by the Advanced Research Projects Agency (ARPA) of the U.S. government in 1969 and was first known as the ARPANet. The agency task was to establish and maintain a worldwide lead in science and technology. However, the agency's role was almost completely in military terms, and failed to recognise the importance of innovative research in the nation's universities at that time (Slevin, 2002).

According to Castells (2001:10), the ARPAnet reputation as an innovative research institution only began in 1961. The author further argues that the the agency's structure was decentralized. Its role was redefined as a body supporting and funding the work carried out

by researchers on special projects. The author states that the creation of ARPANET in 1969 has become widely recognized as the origin and introduction of the Internet. In 1972, the first succesful demonstration of the ARPANET took place at an international conference in Washington, DC. Castells (2001) further argued that the next step was to make ARPANET's connection with other computer networks possible, starting with the communication networks that ARPA was managing. It was the introduction of a new concept: a network of networks. This was accomplished in 1973 with the design of the transmission control protocol (TCP) which was then split into two parts, the inter-network protocol (IP), yielding the TCP/IP protocol, the standard on which the Internet is still operating today (Slevin, 2002). Moreover, Lesame et al. (2012) argued that the World Wide Web (WWW) emerged after introducing the first graphical user interface which evolved into web browsers. The WWW provides Internet users with a uniform and convenient means of accessing the wide variety of resources (picture, text, data, sound and video) available on the Internet. Thus, since Internet has evolved, it has been used in education as well. From this history, the current study adresses the issue of its use by first-year undergraduate students in the CAES at UKZN.

2.4 Brief history of the Internet's evolution

The table below shows the evolution of the Internet.

Table 2.1: Key Internet milestones showing how the Internet has evolved, adapted from Lesame et al (2012: 40)

Year	Events
1969	Internet was born under the banner of Arpanet
1972	Email was brought to the Arpanet network
1982	The term "Internet" was coined
1986	Software was released enabling news transmission, posting and reading
1987	The first known Internet worm (virus) crippled thousands of computers
1991	World Wide Web software was invented to make it easier to publish and access information on the internet
1992	The first audio and video broadcasts took place
1993	the first search engine, ALIWEB, was launched and Mosaic, the first web browser to combine graphics and text on a single page.
1994	the first commercial web browser, Netscape, was launched
1995	Amazon.com and eBay were launched to enable Internet users to trade over the Internet
1996	E-commerce transactions exceeded US$1 billion, and Internet-related stocks began to soar.
1998	Google was launched
1999	Napster launched software to enable Internet users to swap MP3 music files online, and blogger, a user-friendly, free blogging platform, was launched
2000	The dotcom crash occurred suddenly and e-commerce slid into decline
2003	The first public version of Skype (a VoIP program) allowed users to make free phone calls over the internet
2004	The social networking website Facebook was launched
2005	YouTube was launched, enabling individuals to publish videos online, and Skype launched internet-based video telephony
2006	Twitter was created, allowing blog messages of up to 140 characters
2008	The mobile web reached critical mass for advertising
2009	Actor Ashton Kutcher became the first person on Twitter to have a million followers are subscribing to his tweets.

2.5 Use of Internet and access to the Internet

This section briefly discusses the use of the Internet and access to Internet.

2.5.1 Use of the Internet

As mentioned previously, the term use means the purpose for or how something can be used. In this context, "use" refers to how Internet is "put into service or action; employed for a given purpose" (Stevenson and Soanes:2004).

According to Dogruer and Eyyam (2012), Internet has been the most useful technology of the modern times which helps us in our daily lives and our personal and professional'lives developments. For students and educational purposes, the Internet is widely used to gather information to do the research or add to the knowledge of any subject they have. Regarding the business personnel and professionals like doctors, engineers; the Internet is used to find necessary information for their professions. Naughton (2016) states that Internet is the largest encyclopedia for everyone, in all age categories. The Internet also uses special software to work on projects and documentation works. It enables the user to download various software for various purposes, making it easier to buy costly software (Naughton, 2016).

Salahuddin and Gow (2015) argue that various governments, both in the developed and the developing world, have recognized the significant growth potential of the Internet to their economies. Many governments have adopted policies that have led to the massive growth of Internet use in their countries. In South Africa in recent times for instance, Internet usage has been increasing at an accelerated rate, helping to catch up with similar economically developed middle-income countries (Salahuddin and Gow, 2015). At present, 40% of South Africans are using the Internet (World Bank, 2013). Additionally, Luiz and Stephan (2012) state that South Africa has the highest penetration of any country in Africa which provides a favourable platform for extensive broadband and Internet usage. The number of Internet users has quadrupled in just a few years (World Bank, 2013). Table 2.2 illustrates the world Internet usage as of the 31 December 2017 update.

Table 2.2: World Internet usage adapted from Internet World Statistics (2018)

WORLD INTERNET USAGE AND POPULATION STATISTICS						
World Regions	Population (2010 Est.)	Internet Users Dec. 31, 2000	Internet Users Latest Data	Penetration (% Population)	Growth 2000- 2010	Users % of Table
Africa	1,013,779,050	4,514,400	110,931,700	10.9 %	2,357.3 %	5.6 %
Asia	3,834,792,852	114,304,000	825,094,396	21.5 %	621.8 %	42.0 %
Europe	813,319,511	105,096,093	475,069,448	58.4 %	352.0 %	24.2 %
Middle East	212,336,924	3,284,800	63,240,946	29.8 %	1,825.3 %	3.2 %
North America	344,124,450	108,096,800	266,224,500	77.4 %	146.3 %	13.5 %
Latin America/Caribbean	592,556,972	18,068,919	204,689,836	34.5 %	1,032.8 %	10.4 %
Oceania / Australia	34,700,201	7,620,480	21,263,990	61.3 %	179.0 %	1.1 %
WORLD TOTAL	6,845,609,960	360,985,492	1,966,514,816	28.7 %	444.8 %	100.0 %

Internet world statistics (2018: 6)

Table 2.2 above shows that Africa has the lowest percentage population penetration in terms of Internet access. Naughton (2016) states that easier access to computers, the modernization of countries around the world, and increased utilization of smartphones have allowed people to use the Internet more frequently and with more convenience. Naughton (2016) further argued that Internet penetration often pertains to the current state of development regarding communications networks. However, broadband Internet usage is not equally present in many countries and due to infrastructure reasons, developing online markets rely strongly on mobile connections.

Biru and Nyirenda (2015) also argued that since the start of this millennium, African countries have experienced steady growth in Internet penetration from 0.78% in 2010 to 20.71% in 2017. Biru and Nyirenda (2015) further argued that while Africa still lags behind the rest of the world in Internet penetration, it is bridging the gap very quickly. For example, in 2008, Internet penetration in Europe was 19.6 times greater than that of Africa, but by 2016, it was only 3.9 times greater.

According to the latest statistics (February 2018) shown by Internet World Statistics (2018), there are approximately 4 billion internet users worldwide. In South Africa, currently the

number of Internet users is around 23, 655 million. In 2012, about 1.58 billion users worldwide used their mobile phones to access the Internet, equating with 67% of Internet users. The number of persons accessing the Internet via mobile phones grew by 21% to1.91 billion users, representing 74% of Internet users. This number increased by 17% in 2015 to 2.23 billion users making 79% of total Internet users.

Nevetheless, Dutton and Blank (2015) have identified Internet users with different cultures and challenged conventional thinking about Internet demographics. Groups are likely to have different values, attitudes and beliefs about the Internet. According to Dutton and Blank (2015), cyber-moderates who believe that the Internet is a good place to pass the time, an efficient way to find information or shop, or a good way to maintain and enhance their social relationships. This category of Internet users is also not uniformly fearful that the Internet will expose them to immoral material, pose a threat to their privacy, or waste their time. They seem to be moderate in both hopes and fears, so they are called 'cyber-moderates'. On the other hand, the Adigitals (category of people against excessive Internet use) tend to see the Internet as a problem generator (Dutton and Blank,2015). This group does not feel that the Internet makes them more efficient, nor do they enjoy being online simply to pass the time or escape from reality. The Internet is likely to be perceived as out of control to members of this culture, potentially controlled by others. For example, they feel frustrated because the Internet is difficult to use and harbours too much 'immoral material'. Compared with the other cultures, the digital group appears to resonate most with the problems generated by the Internet. They feel more excluded from a technological context that is 'not made for them'. This digital culture fits about 14% of the UK's online population (Dutton and Blank, 2015). Accordingly, the current study uses the lens of Blank and Dutton (2015) to view if the Internet is 'made for' users at the CAES at UKZN.

Dutton and Blank (2015) further spoke about the e-Mersives, the Cyber-Savvy and the Techno-pragmatists. These categories of Internet users see the internet as an escape, an efficient tool and a social facilitator. These groups of users are comfortable and naturally at home in the online world and happy being online. They see the Internet as a technology they can control, a tool they can employ, to make their lives easier, save time, and keep in touch with people. However, these groups expressed mixed feelings and beliefs about the Internet,

holding somewhat ambivalent views. This group enjoys being online to pass the time, easily find information, and become part of a community where they can escape and meet people. In addition, they fully exploit the Internet as a pastime, as an efficient information resource, and as a social tool. For this reason, they are living comfortably in an Internet world. Accordingly, the current investigation addresses the concerns of frequency of the use of the Internet, skills to use Internet and challenges CAES students experience when using the Internet. Below figure 2.1 shows Internet users in the world by regions.

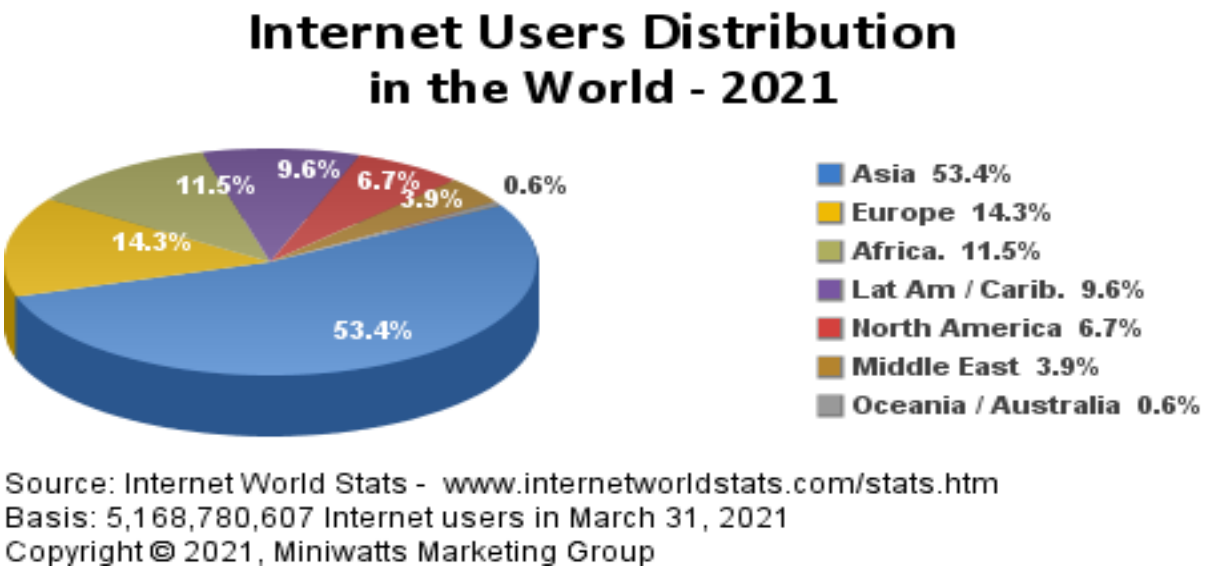


Figure 2.1: Internet users in the world

2.5.2 Access to the Internet

According to recent statistics, 4.66 billion people in the world had access to the Internet in October 2021 (Internet World Statistics, 2021). This includes around 642 million Chinese, 280 million Americans, 243 million Indians, 109 million Japanese, 108 million Brazilians, and 84 million Russian. These individuals use the Internet for economic development, entrepreneurship, education, and health care. However, that leaves roughly 4.2 billion people outside the digital revolution. With Internet usage growing only 9 percent a year, around 58 percent of the world lacks Internet access (International Telecommunication Union, 2014). These individuals cannot enjoy the social, economic, and civic benefits that derive from digital connectivity. Talita (2018) argues that Internet access has been shown to play an important developmental role and Internet access to all people has become an international

goal even in South Africa where the "South Africa Connect" (the implementation of South Africa's broadband policy) policy was introduced in 2013. The policy aims to provide all South Africans access to broadband services with a minimum speed of 10 Megabits per second by 2030.

Castells (2001) further states that there are many different ways to obtain Internet access, including: Wireless connection, Mobile connection, Hotspots, Dial-up, Broadband, and DSL (Digital Subscriber Line) Satellite. According to West (2015), Internet access is often provided at home, schools, workplaces, public places, internet cafes, libraries and other locations. The author further adds that the Internet began to gain popularity with dial-up internet access. This is a form of Internet access that uses the facilities of the public switched telephone network (PSTN) to establish a connection to an Internet service provider (ISP) by dialling a telephone number on a conventional telephone line (West, 2015). In a relatively short time, Internet access technologies changed, providing faster and more reliable options. Furthermore, Brugger and Goggin (2017) argue that broadband technologies such as cable Internet and DSL are the most widely used methods for Internet access. The speed, cost, reliability and availability of Internet access depends on the region, Internet service provider and type of connection.

Borman (2015) argues that in South Africa (SA), affordability is a major concern. Neither fixed-line nor mobile broadband is reliable or accessible enough. Access to the Internet remains a luxury that is monopolised by mobile networks and broadband suppliers. The author points out that civil society should put pressure on mobile network operators and broadband suppliers, to reduce the data fees. Despite high demand by consumers, local mobile operators exploit their customers for profits. By bundling data packages and creating pricing schemes that encourage users to buy more data rather than be hit with out of bundle costs, operators also maximise their profits at the expense of the consumer. Nevertheless, South Africa is slowly starting to catch up with developed countries, by making free Wi-Fi more accessible. For example, in Tshwane, project Isizwe has rolled out several free 24- hour hotspots in public spaces. Johannesburg recently announced plans for a similar project. Overall SA, lags behind the rest of the developed world, where every Starbucks coffee shop provides free W-iFi, and municipalities offer access through libraries and other public places

(Bornman, 2015). Accordingly, the current study investigates places where the Internet is accessed by students at the campus and outside the campus in CAES

Access to computers or smart devices is one of the important factors for understanding the level of Internet access for a region. However, Internet access is not uniformly distributed within or between countries. A digital divide exists between many countries and regions. Bornman (2016) argues that the price of ICT and Internet services is higher in Africa than anywhere globally. In addition, the author states that the relationship between education, income and Internet access is more profound for Africa than for most developed societies. A strong relationship between Internet usage and income has also been found. In Africa, more than elsewhere globally, Internet access and usage have remained the preserve of the wealthy and educated elite (Bornman, 2016).

Good Internet access is associated with regions with high-income populations, a high development index and high technological development (Brugger and Goggin, 2017). Castells (2001) added that many factors make it difficult for people to obtain access to the Internet. These include things such as poverty; high device, data, and telecommunications charges; infrastructure barriers; digital literacy challenges; and policy and operational barriers. Furthermore, Napoli and Obar (2014) have raised the issue of mobile Internet access and stated that mobile Internet access currently represents the only viable and affordable means of getting online. There is compelling evidence across various contexts that mobile Internet access can provide those without traditional forms of Internet access with opportunities to become better integrated into social, economic, and political life. Napoli and Obar (2014) argue that mobile Internet access is superior to traditional Internet access, particularly regarding the wider array of contexts in which it enables access and different kinds of uses.

Bold and Davidson (2012) also view that mobile Internet diffusion is far outpacing fixed, PC-based Internet access. According to the authors, in late 2010 the number of broadband Internet subscriptions over mobile technologies overtook the number of subscriptions over fixed technologies. Bold and Davidson (2012) further argued that mobile subscriptions are expected to rise from 61 percent of all broadband connections in developing countries to 84 percent in 2018. By the end of 2020, the number of mobile smart phone subscriptions had

increased to 8.15 billion (O'Dea, 2021). Moreover, "mobile-only" subscribers account for a large percentage of growth. According to one recent assessment, there were approximately 14 million mobile-only Internet users in the world in 2011, with the number expected to increase to 788 million by 2018. According to Nielsen and Fjuk (2010), this is of special concern because mobile is the primary means by which new Internet users particularly those with lower incomes and in developing countries get online. Thus, the current study also looks at Internet access modes such as smart phones, tablets and laptops.

2.6 Internet use in education

According to Dogruer and Eyyam (2012), new technologies are rapidly changing our ways of communication, the art of teaching, and extending ways of learning. The dramatic growth of Internet usage has changed the lives of millions of people around the globe during the last decade. For students and teachers, the Internet is becoming an increasingly important part of the educational process. It is supported by Ruzgar (2010) who postulated that the use of information technologies had shown very rapid growth during the last decade in almost every country in the world. Increasing computer ownership and access to the Internet has changed the lives of millions of people who get online daily at home, at school, at work and in locations such as Internet cafes. They go online to send/receive e-mails, chat, research for school or work, download music or images, and do many other activities. Therefore, special attention is put on these first-year students of CAES at UKNZ to investigate how they use the Internet since special skills are needed to find the right information for their academic works.

Dogruer and Eyyam (2012) argued that the full integration of ICTs and leveraging the Internet for education requires a clear vision and strategy. Most importantly, commitment is accompanied by investment in equipment, broadband connectivity, learning resources, and technical support. Ramani (2015) is also of the view that Internet's use as an instructional tool in higher education is rapidly increasing. Accordingly, there is an increase in the development of academic course websites with huge amounts of learning materials embedded within them. Ramani (2015) further noted that many universities, including leading academic institutes, are implementing advanced technologies as a part of existing teaching frameworks. Thus, it is typical to see Web pages or Moodle for courses in all fields taught at universities

and colleges providing course notes and related resources as supplements to lectures delivered in traditional classrooms. As a result, the current study evaluates the use of the Internet as an instructional tool by CAES students at UKZN.

Ruzgar (2010) states that the Internet supports many forms of learner interactivity and engagement and provides access to a vast repository of resources. The author adds that, Internet has been implemented in higher education teaching to such an extent that a new culture of learning has been witnessed. Thus, we are currently witnessing the development of huge amounts of Web-based learning materials and contents that have become a major component of many academic courses. In higher education institutions, the use of the Internet enables students and lecturers to access a variety of up-to-date information across the world. It empowers researchers and academic institutions to disseminate data to a vast audience (Hareriman and Mtshali, 2018). According to Hareriman and Mtshali (2018), the ICTs is a policy directive in South Africa. E-learning and the innovative use of ICTs in the education sector assist in addressing inequalities in schools across South Africa and facilitate the ongoing improvement of educator skills. Ruzgar (2010) also states that institutions invest heavily in ICTs, increasing reliance on online portals for access to vital study information and "open" educational resources. This facilitates distance learning, remotely enabling students to access course material and assignments and allowing them to work during the day and virtually attend classes afterwards. Ruzgar (2010) further argues that Internet-based learning also fills a clear need for students in remote areas, providing a platform for the student-lecturer interface despite of geographic limitations. In this light, the current research explores the use of the Internet by CAES students at UKZN to shed new insights into Internet research.

Bagarukayo and Kalema (2015) asserted that universities could remain competitive by using innovative technologies in teaching and learning to improve the quality of activities and attract new learners. South Africa national plan for Higher Education emphasizes that university activities develop an information society, through technology use, for knowledge advancement to improve education and support the new education system. Therefore, there was a need to integrate ICTs in SA universities to compete globally, be innovative and address the learning styles and preferences of digital natives longing to learn in an active,

authentic learning environment (Bagarukayo and Kalema, 2015). Thus, it is worthwhile for the present study to survey if first-year undergraduate students at UKZN have adequate skills to use the Internet for any integration of learning styles and innovation.

Hareriman and Mtshali (2018) have reported that the University of KwaZulu-Natal (UKZN) promotes innovative teaching and learning across its colleges. In recent years, the College of Health Sciences (CHS) at UKZN initiated a new innovative web-based platform to support instruction delivery called UKZNtube. Its features include live broadcast; pre-recorded content; flipped learning; playlists and question gateways, as well as interactive questions. Furthermore, it integrates with a multitude of other collaboration and communication tools like those found in Moodle.

In addition, the SA Department of Higher Education and Training (SADHET) (2012) has recognised certain trends regarding ICT use and Internet use in particular that are relevant to higher education. Firstly, Internet use is expanding the range of options available to education planners in terms of the teaching and learning strategies they choose to use, providing an often-mystifying range of choices in terms of systems design options, teaching and learning combinations, and strategy for administering and managing education. Internet use also allows for exponential increases in data transfer through globalized communication systems and connecting people through those networks. Further, ICT networks have significantly expanded the potential for organizations to expand their sphere of operations and influence beyond their traditional geographical boundaries. Internet use reduces barriers to entry of potential competitors to higher education institutions by reducing the importance of geographical distance as a barrier, reducing the overhead and logistical requirements of running education programmes and research agencies, and expanding affordable access to information resources. The SADHET (2012) further argues that there has been an explosion in collective sharing and generation of knowledge due to growing numbers of connected people. According to the SADHET (2012), the digitization of information in all media has introduced significant challenges regarding dealing with intellectual property and copyright issues. Copyright regimes, and their associated business models, that worked effectively prior to the development of ICT are increasingly under threat, and in some cases, rapidly becoming redundant.

Concerning the Internet in high school, Ukpebor and Emwanta (2012) have stated that much of the evolution of the Internet has occurred in the university and research environments, but more recently, it has entered a larger public arena. It is now being introduced into elementary and secondary school environments and creating a new model for classrooms across the globe. The authors acknowledge that learners use the Internet to gain access to libraries worldwide, aid in research projects and cross-cultural studies, solve school assignments, enhance foreign language skills, and simply exchange ideas and studies with their peers. This idea is supported by Tarimo and Kavishe (2017) who stated that the Internet widens students'horizon further than their local boundaries in terms of information searching. Access and effective use of Internet services in secondary schools give added reading opportunities for students, improving understanding and reading skills which, supports students' academic performance. A remarkable variety in the current research is to assess the use of the Internet by CAES students at UKZN for information seeking and reading skills.

Nevertheless, a study done by Ukpebor (2010) revealed that Internet use by students at the secondary school level is yet to be formally recognized as a means of improving academic performances. This is because curriculum developers underestimate its importance at that level. Students' problems are further compounded, as they do not have the full capacity to use the Internet and understand the use of the Internet for academic purpose. Shiweda (2013) also stated that it is important to discuss the Web as a source of information in high school education as well as the impact of Web information on the learning and teaching process. The author emphasised that the process of searching no longer involves going to the library, visiting shelves or physically browsing through indexes or tables of contents. Thus, rather than consulting books, high school students and first-year students in the current study appreciate the speed and physical advantages offered by the Internet.

According to Dutton and Blank (2015) the Internet contains a wealth of knowledge that is available instantly upon any search. Because of this, Internet has superseded libraries as a source for information gathering and research in high schools. Many teachers now ask students to visit specific websites to study from home, and online encyclopaedias provide masses of knowledge on almost every topic imaginable. The variety of sources allows learners to pursue subjects in much greater detail rather than being limited to whatever the

teacher sends home. Biddiscombe and Upton (2010) view that in high schools, many subjects taught at schools need continuous updating to be relevant and of use. Publishers create print materials such as textbooks only periodically. But, because of the expense of creating and printing new editions, websites, by contrast can be updated with further information on a daily or even hourly basis, with some sites even using real-time applications. Thus, by using the Internet, learners too have access to the most recent data and are better positioned to make well-informed decisions and conclusions on assignments and projects (Biddiscombe and Upton, 2010).

Fasae and Aladeniyi (2012: 1) also argued that the Internet can help learners too in research process since it makes it speedy, basic and simple. Therefore, learners prefer the Internet more because it provides accurate information to them in a way that is more fascinating and effective. The Internet likewise permits students to inquire about and find out about previously obscure points to them because of a lack of sources. Hence, this study is also investigating the skills needed to find information when using the Internet.

2.7 Studies conducted on the use of the Internet in education

Chiwara et al. (2017) argued that the Internet has changed how people do their research, communicate, socialise, conduct their businesses and search for jobs. This has enabled people to engage in information acquisition and dissemination, networking, business and commerce regardless of their geographic location. Further, Ng'ambi et al (2016) state that in the last 20 years, South African higher education has changed significantly, influenced by global trends national development goals and pressure from local educational imperatives, in the context of a digitally networked world. Shifts in technology enhanced pedagogical practices and discourses around Information and Communication Technologies have had varying degrees of influence in higher education.

This section of the study includes a review of related studies which were done on the use of the Internet in higher institutions across the world. Thus, the discussion starts with a review of studies done outside the continent followed by studies conducted on the African continent and those done specifically in South Africa.

2.7.1 Related studies conducted outside Africa

Muniandy (2010) has explored the academic use of the Internet among undergraduate students in a local university in Malaysia. This study aimed to determine the level of Internet usage skills and determine how the Internet is used for academic purposes. The aim of this study was also to determine the pathways and search engines used to find information. The results revealed that most students had positive perception of the quality of learning through the Internet. The results also showed that students mostly use the Internet to find information from the websites, download notes, and communicate with friends. The current study adheres to the results of the above study, but it is also looking at the use of the Internet for non-academic purposes. It is also imperative to explore the challenges faced by students when using the Internet.

In a study done by Almarabeh et al (2016) to investigate students' attitude at the University of Jordan towards using ICT (Information and Communication Technology), the results indicated that most students accessed the Internet before they attended university. It was assumed that there was a positive attitude towards Internet, and they used it mainly for social websites, chatting and information gathering. The study also explored the constraints that students are facing concerning Internet usage. These constraints are common in most universities and enumerated a few: slow Internet connection, the lack of adopting ICT in courses syllabus, inadequate computers in labs, payment restriction for important information needed by students, lack of knowledge about searching (advanced searching), etc. For this reason, Almarabeh et al (2016) suggested that the academics and decision-makers at the University of Jordan pay more attention to planning, developing, and implementing ICT strategies because the ICT is an important tool in higher education and the college student's life, and redirect the student to positive attitudes in using the Internet. Consequently, the present study is not only looking at these attitudes, but it is also looking at the frequency and the duration of Internet use by students.

A study conducted at Mangalore in India by Sujatha (2011) analysed the patterns of Internet use among the teachers and the students of the first-grade colleges in Mangalore city. The analysis revealed that the majority of participants used the Internet. Participants who did not use the Internet were students and were asked to state the reasons for not using the Internet.

Some of the reasons raised by these students were lack of proper Internet facility, need for ICT training, and no interest in using the Internet. It could be shown that among participant who use the Internet, more than one third of the respondents had used the Internet for more than four years. Whereas 22.2 % of the academic community used it for 1-2 years and 15.9 % were using the Internet for 2-4 years. The rest of the respondents used it for less than a year. Regarding the frequency of Internet services, the analysis indicated that on an average majority of the respondents used Internet once a week. The time was classified into four different categories: daily, 2-3 times a week, 2-3 times a month, and once in a month. Furthermore, the study investigated the level of the academic community's access to the Internet, reasons for non-use of the Internet, satisfaction with the Internet facilities provided in these institutions and the problems faced in using the Internet. Sujatha (2011) argued that access to the Internet and the availability of personal computers (PCs) influenced the Internet use. Thus, the study revealed that the majority of respondents accessed the Internet in their homes. The rest of the respondents could access it at the Internet café, libraries and the computer laboratory on campus. This shows that the respondents from the different institutions under study did not have common access point on campus for the Internet. The computer centres provided general access points for all the respondents, and to some extent the libraries in these institutions also offered a limited access. Improving participants' skills in terms of Internet use was also a major issue in this study and respondents expressed their willingness to improve their skills. In addition, constraints in terms of Internet use were raised by students. The majority of respondents encountered difficulties while using the Internet. Common problems such as slow Internet access speed, limited number of computers, and difficulty in finding relevant information were identified. Thus, the current investigation addresses the issue of the reasons for using the Internet and the modes of accessing the Internet.

2.7.2 Studies conducted in Africa

Bassi and Mamza (2014) investigated Internet accessibility and utilization by Modibbo Adama University of Technology Yola Library School in Nigeria. To achieve the aim of the research, five objectives were formulated which included: to determine whether the students of Modibbo Adama University of Technology Library school Yola access and utilize Internet

facilities, level of search skills, reasons for the use of the Internet, level of satisfaction and problems associated with the use of the Internet by students. The findings revealed that the students' level of accessing the Internet was very high, Internet search skill was very low, the major reasons students use the Internet was for assignments and communications. The students were not satisfied with the information retrieved on the Internet, while lack of adequate search skills, poor network and high charging fees were some of the problems faced by the students. Some recommendations were proposed: University authority should provide a means of enabling students to own personal computers and Internet facilities. The university authority should review its curriculum to include adequate information literacy skills on using the Internet and other ICT resources. Therefore, it is imperative to look at how often and for how long students used the Internet in the current study.

Arthur and Brafi (2013) conducted a study entitled "Internet use among students in tertiary institutions in the Sunyani Municipality, Ghana". The study aimed to find out how tertiary students in the Sunyani Municipality have been harnessing the potentials of Internet technology. The study tried to find out how the Internet is being utilized by students in the tertiary institutions in Sunyani Municipality and the problems that students might be encountering in its use. The results outlined that many students in the Municipality had learnt how to use the Internet from their teachers. Concerning search engines, Arthur and Brafi (2013) stated that students preferred Google and Facebook for the social network. The results also revealed that poor Internet speed, inadequate number of computers in computer laboratories, and inadequate user skills were observed as the leading constraints to Internet use.

The study showed that many students were more likely to use the Internet Cafés as an access point. Many of them also believed the cost of access was expensive. The paper also showed that more tertiary students are using Internet technology to look for information for assignments. In this light, the current research investigates the barriers to effectively accessing the Internet by first-year students in the CAES at UKZN.

Waithaka (2013) conducted a related study at the University of Nairobi in Kenya that investigated Internet usage among students. The study findings indicated that the student' level of awareness about Internet services offered at the university was high. The students

had good basic computer and Internet skills; however, they lacked more advanced skills which negatively affected their use of Internet resources. This study also concluded that university students use the Internet for various reasons that include research, academic work, communication and social interaction. The study also revealed that most students had taught themselves to use the Internet or learned from colleagues. The author added that network skills and digital information literacy had become critical skills for university students who need to be discriminative readers and competent information evaluators to succeed in their academic and research activities. The study recommended the provision of formal Internet training and adequate facilities also, the implementation of a better, inclusive policy on Internet use. Furthermore, free Internet access should be made available to all university students, if not all university community members. Consequently, the current study addresses the need for adequate skills to use the Internet for advanced research.

Tarimo and Kavishe (2017) reported the results of a study done to investigate Internet access and usage by secondary school students in Morogoro Tanzania. The results found out that the majority of learners who participated in the study did not use Internet services for academic purposes. Internet services provided by the school were an opportunity for them to download music and play games. The results also showed that learners were browsing the Internet for fun and used the Internet for visiting different websites. On the issues of access and use, the results of this study revealed that 58 learners out of 120 who participated in the survey (48.3%) indicated that Internet accessibility in their schools was intermediate while only 26 learners stated that Internet access in their schools was high. It was also revealed that the majority of students did not have enough skills for Internet browsing. It was recommended that respondents be made aware of the importance of using Internet services to search for academic information rather than entertainment. The results show that the respondents were not using Internet services essentially for their academic issues. According to Tarimo and Kavishe (2017), this may be due to a lack of awareness and skills to search relevant academic information on the Internet. Also, another reason could be due to a lack of interest in Internet use to access academic materials. In this light, the current research explores how CAES students access and use the Internet in the UKZN context. This is because UKZN provides Internet access to every registered student.

2.7.3 Studies conducted in South Africa

Mbasera (2012) investigated the use of the Internet by postgraduate students at three universities in the Eastern Cape province of South Africa. This study sought to determine factors that affect the use of Internet-based information sources by postgraduate students and to find out the level of postgraduate satisfaction with Internet-based information sources available for their information needs. The study also sought to identify the pattern of postgraduate students' use of Internet-based information sources as well as to establish the Internet-based information sources available among universities in Eastern Cape and suggest ways of stimulating the use of Internet-based information sources by postgraduate students at universities in the Eastern Cape, South Africa. The results of the study outlined that the degree to which students use Internet-based information depends on several factors, which include academic discipline affiliation, age, level of study, gender, information and communications technology (ICT) literacy, institutional support, the relevance of available information resources, accessibility, marketing and publicity of information sources available, and training.

The study revealed that participants were generally satisfied with Internet-based information sources offered by their universities. Postgraduate students believe that Internet-based information sources are useful in their academic work. Mbasera (2012) stated that the level of study and age affected the use of Internet-based information sources. Further, the study revealed that masters and PhD students used e-databases (electronic databases) and e-journals (electronic journals) more frequently. Postgraduate students mainly use search engines to gain access to Internet-based information sources. Within these selected universities, Online Public Access Catalogues (OPACs) and library websites were found to be unpopular gateways to Internet-based information sources. Nevertheless, Universities in the Eastern Cape were found to support of the use of Internet-based information sources with budgets of libraries and plans listed in favour of electronic resource provision. Thus, the current study assesses Internet-based information sources of first-year students of the CAES at UKZN.

A similar study was conducted by Harerimana and Mtshali (2018) to explore Internet access and use by undergraduate nursing students at a selected university in South Africa. The study tried to identify students' competency level to use computers and the Internet, the reasons for

using the computer and Internet and the academic activities conducted on the Internet. Students were asked to rate their computer competency and reported various computer competency levels, with a majority (86%) which reported that their ability to use Internet was either good or very good. Among the 115 participants, 32.2% rated having an intermediate level of skill. Furthermore, the findings of the study revealed that the Internet was used for various purposes including academic (96.5%); communication (82.6%), pleasure (71.3%), and work-related activity (53.9%). Facebook (77.4%) was the most commonly used social network. Harerimana and Mtshali (2018) reported that students used the Internet to exchange experiences and information via synchronous and asynchronous teleconferencing and discussion lists to communicate with lecturers and accessing Internet placed courses. The study reported constraints encountered by the student regarding Internet use. Such limitations include restricting access to certain sites, very slow Internet connection, little training on how to use Internet facilities, and a limited number of computers. Harerimana and Mtshali (2018) stated that Contrary to other studies, this study shows that students do use the Internet for social networks and recommend structured support on how to use it for academic purposes.

Kheswa (2010) conducted a study entitled "Use of the internet by third-year undergraduate students of the Faculty of Humanities, development and Social Sciences at UKZN, Pietermaritzburg campus". The study tried to establish the purpose for which students use the Internet, the frequency of Internet and the information services that are relevant to students. The results stated that most participants used the Internet on campus, with few using it off-campus. This is because access to the Internet was expensive, and students did not have access to a computer at home. The study also revealed that the majority of participants had used the Internet for more than two years, with few of them who spent seven to nine hours on the Internet per week. Thus, most of the third-year students who participated were able to use Internet services. The most important Internet services for third-year students were email, Web, telnet, social networks, e-mail and GroupWise e-mail account. The findings also stated that Google was preferred by the participants as the search engine more than others. However, difficulties encountered by students in terms of Internet use were also revealed. These difficulties included: a limited number of computers in the LANs (local area networks) and slow internet connections. According to Kheswa (2010), the number of computers in the LANs should be increased as the majority of students access the Internet in the LAN.

Moreover, since some students rated their ability to use the Internet as poor, more training should be provided to students to improve their Internet skills. Thus, the current study investigates the use of the Internet by first-year undergraduate students in the CAES at the UKZN/PMB Campus. The following section will discuss the frequency of Internet use by students.

Thus, studies conducted outside Africa show that most participants had accessed the Internet before they attended university. There was a positive attitude toward the Internet. Studies done in Africa on the other hand show few similarities with studies done outside Africa regarding the constraints encountered by participants. However, the difference is seen on the frequency of Internet use and access. Regarding the studies done in South Africa, there is no much difference with the rest of the studies in terms of constraints participants are facing when using the Internet.

2.8 Frequency of Internet use by students

This section relates to the frequency of Internet use by students from some of the studies discussed earlier. Various Internet services were provided in a survey conducted by Waithaka (2013) at the University of Nairobi in Kenya. The respondents had to indicate the frequency with which they used Internet services. The rate ranged from daily use, weekly use, monthly use, sometimes and never. The study revealed that among 381 participants, 241(81.6%) students stated that they had used a service such as E-mail daily. The second was "own library OPACs", with 202 students (76, 5%) indicating using it daily. The web was third regarding daily used services (with 178 or 67, 4%), while e-journals and e-books came fourth with 152 (57, 6%) respondents. Waithaka (2013) argued that the least used services in the daily use category were online databases, with 45 (17%) respondents; 28 respondents (10, 6%) indicated discussion groups and eight (3%) indicated downloading software. According to Waithaka (2013), a significant number of the respondents stated that they used different services weekly, monthly or sometimes. However, the results showed that other services were not used as frequency apart from the e-mail, the web, own library OPACs and e-journals/e-books. In the light of the above study, it is essential in the current study to detect the differences regarding the frequency of Internet use by first-year students in the CAES at UKZN.

In the study conducted by Kheswa (2010), out of 254 participants, 232 participants (91%) reported using the Internet for over 24 months. Fourteen (5.5%) participants had used the Internet for 19 to 24 months, four (1.5%) had used it for seven to twelve months, three (1%) used it for 13 to 18 months, and only two students (0.7%) used it for less than six months. Thus, based on the study results, a majority of students under study were familiar with the Internet. Moreover, Kheswa (2010) found that out of 254 students, 113 (44.5%) students used e-mail daily while 98 (38.6%) students used the Web daily. The findings further revealed that less than half of participants had used the Web two to four times a week and 90 (35.4%) students used the e-mail two to four times a week. Kheswa (2010) pointed out that the majority of students reported that they spent seven to nine hours on the Internet per week. Thus, regarding the frequency of use of Internet facilities, telnet and news readers were not that frequently used by the third-year students when compared with email and the Web. Similarly, the current study addresses duration and frequency of Internet use by first-year students.

The study done by Adekunisi et al (2013) found that many students browsed the Internet daily. He further found that 37.5% of participants surfed the Internet weekly, 13% browsed fortnightly and 17% browsed monthly. From these results, it could be seen that a good percentage of the respondents browsed the Internet regularly. These results are in line with the study conducted by Sujatha (2011) who assessed the frequency of using Internet services by classifying the time into four categories: daily, 2-3 times a week, 2-3 times a month, and once in a month. The results revealed that 35% of participants used the Internet 2-3 times a week and an equal percentage (26.7 %) of the academic community used it daily and once a month, respectively. The analysis clearly indicates that on the average majority of the respondents used Internet once a week. Accordingly, though first year-students do not have enough skills to browse the Internet for advanced research, it is imperative to determine how many browse through the Internet regularly.

2.9 Challenges encountered by students when using the Internet

Ogunlana et al (2015) outlined that the Internet as an information source is not satisfying because it poses one problem or the other for its users. The study conducted by Harerimana and Mtshali (2018) explores Internet access and use by undergraduate nursing students at a

selected university in South Africa. The findings reported various constraints in using Internet facilities such as restricted access to certain networks, very slow internet connection (takes too long to load pages), very few computers to access the Internet and lack of training on how to use Internet facilities. Fasae and Aladeniyi (2012), in his study supported the idea above and outlined that slow access speed was the leading problem as well as difficulty in finding relevant information. This slow access speed discourages many users because it takes much of their time retrieving the needed information.

Ogunlana et al. (2015) in their study on postgraduate students in Olabisi Onabanjo University outlined that the problem mostly faced by the respondents on the Internet is the issue of the too-long web-page. According to them, most students find it difficult to find relevant materials that will satisfy their information need on the web. Ogunlana et al (2018), outlined that the majority of respondents stated that they have difficulty sourcing for information because of too long web pages and slow server speed in finding relevant web materials. Ogunlana et al. (2015) further stated that it should equally be known that an external problem like power supply and facility not readily available when needed, is also a big problem to frequent internet usage.

Chapman (2005) cited by Brändström (2011) argued that a great deal of information on the Internet is of questionable value, inaccurate or misleading. Teachers are thus faced with a new pedagogical challenge, namely to teach their students how to use the Internet responsibly. This task is difficult for teachers, as it is combined with another educational task, that is, to explore ways of using the Internet to promote learning in general.

Chapman (2005), cited by Brändström (2011) added that despite very favourable attitudes towards the Internet, students also worry that they might be spending too much time on the Web. This study revealed that a large percent of the students indicated that they are on Internet more than they should be.

Tarimo and Kavishe (2017) argued that despite the increase and widespread adoption of Internet services, challenges significantly prevent the effective access and usage of Internet services in schools. These challenges might be caused by a lack of support from the government, education leaders, teachers or even the students themselves. Furthermore,

Tarimo and Kavishe (2017) maintain that the challenges facing students could be a lack of or inadequate ICTs infrastructure in their schools, lack of awareness among the students, limited power supply and low bandwidth. The results further reported that the majority of students are not aware that the Internet is a tool for searching online academic information. The authors continue by saying that despite a few being aware of the Internet as a searching tool, skills in searching electronic information resources are still a problem. Other challenges faced by students were outlined when using the Internet. These challenges include: servers being down frequently in most institutions leading to the connection not being available, poor quality hardware, lack of ICT facilities and the unreliability of electricity in some institutions.

On the other hand, a study conducted by Daneshdoust and Keshmiri (2012) found out that the Internet negatively impacts on students. According to them, too much information on the Internet confuses learners. Thus, students give up searching because spending too much time searching for information frustrates their motivation. Daneshdoust and Keshmiri (2012) also outlined that Internet-based learning is inferior to traditional ways of learning in the manner that during natural communication, learners can see each other, they can use many ways to communicate such as facial expressions. According to Daneshdoust and Keshmiri (2012) the Internet cannot give a detailed account of the learners' recognition ability. Moreover, the authors outlined that during Internet-based learning, the learning process has chaos because teachers cannot control students completely. Students may chat online, watch movies or do whatever they like. Thus, learners cannot get feedback from teachers. They also added that students do not have enough self-control during Internet-based learning. This is because Internet-based learners are from different cultures and learning motivations. Therefore, these differences result in different learning objectives which in the traditional method are considered carefully but because these differences are not clearly defined in Internet-based learning, some learners are bored.

In short, problems faced by students when using the Internet can be summarised into the following major issues: slow Internet connection, restriction of certain sites, a limited number of computers with Internet access and lack of training regarding Internet use to both students and teachers. The current research is also investigating the challenges first-year students in

the CAES at UKZN are experiencing when using the Internet for new insight to emerge. Thus, special skills which require training regarding advanced research skills.

2.10 Summary of the chapter

This chapter reviewed the related literature on Internet use by students. This chapter provided a brief history of the Internet as well as the evolution of the Internet. The chapter also reviewed the literatures on the use of the Internet and access to the Internet. This was followed by the review of related studies conducted on the use of the Internet in education. This chapter looked at studies done outside Africa, some undertaken in Africa and those conducted in South Africa. Further, this chapter reviewed related literatures on the frequency of Internet use by students. The chapter ended with a review of the few studies conducted on challenges faced by students when using the Internet. Literature points out that the use of Internet for academic purposes has gained a momentum and had led to improved performance by students.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

All research is based on some underlying philosophical assumptions about what constitutes valid research and which research method(s) is/are appropriate for developing knowledge in a given study. To conduct and evaluate any research, it is therefore important to know what these assumptions are. Common philosophical assumptions were reviewed and presented; the positivism paradigm was identified for the framework of the study. Thus, this chapter covers the research design and methodology that was used to address the research problem. The chapter presents the research design, research approaches, research paradigm, study population, sampling procedures, data collection techniques (the questionnaire and the interview), data analysis methods, ethical consideration and the validity and reliability of the study.

3.2 Research methods and methodology

This section describes the research method and the procedures of the study.

3.2.1 Research paradigm

The study falls within the positivist paradigm as it explores social reality. According to Akiyu, Umar and Kasim (2014) positivism could be regarded as a research strategy and approach rooted in the ontological principle and doctrine that truth and reality are free and independent of the viewer. According to them, a positivist investigator has an idea that the

universe or world conforms to permanent and unchanging laws and rules of causation and happenings. Wilson (2010) argued that at the ontological level, positivists assume that reality is objectively given and measurable using properties independent of the researcher their instruments; in other words, knowledge is objective and quantifiable. According to him, positivistic thinkers adopt scientific methods and systematize the knowledge generation process with the help of quantification to enhance precision in the description of parameters and their relationship.

3.2.2 Research approach

This research study used the quantitative approach because of its value of making it possible to test questions and answers coded with numbers to analyse descriptive statistics on Internet use by first-year undergraduate students. According to Dane (1990: 146), quantitative research is a formal, objective, systematic process in which numerical data are used to obtain information about the world. Bickman (2000: 20) states that quantitative research is used to quantify the problem by way of generating numerical data or data that can be transformed into usable statistics. It quantifies attitudes, opinions, behaviors, and other defined variables and generalises results from a larger sample population. Welman, Kruger and Mitchell (2005: 8) are also of the same view. Welman, Kruger and Mitchell (2005:10) add that the quantitative research approach does not involve investigating processes but emphasises the measurement and analysis of causal relationships between variables.

Regarding the use of the Internet, the quantitative research method was applied to determine the number of students using the Internet, the reasons for using the Internet, how many students were aware of Internet services and how often students used the Internet. Moodley (2013) outlines that this approach was chosen for his study in view that the purpose of the study was largely to identify information needs and information-seeking behaviour of a particular community, and identify characteristics of that particular society. According to him, the quantitative approach enabled him to accurately describe the community library user's information needs and seeking patterns.

This approach was attained by using a questionnaire comprising open questions, closed questions and open-ended questions. The few open questions asked provided qualitative data

regarding Internet usage. However, among these questions asked, the majority were closed and provided quantitative data of the study.

3.2.3 Research design

Babbie and Mouton (2001:83) argue that there are three main research strategies: experiments, surveys and case studies. By the nature of this research, the survey research strategy is needed. This is because the objective of such a strategy is to describe, compare, contrast, classify, analyze and interpret the meanings of the use of the Internet by the first-year undergraduate students in the College of Agriculture, Engineering and Science at the UKZN/ Pietermaritzburg Campus.

Kelly et al. (2010) argued that the term survey is used in a variety of ways, but generally refers to the selection of a relatively large sample of people from a pre-determined population (the 'population of interest'; this is a wider group of people in whom the researcher is interested in a particular study), followed by a collection of a relatively small amount of data from those individuals. Thus, the researcher uses information from a sample of individuals to make inferences about the wider population. Kelly et al. (2010) added that data are collected in a standardized form during a survey research method. According to the authors, this is usually but not necessarily done by means of a questionnaire or interview. According to the authors, the survey is designed to describe how things are at specific time. There is no attempt to control conditions or manipulate variables. According to Babbie and Mouton (2001:232), surveys are the least expensive research format and have the quickest data collection and reporting speed. It is also the best method for a social scientist interested in collecting data describing a large population.

Penny et al. (2000) stated that survey research design should have the following characteristics: Survey research is often a quantitative method but can be qualitative, requiring standardized information from and about the subjects being studied. The subjects can be individuals, groups, organizations or communities. The authors add that sample selection must be done without prejudice or preference so that the data collected through the survey will represent the entire population. The primary way of collecting information is by asking people structured and pre-defined questions to meet the study's objective. According

to Penny et al (2000), Interviews or questionnaires are the common methods used for data collection. Further, the authors state that surveys are widely used in the social sciences and follow specific procedures based on survey science and the scientific method. Finally, the survey is one of the few techniques available to study attitudes, values, beliefs and motives.

As advantages of survey research design, Babbie and Mouton (2001:232) state that the survey research method is a faster data collection than other methods. It is a relatively inexpensive method of data collection. Survey data can be very accurate if sampling is probabilistic. Surveys are more ethical than experiments. It uses the methods, materials and setting of the study of the real-life situation which is under investigation to ensure ecological validity (Babbie and Mouton, 2001:232). Penny et al. (2000) also argue that survey research design is the only method to collect generalised information from almost any human population. The authors add that survey is the only way of retrieving information about a respondent's history.

On the other hand, the survey research design has some weaknesses. Kothari (2005) argues that survey provides inflexible design. The survey used by the researcher from the very beginning, and the method of administering it cannot be changed throughout the process of data gathering. Although this inflexibility can be viewed as a weakness of the survey method, this can also be a strength considering the fact that preciseness and fairness can both be exercised in the study. According to Kothari (2005) surveys are not ideal for controversial issues. This is because the participants may not precisely answer questions that bear controversies because of the probable difficulty of recalling the information. The truth behind these controversies may not be relieved as accurately as when using alternative data gathering methods such as face-to-face interviews and focus groups. Furthermore, with surveys, there is possible inappropriateness of questions. Fowler (2014) states that questions in surveys are always standardized before administering them to the subjects. The researcher is therefore forced to create questions that are general enough to accommodate the general population. However, these general questions may not be as appropriate for all the participants as they should be.

3.3 Population

Babbie and Mouton (2001: 175) define a population as a theoretically specified aggregation of study elements from which the sample is selected. Another definition by Williams (2003: 74) states that a population is a collection of persons, groups, events, or things about which we wish to generalize, for example the population of Engineering students at UKZN.

This study included all registered first-year undergraduate students in the College of Agriculture, Engineering and Science (CAES) at the UKZN/Pietermaritzburg Campus. Hence, the population is 880 (see full details in Table 3.1). However, due to the large populations, researchers often cannot test every individual in the population because it is too expensive and time-consuming. In the present study, sampling was done since the targeted population includes a large number of units (students) shown in table 3.1 below.

Table 3.1: Population of first-year undergraduate students in CAES N=880

Schools	**Number of students**
School of Agric, Earth and Env. Science	298
School of Chemistry and Physics	108
School of Engineering	66
School of life sciences	167
School of Maths, Stats and Computer Sciences	89
Bachelor of Science (4-year augmented)	152
Total	880

(University of KwaZulu-Natal, CAES, 2017)

3.4 Sampling

Sapsford (2007: 51) states that sampling is about getting a group to survey, which is enough like the population under investigation that valid generalizations can be made about the population by the sample. The sampling units on the other hand constitute the subsets of the population. According to Welman, Kruger and Mitchell (2005), the term refers to a singular value within a sample database. For example, if you were conducting research using a sample of university students, a single university student would be a sampling unit. Thus, a sample

of these students was used from the total number (population) of first-year undergraduate students in the CAES. To select a proper sample for this study, the researcher used stratified random sampling. During this sampling, the researcher selected students from each school according to their numbers to get a better degree of representativeness. Williams (2003) states that stratified samples divide a population into sub-groups or strata. Participants were selected using the table by Krejcie and Morgan (1970). The table was used to determine the size and the percentage of each stratum. Thus, from the total population of 880 students; the sample size is equal to 269students. The sample size of each school was calculated according to the percentage in population. For instance, The School of Life Science has 167 students. The sample size will be 167×269÷880. In other words, based on the illustration of the stratification procedure, a random sample of 167 students was drawn from the sampling frame. This makes 51 students or 19%. Similar calculations were used for other schools. Table 3.2 below shows the full details.

Table 3.2.: Sample size of first-year undergraduate students in CAES

Schools	**Sample size**	**Number of students in each school**	**Percentage**
School of Agric, Earth and Env. Science	91	298	34%
School of Life Sciences	51	167	19%
Bachelor of Science (4-year augmented)	46	152	17%
School of Chemistry and Physics	33	108	12%
School of Maths, Stats and Computer Sciences	27	89	10%
School of Engineering	20	66	8%
Total	269	880	100%

3.5 Data collection instruments

According to Pavan and Nagarekha (2014), data collection is gathering and measuring data, information, or any variables of interest in a standardized and established manner that enables the researcher to answer or test hypotheses and evaluate outcomes of the particular collection. As mentioned previously, a questionnaire was used to collect data as it was the best method

in collecting data for describing a large population. In this study, a specific self-administered questionnaire was adopted as a data collection instrument. The researcher obtained some of the questionnaire questions from previous studies that had been done on Internet usage. Thus, the instrument was adapted from the study done by Kader (2007) titled "A study on how university students in Durban, KwaZulu-Natal, use the Internet during their spare time". The questionnaire of the current study consisted of four sections: demographic information, access to the Internet, the use of Internet services and the challenges when using the Internet (see appendix one).

According to Kothari (2005) quoted by Waithaka (2013), a questionnaire is a document that contains instructions, questions and statements which are compiled to obtain answers from respondents. The questions are presented with the same wording and in the same order to all the respondents.

Brink (2006: 19) identifies the advantages and disadvantages of questionnaires. Firstly, questionnaires are a quick way of obtaining data from a large group of people and are less expensive and time saving. Also, questionnaires is the best research instruments to test for reliability and validity. With questionnaires, subjects feel a greater sense of anonymity and are more likely to provide honest answers. Brink (2006:19) further states that the format in the questionnaire is standard for all subjects and is not dependent on the interviewer's mood.

Apart from these advantages, Brink (2006:19) identifies the disadvantages of the questionnaire. According to the author, it may be difficult to obtain a good response rate. Often there is no strong motivation for respondents to respond. They are complex instruments and, if badly designed, can be misleading. Also, questionnaires are an unsuitable evaluation method if probing is required; there is usually no real possibility for follow-up on answers. Furthermore, the quality of data is probably not as high as with alternative data collection methods, such as personal interviewing. Finally, they can be misused, and a mistake is to read too much into questionnaire results.

The questionnaire consisted of both open-ended and closed-ended questions. For the close-ended questions, the students were provided with a list of alternative responses to choose from to facilitate consistent answers to questions; instructions were given on how to respond

to the questions. According to Welman, Kruger, and Mitchell (2005), an open-ended question when the interviewer asks a question without any prompting with regards to the range of answers expected. This means that open-ended questions prompt people to answer with sentences, lists, and stories, giving deeper and new insights. The advantage of open-ended question is that the respondent's answer is not influenced improperly by the interviewer or the questionnaire. The verbatim replies from respondents can provide a rich source of varied responses that might have been untapped by categories on a pre-coded list. Durrheim and Terre Blanche (1999) emphasized that open questions allow respondents to transfer their experiences or opinions about a specific issue in their own words, without any restriction. Thus, participants may provide a straight answer to the question being asked. The main drawback of open-ended questions is the difficulty in analysis (De Vos, 1998). Thus, it becomes now and then challenging to interpret the content. These types of questions are also time-consuming because participants could take the time to express themselves when trying to answer questions. On the other hand, closed-ended question, respondents are given a range of answers either verbally or from a show card. A range of responses is set out in the self-completed questionnaire, and the respondent is asked to tick the appropriate boxes (Welman, Kruger, and Mitchell, 2005). Babbie and Mouton (2001) also stated that with closed-ended questions, the respondents are asked to choose the answers provided in the list made by the researcher. The authors add that closed-ended questions are popular in research because they provide a greater uniformity of responses and are easy to process. These questions are transferred directly into a computer format for the ease of data analysis.

Nevertheless, Durrheim and Terre Blanche (1999) argued that closed questions do not allow the respondents to provide answers in their own words but force the respondent to select one or more choices from a fixed list of answers provided. Further, Leary (2010) argued that close-ended questions are common because they provide consistent responses because the questions are easily quantified. Nevertheless, the author admits that the major disadvantage is that researchers fail to include important responses. The author adds that respondents may have an answer different from those supplied and suggests that one way to solve the problem is to include an "other" response followed by a blank space, allow respondents an opportunity to provide their own answers. The "other" responses are then held just like open-ended.

3.6 Administering the questionnaire

The researcher had to find out the venues where most first-year students attend their lectures. Almost all students attend modules like mathematics, physics and chemistry within the College of Agriculture, Engineering and Science. Thus, the venues for these modules were identified and the researcher had to negotiate with the lecturers to allow access during lectures time. The questionnaires were hand-delivered to the students during their lecture times and were returned immediately after completion. Students rushing for the next lecture promised to fill the questionnaire during a free period. The sample of 269 respondents was relatively large, and assistance from friends and colleagues was required. The questionnaires and covering letters were photocopied and stapled. Friends and colleagues from the university assisted in the distribution and collection of the questionnaires. Distribution of the questionnaires was done within two weeks.

3.7 Data analysis

This section is about the analysis of the data which was collected. According to Brink (2006), data analysis involves categorising, manipulating and summarizing the data and describing them in a meaningful term. As mentioned earlier, this a quantitative study; hence, the results were presented statistically using figures and tables in the chapter 4 and 5 respectively. The Statistical Package for the Social Sciences (SPSS) was used to analyse the responses. Durrheim and Terre Blanche (1999) state that quantitative data analysis involves three steps: coding, entering, and cleaning. Welman, Kruger and Mitcthell (2005) argue that after a researcher has compiled and processed all information, the challenge is to reduce the huge amount of data to manageable and understandable texts. The authors state that the purpose of coding is to analyse and make sense of the data that have been collected. Codes or labels that attach meaning to answers the questions were prepared. This allowed classifying the answers in the limited numbered category.

Before the coding, data cleaning was done. During this process each questionnaire was evaluated to check for missing data and ambiguity and errors in the responses. Thereafter, the data was captured using each questionnaire and each variable using the SPSS matrix for analysis. At this stage, data was now analysed using SPSS. There were a limited number of

open questions in the questionnaire. Content analysis was used to interpret the response to the open questions in the questionnaire. According to Welman, Kruger and Mitchell (2005), content analysis can be described as a quantitative analysis of qualitative data. The authors add that the basic technique involves counting the frequencies and sequencing particular words, phrases, or concepts to identify keywords or themes. Through this process, response categories for the responses to the open question in the questionnaire were created. After identifying the categories, data were coded and manually processed.

3.8 Reliability and validity of the instrument

During a research, it is always wise to determine whether the data collection tools are reliable and valid. According to Mohajan (2017) reliability and validity are the two most important and fundamental features in the evaluating any measurement instrument or tool for good research. Durrheim and Terre Blanche (1999:99) also state that reliability refers to the dependability of a measurement instrument, the extent to which the instrument yields the same results on repeated trials. Mohajan (2017) argues that reliability is used to evaluate the stability of measures administered at different times to the same individuals and the equivalence of sets of items from the same test. According to the author, the better the reliability is performed, the more accurate the results, which increases the chance of making the correct decision in research.

From these explanations, the questionnaire of this research should lead to the same results each time it is used. In this study, the questionnaire was tested and whoever accepts to do similar research on this topic should get the same results. In brief, to ensure the validity and reliability of this study, a pre-test of the questionnaire was done using ten first-year students selected randomly from the college of law and management at the UKZN/ PMB campus. Furthermore, Shiweda (2013: 54) argues that securing of validity and reliability can be facilitated many ways. Still one of the most important methods to ensure the validity of an instrument is to do a pre-test. Welman, Kruger and Mitchell (2005) state that validity is the extent to which the research findings accurately represent what is happening in the situation. According to Durrheim and Terre Blanche (1999: 83), validity refers to the extent that the instrument measures what it was designed to measure

Using this group of students in the pre-test was because they were at the same level and had similar characteristics with first-year undergraduates from the CAES. Thus, Welman, Kruger and Mitchell (2005) state that when a measurement instrument is developed, it is useful to "test it out" before administering it to the actual sample. This "testing out" process is done using a pilot study, which entails administering the instrument to a limited number of participants from the same population as that for which the eventual research is intended. To ensure reliability, data collected through a survey questionnaire was analysed to generate Cronbach's alpha coefficient using the Statistical Package for Social Sciences (SPSS). Sekara and Bougie (2010) argue that the closer to 1 the Cronbach's Alpha scale is, the higher the instrument's reliability and answers. If the scale is 0.6, it is considered poor; while closer to 0.8, it is considered good and acceptable. Thus, items from questionnaires with Cronbach alpha value of less than 0.7 were dropped or modified accordingly. Those with a value greater than 0.7 were adopted. This indicated higher reliability, which means that the questions were measuring what the researcher intended to measure.

Selected lecturers from the Information Studies Programme also reviewed the questionnaire because of their expertise. During the pre-test, all ten questionnaires were completed. The researcher had to modify the questionnaire by removing contents which created confusion to participants. The following changes were made to the questionnaire: square brackets were inserted for each question; an extra option was added in the form of "please specify "from questions 5 to 10 (see appendix 1). Long questions were shortened to avoid ambiguity. Thus, Words that respondents did not understand were clarified in the final version of the questionnaire. Feedback obtained from the pre-test helped improve the quality of the instrument in areas such as the precision of questions and how they captured content. In addition to the pre-test in this study, validity was also ensured through content validation. Content validation was achieved by making sure that the items in the questionnaire were related to the questions which the present study intends to answer. Content validity refers to the extent to which the instrument covers the complete content of the particular construction that is set out to measure (Maree, 2007). Validity requires that an instrument is reliable, but an instrument can be reliable without being valid (Kimberlin and Winterstein, 2008).

3.9 Ethical considerations

From the early stages of a research project, provisional decisions are usually taken about the nature of the research sample, the methodology. These decisions tell the way the researcher interacts with participants involved in the study. According to Welman, Kruger and Mitchell (2005), ethical behaviour is as important in research as any other field of human activity. The authors state that certain ethical considerations, concerned with such matters as plagiarism and honesty in reporting results, arise in all research, but additional issues arise when the research involves human subjects. Thus, the principles underlying "research ethics" are universal and concern issues such as honesty and respect for the rights of individuals. Further, Mohajan (2017) argues that most universities now have codes of ethics enforced by ethics committees, which must approve all research projects involving humans or animals. These codes of ethics have intrinsic value in protecting the rights of humans and animals who may become involved in research.

In the current study, ethical clearance was granted by the University before undertaking this research. This is a certificate offered by the Ethics Committee of the University of KwaZulu-Natal. It has to be obtained before conducting this research. Once the certificate was offered, the researcher had the authorization to start the research. In this case, the research topic was analyzed to check if it did not have any elements that could expose or cause embarrassment to any person involved in the research. Welman, Kruger and Mitchell (2005) state that the general principle usually invoked in codes of ethics is that no harm should occur to the paticipants. Secondly, subjects should take part freely, based on informed consent. The consent form (see appendix 2) in this research stipulates that participants are free to participate and can withdraw any time from the research if they no longer feel free to be part of the research. According to Mohajan (2017), every research suggests that if subjects are fully informed about the reasons for research, even if there is no possibility of physical pain discomfort, they lose interest and highly unreliable results are obtained.

In short, for this study, the University of KwaZulu-Natal Humanities and Social Sciences Ethics Committee approved the study and the ethical clearance was issued. Also, every effort was made to ensure that participants were informed about the study and participant

confidentiality was protected. Thus, from the 17th of March 2018 to the 2nd of April data was collected.

3.10 Summary of the Chapter

In this chapter, the researcher outlined the research methods and procedures that were used in the study. Thus, the researcher employed the quantitative research approach to collect data. The chapter also described the population of the study. Further, data collection tool in the form of self-administered questionnaire was described. To ensure validity and reliability of the study, a pre-test of the questionnaire was done. Data was analysed using SPSS and the results are presented in chapter Four which follows.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF THE RESULTS

4.1 Introduction

This study set out to investigate the Internet use by first-year undergraduate students in the College of Agriculture, Engineering and Science at the University of KwaZulu-Natal, Pietermaritzburg campus. Thus, a questionnaire was designed to answer the key questions (see Chapter One). The research results were drawn from the self-administered questionnaire given to 269 first-year undergraduate students in the CAES (see appendix 1). The results were presented statistically using figures and tables (see Chapter 3; section 3.7). Thus, this chapter offers the results of the study. The areas reported below can be classified as follow: Demographic characteristics; Access to the Internet; Use of Internet services, and Students 'ability and problems when using the Internet. Note: n below refers to the number of respondents who answered the questions.

4.2 Response rate

The previous Chapter explained that the self-administered questionnaire was distributed to first-year undergraduate students in the Agriculture, Engineering and Science college at the University of KwaZulu-Natal, Pietermaritzburg campus. Out of 269 questionnaires distributed to respondents, 186 were collected immediately after completion, producing a response rate of 69%. Considering the sample size of 269 first-year undergraduate students, this good response rate is explained by the various measures undertaken to ensure participation, as mentioned in Chapter 3 (see Chapter 3, Section 3.5: Data collection instrument). The symbol n indicates the total possible number of respondents that should have answered a particular question in each instance below.

4.3 Questionnaire results

The questionnaire was divided into five sections. Section A investigated the background information of the participants; Section B sought access to the Internet; Section C focused on the use of Internet services or facilities by first-year undergraduate students; Part D dealt with

students' ability to use the Internet and the problems experienced by students when using the Internet, and lastly, Part E focused on comments and suggestions of participants. Note that questions 4, 5, 6, 8, 12, 18, 20, 21, 23 and 25 were multiple response questions that allowed respondents to provide multiple responses (see section 3 and appendix one). Figures are rounded-off to one decimal place. In total, there were 29 questions, 27 closed-ended questions and 2 open ended questions.

4.4 Demographic information

Two questions (question 1 to 2) in the questionnaire were designed to collect demographic information on the participants. The demographic information on the respondents allowed the researcher to gain a clear image of the population under study.

4.4.1 Gender

The respondents were asked to specify their gender (question 1). Out of 186 respondents, 96 respondents were males (51%) while the remaining 90 participants (49%) were females. From the results, it is evident that there were more male respondents than female respondents.

4.4.2 Age of participants

The information in this section deals with the age range of participants. In question 2 respondents were asked to specify their age. Table 4.1 below shows that the highest number of respondents (78 or 41%) were 18 years old. The lowest number of respondents were 24 (8%) and 20 (3.8%) years of age. Thus, the majority of first-year undergraduate students in the CAES are 18 years of age. Table 4.1 below shows the age distribution of participants.

Table 4.1: Age distribution N= 186

Age	Frequency	Percentage
18	78	41%
19	52	30%
20	24	12%
21	14	7%
22	11	6%
23	5	3%
24	2	1%
Total	**186**	**100.0**

4.4.3 Field of study

The respondents were asked to specify the fields they are registered under (question 3). The results in Table 4.2 below show that 60 (32.2%) respondents, or the majority, were under the School of Life Science, followed by the School of Mathematics, Statistics and Computer Science with 40 (21.5%) respondents. The lowest numbers were 16 (8.6%) respondents registered under the School of Engineering followed by 10 (5.3%) respondents under the Bachelor of Science (4-year augmented). The results show that the biggest group of participants were from the School of life science and the smallest group from the Bachelor of Science (4-year augmented).

Table 4.2: Respondents fields of study N= 186

Field of study	Frequency	Percentage
School of life sciences	60	32.2%
School of Mathematics, Statistics and Computer Science	40	21.5%
School of Agriculture, Earth, and Environmental Science	38	20.4%
School of Chemistry and Physics	22	11.8%
School of Engineering	16	8.6%
Bachelor of Science (4-year augmented)	10	5.3%
Total	186	100.0

4.5 Access to the Internet

The questions asked at this stage assessed the respondents Internet usage. Respondents were asked various issues concerning Internet access.

4.5.1 Access to the Internet on campus

Question 4 was asked to respondents to find out whether they used the Internet on campus or not. Table 4.3 below demonstrates that majority of respondents used the Internet on campus. Meaning that out of 186 students, 179 (96%) students accepted that they used the Internet on campus while 7 (3.7%) students indicated that they did not use the Internet on campus. The results are illustrated in table 4.7 below.

Table 4.3: Use of Internet on campus N= 186

Internet use on campus	Frequency	Percentage
Yes	179	96.3%
No	**7**	3.7%
Total	186	100.0

4.5.2 Why do respondents not using the Internet on campus?

Question 5 was the continuation of question 4, which explained why respondents did not use the Internet on campus. The results in Table 4.4 below show that 4 (57%) respondents do not access the Internet on campus because the computer labs are fully occupied during their free time on campus. Three (43%) respondents stated that they have Internet at home and only attend lectures on campus. Thus, they use the Internet at home.

Table 4.4: The reasons for not using the Internet on campus N=7

Reasons for not accessing the Internet on campus	Frequency	Percentage
Computer labs fully occupied during a free period	4	57%
Prefer Internet access at home	3	43%
Total	7	100.0

4.5.3 Where on campus is the Internet accessed?

Question 6 was asked to the respondent to find out where on campus they accessed the Internet. This was a multiple response questions where participants were allowed to tick more than one option that applied to them. Thus, out of 186 (100%), 100 respondents or 53.7% indicated that they accessed the Internet from computer laboratories (LANs), while 29 respondents or 15.5% stated that they accessed the Internet from their residences using wireless connections and 57 respondents or 30.6% indicated that they accessed it from the libraries. These findings are illustrated in table 4.5 below.

Table 4.5: Where on campus is the Internet accessed? N=186

Where on campus is the Internet accessed?	Frequency	Percentage
Computer laboratories	100	53.8%
Libraries	57	30.6%
Residences	29	15.6%
Total	**186**	**100.0**

4.5.4 Access to the Internet outside the campus

Question 10 was asked to establish whether students accessed the internet from outside the university. Table 4.6 below indicates that out of 186 students, 90 (48.3%) students reported that they did not access the Internet outside the university, while 96 (51.6%) reported to having accessed the Internet outside the university.

Table 4.6: Internet access outside the university N= 186

Outside university access	Frequency	Percentage
Yes	96	51.6%
No	90	48.4%
Total	186	**100%**

4.5.5 Reasons for not accessing Internet outside the university

Question 8 was multiple response questions and a continuation of question 7. This question was asked to respondents who stated that they did not use the Internet outside the university to identify the reasons why they did not. The results reveal that majority of students (56.6%) indicated that they did not have access to the Internet outside the university at all. The results are illustrated in Table 4.7 below.

Table 4.7: Reasons for not accessing the Internet outside the university N=90

Reasons for not accessing the Internet outside the university	Frequency	Percentage
Do not have access to the Internet outside the university at all	51	56.6%%
Do not have access to a computer outside university	39	43.3%
Access to the Internet outside university is expensive	34	37.7%
Total	124	137.6%

4.5.6 Where the respondents access the Internet outside the campus

Question 9 was asked to respondents who respondent by "yes" to question 7 above. They were asked to indicate places where they access the Internet outside the campus (See table 4.6 above). There were three options from the questionnaire where the Internet is accessed outside the university. The results show that the majority of students (48%) accessed the Internet from public libraries. These results are illustrated in Table 4.8 below.

Table 4.8: Place where respondents access the Internet outside the campus N=96

Where the Internet is accessed outside the university by respondents	Frequency	Percentage
Public libraries	46	48%
Home	26	27%
Internet café	24	25%
Total	96	100%

4.5.7 What kind of the Internet access do you use at home? (Choose one)

Respondents were asked to indicate the kind of Internet access they use at home. Table 4.9 below shows that out of 186 respondents, 100 (53.7%) indicated that they used Wi-Fi while 79 (42.4%) indicated that they used data bundles and 7 (3.7%) indicated that they used modem. Thus, the results show that the most frequently used Internet access was Wi-Fi, followed by the data bundles. The least used Internet access was the modem.

Table 4.9: Internet access used at home by students N=186

Internet access used at home	Frequency	Percentage
Wi-Fi	100	53.7%
Data bundles	79	42.4%
Modem	7	3.7%
Total	186	100%

4.5.8 Gaining access to the Internet

Question 11 was multiple response questions that were asked to respondents to state how they get access to the Internet. Table 4.10 below shows that 96 (53.2%) respondents, or the majority, access the Internet using laptops, followed by 86 (46.2) respondents who use a desktop computer. The lowest number of respondents, namely 21 (11.3%), use smartphone while 14 (7.5%) respondents use tablets.

Table 4.10: Internet access modes N=186

Internet access modes	Frequency	Percentage
Laptop	96	53.2%
Desktop computer	86	46.2%
Smart phone	21	11.3%
Tablets	14	7.5%
Total	217	118.2%

***Multiple responses were possible**

4.5.9 Main tools to the access Internet

Question 12 was asked to determine the main tools used by respondents to access the Internet. Table 4.11 below indicates that the most common main tool used was a laptop with 101 (54.3%) respondents while 33 (17.7%) used a desktop computer as their main tool to access the Internet, followed by 31 (16.6%) respondents who used smart phone as their main tool to access the Internet. Further, 21 (11.3%) respondents indicated tablets as their main tool to access the Internet. Thus, these results show that the laptop is the most used tool to access the Internet by students.

Table 4.11: Main tools of accessing the Internet N= 186

Main tools	Frequency	Percentage
laptop	101	54.3%
Desktop computer	33	17.7%
Smart phone	31	16.6%
Tablets	21	11.3%
Total	186	100%

4.5.10 How did respondents learn to use the Internet?

The researcher wanted to find out how respondents learned to use the Internet (Question 13). Out of 186 respondents, 130 (70%) reported that they learned to use the Internet from school

while 48 (25.8%) indicated that they taught themselves to use the Internet by practising at home. The least way of learning to use the Internet was reading from books with 5 (2.6%) respondents and respondents who learned from their friends to use the Internet with 3 (1.6%). The results are illustrated in Table 4.12 below.

Table 4.12: How respondents learned to use the Internet N=186

How respondents learned to use the Internet	Frequency	Percentage
From school	130	70%
Self-taught	48	25.8%
Reading from books	5	2.6%
Taught by friends	3	1.6%
Total	186	100%

4.6 Use of Internet services

This section provides the results relating to the use of Internet services, the purpose of Internet use, the importance of those services to students and the frequency of their use.

4.6.1 Internet services used on campus

This was a multiple responses question (Question 14) which was asked to respondents to indicate the Internet services they used on campus. All the respondents indicated to have used Internet services provided on campus. Thus, table 4.13 below shows that 106 (57%) students had used e-mail on campus while 99 (53.2%) had used the web. In addition, the results show that 95 (51.1%) students had used social networks and 90 students or 48.4% had used telnet on campus. Therefore, the results show that e-mail and Web are the most Internet services used by first-year undergraduate students in CAES.

Table 4.13: Internet services used on campus N= 186

Internet services used on campus	Frequency	Percentage
E-mail	106	57%
Web	99	53.2%
Social networks	95	51.1%
Telnet	90	48.4%
Total	390	209.7%

***Multiple responses were possible**

4.6.2 Purpose of Internet use

Question 15, another multiple response questions, was asked to establish what purpose students used the Internet. The results show that students use the Internet for different purposes. The results reveal that the most common purposes for which students use the Internet were for learning purposes (i.e. to prepare for assignments, class, research, etc…) with 121 (65.1%) students and to update knowledge with 119 (64%) students. Below is table 4.14 which illustrates the results.

Table 4.14: Purposes for which Internet is used by students N= 186

Purpose of Internet use	Frequency	Percentage
For learning purpose	121	65.1%
To update knowledge	119	64%
Communication with family and friends	69	37%
For entertainment	47	25.2
For news	25	13.4%
Total	356	204.7%

***Multiple responses were possible**

4.6.3 Frequency of Internet services

Question 16 was asked to respondents to indicate how often they used Internet services for academic purpose. Table 4.15 below indicate that out of 186 students, 180 (96.7 %%) students used Internet services daily while only 4 (2.1%) students indicated to had used Internet services once a week followed by 1 (0.5%) who had used Internet once every two weeks and 1 (0.5%) who had used it once a month. Therefore, all students had used Internet services for academic purposes. However, the majority of students as indicated below had used it daily.

Table 4.15: Internet services frequency N= 186

Frequency of use	Frequency	Percentage
Daily	180	96.7%
Once a week	4	2.2%
Once every two weeks	1	0.5%
Once a month	1	0.5%
Total	186	100%

4.6.4 Internet services in order of importance to students

Students were asked to indicate which Internet services were most important to them anytime and anywhere they accessed the Internet (Question 17). Table 4.16 below indicates that out of 186 respondents, 110 (59.1%) students rated e-mail as essential, while 50 (32.2%) rated it as very important and 20 (10.7%) students rated it as important. Only six students, or 3.2% rated it as somewhat important. In addition, 113 (60.7%) students rated the Web as essential while 53 (28.4%) rated it as very important, and ten students or 5.3% rated it as important. Only five students or 2.6 % rated it as somewhat important. Regarding social networks (Facebook, Myspace, Student Village etc.), 50 (26.8%) students rated them as essential, while 60 (32.2%) students rated them as very important, and 60 (32.2%) students rated them as important. Only 10 (5.3%) students rated social networks as somewhat important while 6 (3.2%) rated them not important. Newsreaders were essential for 15 (8.1%) students, very important for 47 (25.2%) students, important for 77 (41.3) students, somewhat important for 37 (19.8%) students and not important for 10 (5.3%) students. Furthermore, table 4.20

indicates that telnet was essential for 29 (15.5%) students while very important for 78 (41.9%) students and 69 (37.1%) students reported it as important. Only 6 (3.6%) students reported Telnet as somewhat important, and 4 (2.1%) students reported it as not important. FTP (file transfer protocol) was essential for 10 (5.3%) students only while 87 (46.7%) reported it as not important and 17 (9.1%) students reported it as somewhat important. In addition, 50 (26.8%) students rated it as important, and 39 (20.9%) students reported it as very important. Usenet was not important for all respondents.

Table 4.16: Internet services in order of importance to students N=186

Internet services	Essential	Very important	Important	Somewhat important	Not important
E-mail	110 (59.1%)	50 (32.2 %)	20 (10.7%)	6 (3.2%)	0 (0%)
Web	113 (60.7%)	53 (28.4%)	10 (5.3%)	5 (2.6%)	0 (0%)
Social networks	50 (26.8%)	60 32.2%	60 32.2%	10 (5.3%)	6 (3.2%)
News reader	15 (8.1%)	47 (25.2%)	77 (41.3%)	37 (19.8%)	10 (5.3%)
Telnet	29 (15.5%)	78 (41.9%)	69 31.7%	6 (3.6%)	4 (2.1%)
FTP	10 (5.3%)	39 (20.9%)	50 (26.8%)	17 (9.1%)	70 (37.6%)
Usenet	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

4.6.5 Internet services frequency of use

Question 18 was asked to students to indicate how often they used Internet services. The results in table 4.17 below indicates that out of 186 students, 90 (48.3%) students used e-mail daily while 77 (41.3%) used the Web daily. Social networks were used by 120 (64.5%) students daily, and six students (3.2%) used them once a month. The Newsreader was used by 14 (8.3%) students daily while 60 (32.2%) indicated to have used it once a month. Furthermore, 13 (6.9%) students used FTP daily, while 69 (37%) used Telnet once a week. A minority of students 15 (8.1%) indicated to have used Telnet daily. All participants (100%) in this study had never used Usenet.

Table 4.17 Frequency of use of Internet services N= 186

Internet services	Daily	2 to 4 times a week	Once a week	Every two weeks	Once a month	Never	No response
Email	90 (48.3%)	79 (42.4%)	10 (5.3%)	6 (3.2%)	0 (0%)	0 (0%)	1 (0.5%)
Web	77 (41.3%)	78 (41.9)	12 (6.4%)	13 (6.9%)	0 (0%)	0 (0%)	6 (3.2%)
Social networks	120 (64.5%)	50 (26.8%)	7 (3.7%)	3 (1.6%)	6 (3.2%)	0 (0%)	0 (0%)
News reader	14 (8.3%)	11 (5.9%)	36 (19.3%)	50 (26.8%)	60 (32.2%)	3 (1.6%)	12 (6.4%)
FTP	13 (6.9%)	16 (8.6%)	26 (13.9%)	36 (19.3%)	65 (34.9%)	22 (11.8%)	8 (4.3%)
Telnet	15 (8.1%)	30 (16.1%)	69 (37%)	21 (6.4%)	32 (17.2%)	10 (5.3%)	9 (4.8%)
Usenet	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	186 (100%)	0 (0%)

***Multiple responses received**

4.6.6 Duration of Internet use

Students were asked to indicate for how long they have been using the Internet (question 19). Table 4.18 below shows that out of 186 students, 121 (72%) had used the Internet for over 96 weeks followed by 47 (27.9%) students who had used the Internet for 76 to 96 weeks. In addition, 10 (5.3%) students had used it for 52 to 72 weeks, and 4 (4.7%) had used it for 28 to 48 weeks. Table 4.22 also shows that no students had used the Internet for less than 24 weeks.

Table 4.18: Duration of Internet use N=186

Duration of Internet use	Frequency	Percentage
Over 24 months	121	72%
19 to 24 months	47	27.9%
13 to 18 months	10	5.3%
7 to 12 months	8	4.7%
Less than 6 months	0	0%
Total	186	100%

4.6.7 Hours spent on the Internet

Question 20 was asked to students to establish how many hours per week they spent on the Internet. Table 4.23 below indicates that out of 254 students only 68 (32.7%) reported that they had spent over 12 hours Internet per week, 65 (34.9%) students had spent ten to 12 hours while 30 (16.1%) students had spent 7 to nine hours per week. Furthermore, Table 4.19 below indicates that 20 (10.7%) students had spent four to six hours on the Internet per week, while 3 (1.6%) students reported spending one to three hours per week. No students had spent less than an hour per week.

Table 4.19: Hours spent on Internet per week N= 186

Hours spent on the Internet per week	Frequency	Percentage
Over 12 hours	68	36.5%
10 to 12 hours	65	34.9%
7 to 9 hours	30	16.1%
4 to 6 hours	20	10.7%
1 to 3 hours	3	1.6%
Less than 1 hour	0	0%
Total	186	100%

4.6.8 E-mail domains or email providers used

Students were asked to indicate which e-mail domains they used regardless of whether they used them on or off-campus (question 21). The results in Table 4.20 below suggest that a majority of 183 (98.3%) students reported having used e-mail while 3 (1.6) students did not indicate if they used e-mail or not. Furthermore, the results suggest that 101 (54.3%) students used yahoo mail while 105 (56.4%) students used Gmail and 180 (96.7) students used the student's outlook.

Table 4.20: E-mail domains or email providers used N= 186

E-mail domains/E-mail providers used	Frequency	Percentage
Outlook	180	96.7%
Gmail	105	56.4%
Yahoo mail	101	54.3%
No response	3	1.6%
Total	386	209%

***Multiple responses were possible**

4.6.9 Social networks used

Question 22 was asked to establish what social networking sites students used on-campus or off-campus. Table 4.21 below indicates that all 186 students responded to having used social networking and it indicates that a majority of 131 (70.4%) students used Facebook, 100 (53.7%) students used WhatsApp, 25 (13.4%) students used Twitter and 20 (10.7%) students used Students Village. MySpace was used by 10 (5.3%) students only.

Table 4.21: Social networks used N= 186

Social networks	frequency	Percentage
Facebook	131	70.4%
WhatsApp	100	53.7%
Twitter	25	13.4%
Student Village	20	10.8%
MySpace	10	5.4%
Total	286	153.7%

***Multiple responses were possible**

4.7 Students' ability and problems

This section dealt with students' ability to use the Internet and the problems they faced when browsing through the Internet.

4.7.1 Sufficient skills to browse through the Internet

Students were asked to rate themselves regarding the skills to browse through the Internet/Web when searching for information (Question 23). The results from table 4.22 below reveal that 24.2% were on average, 51.6% were rated as intermediate, and 24.2% of the respondents rated their internet skills as advanced. This implies that those who have intermediate rating skills constitute the highest.

Table 4.22: Sufficient skills to browse through the Internet N= 186

Skills	Frequency	Percentage
Intermediate	96	51.6%
Advanced	45	24.2%
Average	45	24.2%
Total	186	100%

4.7.2 Training on searching for information on the internet

Students were asked to indicate whether they had received any training on searching for information on Internet (question 24). The results show that majority of 106 (57%) respondents indicated that they did not receive any training on searching for information on Internet while 80 (43 %) respondents indicated to have received such training. These results are illustrated in table 4.23 below.

Table 4.23: Training on searching for information on the Internet N=186

Training	Frequency	Percentage
Yes	80	43%
No	106	57%
Total	186	100%

4.7.3 Where did respondents receive training on the use of the Internet?

Question 25 aim was to find out where the respondents had received training on the use of the Internet, particularly on searching for information on the Internet. Majority of respondents stated that they received basic training from their respective high schools. These results are illustrated in Table 4.24 below.

Table 4.24: Place where training was received N= 186

A place where training was received	Frequency	Percentage
High school	130	69.9%
Internet café	40	21.5%
Public libraries	16	8.6%
Total	186	100%

4.7.4 Level of information literacy

Respondents were asked to rate themselves regarding the level of information literacy (question 26). Table 4.25 below show that the majority of 99 (53.2%) respondents rated their level of information literacy as being 'good', 39 (20.9%) respondents rated themselves as 'very good', and 29 (15.6%) respondents rated themselves as 'average'. Furthermore, 10 (5.4%) respondents rated themselves poor, and 9 (4.8%) respondents indicated 'very poor'.

Table 4.25: level of information literacy N=186

Information literacy level	frequency	Percentage
Good	99	53.2%
Very good	39	20.9%
Average	29	15.6%
Poor	10	5.4%
Very poor	9	4.8%
Total	186	100%

4.7.5 Problems or constraints encountered by students when using the Internet

Question 27, a multiple response questions, was asked to establish student's problems using the Internet. Table 4.26 below indicates that all 186 reported that they had a problem when using the Internet. Thus, the majority of 121 (63.4%) students had difficulties in locating information, 101 (54.3%) students had an inaccuracy of information as a problem, and 57 (30.6%) students had unreliability of sources as their problems. Furthermore, table 4.26 indicates that 90 (48.3%) students who did not access the Internet on campus had the cost of

Internet expenses (airtime or Data bundles) as their problem, 47 (25.2%) students had a problem of slow access speed/slow network connections, 29 (15.5%) students had a problem with the network signals and 13 (6.9%) students regarded viruses as a problem they had encountered. A minority of 7 (3.7%) students had logging in as the problem they encountered.

Table 4.26: Problems encountered when using the Internet N=186

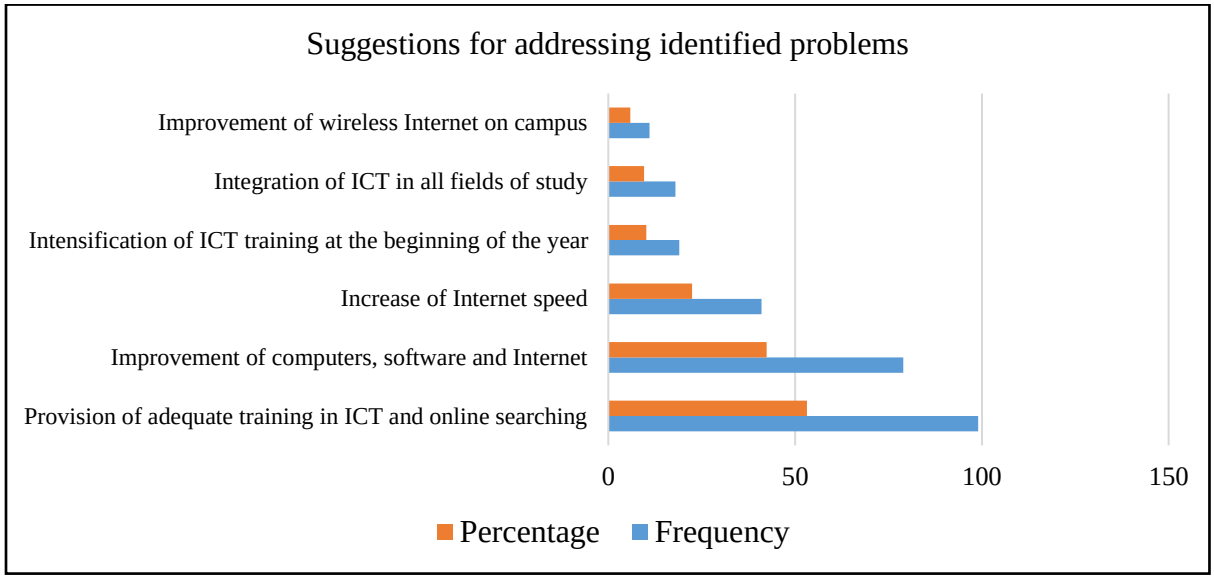
Problems	Frequency	Percentage
Difficulty in locating relevant information	121	63.4%
Inaccuracy of information	101	54.3%
Cost of internet expenses (airtime or Data bundles)	90	48.3%
Unreliability of sources	57	30.6%
Slow access speed/slow network connections	47	25.2%
Network signals	29	15.5%
Virus	13	6.9%
Logging in	7	3.7%
Total	465	247.9

Multiple responses were possible

4.7.6 Suggestions for addressing identified problems

Question 28, an open question was asked to respondents to find out what could be done to address the challenges they identified. Out of 186 respondents, only 101 students responded since this question was a continuation of question 27. Thus, figure 4.1 below shows that 99 (53.2%) students suggested that the University should provide adequate training in ICT and online searching to students, 79 (42.4%) students suggested the improvement of computers, software, and Internet; and 41 (22.4%) students suggested the increase of Internet speed. Further, figure 4.1 shows that 19 (10.2%) students indicated that there should be the integration of ICT in all fields of study, 18 (9.6%) students suggested the intensification of ICT training at the beginning of the year. 0nly 11 (5.9%) students suggested the improvement of wireless Internet on campus.

N= 186



Multiple responses were possible

Figure 4.1: Suggestions for problems/challenges

4.8 Additional comments regarding the use of the Internet

The last question of the questionnaire was asked to participants to provide additional comments and suggestions about using the Internet. Not all students made comments and suggestions. However, 45 (24.2%) students suggested that first-year students should be trained to find information on the Internet for advanced research for future purposes. In addition, 23 (12.4%) suggested the restriction of access to social networks during working hours since they interfere with academic work. Also, 20 (10.7%) students added that the Internet should be promoted since it plays a vital role in nowadays education. The last comment was about where the Internet is accessed on campus. Thus, 2 (1.1%) students suggested that there should be more computer labs since the number of students increases every year.

4.9 Summary of Chapter Four

This chapter presented the results of the study, which set out to survey the use of the Internet by first-year undergraduate students in the CAES at the UKZNP. Findings were presented in the form of tables and figures. The questionnaire results presented the demographic information of respondents and the information on the Internet usage. Recommendations presented included adding computer lab and training of students regarding searching for information on the Internet. The next chapter (Chapter Five) discusses the findings.

CHAPTER FIVE
DISCUSSION OF THE RESULTS

5.1 Introduction

In this chapter, the results of the study are discussed. The purpose of the study was to investigate the use of the Internet by first-year undergraduate students in the College of Agriculture, Engineering and Science at the University of KwaZulu-Natal-Pietermaritzburg campus. The results of the study are discussed in light of the research questions posed in chapter one and the literature review:

- What do first-year students use the Internet for?
- What are the most frequently used Internet services by first-year students?
- How often do first-year students use the Internet?
- Do first year-students have adequate skills to use the Internet?
- What challenges do first-year students experience when using the Internet?

The discussion in this chapter is regulated around the above research questions. The results discussed in this chapter are those presented in Chapter 4 resulting from the questionnaires completed by a sample of first-year undergraduate students in the CAES at UKZNP. It must be noted that a good response rate of 69% was yielded allowing the researcher to make generalizations about the total population.

5.2 Background information of respondents

This section provides the profile of first-year undergraduate students who responded to the questionnaire. This section explores the findings relating to respondents 'demographic information which include gender and age. Information about schools in which respondents are enrolled is also provided.

5.2.1 Demographic profile of the respondents

The study focused on first-year undergraduate students in CAES. The questionnaire results show that 96 (51%) respondents were males and 90 (49%) were females. Thus, there were slightly more males respondents than females respondents. In terms of age, the undergraduate first-year in CAES was between the ages of 18 and 24 years old. However, the majority 130 (69%) of respondents were from the age group 18-19 years, 49(26%) respondents were from the age group 20-22 years. Only 7 (3.7%) respondents were from the group of 23-24 years.

The reason for having the age group of 18-19 years as the majority is that students generally enrol at tertiary education at the age of 18 years and complete 19 years the same year at the university. In terms of field of study, respondents are registered in six different schools (School of Agriculture, Earth and Environmental Science, School of Chemistry and Physics, School of Engineering, School of life sciences, School of Mathematics, Statistic and Computer Sciences and the School of Mathematics, Statistic and Computer Sciences). The majority of respondents were registered with the School of Life Sciences (60 respondents or 32.2%) and 40 respondents or 21.5% with the School of Mathematics, Statistic and Computer Sciences. Furthermore, 38 respondents (20.4%) were registered with the School of Agriculture, Earth and Environmental Sciences, 22 (11.8%) with the School of Chemistry and Physics, 16 (8.6%) with the School of Engineering and 10 (5.3%) with the four years augmented program. Thus, the school of Engineering and the Bachelor of Science (4-augmented) were least represented in this study.

5.2.2 Access to the Internet on campus

This study found that most students 179 or 96.3%, access the Internet on campus whereas only 7 or 3.7% of students indicated that they do not. Most of the students who stated they do not use the Internet gave either computer labs full during their free time on campus, access to the Internet at home as their reasons. The fact that a high percentage of students use the Internet on campus reflects the prevalence of the technology and emphasizes the importance of the current study. Harerimana and Mtshali (2018) state that in higher education institutions, access to the Internet enables students and lecturers to access to a variety of up-to-date information across the world, and empowers researchers and academic institutions to disseminate data to a vast audience. Further, Tarimo and Kavishe (2017) point out that access and effective use of Internet services in secondary schools give added reading opportunities for students, which improves understanding and reading skills which supports students' academic performance. Thus, from these findings the usefulness of the Internet is observed by the majority of students who believe that the Internet should always be used.

5.3 Discussion of findings in relation to research questions

A self-administered questionnaire was used as the means of data collection. As noted in chapter four above, 269 questionnaires were distributed to first-year undergraduate students

in CAES, with 186 completed and returned. The research questions listed above provide the basis for the discussion.

5.3.1 Research question One: What do first-year students use the Internet for?

When asked what they use the Internet for, the majority of respondents (121 respondent or 65.1%) indicated that they use it for learning purposes whereas 119 respondent or 64% accessed the Internet for updating knowledge and 69 respondent or 37.1% indicated that they use it for communication with family and friend through social networks. Other reasons for Internet use were entertainment (47 respondents or 25.2%) and news (25 respondents or 13.4%). The results from the present study indicate that the Internet is a tool used for various purposes. This is confirmed by Dogruer and Eyyam (2012) who wrote: "Since the emergence of the Internet, it has become an important medium of communication as well as a research and leisure tool. People have started to access any information easily on the Internet and also use it for social, educational and entertainment purposes."

Ontula (2013) in her study on Internet access and use among undergraduate students of Bowen University Iwo, Osun State, Nigeria, revealed that respondents used the Internet for various academic activities. It was found out that 75.8 % of students used the Internet to search for information related to academic work, for example doing their assignments, e-mail lecturers on the academically related matter and finding information for their research work. Further, the author found out that 40.3% of students used the Internet to find books. 20% of students used the Internet for social networks (e.g. Facebook, Twitter), and 18.1% of students used the Internet to e-mail friends and colleagues on academic-related matters. Thus, generally students use the Internet for different reasons depending on their needs. However, using the Internet for academic-related matters does not exclude using it for the entertainment of socializing with friends.

5.3.1.1 Using the Internet for learning purposes

As mentioned in the previous paragraph, the current study results show that the majority (65.1%) of the students stated that they used the Internet for learning purposes, 64% for updating knowledge, 37% for communicating with friends and family. A small percentage of students (25.2%) used the Internet for entertainment and 13.4% for the news.

The present study results concur with the results of the study done by Yilmaz and Orhan (2010) in which respondents reported that they used the Internet every day mostly for learning

because they appreciated the variety of information it contains and the ease of access to the source of information. Yilmaz and Orhan (2010) also indicated a clear relationship between accessing information through the Internet and students' achievement in research assignments and projects. Apuke and Iyendo (2018) in their study entitled "University students 'usage of Internet resources for research and learning: forms of access and perceptions of utility", is also in agreement with what has been established in the current study. They stated that students believed that using the Internet enabled them to perform research ahead of time, tackle multiple homework, widen the scope of reading and learning, promotes self-learning, encourage and enhance peer learning, and facilitate student's examination preparation. Accordingly, the current study results reveal that although students use the Internet for diverse purposes, the main reason to use the Internet is learning. This can be seen from the huge difference between those who used it for social networks and learning.

5.3.1.2 Updating knowledge

The current results show that 119 students (64%) had used the Internet to update their knowledge. Apuke and Iyendo (2018) pointed out that using the Internet in the educational setting has enabled easy access to many resources. The authors noted that the Internet is beneficial in several ways in academic settings to provide access to global sources of information and permit students to discuss and share experiences. In addition, Apuke and Iyendo (2018) claimed that educators who advocated for technology integration into the learning process believed it would improve learning and prepare students to participate in the twenty-first-century workplace effectively. Dogruer and Eyyam (2011) also argued that it had been observed that the Internet had been widely used in higher education institutions, and this efficiently helps students to carry out substantial research work which is up to date. Thus, in the current research, students acknowledge the importance of the Internet when researching a particular topic and the ease of communication with their lecturers.

5.3.1.3 Communicating with family and friends

The current study results show that 31.1 % of the participants used the Internet to communicate with family and friends (i.e. social networking). Social networks used by the first-year students in the current study included Twiter, Myspace, Student Village, WhatsApp and Facebook. In addition, in the current study (see table 4.21) the results reveal that all

participants responded to have used social networks. Thus, 131 (70%) students used Facebook, 100 (53%) students used WhatsApp, 25 (13.4%) students used Twitter and 20 (10.7%) students used Students Village. Myspace was used by 10 (5.3%) students. These results are similar to the study done by Puspita and Rohedi (2017), which reported that 68.3% of participants had used the Internet to communicate with family and friends. Puspita and Rohedi (2017) stated that students are more likely to interact via social media than hanging out with friends. They are more focused on the virtual world, regardless of what is happening around them. Further, Almarabeh et al. (2016) are also in agreement with the current study results. Their study titled "Internet usage, challenges, and attitudes among university students: case study of the University of Jordan"; found that 97% of participants used the Internet to communicate with family and friends (social networks). According to the authors, people use social media networks, and in particular, college students represent a large proportion of users on social media networks to communicate with friends. Accordingly, the current study explores the purposes for which the Internet is used. Among the social networks mostly used in this study, Facebook and WhatsApp seem to have been used by many first-year students. This could be because they accessed the Internet using their smartphones.

5.3.1.4 Entertainment

The current study results revealed that few respondents (25.1 %) had used the Internet for entertainment. Similarly, Geyer et al. (2017) studied Internet use among university students. The authors found that 29 (9.8%) respondents used the Internet for playing games and downloading music. Fasae and Aladeniyi (2012) also in their study on Internet use by students of the faculty of science in two Nigerian Universities; found that the minority of respondents (58%) had used the Internet for entertainment compared to those who had used it for educational purposes (89%) and research purposes (82%). Thus, in the current study one would argue that the Internet was not much used for entertainment although it is important for students in tertiary education.

5.3.1.5 News

The current study results show that a minority of respondents (13.4%) used the Internet to read the news. Similarly, Matlala (2015) in his study on the use of the Internet by grade 11 learners from selected schools in the Sekhukhune district, Makhuduthamaga local

municipality in Limpopo Province, found that only 5.7% of respondents had used the Internet for reading news. Thus, in the current study students did not focus much on reading news when using the Internet. Instead, the Internet was used for academic purposes and social networks.

5.3.2 Research question two: What Internet services do first-year students use?

The current study's findings revealed that first-year undergraduate students in the CAES used the following internet services or facilities: E-mail, Web, social networks, news reader, Telnet and FTP. The results of the study indicated that out of these services the Web, e-mail, social networks and Telnet were the most used Internet services by the first-year students from the CAES. The findings of the study reported that out of 186 students, 90 (43%) students used e-mail daily, while 77 (41.3%) students used the Web daily. On the other hand, social networks were used by 120 (64.5%) students daily, and six students or (3.2%) used them once a month. The newsreader was used by only 14 (8.3%) students daily, while 60 (32.2%) indicated to have used it once a month. Furthermore, 13 (6.9%) students used FTP daily while 69 (37%) used Telnet once a week. A minority of students 15 (8.1%) indicated to have used Telnet daily. From these results, one could maintain that the Web, e-mail and social networks are the most Internet services first-year students in CAES had used. A study done by Adekunmisi et al. (2013) supported these results and indicated that the major use of the Internet was surfing the Web and e-mail. Adekunmisi et al. (2013) analysed Internet access and usage by undergraduate students: A case study of Olabisi Onabanjo University in Nigeria. The results revealed that 32.5% of participants had used the Web daily, 37.5% every week, and 17% monthly.

The current study results revealed that students used the Web mainly to access academic material, get information using search engines and find sources of information on the Internet. With regards to e-mail, students used it primary to communicate with lecturers. Thus, these two Internet services are used to assist students in finding academic-related information requested by lecturers. Findings from Akporido (2014) in his study on medical students' use of the Internet in the College of Health Sciences, Delta State University, Abraka in Nigeria show that all respondents (100%) use the Internet for email and research.

Ukpebor and Emwanta (2012) pointed out that using the Web in teaching and research makes it available for the students who prefer or require learning outside the classroom to study at their convenient time and space. According to the authors, the Web has already been one of the most popular media for delivering course information. Furthermore, because of the attractive characteristics of the Internet, lecturers are trying to use the web to assist in interactive teaching, research, and learning. Moreover, Uwaifo and Azonobi (2014) emphasized that students are no longer restricted to print information materials to solve their state of the art information. Rather they depend on the Internet, which according to the authors places at the disposal of all gateways to various forms of information and the capacity to access them on a worldwide web (www) level. Thus, such provision by Internet enables students to communicate with their colleagues, lecturers and friends with e-mail facilities, search or engage in discussion groups.

Nevertheless, Yebowaah (2018) argues that despite the significance of Internet usage to students 'academic performance, its negative impacts are numerous. According to the author, some students use the Internet for non-academic purposes such as gaming and social networking, thus culminating in the loss of study schedules. In addition, students use the Internet for leisure rather than educational purposes, leading to fallen academic standards. Further, a study done by Mami and Hatami-Zad (2014) points out that students probably don't receive proper guidance in using the Internet in studying. Thus, the Internet can be a bad tool for higher academic achievement if its usage is not controlled.

5.3.3 Research question three: How often do the first-year students use the Internet?

The respondents were asked to indicate how often they access the Internet for academic purposes. The researcher used the following categories to grasp the frequency of Internet use correctly: daily, once a week, once every two weeks, once a month. Thus, the following question was asked: How often do you access the Internet for academic purposes?

The results in table 4.15 (See chapter four) show that most students (96.7%) had used the Internet daily. In comparison, only 4 (2.1%) students indicated to had used the Internet services once a week, followed by 1 (0.5%) who had used the Internet once every two weeks and 1 (0.5%) who had used it once a month. Therefore, all students had used Internet services for academic purposes. However, the majority of students, as indicated below had used it

daily. From these results, one would argue that majority of first-year students in CAES are active users of the Internet.

Moreover, table 4.18 in Chapter Four indicated that out of 186 students, 121 (72%) had used the Internet for over 24 months followed by 47 (27.9%) students who had used the Internet for 19 to 24 months. 10 (5.3) students had used it for 13 to 18 months and 4 (4.7%) had used it for 7 to 12 months. Table 4.19 also shows that no students had used the Internet for less than six months. Thus, these results reveal that first-year students had used the Internet before for more or less than two years in their respective schools.

The above results generally correspond with Anyaoku, Nwafor-Orizu, and Oguaka (2015) who found that out of 161 students, the Internet was used daily by 116 (72%) students. It was used two to three times a week by 29 (18%) students, followed by 5 (3.1%) students who never used the Internet to search for information. Similarly, Aba et al. (2015) reported in their study that 29.63% of respondents had spent two to four hours a week, 23.33% spent less than one hour a week on the Internet, 17.78% spent five to six hours a week, 11.11% spend seven to nine hours a week, while 7.78% spend ten to twenty hours a week and 10.37% spend more than twenty hours a week. This implied that, those who spend 2 to 4 hours a week constituted the highest percentage while the least percentage of respondents constitutes those that spend 10 to 20 hours a week. Respondents were also asked to indicate their experience of Internet use. The results revealed that 37.78% of students constitute those that had 1 to 2 years of experience. 25.19% had less than one year of experience, 19.63% had one year of experience, while 17.40% had two years and above experience on Internet usage. This implies that, those who had 1 to 2 years of experience on Internet usage constitute the highest percentage of respondents while those who had two years and above of experience constitute the least percentage of respondents based on their responses.

Unlike the current study and the studies cited above, Braimllari and Sala (2017) did a study on Internet use for learning by undergraduate students at the University of Tirana in Albania. They found that the majority of the respondents have more than five years are using the Internet (64.4%), 20.8% have using the Internet from 4 to 5 years, and 13.64% have 2 to 3 years. Further, about 94% of the respondents use the Internet every day, and only 6% of

respondents use the Internet 2 to 3 times a week. Thus, the respondents in the current study are assumed to have less experience than respondents in Braimllari and Sala (2017) study.

5.3.4 Research question four: Do first-year students have adequate skills to use the Internet?

To find out whether first-year undergraduate students have adequate skills to use the Internet, the researcher asked them whether they possessed sufficient skills to browse through the Internet/Web when searching for information (Question 23). The researcher also had to ask how they learned to search for information on the Internet. It was also important to rate the level of students Internet literacy. Thus, when asked about their skills to browse through the Internet, an insignificant majority of 100 (53.7%) students thought they had adequate skills, whereas 86 (46.2%) admitted that they did not have adequate skills to browse through the Internet. This is still the majority and one would conclude that first-year students had the necessary skills to browse through the Internet. This finding is in line with Israel and Edesiri (2014) who reported that out of 238 respondents, 192 (80.7%) respondents accepted to have enough skills to browse through the Internet and 29 (12.2%) said that they did not have enough skills to browse through the Internet. In this study, respondents akcnowlegded sending and opening an attachement from an email using a common email program. They could launch any of the web browsers and, they could also download files and images from a web page.

Regarding whether respondents received any training in searching for information on the Internet, it was noted that the majority of 106 (57%) respondents indicated that they did not receive any training in searching for information on the Internet. In comparison, 80 (43 %) respondents indicated to have received such training. Al-Hadi, Al-Aufi and Al-Azri (2017) stated that today, students maintain the skills necessary to make efficient use of information in day-to-day activities. Information literacy programs provided by academic libraries remain efficient, to guarantee a better attitude for graduates in their lifelong search and service of information. This study supports the recommendations provided by students in the current research regarding necessary skills to deal with advanced search in second and third year. Thus, on the question of rating students level of information literacy, the results revealed that majority of 99 (53.2%) respondents rated their level of information literacy as being ‘good’, 39 (20.9%) respondents rated themselves as ‘very good’ and 29 (15.6%) respondents rated

themselves as ‘average’. Furthermore, 10 (5.4%) respondents rated themselves poor and 9 (4.8%) respondents indicated ‘very poor’. Thus, a participant in the current study can browse through the Internet, although they still need enough skills for advanced search in future.

5.3.5 Research question five: What challenges do first-year students experience when using the Internet?

The respondents were asked to indicate the challenges they encountered when accessing the Internet. The findings of this study revealed that respondents experienced numerous problems. Table 4.26 (see chapter four) indicates that all 186 students reported that they had experienced problems. Thus, 121 (63.4%) students indicated having had problems locating the right information when browsing the Internet; 101 (54.3%) students indicated that inaccuracy of information was a serious problem for them, while 57 (30.6%) students had unreliability of sources as their problem. Furthermore, the results reveal that 90 (48.3%) students had a cost of Internet expenses (air time or Data bundles) as their problem while 47 (25.2%) students experienced slow access speed/slow network connections. Network signal was reported by 29 (15.5%) students as their problem while 13 (6.9%) students reported having had the virus as their problem. Lastly, logging in was also among the students’problems had and was experienced by only the minority of 7 (3.7%) students.

These challenges were also found in a study done by Almarabeh et al. (2016) at the University of Jordan. According to the authors, respondents indicated slow Internet’speed, difficulty finding relevant information and lack of knowledge about searching (advanced searching) as major constraints. The results of this study found out that out of 536 participants, 334 (62.31%) had slow speed of the Internet as a problem, 195 (36.3%) participants had difficulty in finding relevant information as problem and 177 (33.02%) had lack of knowledge about searching (advanced searching). Similar to the results of the current study, Kheswa (2010) in his study on the use of the Internet by third-year undergraduate students of the Faculty of Humanities, Development and Social Sciences at the University of KwaZulu-Natal, Pietermaritzburg campus; found out that slow Internet connection was experienced by the majority of 184 (72%) students. Further, Matlala (2015) reported that the slowness of the Internet was a problem encountered by the higher number of 150 (56.8%) learners when using the Internet.

5.3.6 Students'comments and recommendations

The last question of the questionnaire asked respondents to provide additional comments and suggestions regarding using the Internet. It must be noted that not all students made comments and suggestions. These comments and recommendations can be grouped into four categories. The first category consisted of 45 (24.2%) students who suggested that first-year students be trained to find information on the Internet for advanced research for future purposes. The second category consisted of 23 (12.4%) students who suggested that access to social networks should be restricted during working hours since they interfere with academic work. The third category consisted of 20 (10.7%) students who thought that the Internet should be promoted since it plays a vital role in nowadays education. The last category consisted of 2 (1.1%) students who suggested that there should be more computer labs since the number of students increases every year.

5.4 Summary of the chapter

This chapter comprised a discussion of the findings as contained in Chapter Four. The discussions were based on the research questions underpinning the study, which rotated around understanding the Internet use by first-year undergraduate students at UKZNP. The chapter has outlined the research questions. Thus, the chapter covered the following areas: the purpose for which first-year are using the Internet, the most Internet services first-year students use, the frequency of Internet use by first-year students, determining whether first-year students have adequate skills to use the Inernet and the challenges that first-year students experienced when using the Internet. The chapter ended with a brief discussion on comments from students together with recommendations. The next chapter provides the summary and conclusion of the study, recommendations for improvement regarding the use of the Internet at UKZNP and suggestion for future research.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter summarizes the study' findings, provides the conclusions and recommendations, and suggests directions for future research. The study' main purpose was to investigate the use of the Internet by first-year undergraduate students in the College of Agriculture, Engineering and Science at UKZNP. The study attempted to answer the following research questions:

- What do first-year students use the Internet for?
- What are the most frequently used Internet services by first-year students?
- How often do first-year students use the Internet?
- Do first-year students have adequate skills to use the Internet?
- What challenges do first-year students experience when using the Internet?

A brief overview of the study follows.

6.2 Summary of the study

Chapter one provided an introduction to the study by presenting a background of the study, a statement of the research problem, research questions, the broader issue to be investigated, rationale of the study. A conceptual framework in the form of network literacy was provided. The delimitation of the research and the definition of key terms used in the study were also provided.

Chapter two presented the review of the related literature. This included an overview of Internet use by students. The first part of the literature review covered a brief history of the Internet and a history of its evolution. The second part of this chapter presented the literature review on the use of the Internet and access to the Internet. The third part of this chapter focused on the literature reviews using the Internet in education. The fourth part of chapter two covered the literature reviews of the studies done outside Africa, followed by Africa and then in South Africa. The last part of chapter two covered the frequency of Internet use by students and the challenges encountered by students when using the Internet. The chapter concluded with a summary of what was discussed within the chapter.

Chapter three covered the research design and methods adopted in the study. The approach that the study employed was quantitative where quantitative data were collected. A survey using a self-administered questionnaire as the data collection technique represents the research design adopted to gain an insight into the use of the Internet by first-year undergraduate students in the CAES at UKZNP. The chapter discussed the population of the study, the sampling technique and the size. The chapter also discussed the instrument' validity and reliability through a pre-test instrument (Questionnaire). The analysis of data using SPSS and the ethical issues of the study were discussed.

The findings of the study are presented in chapter four. The study set out to investigate the Internet use by first-year undergraduate students in CAES at the UKZNP. Thus, the results were presented and analyzed via tables in most cases and figures. Recommendations concerning the use of the Internet were also discussed. Chapter Five discussed the results of a study which were presented in Chapter Four. The discussion of the findings was considered in the light of the research questions underpinning the study and the literature review. The key research questions of the study were outlined at the beginning of this chapter. Thus, the major areas covered in this chapter embraced the purpose for which first-year students use the Internet, identifying the frequency of Internet use, identifying the most Internet services first-year students use, determining whether first-year students have adequate skills to use the Internet, challenges that first-year students experience when using the Internet, and the student's comments and suggestions in relation to the use of the Internet.

The present chapter (chapter six) presents the study' main findings, together with the conclusions and recommendations that arise from these. Chapter six ends with suggested topics for further research.

6.3 Conclusion

The conclusions reached are guided by the research questions. The research questions supporting the study and the conclusion relating to these questions are provided. The analysis of the data revealed that there were important outcomes from the survey of the 186 first-year undergraduate students in the College of Agriculture, Engineering and Science at the University of KwaZulu-Natal Pietermaritzburg campus and the following conclusions were

drawn: The study found out that the Internet is used for diverse purposes. Based on the results of the study, it may be concluded that a majority of 121 (65.1%) participants used the Internet for learning purposes, and 119 (64%) participants used it for updating knowledge, followed by 69 (37.7%) participants who used the Internet for communicating with family and friend using social networks. The study also found that a smaller percentage of participants (47 participants or 25.2%) used the Internet for entertainment, followed by 25 (13.4%) participants who use the Internet to read the news. Thus, most first-year students used the Internet for learning purposes such as searching for information related to academic work, such as doing their assignments, e-mail lecturers on academic-related matters and finding information for their research work.

Looking at the results of the Internet services used, it may be concluded that first-year undergraduate students in CAES used the following Internet services: E-mail, Web, Social networks, Telnet and FTP. The study found out that out of these services the Web, e-mail, social networks were the most used Internet services by the first-year students from the CAES. Out of 186 participants, 106 (57%) students accepted to had used e-mail on campus, 99 (53.2) students had used the Web and 95 (51.1%) students had used social networks. Therefore, it can be concluded that the most relevant and important Internet services to first-year students were e-mail, the Web, and social networks.

In relation to these services, conclusions may be drawn based on the findings of the study that 180 (96.7 %) students used Internet services daily while only 4 (2.1%) students indicated to had used Internet services once a week followed by 1 (0.5%) student who had used the Internet once every two weeks and 1 (0.5%) student who had used it once a month. It may be concluded that the majority of students had used Internet services daily. Further, concerning Internet services, conclusions may be drawn based on the study's findings that 90 (48.3%) students used e-mail daily while 77 (41.3%) used the Web daily. Social networks were used by 120 (64.5%) students daily, and six students (3.2%) used them once a month. Also, 13 (6.9%) students used FTP daily, while 69 (37%) used Telnet once a week. A minority of students 15 (8.1%), indicated to have used Telnet daily. All participants (100%) in this study had never used Usenet. Thus, it can be concluded first-year students are active users of Internet services.

Based on the study results, out of 186 students, 121 (72%) students had used the Internet for over 24 months or 104 weeks, 47 (27.9%) students had used the Internet for 19 to 24 months. 10 (5.3%) students had used it for 13 to 18 months and 4 (4.7%) had used it for 7 to 12 months. It may also be concluded that the majority of students had used the Internet for over 24 months or 108 weeks. Furthermore, the study found out that no students had used the Internet for less than six months. Therefore, although they are in first year of their studies, participants have been using the Internet for quite some time.

An insignificant majority of students believed they had adequate skills to search and retrieve information on the Internet/web effectively. The results revealed that 96 (56.1%) students were rated as intermediate, 45 (24.1%) students were on average while 45 (24.1%) rated their Internet skills as advanced. Thus, it may be concluded that participants in this study had adequate skills to search and find information on the Internet/web. The level of information literacy results of students revealed that 99 (53.2%) students rated their level of information literacy as being 'good', 39 (20.9%) respondents rated themselves as 'very good', and 29 (15.6%) respondents rated themselves as "average". Furthermore, 10 (5.4%) respondents rated themselves, poor and only 9 (4.8%) students indicated 'very poor'. Regarding the duration of Internet use by first-year students, the results revealed that the majority of 121 (72%) students had used the Internet for over 24 months, followed by 47 (27.9%) students who had used the Internet for 19 to 24 months. Also, 10 (5.3%) students had used it for 13 to 18 months, and only 4 (4.7%) had used it for 7 to 12 months. Thus, referring to the results of students' level of information literacy and the duration of Internet use, one may conclude that first-year students possessed adequate skills to use the Internet.

Although facilities for accessing the Internet are available, first-year students are still experiencing problems finding information using the Internet/web. All the participants (186 participants) reported that they had challenges when using the Internet. Challenges such as difficulty in locating information were experienced by the majority of 121 (63.4%) students, inaccuracy of information was experienced by 101 (54.3) and 57(30.6%) students experienced unreliability of source. In addition, challenges such as slow access speed/slow network connections were experienced by 47 (25.2%) students and 29 (15.5%) students experienced the network signals. Viruses challenges was experienced by 13 (6.9%) students, and logging in was experienced by 7 (3.7%) students. These challenges made it difficult for

students to access the information they needed fully. One would conclude that these challenges are common challenges that students encounter when using the Internet.

Given the above conclusions and drawing on the study's conceptual framework, one would argue that first-year undergraduate students in the CAES were capable of network literacy. They could use ICTs to search and find the information they needed for learning purposes. Additionally, first-year students in the CAES had the skills to use Internet facilities, hence they were network literate.

Given the above conclusion, the following recommendations are made.

6.4 Recommendations

In the light of the findings of the previous chapters and the conclusion made above, the following recommendations are made:

- To enhance students' ability to use the Internet, the university should provide adequate ICT and online searching. Information literacy, respecting intellectual property rights through correct referencing procedures and evaluating information sources should be taught to students early. Thus, students will be aware of how searching for information and using it in more advanced research in their poste-grade studies.
- The university should improve computers, software and the Internet in all LANs. Improving these can allow good Internet connection which offers greater mobility and ease of access to the Internet. Thus, bandwidths should also be increased for greater Internet speed.
- UKZNP should integrate ICT in all fields of study. Computer courses need to be included in all aspects of courses development and should probably be offered in every field of study. The course structure should be designed in a manner that all students acquire the ICT skills
- More notably, the UKZNP should intensify the ICT training at the beginning of the year. Students had used a computer in their previous schools but did not have enough skills to effectively use the computer and the Internet. Thus, at the beginning of the academic year, UKZNP should embark on intensive ICT training of first-year students before tests, assignments and any task which requires Internet starts.

- The wireless connection needs to be improved around campus and within residences. This will reduce the number of students using the university LANs. Thus, students may access the Internet wherever they are around the campus.
- UKZNP should promote the instruction programmes of the library regarding the information searching skills.

6.5 Suggestions for further research

The present study investigated the use of the Internet by first-year undergraduate students in the College of Agriculture, Engineering and Science at the University of KwaZulu-Natal, Pietermaritzburg campus. For further research, the following suggestions have been made:

- Further study should investigate Internet use by postgraduate students in the College of Agriculture, Engineering and Science at UKZNP.
- A similar study should focus on the use of the Internet by students in other faculties at UKZNP
- A further study should investigate the use of the Internet by postgraduate students from all faculties at UKZNP (all campuses included)
- A further study should focus on Internet use by first-year undergraduate students at UKZNP including all campuses.
- A further study on first-year student attendance at the library training programmes.

6.6 Summary of the chapter

This chapter provided an overview of the entire study into Internet use by first-year undergraduate students in the College of Agriculture, Engineering and Science at the University of KwaZulu-Natal, Pietermaritzburg campus. The research questions underpinning the study were revisited, and the major research findings and conclusions about the findings were articulated. Recommendations to improve the use of the Internet by first-year undergraduate students and suggestions for further research were also provided. The results of this study could assist the college of Agriculture, Engineering and Science in decision-making regarding which Internet services students used and, most prominently, what needs to be improved to provide better Internet service for students on the Pietermaritzburg campus.

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Appendix 1: Students questionnaire

Survey questionnaire for collecting data on the use of the Internet by first-year undergraduate students in the College of Agriculture, Engineering and Science at the University of KwaZulu-Natal, Pietermaritzburg campus.

Important note:

Please note that the information collected in this study will be used to write an academic thesis. Individual identification of participants is not important in this study.

Instructions

Please indicate your appropriate response by means of a tick [√]. Where possible please elaborate in the space provided.

Section A: Background information

1. Gender (Please tick [√] to fill your answer)

What is your gender?

1.1 Male [ ]

1.2 Female [ ]

2. What is your age?

3. What school are you in?

3.1 School of Agriculture, Earth and Environmental science

3.2 School of Chemistry and Physics

3.3 **S**chool of Engineering

3.4 School of life sciences

3.5 School of Mathematics, Statistic & Computer Sciences

3.6 Bachelor of Science (4-year augmented).

Section B: Internet usage

4. Do you use the Internet on campus?

4.1 Yes [ ]

4.2 No [ ]

5. If No, please explain why not.....

……
……
……

6. Where on campus do you access the Internet?

6.1 Computer laboratories (LANS) [ ]

6.2 Libraries [ ]

6.3 Residences [ ]

6.4 Others (please specify) [ ]

7. Do you have access to Internet outside the university?

7.1 Yes [ ]

7.2 No [ ]

8. If not, why don't you have access to Internet outside the university?

8.1 I do not have access to a computer off campus [ ]

8.2 I do not have access to Internet off campus [ ]

8.3 Access to the internet off campus is expensive [ ]

9. If yes, where do you usually access the internet outside the University? (Choose one)

9.1 Home [ ]

9.2 Internet café [ ]

9.3 Other (Specify…) [ ]

10. What kind of internet access do you use at home? (Choose one)

10.1 Wi-Fi [ ]

10.2 Data bundles [ ]

10.3 Modem [ ]

10.4 None [ ]

10.5 Other (Specify…) [ ]

11. What do you use to access the internet? (Choose one or more)

11.1 Desktop computer [ ]

11.2 Laptop [ ]

11.3 Smart phone [ ]

11.4 Tablet [ ]

11.5 Other (Specify…) [ ]

12. What is your main method to access the internet? (Choose one)

12.1 Desktop computer [ ]

12.2 Laptop [ ]

12.3 Smart phone [ ]

12.4 Tablet [ ]

12.5 Other (Specify…) [ ]

13. How did you learn to use the internet? (Choose one)

13.1 Reading from books [ ]

13.2 Self-taught [ ]

13.3 Taught by friends [ ]

13.4 School [ ]

13.5 Other (Specify…) [ ]

14. What Internet services do you use? (Please tick those applied to you)

14.1 Email [ ]

14.2 World Wide Web [ ]

14.3 Social network (Facebook, Instagram, Twitter, YouTube, Myspace, Student Village)[ ]

14.4 Telnet (e.g. access library catalogue remotely) [ ]

14.5 Others (Specify…)……

……

15. What is the purpose of your Internet use? (Choose one or more)

15.1 For the news (i.e. Sowetanlive, Media24, Supersport, etc…) [ ]

15.2 To update knowledge [ ]

15.3 For learning purpose (i.e. To prepare for assignments, class, research, etc…) [ ]

15.4 To communicate with family and friends (i.e. Social networking) [ ]

15.5 For entertainment [ ]

15.6 For other reasons (Specify…) [ ]

16. How often do you access the internet for academic purposes ? (Choose one)

16.1 Daily

16.2 Once a week [ ]

16.3 Once every two weeks [ ]

16.4 Once a month [ ]

16.5 Never [ ]

17. Please rank each of the following internet services in the order of importance.

Internet services	**Essential**	**Very important**	**Important**	**Somewhat important**	**Not important**
Electronic Email (email)					
World Wide Web (WWW)					
Telnet (eg. access to library catalogue remotely)					
Social Networks (Facebook, Myspace, Student Village etc.					
News reader					
Usenet					

Other:					

18. How often do you use the internet services listed below? Please rank each in the order of the frequency of use.

Internet services	**Daily**	**2-4 times a week**	**Once a week**	**Every two weeks**	**Once a month**	**Never**
Electronic Email (email)						
World Wide Web (WWW)						
Telnet (eg. access to library catalogue remotely						
Social Networks (Facebook, Myspace, Student Village etc.)						
News reader						
Usenet						
Others						

19 For how long have you been using the internet?

19.1 Less than 6 months

19.2 7 to 12 months

19.3 13 to 18 months

19.4 19 to 24 months

19.5 Over 24 months

20. How many hours per week do you spend using the internet on average?

20.1 Less than 1 hour a week [ ]

20.2 2-4 hours a week [ ]

20.3 5-6 hours a week [ ]

20.4 7-9 hours a week [ ]

20.5 10-20 hours a week [ ]

20.6 Other (Specify…) [ ]

21. What email domains or email provider do you use (*Please tick all apply*)?

21.1 Outlook [ ]

21.2 Gmail [ ]

21.3Yahoo Mail [ ]

21.4 other, please specify_____
_____

22. Which of the following social networking sites do you use (Choose one or more)?

22.1 Facebook

22.2 Twitter [ ]

22.3 Myspace [ ]

22.4 WhatsApp [ ]

22.5 Other specify… [ ]

23. Do you have sufficient skills to browse through the internet?

23.1 Yes [ ]

23. 2 No [ ]

24. Did you receive any training on searching for information on the internet?

24.1 Yes [ ]

24.2 No [ ]

25. If Yes, where?.....

26. How do you rate your level of information literacy? (Information literacy is the ability to access, evaluate, and use information from a variety of information sources)

26.1 Very good [ ]

26.2 Good [ ]

26.3 Average [ ]

26.4 Poor [ ]

26.5 Very poor [ ]

27. What problems do you encounter when surfing the internet? (Choose one or more)

27.1 Viruses [ ]

27.2 Inaccurate information [ ]

27.3 Unreliability of sources [ ]

27.4 Slow access speed/slow network connections [ ]

27.5 Network signals [ ]

27.6 Difficulty in locating relevant information [ ]

27.7 Cost of internet expenses (air time or Data bundles) [ ]

27.8 Logging in [ ]

27.9 Other (Specify…) [ ]

28. What solutions can be employed to overcome these challenges?

……
……
……

29. Any comment, suggestion regarding the use of the internet?

……
……
……
……
….

Thank you for your time and participation!!!!

Appendix 2: Informed consent letter

Dear Participant,

My name is…BASHIMBE BAGANDA. (*204504155*). I am a masters candidate studying at the University of KwaZulu-Natal, Pietermaritzburg Campus. The title of my research is: The use of the Internet by first-year undergraduate students in the College of Agriculture, Engineering and Science at the University of KwaZulu-Natal, Pietermaritzburg campus. The aim of the study is to investigate the use of the Internet by first-year undergraduate students in the College of Agriculture, Engineering and Science at the University of KwaZulu-Natal, Pietermaritzburg Campus. I am interested in interviewing you so as to share your experiences and observations on the subject matter.

Please note that:

- The information that you provide will be used for scholarly research only.
- Your participation is entirely voluntary. You have a choice to participate, not to participate or stop participating in the research. You will not be penalized for taking such an action.
- Your views in this interview will be presented anonymously. Neither your name nor identity will be disclosed in any form in the study.
- The interview will take about (*how long?*).
- The record as well as other items associated with the interview will be held in a password-protected file accessible only to myself and my supervisors. After a period of 5 years, in line with the rules of the university, it will be disposed by shredding and burning.
- If you agree to participate please sign the declaration attached to this statement (a separate sheet will be provided for signatures)

I can be contacted at: School of Social Sciences, University of KwaZulu-Natal, Pietermaritzburg Campus.

Email: …204504155@stu.ukzn.ac.za……...;
Cell: ……..; ……..

My supervisor is SIYANDA KHESWA who is located at the School of Social Sciences, Pietermaritzburg Campus of the University of KwaZulu-Natal. Contact details: email: Kheswas1@ukzn.ac.za, Phone number: 033 260 6987.
My co supervisor is GBOLAHAN OLASINA who is located at the School of Social Sciences, Pietermaritzburg Campus of the University of KwaZulu-Natal. Contact details: email OlasinaG@ukzn.ac.za. Phone number: 0332605285.

The Humanities and Social Sciences Research Ethics Committee contact details are as follows: Ms Phumelele Ximba, University of KwaZulu-Natal, Research Office, Email: ximbap@ukzn.ac.za**,**Phone number +27312603587.

Thank you for your contribution to this research.

DECLARATION

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. I understand the intention of the research. I hereby agree to participate.

I consent / do not consent to have this interview recorded (if applicable)

SIGNATURE OF PARTICIPANT DATE

……