

ISSUES AFFECTING E-LEARNING PRACTICES AT NORTH-WEST UNIVERSITY, MAFIKENG CAMPUS

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Commerce in Computer Science and Information Systems at the Mafikeng Campus of
the North-West University

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PREFACE AND ACKNOWLEDGEMENTS

I would like to thank God for the strength he has showered me with, for all the blessings, for everything that he has done for me. Most importantly, I would like to send special thanks to my parents, my Grandmothers, my brothers and my sisters for all the support, for believing in me, for always being on my side during good and bad times and also for the opportunity that they gave me throughout this journey. I am also thankful to my colleagues and my friends for supporting me throughout the journey.

I am also thankful to the North-West University,-Mafikeng Campus for giving me the opportunity and also for allowing me to conduct research at this institution. This gratitude is also extended to all the students and academic staff members who participated during the questionnaire survey.

Abstract

The assumptions that electronic learning (e-learning) is recent initiative is a common misunderstanding. It can be argued that e-learning came into existence in 1950s and it has to be taken into consideration when we think through the recent exciting attentiveness and action in taking advantage of Internet technologies particularly in the environment of Open Distance Learning. The study is all about investigating on the issues affecting e-learning practices at the North-West University, - Mafikeng Campus. Quantitative research methodology was used in this study and data collected through questionnaires composed of closed-ended and secondary data from related articles, journals and books. The study defines the university's current technological tools (IT infrastructure) and determine issues that are affecting the use of e-learning at the NWU.

Keywords:

e-learning, e-learning tools, Information and communication Technology, virtual learning environment and Open Distance Learning.

Declaration

This is a declaration that every part of this research paper is my own work and I did not plagiarise any part of this research from any other source. I declare that I am aware that if it is found that I copied from another source, steps should be taken and I will suffer the consequences. The literature review is based on different author's ideas and they were referenced and acknowledged.

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Ethical Clearance Certificate



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Project Leader: Prof N Mavetera

Student: ST Ntutang

Ethics number:

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Institution Project Number Year Status
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Special conditions of the approval (if any): None

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Yours sincerely

Prof Amanda Lourens

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With the title

**ISSUES AFFECTING E-LEARNING PRACTICES AT NORTH-WEST
UNIVERSITY, MAFIKENG CAMPUS**



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CHAPTER 1 INTRODUCTION

1.1 Introduction

E-Learning is an idea resulting from the usage of information and communication technologies (ICTs) to review and improving traditional teaching and learning models and practices that have grown in the past years. This development was led by the increase in development of the information society and this had a serious impact on the global economic and socio-cultural development. Researchers in the field still debate that the emergence of e-Learning needs to be tested periodically because it is still in the early stages (Lee, Yoon & Lee 2009).

North-West University is based in South Africa with three campuses namely Potchefstroom, Mafikeng and Vanderbijl Park (Vaal Triangle Campus). The University as a whole is offering full-time and part-time studies in different faculties.

In this study e-learning is described, the problem is clearly stated, and the theory guiding the research is also outlined. The purpose of this study and objectives are also identified. Finally, issues affecting e-learning practices and utilisation are also identified.

1.2 Background and context

The term e-learning refers to the use of electronic media and Information and Communication Technology in the process of learning, the computer network or even a stand-alone computer by using the electronic applications and following certain processes to learn (Khan 2000). E-learning has been recognised as a transforming education where it provides opportunities to individuals to learn anytime at any place. E-learning provides access to resources and also the other way of communication and virtual communities (Khan 2005). With e-learning technology is used for a framework warehouse and managerial purposes (Conole 2004 and Morrison 2003). According to Conole (2004) there is a wealth of digital resources and it has also been identified that Information and Technology Communication tools can support the e-learning and teaching.

The e-learning environment comprises of teaching-learning arrangements in which the student (learner) and instructor (teacher) are normally separated geographically, and to focus on the special nature of course design, learning and instruction under such

circumstances. The most important characteristic of all e-learning is that communication between students (learners) and instructors (teachers) is done by sending of e-mails or writing documents and by electronic media. A second important characteristic of distance education arises from the first.

The methods of classes or lessons being broken down into its essential parts, some or all of these are organised away from the student, and communicated to the learner by the means of communications technology, with the probability of interaction between the student and an instructor so being done through communications technology (Liaw, Huang & Chen 2006).

The study investigated the issues that affect the e-learning practices at NWU (Mafikeng Campus), because the university was willing to go through introducing the Open Distance Learning. Open Distance Learning is a unique way of distance learning which is also called supported Open Learning. This means individuals can study on their own, either at home or any place by reading, watching or listening to material provided, undertaking activities and doing assignments with the regular support of the instructor/facilitator.

Open Distance Learning (ODL) is highly dependent on the e-learning. E-learning is studied thoroughly by looking to all the elements and the components of e-learning and identifying the NWU ODL requirements which fit in with the e-learning requirements.

Looking the characteristics of e-learning and from the definition it can readily be concluded that the internet, the web and the electronic media are the most important elements for the building an e-learning environment (Gunasekaran, McNeil & Shaul 2002).

1.3 Problem statement

It has been proven that many universities choose to implement a Virtual Learning Environment (VLE). The VLE is a learning platform or a student portal with links that help student to access different study materials from the instructor. It is maintained by the IT services or department. For example the university takes a decision that all programmes must make the use of VLE without considering whether it is appropriate, it is appreciated that staff empowerment needs to be done and whether it is affordable. It

has been identified in reality that organisations still have little understanding of the cost of the traditional teaching and learning methods (Conole 2004).

Researchers have been interested in the potential benefits and affordability, with the motivation to see the evidence-based practice by comparing the benefits of the new technologies over the old and existing teaching and learning methods, while at the end they are more concerned with how technology can be adopted and implemented to improve the student learning experience (Alaeddini & Kardan 2010). Most of the universities offer the online programmes and they have learning technology professionals within their supporting services. So the e-learning technology has been recognised as being very important because it provides a big role for the institutions' technical and educational aspect of using technology for teaching and learning purposes (Conole 2004).

As the topic highlights the study is all about researching or investigating the issues that affect or prevent e-learning practices in the NWU (Mafikeng Campus). The University is currently planning on introducing Open Distance Learning (ODL). ODL can only be successful through the use of e-learning tools. The problem is that the e-learning has been adopted and the post-implementation investigation on issues affecting the use of e-learning have not been conducted. So the study will determine and identify the university's current e-learning tools (IT tools) and identifying the issues that affect the use of e-learning at this Campus of the University.

The use of e-learning at the North West University will enable other individuals to study from different environments and also to enable the University to improve its performance.

1.4 Purpose of the study

The study reviews the general characteristics of e-learning environment, issues and some of the challenges faced by the institutions concerning the e-learning. The study identifies and explores whether the university is ready for e-learning by looking at the status of their IT infrastructure for e-learning whereby it should be identified whether the university can have a successful e-learning implementation.

The main purpose of this study is to identify all the components and elements of e-learning systems, to identify the principal stages for e-learning in the organisation or

different universities and at the end the study aim at identifying through the investigation this issues affecting the e-learning practices in the university.

1.5 Aims/objectives

The most essential objective of e-learning is making it possible to access information and knowledge needed with a lesser amount of money and without time and space limits. It has been determined that e-learning is important because technology has now had a huge impact on universities or academic institutions and also other organisations by bringing all the clashing of the organisational structure and individual functions across the organisation e.g. the administration matters, teaching and learning and the research whereby the organisations transformation is taken into consideration (Conole 2004).

The list below contains the objectives of this study:

- To identify and determine the University's current tools (IT tools).
- To identify e-learning components of the NWU.
- To identify the benefits of using e-learning.
- To identify issues affecting the use of e-learning at NWU-Mafikeng.
- To use Activity Theory in the consideration-/appraisal of the NWU's e-learning environment.

1.6 Theory guiding the research

Theories are defined as the explanations of a natural or social behaviour, the occurrence or phenomenon. Theories are there to provide a clear observation why certain events or certain things happen, by describing or predicting and it was highlighted that it is possible to predict the events or the behaviour using a set of predictions, without even explaining the reason why such events are taking place. Based on the examples of research theories are trying to clarify different types of collective behaviour by means of an established set of concepts, proposals, limited conditions, rules and principal judgment (Bhattacharjee 2012).

This study was driven by activity theory. Murphy and Rodriguez-Manzanares (2008) have defined Activity Theory (AT) as "the best kept secret in academia". It is a framework that offers the most integrated explanation of plans on the nature and the

development of human behaviour. For technological use AT permits individuals to move from computers as a focus of concern but by also understanding technology as part of the scope of human activities.

AT is usually used to analyse the organizational activities that involves the use of computers. In the field of education the AT assists on the understanding on how technological improvement can influence change. It was maintained that theory gives focus to the dialectical procedure by which awareness, learning, and development at the same time shape and they are shaped by technology (Murphy *et al.*, 2008; Robertson 2008).

The AT studies human activity (fully discussed in Chapter 2), outlined and agreed to be an activity in a specific community location, such as the working or learning environment. The main unit in AT is the activity system which is well-defined as the object oriented, collective and culturally mediated human activity. The model structure of activity system is composed of the interacting components of subject, object tools, division of labour, community, rules and outcomes (Murphy *et al.*, 2008; Robertson 2008).

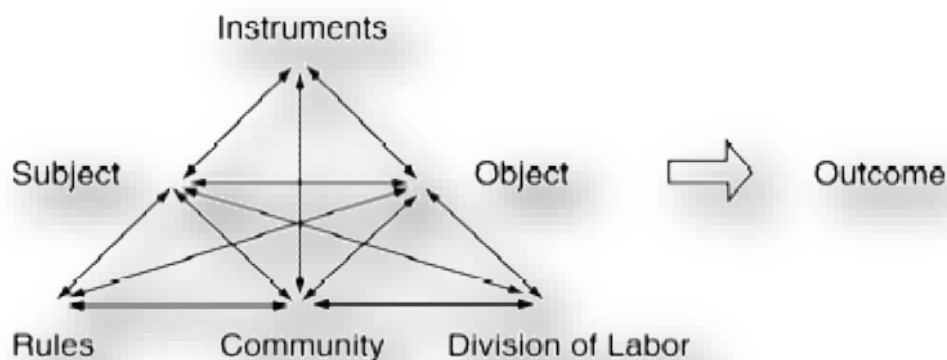


Figure 1.1 Components of Activity System (Murphy *et al.*, 2008; Benson *et al.*, 2008)

- *The Subject* of an activity system is the individual or group whose perspective is accepted.
- *The Object* talks about the raw material at which the activity is directed and which is shaped or changed into results with the help of physical and symbolic, external and internal tool. It precedes and motivates activity.
- *Tools* assist the object of activity. They can be external, material (e.g., a textbook, a computer) or internal, symbolic (e.g., language). Tools share in the

change of the object into an outcome, which can be preferred or unexpected. They can allow or force activity.

- *Community* talks about the members of an activity system, who share the same object. e.g. students and staff members.
- *Division of labour* consists of the separation of tasks and roles among members of the community and the separations of control and status. e.g. lecturer, programme manager, and rector.
- *Rules* are clear and understandable standards that order activities and interactions within the system.

1.7 Literature survey

E-learning is defined for our purposes at this point as the use of any of the new technologies or applications in the service of learning or learner support. It is essential for the reason that e-learning can make a major difference: to how students can learn, how fast they can master an area of expertise, how easy it is to study; and, similarly essential, how considerably they like learning (Laurillard 2004). Such a difficult set of technologies will make different types of impact on the understanding and the experience of learning (Laurillard 2004):

In cultural terms – students are more comfortable with e-learning methods, as they are comparable to the other forms of information search and communications methods they practise in other parts of their lives

Being knowledgeable and participating in and – collaborating technology provides a new-fangled type of engagement with ideas through both material and social interactivity over the internet.

The community is seen within the context of - the reduction in social difference afforded by online networking fits with the idea that students should take greater responsibility for their own learning.

In practical terms – e-learning provides the students with the ability to accomplish quality educational outcomes at scale, and share resources across the organisation networks; its greater flexibility of provision in time and place makes it good for widening participation.

At present, the technology-based learning uses computers and different web sites, cybernetic university, cybernetic class that extend global Internet network development making it a possible way for the development of new training techniques. In these circumstances because of needs to extend skills and knowledge-based information technology the traditional methods of educational system is not efficiency (Minou, 2010).

The world and its government have begun to realise that distance education is a vehicle for accomplishing national development goals by improving the qualifications of the workers to function in a new economic climate. It provides a clear access and fairness for individuals who previously had been left out of education beyond school. This importance was mutual and shared by international and national development agencies which they also see e-learning as approach to meet educational requirements in developing countries (Calvert 2005).

Most universities realise that distance education and e-learning as a means of enrolling more students, increasing their student base, producing fee income, offering courses in place markets and meeting their regional obligations cost efficiently. With decreasing reliance on public funding, universities have entered a world of competition and are more dependent on their own revenue-generating activities (Calvert 2005).

Looking to the todays developed countries using e-mail and the World Wide Web for teaching and learning is now seen as a necessity because it enables the universities and learning centres to offer distance learning without being restricted by time and space. No e-learning programme is possible without the interactivity (IT tools) provided by the internet to both the instructor and the student (Coleman 2011).

Minou (2010) has demonstrated that regardless of optimistic characteristics of e-learning some have confidence in the new training methods based on computer and Internet generate the difficulties for training and even for social or shared life of people. Extreme requirements on technology and physical difficulties of a longer time functioning with computers and other flaw that result in low movement is between the disadvantages that increases criticisms e-learning in all of the nations. Certain difficulties and challenges in accomplishment of e-Learning were described as seen below:

In the first place, there is a - shortage of applicable telecommunications infrastructure: lacking of virtually communications infrastructure, the smaller Internet networks and minor e-learning (Minou 2010).

In the Second place, there is the issue of – the presence of instruction reminders with long text: the education system course is based on text type and retained long after we need for e-learning small contents with advanced understanding of topic. Therefore the learning system in these two cases is not friendly with towards each other and generates the difficulties for both instructors and students. While teacher–student communication is an important accomplishment factor in e-learning, it gives the impression that little effort has been completed on the instructors (Minou 2010).

In the Third place, the system does- side-step students from public lifestyle: Innovative training techniques, even though facilities make more available resources designed for students to be without the crowd, but for the reason of avoiding shared life that also generates a number of problems. Once a student starts to use a computer for communication means that later the social association is not completely established (Minou 2010).

1.8 Research questions

Research projects usually start with the problem or issue and is expressed as a question. Naturally, these questions investigate the ontological, phenomenological, epistemological and normative nature of the problem or issue that is being investigated (Roode 1993).

Table 1.1 Generic research questions

GENERIC RESEARCH QUESTIONS		
	What is?	
How does? -- >	Research problem: Issues affecting E-learning practices at the North-West University, - Mafikeng Campus.	<-- Why is?

	How should?	
--	--------------------	--

The table above does not provide any structural relationship between the generic research questions. Definitely the questions are not linearly related, and the individuality of each problem situation will prescribe which questions would be applicable, and the order in which they should be posed (Roode 1993).

Based on the research objectives that are listed above, the following research questions were raised in order to address the above mentioned objectives.

- a) Do the universities have enough technological tools (resources) to offer e-learning?
- b) Do the university have the environment where they offer e-learning?
- c) Do the university's staff members have enough computer competency to use e-learning platforms?
- d) What are the benefits of e-learning as a learning method?
- e) Are there issues that affect the use of e-learning at the university?

1.9 Importance of the study

The new technology differs a lot and they do have their complexities and they offer different ways on how they can be used, it has also been identified that as technology is changing rapidly there is a little understanding about the affordance of different technology tools (Conole 2004). E-learning is also important for academic and support staff factors whereby they use technology more often for teaching, administration and also for conducting their research.

According to Conole it is important to have e-learning strategies for the senior management of institutions to be offered help in order to understand more on e-learning especially to inform them on strategic decisions they take in-terms of how they think about technology impact on the day-to-day running of the organisations, therefore if the senior management does not have more information and knowledge about e-learning they will make rush decisions based on the little evidence that they have (Conole 2004 and Curran 2004).

1.10 Research methodology

There are three approaches to research the qualitative, quantitative and the mixed methods.

A quantitative approach is the one in which the researcher primarily uses post positivist entitlements for development of knowledge (i.e., use of measurement and observation, and the test of theories), engage strategies of investigation such as experiments and surveys, and collects data on predetermined instruments that yield statistical data.

A qualitative approach is the one in which the investigator often makes knowledge claims based primarily on constructivist perspectives (i.e., the multiple meanings of individual experiences, meanings socially and historically constructed, With an intent of developing a theory or pattern) or advocacy/participatory perspectives (i.e., political, issue-oriented, collaborative. or change oriented) or both. It also uses strategies of inquiry such as narratives, phenomenology's, ethnographies, grounded theory studies, or case studies. The researcher collects open-ended emerging data with the primary intent of developing themes from the data (Creswell 2009).

A *mixed methods* approach is the one in which the researcher would be likely to base knowledge claims on reasonable surroundings (e.g., consequence-oriented, problem centred, and pluralistic). It engages strategies of investigation that include collecting data either simultaneously or sequentially to best understand research problems (Creswell 2009).

A quantitative approach is used to explore whether the university's current e-learning technology and system can be able to meet the terms of Open Distance Learning through the use of questionnaires with closed questions. The research also investigates the historical background of e-learning in different universities that have implemented e-learning. It is a descriptive study which consist of the goals, benefits, challenges and the necessity of e-learning in the North-West University. The main purpose is to identify and determine the necessities of e-learning as a new method of enhancing the students learning progress in the North West University and to determine the factors or issues that are affecting the use of e-learning practices in the NWU,- Mafikeng Campus.

1.11 Research design

Research design is described as a blueprint or outline for conducting the study in such a way that maximum control will be exercised over factors that could interfere with the validity of the research results. The research design is the researchers overall plan for obtaining answers to research question. Burns and Grove (2001:223) state that designing a study helps researchers to plan and implement the study in a way that it will help them obtaining the intended results and this increasing the chances of obtaining information that could be associated with real situations.

1.11.1 Research paradigm

There are set of paradigms that are also used to guide the researcher. According to Shretha (2009) one can define paradigms as shared understandings of reality. A set of assumptions, concepts, values, and practice that constitutes a way of viewing reality for the community that shares them especially in an academic discipline.

A research paradigm sets the framework for an investigator's study. There are several paradigms used to guide research, and authors integrate various paradigmatic schemas to conceptualize and order their research. By research paradigm we mean a set of theories, standards, and assumptions that a community of researchers are mutually looking at concerning the nature and how to conduct research (Shretha 2009). The theories include, but are not limited to:

- *Ontological beliefs* are referred to as the nominalist-realist debate. The nominalist argues that there is no invariant structure outside the individual whereby the individual creates structures by naming, labelling or defining concepts. These structures are recreated as individual experiences and try to make sense out of the unstructured situation in front of him/her. The realist sees the real world as an independent of individual consciousness.
- *Epistemological beliefs* are much more associated with the ontological issues which are the assumptions about the grounds of knowledge- about how one might begin to understand the world and communicate this as knowledge to fellow human beings and those assumptions they entail some ideas e.g. about what forms of knowledge can be obtained and how one can determine what is regarded as true and what is to be regarded as false (Roode 1993).

Epistemology is also a theory of knowledge embedded in the theoretical perspective - it informs the research e.g. objectivism, subjectivism (Creswell 2009).

- *Axiological beliefs* it mainly used in the philosophical studies, what and why do you value something. So this is also used for ethics and aesthetics, which they are philosophical fields that are critical depending on the notions value or the transformation of the field and they were identified to be similar to the value theory.
- *Aesthetic beliefs* are sometimes called judgement of feeling and sensitivity, this is a branch or a viewpoint dealing with the nature of art, beauty and the taste with the formation and appreciation of beauty. It is more defined as a study of sensory or sensory-emotional values.
- *Methodological beliefs* are often associated with the strategy or the plan with actions that integrate the methods to the specific outcomes of the study, so this is sometimes regarded as the rules that administer the choice of our methods e.g. survey research, experimental research (Creswell 2009).

The interpretive Research paradigm will be used as a guide for the research. Interpretive researchers start out with the statements that access to reality is only over and done with social constructions such as language, realisation and shared meanings. The philosophical base of interpretive research means that it focuses on studying human experience in which considerations of objective reality are not taken into account (Myers 2004).

1.11.2 Research strategy

The research strategy discusses to the general methodologies and objectives of the study. These are the types of research strategies: descriptive strategy, non-experimental strategy, correlational strategy, experimental strategy, and quasi-experimental strategy (Bhattacharjee 2012).

Descriptive strategy- the objective is to define the state of affairs at the time of the study and measures variables as they happen logically e.g. 19% of qualified electorates contributed in the election.

Non-experimental strategy- responses to questions about the association between two variables by representing a difference between two groups or two treatments conditions e.g. oral marks of six-year old boy and six-year old girls.

Correlational strategy- measures two variables, usually as they exist logically the objective of this plan is to define an association between the two variables without trying to explain the source of the relationship.

Experimental strategy- the investigator influences one variable (called an independent variable) while witnessing or measuring a second variable (the dependent variable) - this is the 'true' experiment because independent variables are influenced by the researcher (e.g. room temperature) the objective of experimental strategy is to regulate whether a causal relationship exists between two variables.

Quasi-experimental strategy- uses a non-manipulated variable to describe groups or situations (e.g. time or age) or pre and post treatments controls other variables as much as probable and the objective is to attain confirmation in support of a cause-and-effect relationship however, a quasi-experimental approach cannot unmistakably establish a causal link.

For this study the descriptive strategy was used because the study consists of the goals, benefits, challenges and the necessity of e-learning at North-West University,- Mafikeng Campus.

1.11.3 Sampling methods

The study area in this study refers to the place where the data is collected. Data will be collected from the NWU (Mafikeng Campus). The study population involves targeting the university campus academic staff members, and students.

Sampling strategy i.e. plan and scope can be determined by the research paradigm. Sampling, according to Bhattacharjee (2012) means taking any share of the population as representative of the target population. A population is a set of all cases of interest. The sample technique is only focusing on the NWU academic staff members, students from different levels and different faculties. The estimated number of the NWU academic staff members Mafikeng Campus 200-300, (Krejcie & Morgan 1970).

The simple sampling strategy for this study is a simple random sample which is a subdivision of individuals (a sample) selected from a greater set (a population). Each individual is picked randomly and completely by chance, such that each individual has the same probability of being chosen at any stage during the sampling process, and each subset of individuals has the same probability of being chosen for the sample as any other subset of individuals.

The sample size of students for data collection was expected to be 300-400 students. The random sampling method is applied whereby collection of data from the students and the random sampling was also going to be used for collection of data from the academic staff members.

1.11.4 Data collection methods

The questionnaires were used as data collection method and secondary data analysis was used to obtain data appropriate to the objectives and the research questions. Primary data is new information collected in special detail for the study at hand which is the information obtained through the questionnaires, and secondary data is information obtained from books and web articles.

1.11.5 Data analysis

Analysis of data is a practice used for examining, converting, and demonstrating data with the objective of emphasising suitable information, suggesting conclusions, and supporting decision making. Descriptive statistics will be used to analyse the data. The statistical package for the Social Sciences (SPSS version 22) was used to interpret the data.

1.12 Chapter division

Chapter 1: Introduction

This chapter gives an overview of the research problem, aims and objectives, theoretical background, methodology and research design and research questions and aims.

Chapter 2: Literature study

This chapter it explains e-learning, e-learning environment, virtual learning environment, the importance of e-learning and also the critical success factors for implementing e-learning. Theory that is guiding the research is also discussed and the technology acceptance model which is regarded as the framework that is used for expansion or improvement of the technological system that is currently used in an organisation.

Chapter 3: Research methodology and design

This chapter explains the research methodology that will be used in this study in order to give answers to the raised question. It further discusses and looks to the research instrument, the population and sample, sampling method, data collection instrument, data analysis and ethical considerations.

Chapter 4: Data analysis and results interpretation

This chapter discusses the research findings and provides analyses and interpretations of data.

Chapter 5: Recommendations and conclusion

This chapter discusses the answers to the research questions that were asked, it provides conclusions and makes recommendations based on the research findings.

1.13 Chapter summary

This chapter gives a description of the North-West University and its different types of modes on how they are currently offering their studies or programmes. It also gives a description and background on defining e-learning, it contains the following, viz the: problem statement arising from the research topic, the purpose of the research, the objectives of the research, brief literature survey, the main research questions that will be guiding the research objectives, the importance of this study, the research design and methodology that will be adopted during the process of research, ethical requirements, the representative sampling, data analysis which describe the statistical software that will be used for data analysis, the limitations for the study. The next chapter is the literature study.

CHAPTER 2: LITERATURE STUDY

2.1 Introduction

Institutions and other organisations are under a lot of pressure from their competitors, regulators and the community groups to adopt appropriate business and organisations practices. E-learning has drawn an important degree of attention to the educational institutions, educational system & software developers and business organisations because of the educational benefits and the costs benefits (Lee, Yoon & Lee 2009). The study is based on the North-West University (Mafikeng Campus) as the organisation. The study intends to investigate the issues affecting the university campus to use of e-learning.

The university is currently offering courses on a full-time basis, but through the use of e-learning tools the University can offer courses online and this can also offer opportunities to people who are not able to further their studies on full time basis. With e-learning they would be able to access all the material that is related to the course in electronic copies.

As the topic highlights, the study is all about researching or investigating the issues that affect or prevent e-learning practices in the NWU (Mafikeng Campus). The University is currently planning on introducing the Open Distance Learning (ODL). ODL can only be successful through the use of e-learning tools. The problem is that the e-learning has been adopted and the post-implementation investigation on issues affecting the use of e-learning has not been conducted. So the study will determine and identify the university's current e-learning tool (IT tools) and identify the issues that affect the use of e-learning at the university.

The use of e-learning at the North West University will enable other individuals to study from different environments and also to enable the university to improve its performance.

These keywords are derived from the problem statement: e-learning, e-learning tools, Information and communication Technology, Virtual Learning environment and Open Distance Learning. The search engine was the Google Scholar.

2.2 Overview of e-learning

2.2.1 Definition of E-learning

E-learning is the use of Internet in education even though it does not describe the other most important essential features of e-learning. The methods on how programmes are being offered is very important and e-learning is referring to as online learning (Ellaway & Masters 2008). The term e-learning has been used in education since from the middle of 1990s. There is no one definition that is clearly identified to be an agreed definition (Lee *et al.*, 2009). Some researchers' outlook e-learning as the enhanced delivery mode of teaching and study material through the use of electronic media such as the internet, intranets, extranets, satellite transmissions, video or audio recordings (Lee *et al.*, 2009). Examples of definitions include:

Guidelines provided through the electronic media including the internet, intranet, extranet, satellite broadcasts, audio/video, interactive TV, and CD-ROM (Kahiigi, Ekenberg, Hansson, Tusubira & Danielson 2008);

Education in this mode is enabled by internet and www technologies, provided through end-user computing that provides connection between people and information and generates chances for societal learning (Kahiigi *et al.*, 2008);

Distance education is the use of internet and other information technologies (Kahiigi *et al.*, 2008).

E-learning builds up progressively more work as the most essential infrastructural characteristics of universities that allow instructors to deliver the course content to students with diverse representation or illustrations of knowledge and to improve communication between instructors and students and amongst students themselves (Mahdizadeh, Biemans & Mulder 2007).

Several universities are offering new and advanced online courses enlarging their educational environments without the limitations of time and space by ensuring that there is a support for their traditional class sessions with the web-based online educational resources and tools (Lee *et al.*, 2009).

2.2.2 Importance of e-learning

Today IT is regarded as a solution to help universities save costs and deal with quality problems. In terms of teaching and learning Information Technology is giving the Universities an opportunity to transform how the university students can improve their learning by making use of more present, well-organized and active alternative such as e-learning. These e-learning ideas and perceptions have been in existence for years now and it has also been seen as one of the most important developments in the Information system industry (Selim 2007). E-learning can be looked at as the delivery of course content through the use of electronic media, such as internet, intranet, extranet, satellite broadcast, audio or video recordings, CD-ROM and interactive TV (Selim 2007; Phipps & Kelly 2006).

Students who are making use of Information and Communication Technologies (ICTs) are using e-learning. This collaborative technology maintains various types of capabilities (Laurillard 2004 & Al-Harbi 2011):

- Gives students the right to use electronic versions of study materials which are difficult to get locally
- Internet access allows students to search for information and to receive transactional services
- Shared problem-solving or adaptive tutorials are available
- Shared educational games are available
- Gives student an opportunity to control inaccessible access to physical devices
- Access to organised information and directions to the other support learning materials representations of scientific systems can be attained
- Provides a communication platform for students to interaction with other students and instructors
- Provides students with tools for being creative and design
- Provides computer-generated environments for improvement and management of their studies
- Electronic devices also support disabled students.

For being able to put this in use there must be a learning application that should be brokered into Higher Education. Each one is made up of different kinds of interactions; there should be a connection to internet for access to services for example in order to

access news, blog, online auctions, self-testing websites, and tutorials. This would also be achieved by means of combining applications (Al-Harbi 2011). A learning environment can be embedded with a webcam for astronomy students or a computer - aided device can be installed in a role-play environment for students (Laurillard 2004).

2.2.3 Virtual Learning Environment (VLE)

E-learning systems or VLE are quickly becoming part of teaching and learning processes. The VLE offers a number of chances to business schools, together with a potential to influence a business school trademark across different geographical borders and enhancements of face-to-face teaching (Van Raaij & Schepers 2008). VLE is a web-based platform that allows students to access different material such as the course content, instructor's assistance, discussion groups and other learning resources at any time and place (Cross, O'Driscoll & Trondsen 2007).

The VLE offers a number of opportunities to educational institutions, also the opportunity to control and manage the whole University if it is separated and located at different geographical areas (e.g. campuses) and also to improve face-to-face teaching. It also improves communication between the lecturer and the students (Van Raaij & Schepers 2008).

The factor that leads to a successful implementation of a virtual learning environment is the acceptance of the system by the students. The success of VLE implementation is recognised by the easiness of use or its simplicity and usefulness of the system (Cross, *et al.*, 2007). These factors they describe as the acceptance and the use of new technologies. Technology acceptance is not depending only on the e-learning point out that there is an ease of use and observed usefulness, but it is also influenced by the individual expectations and external factors such as system characteristics, the support available and also the social context about the technology (Van Raaij & Schepers, 2008).

2.2.4 E-learning environment

E-Learning makes use of telecommunication technology to provide course material for education and training. This is achieved through the support of information and communication technology development, e-Learning is evolving and rapidly growing as a standard method of modern education. The unlimited benefits of e-Learning consist of

improving the communication between students and instructors, and students among themselves despite of time and space (Sun, Tsai, Finger, Chen & Yeh 2006).E-learning's features accomplish the necessities for education in a present civilisation and this has generated a higher demand for e-Learning from companies and institutions of higher education (Sun, *et al.*, 2006).

E-learning environments more and more function as an essential groundwork feature of universities that permit instructors to deliver scholars with dissimilar illustrations of understanding and to improve communication among instructors and students amongst themselves (Mahdizadeh, *et al.*, 2008).

The e-learning environment and classroom environment has a core major difference between the two – and this is the way in which the instructions are being delivered. This is regarded as the most essential difference. In a traditional learning environment the instructor has the powers and control over the learning platform example- familiarising, rearranging, and making changes when it is necessary (Hamid 2002). There are a number of separating features that influence the teaching and learning situations, including the instructors' ability, the instructors' personality, the skills, the adaptability to the learning environment and also by establishing the supporting study material.

For e-learning situations the instructor and the student are separated but linked by the Internet. The instructors' ability to familiarise, rearrange or to make changes are no longer offered. All this creates the content block to be a most essential block. Provided that technology is now equivalent, course content of an operational e-learning inventiveness is the only factor that can tell apart and distinct from the unproductive e-learning inventiveness (Hamid 2002).

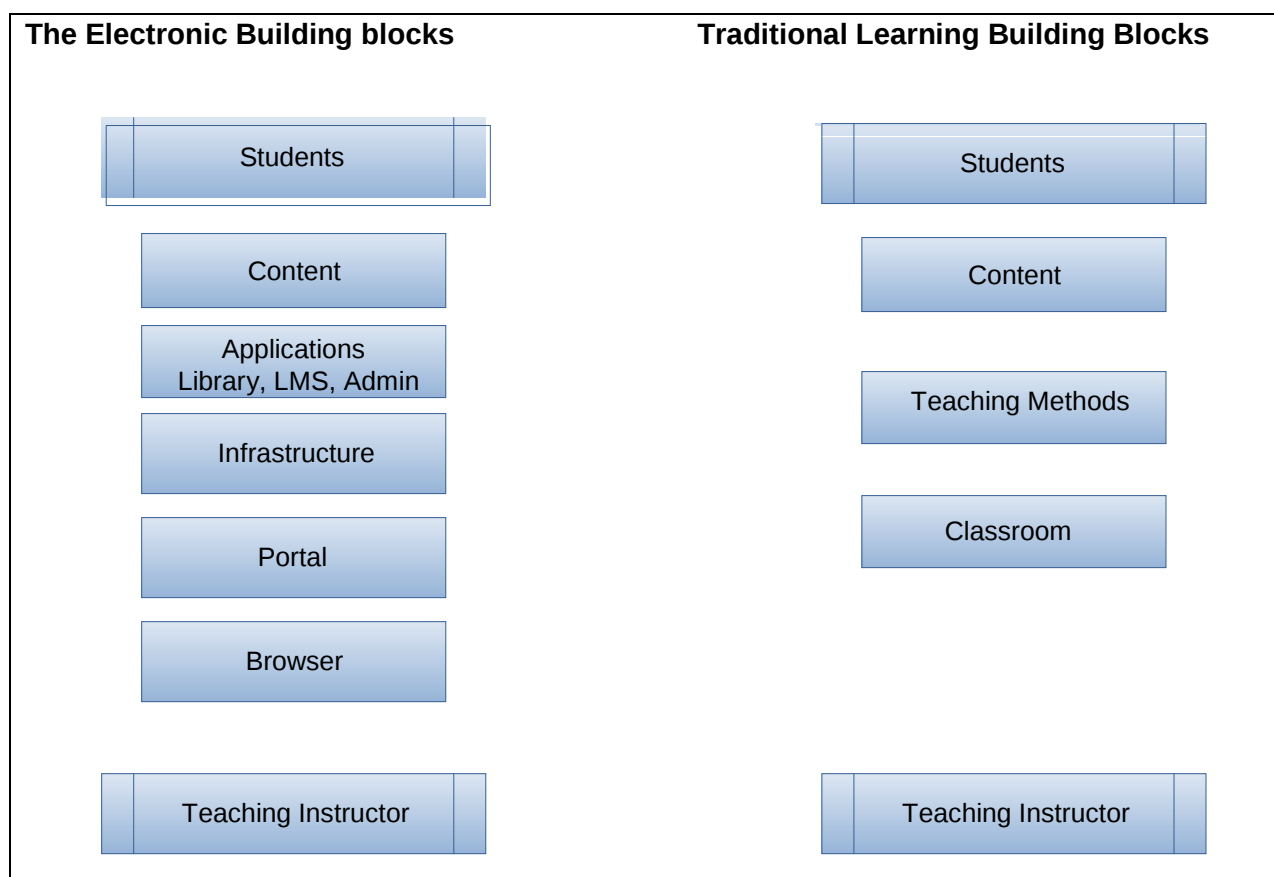


Figure 2.1: The Learning Building Blocks (Hamid 2002)

2.3 E-learning tools / e-learning technologies

There are number of technological tools that are used and that determine the way in which learning is going to take place regardless of the environment in which they are adopted (Kahiigi, *et al.*, 2008). The technological tools comprise TV, CD-ROM, LMS, CMS and virtual worlds as well as collaborative technologies (Phipps & Kelly 2006).

Learning Management Systems (LMS) - these are all information systems and procedures that contribute indirectly and directly to how students learn and how it supports the learning content in text or any multimedia files. Initially they were established to support online learning services to instructors, students and administrators (Mayes & De Freitas 2004). EfunDi that is used at the NWU is on one of the examples of LMS.

Content Management Systems (CMS)—they are designed in order to manage the collaboration of creative content, organisation of content, controlling and managing the distribution of documents in a centred environment. Teaching content management systems in most cases are web-based systems that integrate the management and

administration tasks of LMS and CMS to create, permits, distribute and taking control of learning content (Kahiigi, *et al.*, 2008).

Audio-visual aid societies and computer-generated worlds- have established e-learning surroundings from eliminating only text based to one that combines the multimedia contents (Kahiigi, *et al.*, 2008). According to Omwenga and Rodrigues (2009) this is regarded as the most accessible way of distributing facts, announcement of education and training providing set of invented technologies that contribute to the traditional learning methods and also to traditional computer based training.

The Audio-visual aid societies and computer-generated environments on the other hand they impersonate the real world by becoming more popular and very encouraging when it comes to simplifying students learning. They offer an enriched educational knowledge that is interesting, useful, and pleasurable (Kahiigi, *et al.*, 2008). They also offer students learning area that motivate students' to have higher levels of thinking and knowledge to develop and to generate knowledge the social assembly (Cross, *et al.*, 2007). Additionally, they offer new learning opportunities through which the tasks and circumstances are being replicated and assessed (Hansson 2006).

CD-ROM - the media came into use in the early years of 1990s to support learning content in text-based and multimedia layouts. They were used to provide educational study materials to the students on distance programmes. The use of CD-ROMs motivates self-determining learning where students learn by performing special training programs on the computer regardless of whether there is a connection to internet. CD-ROMs are usually used for Computer basic training programmes for loading the tutorials about the invented software or application and tutorials for learning other languages (Kahiigi *et al.*, 2008).

Game authoring technologies - these are the type of tools used with the aim of improving and simplifying the learning process of the students though the incorporated model and communications. These online games vary from text-based games to games with combination of graphics and virtual worlds which allows more than one participant at a time (Graven & MacKinnon 2005). This also gives students an opportunity to form a social community called edutainment where they can be able to share and create knowledge (Kahiigi *et al.*, 2008).

2.3.1 Different learning approaches

Learning approaches are regarded as ways of delivering instructions to students on how students get access to those instructions that are used by the instructors (Kahiigi, *et al.*, 2008). Learning approaches that are discussed in the literature, comprises of traditional learning, electronic learning, blended learning, mobile learning and personalised learning (MacKeogh & Fox 2008).

Traditional learning - is referring to face-to-face teaching sessions where the instructor is giving the instructions to the student at a given time and place. This type of approach the instructor is positioned, the instructor concentrates much more on giving learning information to the students. Students' assessment is based on the study material that is given by the instructor (Kahiigi, *et al.*, 2008; MacKeogh & Fox 2008).

Electronic learning (e-learning) - it refers to the use of Information and Communication Technologies to improve and support the learning process from different geographical areas. as it is explained above is regarded as the gathering and making use of information that is being disseminate and facilitated through the use of electronic channels such as internet, intranet, extranet, CD-ROM, audio records, video records, DVD and Television (Kahiigi, *et al.*, 2008; MacKeogh & Fox 2008).

E-learning can be of other different approaches which are computer based, asynchronous, synchronous learning. This is an area assisting in a way that the students have full control and the ownership of their learning. Due to unavailable e-learning technologies and expertise a blended-approach is usually implemented (Kahiigi, *et al.*, 2008; MacKeogh & Fox 2008).

Blended learning - this type of learning gives institutions an opportunity to combine different learning methods which include face-to-face classroom session, live e-learning and self-paced learning. This approach integrates different tools for imitating and increasing students learning possibility. It was suggested that it should be the establishment of a learning process with different methods, whereby the student can be able to acquire knowledge, enhance and increase their learning opportunities. This has led to adoption of this learning approach to different higher educational institution of learning (Kahiigi, *et al.*, 2008; MacKeogh & Fox 2008).

Mobile learning - through this approach the delivery and learning content is offered by the use of portable technology devices such as mobile phones, Personal Digital Assistance (PDA), or iPods. The higher usage of mobile technologies has also created opportunities and improvements in the teaching and learning tasks in higher education (Armatas, 2005). Today mobile learning offer huge benefits that facilitates and improve e-learning. It should be taken into consideration that mobile learning approaches are still in their beginning and they are not yet fully implemented as a learning method (Kahiigi, et al., 2008; MacKeogh & Fox 2008).

Personalised learning - the approach facilitates and accommodates individualised learning. It offers each student a path that will meets the students' needs and area of speciality in a creative and acceptable manner. One of the features of personalised learning approach is that it can be able to give orders about student learning (Graven & Mackinnon 2005; MacKeogh & Fox 2008).

2.3.2 Information and Communication Technology

The putting into practice of information and communication technology (ICT) as progressive elastic equipment with its exclusive features is key new investments. On the other hand it must be observed that “regardless of their prospective, telematics presentations are not yet frequently utilised as instructional implements (e.g., Netherlands, has been recognised as the world’s maximum attentiveness of Internet operators and private and administrative computer usage, a general study has showed that more or less the entire university students use e-mail and the World Wide Web for personal activities, but overall it is used for educational programmes)”.

Even though usage of ICT in distance learning has been acknowledged for students not staying at the university, Mahdizadeh, et al. (2007) indicated that in higher education there is also a development by utilising the benefits of e-learning to increase the education performance of students who resides in the university students residents. The consequence of this tendency, is that most of the higher educational institutions across the world are growing their investment opportunities into ICT (Mahdizadeh, et al., 2007).

However, having all the tools and connectivity does not give an assurance to an effective or productive ICT practice. Instructional technology demonstrates that the utilisation of Internet in teaching and learning offer a potential motivation to students and

instructors, student contribution and collaboration increases in the classroom, and students become more responsible for their learning and they are also given an active role in their learning, given an improved motivation, and improved independence in their educational development.

It has also been determined that Higher Educational institutions do not pay an adequate amount of consideration to the questions of how, what, and why ICT have to be adopted. According to Mahdizadeh, *et al.* (2007) ICT adoption has over and over again been applied or been put in use without a principle and several higher educational institutions they don't try to use any resources in order to understand changes that can be brought by ICT and computers in their teaching and learning system. Most of these universities are just following the innovative development, forecasting much more on the accomplishment and cost effectiveness of such creativities.

A university that wants to promote ICT use must take the following into consideration, viz they should fully understand the instructors and the students attitude towards ICT, towards how is being used and why is being used. Instructors' attitudes have been considered as more important because it can be used as the main forecaster of the practice of newly-invented technologies in the teaching and learning environment (Sun, P.-C *et al* 2006).

Research has been done on the use of ICT in Education in order to find out on which factors that influence the possibility of adopting or putting in practice an achievement for the new enhanced and developed technologies in the teaching and learning environment. A number of these researchers presented a model for the use of ICT in Education (Sun, P.-C *et al.*, 2006).

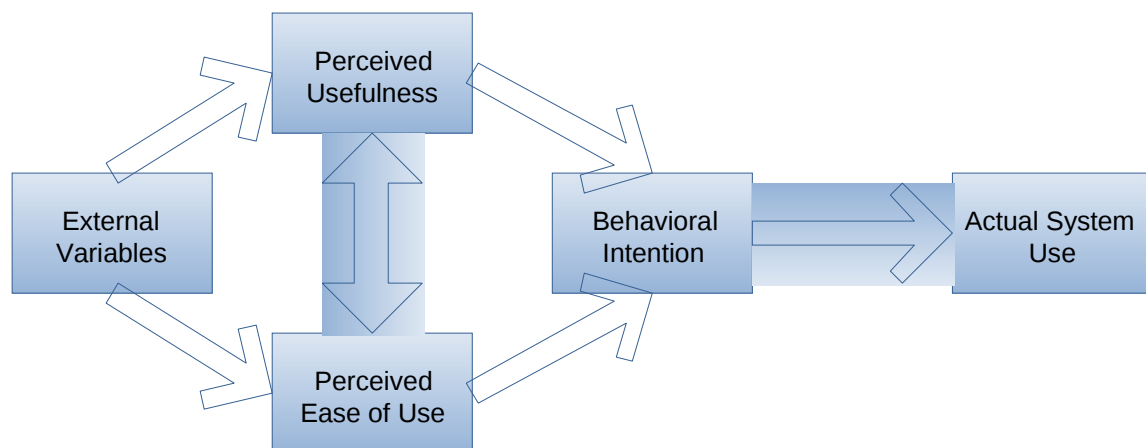


Figure 2.2: Technology Acceptance Model (TAM) (Mahdizadeh *et al.*, 2007)

The Technology Acceptance Model (TAM) by Davis (1993) was suggested and was used as presenting a foundation for the researches that were conducted. TAM defines that individuals behavioural objectives regarding the practice of a particular application can be recognised by supposed effectiveness (the certainty that the use of an application will rise and improve individuals performance) and supposed ease of use (the certainty that the individual usage of the application is of unrestricted effort) (Selim, 2006 & IRMA 2006).

2.3.3 E-learning Technology Acceptance Model (TAM)

The TAM model was first introduced in order to describe different behaviours of people who use computers. The model has been receiving widespread support because it has been mostly referenced as the motivated model for fully understanding the acceptance of information technology.

The Theory Reason Action (TRA) is regarded as the theoretical basis of Technology Acceptance Model. The TRA model is basically concerned with determining a mindful intention behaviours. According to this theory to the individuals behaviour can be determined by his or her behavioural Intention for a specific for a specific action and as the intended behaviour of the person can be determined by his or her attitude and subjective norm (Lee et al. 2009). The ease of use is described to be the person's belief that the use of a particular system that would be free of efforts, whereas the usefulness of the system is where the user believes that the particular system would have impacted on the increasing and improving of their job performance. So this believes they really have impact on how users see information systems and they have influence on how they think and behave towards Information systems.

For the fact that e-learning is used as a tool to improve education and training performance of the users means that they do not accept it as a learning tool, its value to education will never be recognised. The TAM model only built the ease of use of the system and the usefulness of the system, and these two aspects are used to evaluate the acceptance of course website as an operating e-learning tool (Selim 2006). The results have proved that the user-friendliness of the website as effective and efficient learning technology (Ozkan & Koseler 2009).

Through the investigation on the effect of system features one-learning systems use, three characteristics were selected namely: System functionality, System interactivity and the response time (Lee et al., 2009; Ozkan & Koseler 2009). System functionality - the system should be flexible enough for students to be able to access instructors' material through different types of media such as text, video and audio.

System interaction refers to the system being able to facilitate the student interaction among them and also between the student and faculty administrators and lastly the interaction between the student and the instructors (Ozkan & Koseler 2009). The most commonly used tools for interaction are e-mail, bulletin board and chat rooms. Response time is the amount of time within which the system can respond to student request or inquiries, this response time is expected to be fast, consistent and reliable. These three characteristics are identified to have an effect on the usefulness and the intention to use the e-learning systems (Ozkan & Koseler 2009).

2.3.4 Critical success factors (CSF) of e-learning

These words were initially used in the literature during the years of 1980s when there was a concern about why some of the organisations were failing and some were more successful. Research was conducted in order to find out the components that can lead to the success of an organisation (Selim 2007). According to Freund (1988) the critical success factors are described to be activities or actions that must be executed by the company to be successful and it was identified that the CSFs should be measureable and, should also be counted and be controlled.

Distance learning was studied from the macro viewpoint and proposed some CSFs that can help faculties and universities in learning development (Papp 2000). The critical success factors include the intellectual property, relevancy of the course for e-learning, content for e-learning course, maintenance of e-learning course, the e-learning setting and a way of evaluating the success of the course offered on the e-learning systems. According to Papp (2000) the CSFs should be studied individually and also as a combination in order to determine the factors that influence and has impact on the success of e-learning.

Benigno and Trentin (2000) proposed a framework that can be used to assess the courses offered through e-learning systems by concentrating on two sides: firstly is to

assess the learning and secondly to assess the performance of the students. They were taking into consideration factors such as how the students interact with each other, the operative support, course material, learning environment and information technology.

2.3.5 Individual behaviours

Students, instructors and other supporting members to the teaching and learning programs with the element of distance learning are aware that the use of computers is necessary and cannot be avoided (Liaw, Huang & Chen 2006). When an individual decides to be part of the programme and the person is being motivated to obtain a degree that will outweigh his/her general attitude towards new technologies (Van Raaij & Schepers 2008). The participants' comfort level are sometimes not taken into consideration by other participants and also by the academic institutions. So it is recommended to know if and how personal behaviour can have an impact on the acceptance and the use of e-learning systems (Van Raaij & Schepers 2008; Liaw, *et al.*, 2006).

Personal Innovation in the context of information technology can be described as a person's attitude and tendency to try to take on new technologies all by himself or herself without the communicated experience of other people. In simple and short, is individuals capability to try to innovate themselves around new things. This simply shows that people's behaviours have much influence especially around things that involve Information Technology (IT) (Van Raaij & Schepers 2008).

One of the factors related to personal innovation is the computer anxiety which it receives highly attention in the psychology literature (Van Raaij & Schepers 2008). In the computer context it can be explained as an emotional stress or the tendency of being restless and overanxious towards the use of computers. People are being concerned about the computer implications such as loss of important information, fear of being seen as foolish person, making mistakes and also damaging of computer equipment (Van Raaij & Schepers 2008).

Reduced usage of computers, negative perceptions about Information technology and information systems, low user satisfaction are often as a result of computer anxiety. So computer anxiety in the e-learning area research is used to present the negative side of

personal traits and the personal innovation presents the positive side of the personal traits (Van Raaij & Schepers 2008; Liaw, *et al.*, 2006).

2.4 Theory guiding the research study

Theories are well-defined to be the descriptions of a natural or social behaviour, the occurrence or phenomenon. Theories are there to be responsible for a clear observation why certain events or certain things happen, by describing or predictions and it was highlighted that it is possible to predict the events or the behaviour using a set of predictions, without even explaining the reason why such events are taking place. Based on the examples of research theories are trying to clarify different types of collective behaviour by means of an established set of concepts, proposals, limited conditions, rules and principal judgment (Bhattacharjee 2012).

This study is driven by the activity theory (AT). The AT discloses the boundaries amongst e-learning at the macro-organisational level (plan, guiding principle, campus-wide solutions) and micro-organisation (daily functioning practice, collaborative transformation, specific adaptation) (Benson, Lawler & Whitworth 2008). Murphy and Rodriguez-Manzanares (2008) have defined Activity Theory (AT) as “the best kept secret in academia”. It is a framework that offers the most integrated explanation of plans on the nature and the development of human behaviour. For technological use AT permits individuals to move from computers as an attention of concern but by also understanding technology as part of scope of human activities.

According to Blin and Munro (2008) other researcher use the activity theory as a framework for designing a learning environment that is very rich with the technology in order to improve the practices of assessing the learning technologies or used to understand the “changeability in implementation arrangements when it comes to events and determinations for which ICT is being utilised”. Activity theory is a conceptual framework that permits the bridging the gap between motivation and action by proving with a clear interpretation for procedures at different ranks of acting in the world (Blin & Munro 2008).

The analysis of activity systems conceive the tasks related to teaching and learning in higher education support in order to understand these tasks as they disclose. This means that it allows individuals to realise the fundamental organised pressures that

evident themselves through clashes, failures or basically over and done with the idea of not implementing ICT (Blin & Munro, 2008). The AT model also analyses the organizational activities that involve the use of computers. In the field of education the AT is very helpful in assisting on the understanding on how technological improvement can influence change (Murphy, *et al.*, 2008; Robertson, 2008).

AT studies human activity, outlined and agreed to be an activity in a specific community location, such as the working or learning environment. The main unit in AT is the activity system which is well-defined as the object oriented, collective and culturally mediated human activity. The model structure of activity system is composed of the interacting components of subject, object tools, division of labour, community, rules and outcomes (Murphy, *et al.*, 2008; Robertson, 2008).

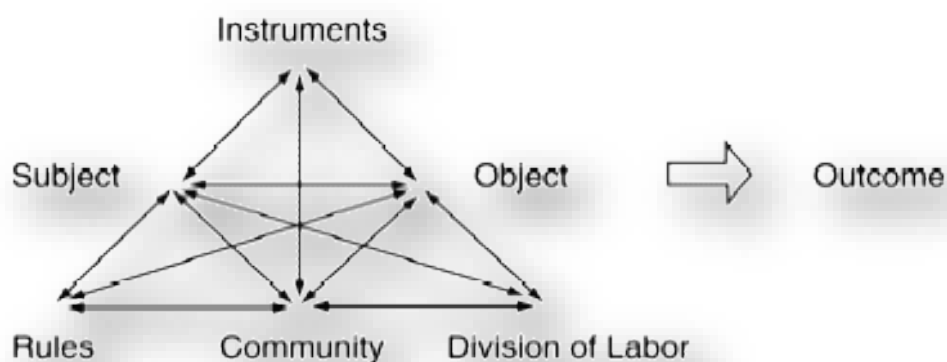


Figure 2.3: Components of the Activity System (Murphy *et al.*, 2008; Benson 2008)

Activity is regarded as a collective system that is determined by an object and an intention that a subject is following. Activity is performed by a series of actions to accomplish an object.

Subject of an activity system is the individual or group whose perspective is accepted this answer a question of who is involved throughout the activity.

Object talk about the raw material at which the activity is directed and which is shaped or changed into results with the help of physical and symbolic, external and internal tool. It precedes and motivates activity by answering the question of why is the activity being taking place.

Tools assist the object of activity. They can be external, material (e.g., a textbook, a computer) or internal, symbolic (e.g., language). Tools take a share in the change of the

object into an outcome, which can be preferred or unexpected. They can allow or force activity, this answer a question of by what means are the subjects going to perform the activity.

Community talk about the members of an activity system, who share the same object and it also, refers to the environment on which the activity is going to be carried out. e.g. students and staff members.

Division of labour consist of the separation of tasks and roles among members of the community and the separations of control and status, and this addresses what needs to be done, when is it to be done and who is responsible for that activity. e.g. lecturer, programme manager, and rector.

Rules are clear and understandable standards that order activities and interactions within the system; this is simply addressing the norms, rules, regulations that might be governing the use and performance of the activity.

Outcome refers to the expected results of the activity that has been performed, it answers the question of what are the anticipated results of the activity being carried out.

2.5 Activity Theory Architectures

Through the AT research development a number of arrangements on components and associations have been customized in order to define the theory scope. There are four architectures that have been created for attainment of different AT targets. The first architecture is focusing on the activity, the second arrangement it describe the activity at individual level, the third arrangement it outline the collective activities and cooperative work and lastly the arrangement joins the activity system to the network (Peña-Ayala, Sossa & Mèndez 2013).

2.5.1 Activity

The activity is the essential component of AT analysis whereby it is under nonstop transformation and developments. The AT development is not level and irregular it is a configuration that takes a longer period, whose object is being transformed into an outcome through a specified procedure. The process or the process consists of number of short term actions. The activity will have to be separated into actions which are there to embrace operations and also to shape the activity (Peña-Ayala, *et al.*, 2013).

2.5.2 Activity at an individual level

By means of the intention of describing an activity to be achieved by just one subject, the AT represents the arrangement that is composed of four elements: subject, tool, object and outcome. The arrangement at the individual level is trying to represent the problem space or environment where the activity is pursuing the object in order to attain the outcomes (Peña-Ayala, *et al.*, 2013).

2.5.3 Activity at collective level

As shared activities require many individuals to participate, the AT extends the architecture to represent collaborative work which includes these three elements: community, rules and division of labour. At this level the arrangement becomes a general model of an activity system. This architecture it extends the activity at individual with a tier (Peña-Ayala, *et al.*, 2013).

2.5.4 Activity at network level

The activity systems are being analysed at top level, more often the other activity system that are involved are found. This is the reason for AT to provide a network level to make clear the presence of the activity systems and describe what happens when the activity system comes into contact. This is the stage where the network level connects the activity systems and incorporates the perception of boundary objects. Boundary objects work at the interface of many circumstances, where two or more activity systems come into contact (Peña-Ayala, *et al.*, 2013).

It was defined that theory gives focus to the dialectical procedure through which awareness, learning, and development at the same time shape and they are shaped by technology (Murphy *et al.*, 2008; Robertson, 2008). When planning to introduce a new object or a new tool like virtual learning environment (VLE), it result in a serious alteration of the internal structure of the teaching activity system and this can conclude that the system has been disrupted.

In case the disturbance expresses itself through the creation and implementation of new curricula, assessment techniques, teaching practises, resources and other activities, we can conclude that the disruption is an expansion. An introduction to new technology is not supposed to cause expansion on internal structure of teaching and learning but it

would rather result in eliminating some new elements, meaning the activity would have not been disrupted in any sense (Blin & Munro, 2008).

2.6 Chapter summary

Technology has affected our lives and it cannot be avoided. Students are exposed to all the newly-invented technology. This growth in technology brings a lot of opportunities to all types of industries where they also help in operation of the business. The opportunities include giving other individuals an opportunity to further their studies, this includes people who are working and they don't have time to study full time. This chapter explain e-learning, e-learning environment, virtual learning environment, the importance of e-learning and also the critical success factors for implementing e-learning. Theory that is guiding the research is also discussed and the Technology acceptance model which is regarded as the framework that is used for expansion or improvement of the technological system that is currently used in an organisation. The next chapter discusses the research methodology used in this study.

CHAPTER 3 RESEARCH METHODOLOGY AND DESIGN

3.1 Introduction

From the previous chapter, the problem statement was defined in terms of five objectives that led to the success and meeting the objectives of conducting the study. This chapter explains the research methodology that will be used in this study in order to give answers to the raised question. Research methodology is a line of attack or the procedure that is taken to associate the research question and the method for data gathering, analysis and explanation in a logical manner. The method for that is utilised and the study must always take into consideration the kind of data that will be gathered in purpose to resolve the problem (Leedy & Ormrod 2010).

E-learning as it has been defined as a computer based educational tool or system that enables you to learn anywhere at any time. Recently e-learning is delivered through the internet channels although in the past years it the learning material was being delivered through the use of the computer based methods like, CD-ROM (Kahiigi, Ekenberg, & Hansson 2007). The following is the main research question arrived at and that needs to be answered:

What are the issues affecting e-learning practices at the North West University (Mafikeng Campus)?

This chapter has been structured in this manner: it provides a description of the different research methodologies that are usually used in social research, the research sub-questions, the aim of the research study, the research design which include the discussion of qualitative and quantitative research methods, research methodology being used for the study, description of data required for the study, the research setting and its elements.

3.2 Research sub-questions

Research sub-questions refer to questions that assist the researcher to answer the research questions and use the question keywords from collecting level of recommended keywords for developing good questions (Kent 2011). The following are the research sub-questions for the study:

- a) Do the universities have enough technological tools (resources) to put up with e-learning?
- b) Do the universities have the environment where they can safely offer e-learning?
- c) Are the university's staff members computer competent (knowledgeable) enough to use e-learning platforms?
- d) What are the benefits of e-learning as a learning method?
- e) Are there issues that affect the use of e-learning at the university?

3.3 Aims of the research study

The most essential objective of e-learning is making it possible to access the information and knowledge needed with a lesser amount of money and without time and space limits. It has been determined that e-learning is important because technology now has a huge impact on the universities or academic institutions and also other organisations by bringing all the clashing of the organisational structure and individual functions across the organisation e.g. the administration matters, teaching and learning and the research whereby the organisations transformation is taken into consideration (Conole 2004).

The list below contains the objectives of this study:

- a) To identify and determine university's current tools (IT tools).
- b) To identify e-learning components of the NWU.
- c) To identify the benefits of using e-learning.
- d) To identify issues affecting the use of e-learning at NWU.
- e) To use Activity Theory in the appraisal of NWU e-learning environment.

3.4 Factor analysis

Factor analysis is regarded as an instrument for identifying the variables relationship for difficult perceptions, as it permits a researcher to investigate concepts that cannot be measured easily and directly by breaking up large number of variables into a less interpretable interlaying factors (Brown 2015).

Confirmatory Factor Analysis (CFA) is a type of a Structured Equation Model (SEM) that deals explicitly with measurement models which are the relationships between observed measures or indicators e.g. behavioural rating. The important feature for CFA is the hypothesis (Brown 2015).

The factor analysis for this study is not performed because there is a theory in place that outlines the factors of the study (Activity Theory with its components). In this study the components of the activity system are regarded as the factors that influence the use, implementation and effectiveness of e-learning environment at North-West University, Mafikeng Campus.

3.5 Hypothesis

Research is conducted with the aim of “knowing more” from the “less know” (Payne & Payne 2005), data is not collected without prior information to reflect on. The researcher does not seek results that are backing previous ideas but they have an opportunity to forecast what they may find, in the area of forecast it is where the hypothesis is developed (Payne & Payne 2005).

According to Punch (2005) is a predicted answer to a research question and the predictions are made before the research is being conducted. The predictions are also made because the research was previously conducted and the certain results were found, the other reason would be that the prediction involves an explanation (Punch 2005). This is the part where propositions are made which explains why the predicted answer can be expected and this is called theory which explains the hypothesis.

According to Nenty (2009) “hypothesis is the most powerful tool man has invented to achieve dependable knowledge”. It is considered to be an influential instrument for the progression of understanding since it functions as the working tool or the arms of theory and a guideline for pursuing resolution to social problems. Hypothesis is specifically related to theory but contains clear variables and they can be tested. Hypotheses permit us to define if our theory is correct by conducting a research. When research is conducted, we are usually observing a type of change between two or events or variables (Payne & Payne 2005).

Working with hypotheses varies from more predictable use of the term, predominantly in the quantitative research in order to mean more specific statement about descriptive or relational phenomena (Payne & Payne 2005). Descriptive hypotheses mean statements about events e.g. something is happening and rational Hypothesis describe the prediction that two or more variables are related in a particular way (Payne & Payne 2005).

Even though research hypotheses are never articulated in the question form, research questions are transformable to research hypotheses. Hypotheses are normally directed to an imaginable influence to the problem variable by another variable (Nenty 2009). This study uses the descriptive hypotheses for a simple exploration and gathering of facts.

Null hypothesis (H_0): Using e-learning systems has no effect on the improvement of teaching and learning.

Alternative hypothesis (H_A): The use of e-learning systems improves teaching and learning.

The null hypothesis is what is being confirmed through the procedure of statistics abbreviated as H_0 and the research hypothesis is abbreviated as H_A (Punch 2005). When testing the null hypothesis, it is anticipated that if the null is not true then an alternative to the null is considered to be true. The research hypothesis indicated come to be our alternative hypothesis and in order to make the research precise the two conclusions are considered, either the null or the alternative hypothesis.

Criteria for decision: The student and academic staff members indicated their perception about the use of e-learning systems in teaching and learning. The judgement on the improvement of teaching and learning was based on the majority responses. The students and academic staff members were able to tell whether these e-learning systems improve teaching and learning.

Even though research hypotheses are never articulated in the question form, research questions are transformable to research hypotheses. A hypothesis normally directs one to an imaginable influence of the problem variable on by another variable (Nenty 2009).

3.6 Research methodology

The research methodologies that are usually used in research are quantitative, qualitative and participatory action research methodology (Mouton & Muller 1998). Research design or methodology is described as a blueprint or outline for directing the study in such a way that maximum controlling will be applied in excess of features that

could embrace up with the strong point of the research outcomes or is a scientifically technique of resolving the research problem (Mouton & Muller 1998).

According to Punch (2005) the research methodology chosen to conduct research must be able to determine what kind of data will be required, the technique to be used when gathering data and also to analyse that data. The study is using the quantitative exploratory descriptive design (discussed below in 3.4.2) to recognise, to examine and describe the features that are contributing to the practices of e-learning. The identified factors would then be categorised into individual's perception, contributing features and variables affecting the likelihood of the university not to practice e-learning.

3.6.1 Qualitative and quantitative research

It has been identified that research can be categorised as qualitative, quantitative, or what he refers to as triangulation (Leedy & Ormrod 2010). The natural surroundings of the data and the problem for research will prescribe the research methodology. If the data collection was done verbally through the interviews the methodology is qualitative and if the data is numerical the methodology is quantitative. Quantitative, qualitative and mixed research methods exist that can be used to organise or conduct a research. The table below identifies that every research methodology has its own strengths and weaknesses.

Quantitative analysis is an independent, organised and recognised procedure where numerical data is used in order to obtain information and this research method is based on the measured amount or quantity (Durrheim 2006; Creswell 2009). Its data was gathered in numerical form and data gathering methods such as surveys were used. The statistical application was used in order to analyse the data (Coldwell & Herbst 2006). It includes either the recognition of the characteristics of the occurrence or discovering the relationship between two or more occurrences. It does not commit to perform the experimental analysis by making changes to the circumstances under the investigation or determine the cause and effect relationship (Leedy & Ormrod 2010). The method is intended to examining the occurrence as it is without bringing any changes (Leedy & Ormrod 2010). According to Leedy and Ormrod the quantitative method examines the "extent to which differences in one characteristic or variables are related to differences in one or more other characteristics or variables". And it has been defined as a research approach that is more formal in its nature that its scope is clearly

or well-defined and manageable (Punch 2005). Bhattacharjee (2012) also indicated that quantitative research is a formal, objective, demanding, and organised way of producing information about incidence. Therefore in quantitative research formal instruments are used in order to gather data.

Qualitative approach it has two common things that it addresses, firstly, it concentrates on the occurrence that take place in the natural environment and secondly it encompasses the reviewing the occurrence in all their difficulty (Creswell 2009). Researchers using this approach take aim of producing the understanding the social reality by focusing on the interpretations rather than quantification (Leedy & Ormrod 2010). The qualitative approach encompasses the use of qualitative data, which include interviews, participatory or documents observation for better understanding of the certain occurrence or the phenomenon (Bhattacharjee 2012). In qualitative research data is gathered in a spoken language or a written format. It also uses observation to gather data and the gathered data is analysed by organising it according to themes or the subjects (Punch 2005).

Qualitative researchers have confidence in the researchers' capability to interpret and construct sense of what he or she sees is important for understanding any social occurrence (Leedy & Ormrod 2010).

Table 3.1 The difference between qualitative research and quantitative research (Leedy & Ormrod 2010).

Qualitative	Quantitative
Its objective is to advance understanding of the primary reasons and motivation.	The aim is to quantify data and make a general judgment of results from the sample of population of interest.
Concentrates more on being appreciative of the organisational practices and having fewer forecasting results.	It concentrates more on forecasting results and less on procedural variables.
Motivates the flexibility in the research process- follow frameworks/models.	There are well defined model for the research design- it is rule driven.
Support better personal investment in the data.	Support a more isolated, objective coordination toward the data.
Counting is done when it is necessary.	Favouritism towards counting.
The sample can be a small number of non-representative cases.	The sample is a large number of representative cases.

Data collection is always unstructured.	Data collection is structured.
Data is not statistically analysed.	Data is statistically analysed.
Grow a primary understanding of the occurrence.	The method recommends the final course of action.
It concentrates much more on the participants reactions.	There is a less focus on the participant's reaction.

3.6.2 Research method for the study

For this study a quantitative method was used. Quantitative data can be arranged in numbers, in a recognised, objective organised procedure to attain information and to describe variables and their associations. This method aims at acquiring a data sample from a larger population sample, in order to achieve this numerical data collection should be used (Creswell 2009).

3.6.2.1 Characteristics of quantitative research

These are the characteristics of a quantitative research (Leedy & Ormrod 2010):

- 1) The reality can be defined by a careful measurement.
- 2) It measures and studies the relationship among the variables if it is possible.
- 3) The statistical analysis is used in order to organise data, to identify the essential association among the variables, to identify the difference and the similarities between different categories of data.
- 4) The population sample is always a representative of a large population.
- 5) It provides the correct amount of characteristics of individuals or group.
- 6) Validity and reliability of the instrument being used is very important.
- 7) Data is collected using different methods

3.6.2.2 Exploratory descriptive design

This is an exploratory descriptive study because it explores and identifies the factors that contribute to the use of e-learning in the North West University (Mafikeng Campus) in the area of South Africa. The exploratory descriptive research studies that have not been previously studied and are striving to identify new knowledge, new ability to see, new understanding and new senses and to discover factors associated to the area of

focus (Leedy & Ormrod 2010). This research make an effort to explore the full nature of the phenomenon (identifying the issues affecting e-learning practices at the North West University-Mafikeng Campus) the manner in which it becomes demonstrated as well as related factors that are the influencer to the practice or the use of e-learning.

Exploratory descriptive research is not categorised nor associated with a large population but it provides a better understanding of the sample being examined. This approach is regarded to be the best for gaining a better understanding of factors that determine whether the organisation or the university is ready for adopting or practice of e-learning. This approach provides accurate account of characteristics of a particular, event group in a real-life situation. the descriptive design can/may be used for purpose of developing a theory, identifying problems with the current practice, making judgements or determining what other people are dong in a similar situation. The descriptive design serves to provide awareness and vision of respondents about the experience (Leedy & Ormrod 2010).

3.3.2.4 Characteristics of Exploratory Descriptive Design

The following are the characteristics of exploratory descriptive research:

- a) It is always striving to develop new knowledge.
- b) It is a flexible approach that permits a researcher to examine the entire research problem being studied.
- c) Data may lead to suggestions on hypotheses for future studies.
- d) It is usually set in a natural setting.

3.7 Research design

The research design is taken as the researchers' entire plan for attaining solutions to research questions guiding the study (Leedy & Ormrod 2010) and also designing a study helps researchers to plot and apply the study in a way that will help them find the intended results and with increases on the probability of obtaining information that could be related to the true state.

3.7.1 Data required.

3.7.1.1 Primary data and secondary data

This study used secondary data - that is the information that is obtained from the books and the web articles. Primary data refers to original information that is collected specifically for the study at hand which the information is obtained through the use of research instrument that is chosen for the research study. The primary data was collected through the use of questionnaires that were filled in by the students and the academic staff members of the Mafikeng Campus of the North-West University.

3.7.2 Data-collection method

The data-gathering tool for this study was a questionnaire. The questionnaire was used to obtain data relevant to the study objectives and research questions. These allow a quantifiable data collection and allow the analysis of data to determine arrangements and relationships. Questionnaire is word document. The questionnaire is described as a method of gathering information from respondents about attitude, knowledge, beliefs and feelings. The questionnaire will be used to reach students from different faculties and also the NWU (Mafikeng campus) staff members. The questionnaire is formulated to identify the factors and issues that are affecting e-learning practices at the North-West University by asking a number of closed-ended questions.

3.7.2.1 Characteristics of questionnaire

The following aspects characterise the questionnaire:

- 1) Every single contributor fills his/her answers on the questionnaire, saving the researchers' time, instead of conducting individual interviews.
- 2) It is more affordable than conducting individual interviews
- 3) Participants remain anonymous and they fully participate without fear of being identified.
- 4) Data collection of different topics maybe collected within a limited period of time.
- 5) The format is standard for all subjects and is independent of the interviewer's mood.

3.7.2.2 Development of questionnaire

The questionnaire is brief and it is asking only for the information that was important and necessary to the research project. In order to assist in making the best use of the number of responses to the questionnaire, the number of questions should be limited to no more than 30 questions. The questionnaire consisted of two sections. The questions contained in a questionnaire are based on the literature review (chapter 2) and other research instruments used in similar studies.

The questionnaire was compiled and discussed with the researcher's supervisor. The first section of the questionnaire was aimed at gathering biographical data on the participants including age, gender, historical period (study period or working period), and faculty which student fall under, as well as the level of decisions that are normally made by a respondent. The second section focused on specific questions with regards to the addressing the objectives of the study.

The questionnaire was typed and it was managed as it had only two parts in order to have an upright sample size. The questionnaires were handed to students of Mafikeng Campus of the University and the questions are rated with Likert scale they were requested to tick “, Strongly Agree, Agree, Neutral, Disagree or Strongly Disagree”.

3.7.2.3 Structure of questionnaire

The questionnaire consists of the following categories:

Part1: Demographic information (general personal particulars of the participant).

Part 2: Technology infrastructure

Part 3: Knowledge on e-learning and technology infrastructure at the North West University.

Part 4: The benefits of using e-learning.

Part 5: issues affecting e-learning practices at the North-West University (Mafikeng Campus).

The questionnaire contents includes closed questions that are making an attempt to identify whether the university staff members have knowledge about e-learning, identify

the IT infrastructure (IT tools) of the North-West University, the benefits of using e-learning and identifying the issues that are affecting e-learning practices at the campus.

3.7.3 Research population

3.7.3.1 Research setting

Research setting refers to the place where data is being collected. The sample data for this study was collected at the North West University (Mafikeng campus) in the area of South Africa, data was gathered from students across different faculties as the research title is also been approved for the study by the North West University. Every student and the academic staff member of the Mafikeng Campus North West University who was willing to participate received a questionnaire.

3.7.3.2 Research elements

Population can be well-defined as the entirety of all subjects that fit in to a set of stipulations, involving the entire group of individuals who are of interest to the researcher and to whom the researcher's results can be generalised. A sample can also be defined as a percentage or a subdivision of the research population selected to participate in a study, representing the research population (Leedy & Ormrod 2010).

The study area as it refers to the area or place where data is collected; data was collected from the North-West University (Mafikeng Campus). Population denotes the collective of all essentials features about information that is required (Bhattacharjee 2012). The population for this study comprise of the campus university academic staff members, and the students (students from different levels and different faculties). Participating students are registered with the North-West University.

3.7.4 Research sample

Sampling is defined as a procedure of deciding on the subset called a sample of population of interest (Bhattacharjee 2012). The subset is carefully selected to symbolize the population. The sample technique is only focusing on the Mafikeng Campus academic staff members and students from different levels.

According to Ruane (2005) the best straightforward possibility sample is the simple random sample. This sampling method understands the researcher performing the following simple stages: “numbering all the elements in the sampling frame and randomly selecting some of the numbered elements for inclusion in the sample”. This sampling may also be done through the use of a table random numbers (a table of random numbers can usually be found in an appendix of a statistics book) whereby the will choose number by chance (Ruane 2005).

According to Ruane (2005) the simple random sample is very simple for a small research population but it soon gets mind-numbing when the population get large. The systematic random can be considered as a reasonable alternative. The researcher begins with the sampling structure and table of random numbers is used to select first point portion for inclusion in the sample. After the initial point is determined, all other elements that will be included in the sample will be systematically selected by means of a sampling interval (Ruane 2005). Ruane define the sampling interval as “a systematic skipping pattern that will speed up the selection process”. Sampling interval is the total population size divided by the preferred sample size. Example: population = 20,000 and desired sample is 500, the sampling interval is 40 ($20,000/500 = 40$). When using a table of random numbers, you have to randomly select a starting point. (The initial point has to be a number selected at random that is within the sampling interval: in this example, it will be a randomly selected number between 1 and 40.)

The sampling strategy for this study is a simple random sample which is a subdivision of individuals (a sample) selected from a greater set (a population). Each individual is picked randomly and completely by chance, such that each individual has the same probability of being chosen at any stage during the sampling process, and each subset of individuals has the same probability of being chosen for the sample as any other subset of individuals.

The sample size of students that will take part during the data collection was expected to be 300-400 students and 200-300 academic staff members. The random sampling method will be applied whereby for collection of data to the students and the random sampling is also going to be used for collection of data from the academic staff members. The purpose of deciding on the sample is to make reflection and statistical interpretation about the identified population (Bhattacharjee 2012).

3.7.5 Data analysis

Analysis of data is a practice used for examining, converting, and demonstrating data with the objective of emphasising suitable information, suggesting conclusions, and supporting decision making (Bryman & Cramer 2001). The technique of statistical analysis is divided by two key secondary procedures mentioned as descriptive and inferential statistics (Ryon 2013). The descriptive is explained as a summary of facts and the records are easily understandable. Inferential statistics demonstrates facts in full details (Ryon 2013). They allow the researcher to make conclusions about the hypothesis and allow the researcher to display in graphs, label and demonstrate figures. Descriptive statistics a used are in this study.

3.7.6 Software

Microsoft Word, Microsoft excel, SPSS. The statistical package for the social science (SPSS) version 22 was used to interpret the data.

3.8 Reliability and validity of the research instrument

3.8.1 Quality

Quality consisting of all the techniques, systems, and resources that are positioned to provide assurance about the carefulness and control with which the research has been done. Example is typically concerned with the responsibilities of those involved in the research, facilities and equipment, keeping records of procedures and methods, research records, the management of samples and materials and the preparation and capability of research staff.

The quality of this research was ensured that data collected is relevant to the study. Data and any other information were collected within the campus university and within the identified scope. The questionnaire was supposed to get constant responses. Reliability of the statements/ questions were checked by the use Cronbach-Alpha. Some of the questions on the questionnaire were asked in different ways to see whether they produced same results.

According to Bhattacharjee (2012:56) it is not satisfactory or fair to measure social science concepts by means of any scale that we favour. it is also an obligation assess these scales to certify that: (a) the scales certainly measure the unobservable

concept that is intended to measure (therefore the scales is regarded “valid”), and (b) the scale quantity the proposed concept constantly and specifically (therefore the scales is regarded “reliable”). Reliability and validity, in cooperation is called the “psychometric properties” of measurement scales.

3.8.2 Reliability

Reliability denotes to the amount of stability or consistency with which an instrument measures the characteristic it is intended to measure. Bhattacharjee (2012:42) defines reliability as “the degree to which the measure of a construct is consistent or dependable”. Therefore the study and its results are reliable when the same outcomes would be achieved if the study were to be duplicated by other researchers using the similar method. Reliability of the questionnaire was checked by the use of Cronbach’s Alpha.

3.8.3 Validity

According to Bhattacharjee (2012:59) Validity is called “construct validity”. Bhattacharjee (2012:59) says validity “refers to the extent to which a measure adequately represents the underlying construct that it is supposed to measure”. This means that it is the degree to which an instrument measures what it is supposed to be measuring. Validity can be sub-categorised as external and internal validity. According to Ruane (2005) validity it is more concerned with the use of factual, recognizable observable proof in order support its statements about the certain events or the world. Ruane (2005) also indicate that in social science research the evidence provided is as a result of experimental indicators or the measures and also elaborate that to concentrate on measuring the validity the researcher must be more inquisitive about the importance of evaluating the experimental indicators or the measures used in the research study. The researcher concludes a successful validity when what has been measured is valid (Ruane 2005).

3.8.3.1 Internal validity

Internal validity in quantitative research it is similar to credibility, is the section that permits others to be familiar with the understandings enclosed within the study over the explanation of contributors’ experiences. Attainment of internal validity takes place by review for the representativeness of the data as a whole (Thomas & Magilvy 2011).

According to Moutinho and Hutcheson (2011:27) internal validity is “the quality of an experimental design such that the results obtained can be attributed to the manipulation of the independent variables”.

3.8.3.2 External validity

According to Moutinho and Hutcheson (2011:27) external validity is “the quality of an experimental design such that the results obtained can be generalised from the original sample and by the extension, to the population from which the sample originated”. The external validity measures the degree to which the outcomes can be general outside the sample used for the study and this means the validity can also be measured outside the environment where the study is being conducted.

3.9 Ethical Requirements

Research ethics commissions exist to certify that, firstly, the anticipated research will not uncover participants to unacceptable risks and practices and, secondly, that the prospective participants can assess the expected consequences of their participation and choose for themselves whether to participate. Research ethics committees have a broader charge and concern for promoting the public interest by helping to guarantee that relevant research is done.

The research will be conducted at the North-West University,- Mafikeng campus and for the ethical requirements students who registered a research module are allowed to conduct research at the institution.

3.10 Limitations of the Study

The biggest limitation of a questionnaire is the failure of the researcher to ensure a satisfactorily high return rate. The returned questionnaires may not be representative of the sample originally selected for the specific disciplines, which may impact on the relevance of the research findings.

3.11 Chapter summary

This chapter discusses the research design and methodology that is used for this study. It further discusses and looks to the research instrument, the population and sample,

sampling method, data collection instrument, data analysis and ethical considerations. Chapter 4 presents the findings and covering the analysis of data collected.

CHAPTER 4: DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter discusses the research findings and provides analyses and interpretations of data. Data was collected using a structured questionnaire and the results are presented in figures and tables. In the survey certain specific questions were asked and the analysis was done based on application of frequencies. The questions contained or asked are informed by the literature reviewed and are meant to address the objectives of the study conducted. The Pearson correlation coefficient method correlates all listed variables with each other (taking two at a time) and indicate which of the resulting relationships are statistical significant. The significance value provides a bit more information on how far down in the significant region the result lie.

The survey was conducted in the North West University Mafikeng Campus reading laboratory. Respondents include both students and academic staff members. The intention was to investigate the issues affecting e-learning practices at North West University- Mafikeng Campus.

This chapter starts with a descriptive introduction explaining the population sample and respondents' rate based on the biographical profile. The next section reveals the findings of the respondents' perceptions regarding issues affecting e-learning practices at NWU-Mafikeng.

4.2 Rate of Return

Sample size of 375 was the intended sample for the collection of data, therefore questionnaires were distributed to the campus reading lab which is composed of first, second, third and fourth year undergraduate students. From 375 questionnaires which were distributed 96% (361) were returned.

4.3 Data analysis and research objectives.

The objectives of the study were to determine issues affecting e-learning practices at the NWU-Mafikeng Campus. The students and academic staff members' perception were tested to determine issues that might be affecting e-learning practice. Data was analysed with SPSS Version 22. The data analysis begins with the representation of the

descriptive statistics on the respondents (students) of the study constructed on their biographical information in part A.

The following section present the results of data collected from academic staff (Mafikeng campus). The questionnaire was designed with survey monkey and the link to the questionnaire was distributed electronically to the academic staff through their e-mail. The link was shared to approximately 150-160 members and 83 participated on the survey. The section has five parts. These parts are as follows: part 1 contains demographic information of the respondents, part 2 has twelve questions, part 3 has fourteen (part A 3 questions and part B 11 questions) questions, Part 4 has eleven questions and Part 5 has nine questions.

4.3.1 Demographic variables (students)

a) Age distribution

Table 4.1 Age distribution (students).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	17-31	354	98.1	98.1	98.1
	32-41	7	1.9	1.9	100.0
	Total	361	100.0	100.0	

The frequency table above and the figure below reflects that, out of the total returned questionnaires of 361 respondents, 354 (98.06%) were aged between 17-31 years; 7 (1.93%) were aged between 32-41 years. The majority of respondents were aged between 17 and 31 years, this implies that the majority of students who participated on the survey are aged between 17-31 years.

b) Gender distribution

Table 4.2: Gender Distribution (students).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	168	46.5	46.5	46.5
	Female	193	53.5	53.5	100.0

Total	361	100.0	100.0
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The frequency table above and the figure below demonstrates that out of the total returned questionnaires of 361 respondents 186 (46.5%) were male and the remaining 193(53.5%) were female. There was no preference given to a specific gender, the sample breakdown is considered as being fair representative of the demographics of the respondents. The figures reflect that the respondents to the survey questionnaires are dominantly female students.

c) Race distribution

Table 4.3: Race distribution (students).

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Black	356	98.6	98.6	98.6
White	3	.8	.8	99.4
Coloured	2	.6	.6	100.0
Total	361	100.0	100.0	

The frequency table above and the figure below demonstrates that out of the total returned questionnaires of 361 respondents 356 (98.6 %) were black; 3 (0.8%) were white and the remaining 2 (0.6%) were coloured. There was no preference given to a specific race, the sample breakdown is considered as being fair representative of the demographics of the respondents. The figures reflect that the respondents to the survey questionnaires are dominantly black students.

d) Level of study distribution

Table 4.4: Level of study (students).

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Undergraduate	347	96.1	96.1	96.1
Post graduate	14	3.9	3.9	100.0
Total	361	100.0	100.0	

The frequency table above and the figure below demonstrates that out of the total returned questionnaires of 361 respondents 347 (96.1%) were undergraduate students (which include first, second and third years level students) and the remaining 14 (3.9%) were post graduate students (which include Honours, masters and PhD students). There was no preference given to a specific level of study, the sample breakdown is considered as being fair representative of the demographics of the respondents. The figures reflect that the respondents to the survey questionnaires are dominantly undergraduate students.

e) Faculty distribution

Table 4.5: Faculty distribution (students).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Law	20	5.5	5.5	5.5
	Human Social Sciences	87	24.1	24.1	29.6
	Agriculture Science and Technology	106	29.4	29.4	59.0
	Education	52	14.4	14.4	73.4
	Commerce	96	26.6	26.6	100.0
	Total	361	100.0	100.0	

The frequency table above and the figure below demonstrates that out of the total returned questionnaires of 361 respondents 20 (5.5%) were from the law faculty; 87 (24.1 %) were from the Human Social Science; 106 (29.4%) were from the Agriculture Science and Technology; 52 (14.4%) were from the education and the remaining 96 (26.6%) were from commerce and administration faculty. There was no preference given for a specific faculty, the sample breakdown is considered as being fair representative of the demographics of the respondents. The figures reflect that the respondents to the survey questionnaires are mostly from the Faculty of Agriculture Science and Technology.

4.3.2 Questionnaire analyses (students)

This section present the results of data collected from students and academic staff members (Mafikeng campus). The section has four parts. These parts are as follows: part 2(a) has 12 questions, Part 3(b) has 14 (part A 3 questions and part B 11 questions) questions, Part 4 (c) have 11 questions and Part 5(d) has 9 questions.

a) Technology Infrastructure.

Table 4.6: Descriptive statistics for Technology infrastructure (Students).

Question/ Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Majority Response
1. The university has enough computers.	14.7	20.5	26.9	14.7	23.3	38 Disagree
2. The university has energy-efficient computers.	10.8	30.7	45.7	6.6	6.1	45.7 Neutral
3. The university offers a wireless connection to the internet.	62.0	21.6	8.0	6.4	1.9	83.6 Agree
4. The university uses a physical (wired) connection in the computer laboratories.	43.8	29.9	16.6	3.9	5.8	73.7 Agree
5. You have access to computer resources around campus.	47.6	33.5	14.1	3.9	0.8	81.1 Agree
6. It is difficult to have access to the computer laboratory.	10.2	16.9	19.7	23.0	30.2	53.2 Disagree
7. The university computer resources are easy to use.	44.0	39.6	311.6	2.8	1.9	83.6 Agree
8. Students with disability have access to computer resources.	42.9	28.3	22.4	3.6	2.8	71.2 Agree
9. The electronic devices supports disable students.	29.9	29.6	33.8	3.0	3.6	59.8 Agree
10. The computers are maintained regularly and they are free	27.4	28.0	25.8	9.7	9.1	55.4 Agree

from viruses.						
11. Users need to be offered training on how to use computer resources.	24.4	36.6	24.9	6.4	7.8	61 Agree
12. The university have enough skilled IT personnel who maintain the technological infrastructure and systems.	29.6	33.8	23.8	6.6	6.1	63.4 Agree

The objective regarding the table results above was to identify and determine the university's current Information technology infrastructure. 361 responses were received from student of different faculties. From the 361 responses 38% disagree that the university does not have enough computers, 45.7 % Neutral respondent shows that the university is using high energy efficiency computers (computers using less power) and 53.2% disagree that it is not difficult to access the computer laboratories.

The results show that 81.1% agree that they have access to computer resources around campus and 83.6% agree that the university computer resources are easy to use. From the respondents 71.2% agree that students with disability have access to computer resources and 59.8% also agree that electronic devices supports disability students even though 61% of respondent agree that users still need to be offered training on how to use the computer resources.

The results further shows that 83.6% respondents agree that university offers a wireless connection and also 73.3% agree that they still use physical (wired/ use cables) connection in the laboratories. 63.4% of respondents agree that the university has enough skilled IT personnel who maintain the technological infrastructure and system and furthermore 55.4% of responded agree that university computers are maintained regularly they are free from viruses. The students results shows that the university's Technological infrastructure is good but they university does not have enough computer resources.

b) The Mostly used technology element and knowledge on e-learning systems.

Table 4.7A: Descriptive statistics for the mostly used technology element (Students).

Question/ Statement	Option					Majority Response
1. The device you own	Laptop 41.3	Tablet e.g. Samsung Galaxy etc. 9.7	Smartphone 37.4	Desktop computer 10.2	PDA (Personal Digital Assistant) 1.4	41.3 Laptop
2. The storage media you use.	USB 74.2	External Hard drive 10.5	Online storage (SkyDrive, Google drive) 2.8	CD 0.3	Computer memory 12.2	74.2 USB
3. A place where you access the internet.	home 7.2	university 89.9	Restaurant/hotspot 0.3	Internet café 1.1	None 1.7	89.9 University

The objective regarding the table results above and below was to identify e-learning component or knowledge on e-learning systems. From 361 respondents 41.3% own personal laptop devices and also 37.4% own smart phones. As for the storage devices they use 74.1% indicated that they use USB and 12.2% store on the computer memory. The results shows that 89.9% of students get access to the internet at university and 17.2% have access to internet at home.

Table 4.7B: Descriptive statistics for Knowledge on e-learning systems (Students).

Question/Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Majority Response
1. You are computer literate.	32.4	35.5	23.3	4.2	4.7	67.9 Agree
2. University offers computer training to students.	30.5	38.8	19.4	5.8	5.5	69.3 Agree
3. University have e-learning management system called eFundi.	76.7	17.2	3.3	2.2	0.6	95.3 Agree
4. You have used eFundi before.	66.8	12.5	3.0	5.5	12.2	79.2 Agree

5. You have access to eFundi.	83.7	11.6	1.1	1.9	1.7	95.3 Agree
6. You currently use eFundi.	79.8	15.0	0.8	2.2	2.2	94.7 Agree
7. eFundi is helpful.	66.2	22.4	7.5	2.2	7.6	88.6 Agree
8. Training is offered on how to use eFundi.	39.1	25.5	19.4	8.6	7.6	64.5 Agree
9. Information that I need is always available on eFundi.	26.6	26.0	33.8	5.0	8.6	52.6 Agree
10. You are aware of other related e-learning platforms.	11.6	20.8	36.3	14.1	17.2	36.2 Neutral
11. You have used other e-learning platforms other than eFundi e.g. website offering course online like www.w3schools.com	12.2	14.7	19.1	24.7	29.4	54.1 Disagree

The table above (Table 4.7B) present results on the student knowledge about e-learning systems. From 361 respondents 67.9% agree that they are computer literate. 69.3% agree that the university offer computer training to students. From the 361 respondents 95.3% agree that the university have the e-learning management system called eFundi. 79.2% agree that they have used eFundi before, 95.3% agree that they have access to eFundi, 94.7% agree that they are currently using eFundi and 88.6% agree that eFundi is helpful, 64.5% agree that training is offered on how to use eFundi and the results further shows that 52.6% agree that information that they need is always on eFundi.

From 361 respondents 36.2% were neutral regarding other e-learning platforms that are available and also 54.1% disagree that they have used other e-learning platforms other than eFundi. With the results presented above they shows that students are aware of the e-learning management system of the university called eFundi and according to survey results are not aware of other e-learning platform that they can use to enhance their learning.

c) Benefits of e-learning

Table 4.8: Descriptive statistics for benefits of e-learning (students).

Question / Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Agree	Majority Response
1. Adopting e-learning benefits the students financially.	14.4	24.1	39.1	10.0	12.5	39.1 Neutral
2. Adopting e-learning benefits the university financially.	19.9	30.2	38.8	5.5	5.5	50.1 Agree
3. Adopting e-learning benefits the university operational/operations.	24.4	34.6	38.5	2.2	2.2	57.1 Agree
4. Adopting e-learning improves the communication among the students and the instructors (lecturers).	37.1	39.9	17.5	4.2	1.4	77.0 Agree
5. E-Learning benefits the community by giving people an opportunity to further their studies.	24.9	31.9	32.1	5.3	5.5	56.9 Agree
6. Adopting e-learning helps the university to manage its resources.	27.1	41.0	27.1	2.2	2.5	68.1 Agree
7. Adopting e-learning helps the university to share resources.	24.9	34.3	36.3	1.9	2.5	59.3 Agree
8. Adopting of e-learning enhances public education.	17.7	41.6	34.6	2.8	3.3	59.3 Agree
9. Adopting e-learning helps the university to reduce the printing costs.	29.4	33.5	27.4	4.2	5.5	62.9 Agree
10. Information that I need is always on eFundi.	23.8	25.5	33.0	8.6	9.1	49.3 Agree
11. Information on eFundi is available in different formats e.g. excel, word, pdf and etc.	53.2	29.9	12.2	3.0	1.7	83.1 Agree

The objective regarding the table results above (Table 4.8: Benefits of e-learning) was to identify the benefits of e-learning. From the 361 respondents 20.1% agree that adopting e-learning benefits the university financially and 39.1% respondents were neutral in terms of e-learning being adopted to benefit students financially. The results shows that 57.1% of respondents agree that adopting e-learning will benefit operational or operations. 77.0% of respondents agree that adopting e-learning will improve communication between the students and the instructors (lecturers) and also at the same 59.3% of the respondents agree that e-learning enhance public education.

Furthermore the results shows that 56.9 % of students responses agree that e-learning does benefits the community by giving people an opportunity to further their studies, 68.1% agree that e-learning can help the university to manage its resources, 59.3% agree that university can be able to share resources and 62.9% respondents agree that e-learning can benefits the university by reducing printing costs.

Above all the benefits outlined, 49.3% of students respondents agree that information they need is always on eFundi and furthermore 83.1% agree that information they get on eFundi is in different formats. With this results it shows that implementing e-learning would be a good idea as it will benefits both the university and students in different ways.

d) Issues affecting e-learning practices.

Table 4.9: Descriptive statistics for Issues affecting e-learning practices (students).

Question / Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Majority Response
1. Lack of IT personnel skills.	7.8	18.0	31.3	18.8	24.1	42.9 Disagree
2. Lack of skilled academic personnel	6.1	16.6	33.2	21.9	22.2	44.1 Disagree
3. Implementation cost.	10.2	21.3	47.6	8.6	12.2	47.6 Neutral
4. Lack of support from the academic staff to students.	10.8	18.6	30.5	19.1	21.1	40.2 Disagree
5. No e-learning systems' training is offered to students and staff.	7.2	11.9	25.8	27.1	28.0	55.1 Disagree

Question / Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Majority Response
6. Lack of internet access	5.3	8.6	18.6	32.1	35.5	67.6 Disagree
7. Lack of skilled personnel to compile e-learning study material.	5.3	8.6	33.0	25.2	25.8	51 Disagree
8. No learning material in local languages e.g. Zulu, Afrikaans	25.8	17.2	22.2	17.5	17.5	43 Agree
9. Lack of technological infrastructure/resources.	10.5	10.2	32.7	22.7	23.8	46.5 Disagree

The objective regarding the table results above and was to identify issues affecting e-learning practices at NWU-Mafikeng campus. From 361 responded 42.9% disagree that it is lack of IT personnel skills that would be preventing the use of e-learning. 44.1% respondents disagree that it is lack of skilled academic personnel that also prevent the practice of e-learning. For implementation cost of e-learning 47.6% of respondent were neutral it shows that students are not sure whether it cost less or high to implement e-learning.

The results also shows that 40.2% disagree that NWU-Mafikeng Campus it lack of support from the academic staff to students, 67.6% of students respondents disagree that it is lack of internet access that might also be leading the NWU-Mafikeng not to practice. The results further shows that 51% of the respondents from students disagree that it is the lack of skilled personnel to compile e-learning material.

The results shows that 46.5% of respondents also disagree that it is lack of technological resources that affect the use of e-learning and 55.1% also agree that training is offered to students and staff members on how to use the e-learning system. Lastly the results shows 43% of respondents agree that there is no e-learning material compiled in local languages e.g. Tswana, Afrikaans, Zulu and etc. The results shows that all the identified factors are not preventing North West University- Mafikeng campus to use e-learning.

4.3.3 Demographic variables (academic staff members)

a) Age distribution

Table 4.10: Age distribution (academic staff members).

Answer Choices	Responses	
<18	0.00%	0
18 - 29	18.07%	15
30 - 44	46.99%	39
45 - 59	24.10%	20
60+	10.84%	9
Total	83	

The table above and figure below reflects that from 83 respondents 15(18.07%) were between 18-29 years, 39 (46.99%) were between 30-44 years, 20 (24.10%) were between 45-59 years and 9 (10.84) of the respondents were 60 years and above. this Implied that majority of the respondents are between 30 and 44 years.

b) Gender distribution

Table 4.11: Gender distribution (academic Staff members).

Answer Choices	Responses	
Male	45.12%	37
Female	54.88%	45
Total	82	

The table above and the figure below demonstrate out of 83 respondents 37(45.12) were male and 45(54.88%) were female. There was no preference given to a specific gender. The figures shows that the respondents to the survey questionnaire were dominantly female and 1(1.20%) of the respondents did not identify the gender.

c) Race distribution

Table 4.12: Race Distribution (academic Staff members).

Answer Choices	Responses	
▼ Black	58.75%	47
▼ White	35.00%	28
▼ Coloured	3.75%	3
▼ Indian	2.50%	2
Total		80

The table above and figure below demonstrate that out 83 respondents 47 (58.75%) of respondents were black, 28 (35.00%) respondents were white, 3 (3.75%) respondents were coloured and 2 (2.50%) respondents were Indian. there was no preference given to a specific race. The remaining 3 (3.61%) respondents did not identify their race. The results shows that majority of the respondent were black.

d) Occupation

Table 4.13: Occupation Distribution

Answer Choices	Responses	
▼ Academic Staff and registered Student	39.74%	31
▼ Academic Staff	60.26%	47
Total		78

The table above and figure below reflect that from 83 respondents 31 (39.74%) were academic staff who are also registered students and 47 (60.26%) respondents were academic staff members. The remaining 5 (6.02%) of the members did not identify their occupation status. There was no preference given to a specific occupation. Majority of the respondents are academic staff but they are not enrolled for any study.

e) Level of study distribution

Table 4.14: Level of Study distribution (academic staff members).

Answer Choices	Responses	
▼ Post Graduate	79.52%	66
▼ None	20.48%	17
Total		83

The table above and figure below reflects that out of 83 respondents 66 (79.52%) respondents are postgraduate and the remaining 17(20.48%) respondents are not enrolled for any study. there were no preference that was given to the level of study of the respondents. The results shows that the majority of the respondents are on their postgraduate studies.

f) Faculty distribution

Table 4.15: Faculty distribution (academic staff members).

Answer Choices	Responses	
▼ Commerce	33.73%	28
▼ Agriculture Science and Technology	25.30%	21
▼ Human Social Sciences	21.69%	18
▼ Education	15.66%	13
▼ Law	3.61%	3
Total		83

The table above and the figure below reflects that from 83 respondents, 28 (33.73%) were from the commerce faculty, 21 (25.30%) were from faculty of agriculture science and technology and 18 (21.69%) were from the human social sciences faculty. Furthermore 13 (15.66%) respondents were from education faculty and the remaining 3 (3.61%) respondents are from the law faculty. The highest number of respondents are from the faculty of commerce and there was no preference that was given to a specific faculty.

4.3.4 Questionnaire analysis (academic staff members)

a) Technology infrastructure

Table 4.16: Descriptive statistics for technology infrastructure (academic staff members).

Question/ statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Majority response
1. The university has enough computers.	20.5	24.66	24.66	9.59	20.55	45.2 Agree
2. The university has high energy-efficient computers (use less power).	5.48	23.29	45.21	12.33	13.70	45.21 Neutral
3. The university offers a wireless connection to the internet. e.g. WIFI connection	47.95	41.10	0.00	5.48	5.48	89.04 Agree
4. The university uses a physical (wired) connection in the computer laboratories.	34.25	36.99	27.40	0.00	1.37	71.23 Agree
5. You have access to computer resources around campus.	42.75	31.51	12.33	6.85	6.85	73.97 Agree
6. It is difficult to have access to the computer laboratory.	6.85	15.07	38.36	17.81	21.92	39.7 Disagree
7. The university computer resources are easy to use.	20.55	49.32	21.92	5.48	2.74	69.86 Agree
8. Students with disability have access to computer resources.	12.33	41.10	35.62	6.85	4.11	53.4 Agree

9. The electronic devices supports disable students.	16.44	17.81	56.15	6.85	2.74	56.16 Agree
10. The computers are maintained regularly and they are free from viruses.	12.50	29.17	23.61	13.89	20.83	41.67 Agree
11. Users need to be offered training on how to use computer resources.	32.88	49.32	10.96	4.11	2.74	82.19 Agree
12. The university have enough skilled IT personnel who maintain the technological infrastructure and systems.	10.96	43.84	16.44	17.81	10.96	54.79 Agree

The objective of the table results above was to identify and determine the university's current information technology infrastructure. The results shows that 45.2% of the respondents agree that the university has enough computer and 45.2% respondents were neutral in terms of identifying that the university has high energy-efficient computer were the computers uses less power. 89.04% of the respondents also agree that the university offers wireless connection to the internet e.g. WIFI connection.

The results further more shows that 71.23% agree that the university uses a physical (wired/ cables) connection in the computer laboratories. 73.97% of the respondents agree that they have access to computer resources around campus and 39.7% of the respondents disagree that it is difficult to access the computer laboratory. The results further shows that 69.86% agree that the computer resources around campus are easy to use. The academic staff members further shows that 53.4% of the respondents agree that students with disability have access to computer resources and also 53.43% respondents agree that the electronic devices supports disability students.

Furthermore the results depicts that 56.67% of the respondents were neutral they would not identify whether the computers are maintained regularly that they are free from

viruses and 54.79% also agree that the university have enough skilled IT personnel who maintain the technological infrastructure and systems. 82.19% of the respondents agree that users need to be offered training on how to use computer resources. The above results shows that the university's technological infrastructure is good or it is well equipped to be practicing e-learning.

b) The mostly used technology element and knowledge on e-learning systems

Table 4.17A: Descriptive statistics for the mostly used technology element (Academic staff members).

Question/statement	Option(s)					Majority Response
1. The device you own (personal device)	Laptop 61.97	Tablet 8.45	Smartphone 8.45	Desktop 21.13	PDA 0.00	61.97 Laptop
2. The storage media you use.	USB 35.21	External Hard drive 32.39	Online storage 4.23	Compact disc (CD) 0.00	Computer Memory 28.17	35.21 USB
3. A place where you access internet.	11.11	88.89	0.00	0.00	0.00	89.99 University

The objective table results above and below was to identify e-learning components and/or knowledge on e-learning systems. 61.97% of the respondents are laptop(s) which they are regarded as personal devices. 35.21% respondents are using USB as their storage media, 32.39% are using the external hard drives and 28.17% respondents are using computer memory. The results also shows that the majority of the respondents access the internet at university.

Table 4.17B: Descriptive statistics for Knowledge on e-learning systems (Academic staff members).

Question/Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Majority Response
1. You are computer literate.	66.67	30.56	2.78	0.00	0.00	97.22 Agree
2. University offers Computer training is offered to students.	20.83	51.39	22.22	4.17	1.39	72.22 Agree

3. University have e-learning management system called eFundi.	77.78	19.44	2.78	0.00	0.00	97.22 Agree
4. You have used eFundi before.	76.06	16.90	4.23	1.41	1.41	92.96 Agree
5. You have access to eFundi.	76.39	18.06	1.39	1.39	2.78	94.44 Agree
6. You currently use eFundi.	73.24	16.9	5.63	1.41	2.82	90.14 Agree
7. eFundi is helpful.	63.89	26.39	5.56	2.78	1.39	90.28 Agree
8. Training is offered on how to use eFundi.	53.52	28.17	7.04	5.63	5.63	81.69 Agree
9. Information that I need is always available on eFundi.	20.83	34.72	29.17	9.72	5.56	55.56 Agree
10. You are aware of other related e-learning platforms	19.44	31.94	15.28	19.44	13.89	51.39 Agree
11. You have used other e-learning platforms other than eFundi e.g. website offering courses like www.w3schools.com	18.31	12.68	11.27	26.76	30.99	57.75 Disagree

The table above presents results on knowledge on e-learning systems. The results reflects that 97.22% of the respondents agree that they are computer literate. From the 83 respondents 72.22% of the respondents agree that university offers computer training to students. The results shows that 97.22% of the respondents agree that the university have the e-learning management system called eFundi.

The results further shows that 92.96% of the respondents agree that they have used eFundi before, 94.44% of respondents agree that they have access to eFundi, 90.14% of the respondents agree that they are currently using eFundi, 90.28% of the respondents agree that eFundi is helpful. Furthermore more results shows that 81.69%

of the respondents agree that training is offered on how to use to eFundi and 55.39% of respondents also agree that information that they need is always available on eFundi.

The results shows that 51.39% of the respondents agree that they are aware of other e-learning platforms. It also shows 57.75% of the respondents disagree that they have used other e-learning platforms other than eFundi e.g. website offering courses online. The results shows that the Mafikeng Campus academic staff members have knowledge on the current e-learning management system in use, they are have used it before and they are also currently using it as they find it helpful. The academic staff members also indicated that information that they are looking for is always available and furthermore they are well aware of other e-learning platforms that are available.

c) Part 4

Table 4.18: Descriptive statistics for Benefits of e-learning (academic staff members).

Question / statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Majority Response
1. Adopting e-learning benefits the students financially	33.33	44.44	13.89	6.94	1.39	77.78 Agree
2. Adopting e-learning benefits the university financially	43.66	30.99	18.31	4.23	2.82	74.65 Agree
3. Adopting e-learning benefits the university operational/operations.	40.85	40.85	14.08	4.23	0.00	81.69 Agree
4. Adopting e-learning improves communication among the students and the instructors (lecturers).	56.94	26.39	9.72	6.94	0.00	83.33 Agree
5. E-Learning benefits the community by giving people an opportunity to further their studies.	36.11	41.67	15.28	2.78	4.17	77.78 Agree
6. Adopting e-learning helps the university to manage its	41.67	38.89	13.89	4.17	1.39	80.56 Agree

resources.						
7. Adopting e-learning helps the university to share resources.	45.83	41.67	9.72	2.78	0.00	87.50 Agree
8. Adopting of e-learning enhances public education.	35.21	32.39	25.35	7.04	0.00	67.61 Agree
9. Adopting e-learning helps the university to reduce the printing costs.	54.17	29.17	9.72	2.78	4.17	83.33 Agree
10. Information that I need is always available on eFundi.	14.29	35.71	27.14	11.43	11.43	50.00 Agree
11. Information on eFundi is available in different formats e.g. excel, word, pdf and etc.	31.43	40.00	20.00	7.14	1.43	71.43 Agree

The objective of the table results above was to determine the benefits of e-learning. From the 83 respondents, 77.78% agree that adopting e-learning can benefit the students financially and 74.65% agree that adopting e-learning can benefit the university financially. The results reflect that 81.69% of respondents agree that adopting e-learning can improve communication among students and instructors (lecturer) and 77.78% of the respondents agree that e-learning can benefit the community by giving people an opportunity to further their studies.

The results further shows that 80.56% respondents agree that adopting e-learning can help the university to manage its resources and also 87.50% respondents agree that e-learning can help the university to share the resources. The results also reflect that 67.61% of the respondents agree that e-learning can enhances public education. Most importantly the results shows that 83.33% of respondents agree that e-learning can help the university to reduce the printing cost.

The results further shows that 50.00% of respondents agree that e-learning management system benefits them because they always find information they are looking for on eFundi. The results also reflects that 71.43% of the respondents agree that information on eFundi is available in different format. The overall results shows that

academic staff members agrees that e-learning is a good idea can be practiced as it will benefit the university, students and the community.

d) Part 5

Table 4.19: Descriptive statistics for issues affecting e-learning (academic staff members).

Question / statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Majority Response
1. Lack of IT personnel skills.	12.86	10.00	21.43	37.14	18.57	55.71 Disagree
2. Lack of skilled academic personnel	14.29	14.29	20.00	31.43	20.00	51.43 Disagree
3. Implementation cost.	4.35	5.80	31.88	39.13	18.84	57.97 Disagree
4. Lack of support from the academic staff to students.	14.29	21.43	21.43	31.43	11.43	42.86 Disagree
5. No e-learning systems' training is offered to students and staff.	21.43	34.29	18.57	21.43	4.29	55.71 Agree
6. Lack of internet access	27.14	28.57	15.71	14.29	14.29	55.71 Agree
7. Lack of skilled personnel to compile e-learning study material.	18.57	18.57	18.57	30.00	14.29	44.29 Disagree
8. No learning material in local languages e.g. Zulu, Afrikaans, Tswana etc.	11.43	14.29	24.29	24.29	25.71	50.00 Disagree
9. Lack of technological infrastructure/resources.	20.00	18.57	21.43	28.57	11.43	40.00 Disagree

The objective of the table results above was to identify issues affecting e-learning practices at NWU. The results reflect that 55.71% of the respondents disagree that the university lack IT personnel skills, 51.43% respondents disagree that the university lack skilled academic personnel and 57.97% respondents disagree that implementation might be the factor that prevent the e-learning practice.

The results continues to show that 42.86% of the respondents disagree that there's a lack of support from the academic staff to students this shows academic do give students support regarding their studies. The 55.71% of the academic staff respondent agree that the university does not offer e-learning straining to staff and students and the same number of respondents agree that there's lack of internet access.

Furthermore the results shows that 44.29% of the academic staff members who participated on the survey disagree that the university lack skilled academic personnel to compile e-learning study material. 40.00% of the respondents disagree that the university lack technological infrastructure or resources to practice e-learning and also 50.00% respondents disagree that the university does not have e-learning material compiled in local languages. According to the overall factors analysed above are not preventing university to practice e-learning.

4.4 Reliability

The reliability of the questionnaire was checked and determined by the use of descriptive statistics scale by Cronbach's Alpha coefficient. The overall Cronbach's Alpha for the study based on number of questions checked for the reliability was 0.813 which falls under the acceptable rate.

4.4.1 Reliability checked for students' results.

a) Part 2

Table 4.20: Reliability (technology Infrastructure- students).

Statement	Mean	Standard Deviation	Sample size (n)
1. The university has enough computers.	3.11	1.365	361
2. The university has high energy-efficient computers (use less power).	2.66	.970	361
3. The university offers a wireless connection to the internet. e. g. Wi-Fi connection	1.65	1.004	361
4. The university uses a physical (wired/ use cables) connection in the computer laboratories.	1.98	1.134	361
5. You have access to computer resources around campus.	1.77	.892	361

6. It is difficult to have access to the computer laboratory.	3.46	1.345	361
7. The university computer resources are easy to use.	1.79	.894	361
8. Students with disability have access to computer resources.	1.95	1.023	361
9. The electronic devices supports disability students.	2.21	1.021	361
10. The computers are maintained regularly and they are free from viruses.	2.45	1.242	361
11. Users need to be offered training on how to use computer resources.	2.37	1.147	361
12. The university have enough skilled IT personnel who maintain the technological infrastructure and systems.	2.26	1.134	361

The students scored high on the whether it is difficult to have access the computer laboratory 3.46 (standard deviation 1.345) and whether the university has enough computers 3.11 (standard deviation 1.365). They have also scored low on whether the university offers a wireless connection to the internet 1.65 (standard deviation 1.004) and 1.77 (standard deviation 0.892) on whether they have access to computer resources around campus.

Based on the interpretation the results shows that the university has enough computers and but it is also difficult to access computer laboratory or resources around campus.

b) Part 3 (Table B)

Table 4.21: Reliability (knowledge on e-learning systems- students).

Statement	Mean	Standard Deviation	Sample size (n)
1. You are computer literate.	2.13	1.064	361
2. University offers Computer training to students.	2.17	1.097	361
3. University have e-learning management system called eFundi.	1.33	.698	361
4. You have used eFundi before.	1.84	1.413	361

5. You have access to eFundi.	1.26	.730	361
6. You currently use eFundi.	1.32	.797	361
7. eFundi is helpful.	1.51	.857	361
8. Training is offered on how to use eFundi.	2.20	1.251	361
9. Information that I need is always available on eFundi.	2.43	1.181	361
10. You are aware of other related e-learning platforms.	3.04	1.226	361
11. You have used other e-learning platforms other than eFundi e.g. website offering courses online like www.w3schools.com	3.44	1.365	361

The respondents have scored high on whether they have used other e-learning platforms other than eFundi 3.44 (standard deviation 1.365) and 3.04 (standard deviation 1.226) on whether they are aware of other related e-learning platform. They also scored low on whether they have access to eFundi 1.26 (standard deviation 0.730) and on whether they are currently using eFundi 1.32 (standard deviation 0.797).

The results shows that students are not aware of other e-learning platforms available and they are not even using them. Students use eFundi because it is the university's e-learning management system.

c) Part 4

Table 4.22: Reliability (Benefits of e-learning- students).

Statement	Mean	Standard Deviation	Sample size (n)
1. Adopting e-learning benefits the students financially	2.81	1.174	360
2. Adopting e-learning benefits the university financially.	2.47	1.047	360
3. Adopting e-learning benefits the university operational/operations.	2.28	.908	360
4. Adopting e-learning improves communication among the students and the instructors (lecturers).	1.93	.913	360

5. e-Learning benefits the community by giving people an opportunity to further their studies.	2.34	1.081	360
6. Adopting e-learning helps the university to manage its resources.	2.12	.920	360
7. Adopting e-learning helps the university to share resources	2.24	1.029	360
8. Adopting of e-learning enhances public education.	2.33	.913	360
9. Adopting e-learning helps the university to reduce the printing costs.	2.22	1.079	360
10.Information that I need is always available on eFundi.	2.54	1.205	360
11.Information on eFundi is available in different formats e.g. excel, word, pdf and etc.	1.70	.917	360

The respondents scored high on whether adopting e-learning will benefit the students financially 2.81 (standard deviation 1.174) and on whether they always find information they need on eFundi 2.54 (standard deviation 1.205). They also scored low on whether information on eFundi is available in different formats 1.70 (standard deviation 0.917) and 1.93 (standard deviation 0.913) on whether adopting e-learning improves the communication between the students and their instructors.

These results suggest that students believes that e-learning can benefit them financially because they also indicated that information they are looking for is always available on eFundi.

d) Part 5

Table 4.23: Reliability (issues affecting e-learning practices- students).

Statement	Mean	Standard Deviation	Sample size (n)
1. Lack of IT personnel skills.	3.34	1.239	361
2. Lack of skilled academic personnel	3.37	1.174	361
3. Implementation cost.	2.91	1.092	361
4. Lack of support from the academic staff to students.	3.21	1.269	361

5. No e-learning systems' training is offered to students and staff.	3.57	1.216	361
6. Lack of internet access	3.84	1.156	361
7. Lack of skilled personnel to compile e-learning study material.	3.55	1.139	361
8. No learning material in local languages e.g. Zulu, Afrikaans, Tswana etc.	2.84	1.433	361
9. Lack of technological infrastructure/resources.	3.39	1.247	361

The results shows that the respondents scored high on whether there's lack of internet access 3.84 at the university and 3.84 (standard deviation 1.156) and 3.57 (standard deviation 1.216) on whether the university does not offer training on e-learning systems to academic staff and students. They also scored low on whether the university does not have learning material in local languages 2.84 (standard deviation 1.433) and 2.91 (standard deviation 1.092) on whether the implementation costs are affecting e-learning practices.

The results suggest that respondents believe that lack of internet does not affect e-learning practices and in terms of implementation cost they are not affecting e-learning practices.

4.4.2 Reliability checked for academic staff members' results

a) Part 2

Table 4.24: Reliability (technology infrastructure - academic staff).

Statement	Mean	Standard Deviation	Sample size (n)
1. The university has enough computers.	2.85	1.40	83
2. The university has high energy-efficient computers (use less power).	3.05	.1.06	83
3. The university offers a wireless connection to the internet. e. g. Wi-Fi connection	1.79	1.07	83
4. The university uses a physical (wired/ use cables) connection in the computer laboratories.	1.97	0.86	83
5. You have access to computer resources around campus.	2.04	1.20	83

6. It is difficult to have access to the computer laboratory.	3.33	1.17	83
7. The university computer resources are easy to use.	2.21	0.92	83
8. Students with disability have access to computer resources.	2.49	0.94	83
9. The electronic devices support disability students.	2.62	0.93	83
10. The computers are maintained regularly and they are free from viruses.	3.01	1.33	83
11. Users need to be offered training on how to use computer resources.	1.95	0.92	83
12. The university have enough skilled IT personnel who maintain the technological infrastructure and systems.	2.47	1.19	83

The academic staff members have scored high on the whether it is difficult to have access the computer laboratory 3.33 (standard deviation 1.17) and whether the university has high-energy efficiency computers 3.05 (standard deviation 1.06). They have also scored low on whether the university offers a wireless connection to the internet 1.79 (standard deviation 1.07) and 1.95 (standard deviation 0.92) on whether the university offer the users training on how to use the resources.

Based on the interpretation the results shows that the university has enough computers and but it is also difficult to access computer laboratory or resources around campus.

b) Part 3

Table 4.25: Reliability (knowledge on e-learning systems- academic staff).

Statement	Mean	Standard Deviation	Sample size (n)
1. You are computer literate.	1.36	0.54	83
2. University offers Computer training to students.	2.14	0.84	83
3. University have e-learning management system called eFundi.	1.25	0.49	83
4. You have used eFundi before.	1.35	0.75	83
5. You have access to eFundi.	1.36	0.82	83
6. You currently use eFundi.	1.44	0.88	83

7. eFundi is helpful.	1.51	0.83	83
8. Training is offered on how to use eFundi.	1.82	1.14	83
9. Information that I need is always available on eFundi.	2.44	1.09	83
10. You are aware of other related e-learning platforms.	2.76	1.34	83
11. You have used other e-learning platforms other than eFundi e.g. website offering courses online like www.w3schools.com	3.39	1.49	83

The respondents have scored high on whether they have used other e-learning platforms other than eFundi 3.39 (standard deviation 1.49) and 2.76 (standard deviation 1.34) on whether they are aware of other related e-learning platform. They also scored low on whether the university have an e-learning management system called eFundi 1.25 (standard deviation 0.75) and on whether they have used eFundi before 1.35 (standard deviation 0.75).

The results show that the academic staff members are aware of other e-learning platforms available and they are not even using them. Both the staff and students use eFundi because it is the university's e-learning management system.

c) Part 4

Table 4.26: Reliability (benefits of e-learning- academic staff).

Statement	Mean	Standard Deviation	Sample size (n)
1. Adopting e-learning benefits the students financially	1.99	0.94	83
2. Adopting e-learning benefits the university financially	1.92	1.02	83
3. Adopting e-learning benefits the university operational/operations.	1.82	0.83	83
4. Adopting e-learning improves communication among the students and the instructors (lecturers).	1.67	0.91	83
5. e-Learning benefits the community by giving people an opportunity to further their studies.	1.97	1.00	83
6. Adopting e-learning helps the university to manage its resources.	1.85	0.91	83

7. Adopting e-learning helps the university to share resources	1.69	0.76	83
8. Adopting of e-learning enhances public education.	2.04	0.94	83
9. Adopting e-learning helps the university to reduce the printing costs.	1.74	1.03	83
10.Information that I need is always available on eFundi.	2.70	1.19	83
11.Information on eFundi is available in different formats e.g. excel, word, pdf and etc.	2.07	0.96	83

The respondents scored high on whether they always find information they need on eFundi 2.70 (standard deviation 1.19) and on whether information on eFundi is available in different formats 2.07 (standard deviation 0.96). They also scored low 1.67 (standard deviation 0.91) on whether adopting e-learning improves the communication between the students and their instructors and 1.69 (standard deviation 0.76) on whether adopting e-learning will help the university to share resources.

These results suggest that academic staff members believes that e-learning can benefit the students and instructors by improving their communication and furthermore benefit the university by allowing the sharing of resources.

d) Part 5

Table 4.27: Reliability (issues affecting e-learning practices- academic staff).

Statement	Mean	Standard Deviation	Sample size (n)
1. Lack of IT personnel skills.	2.61	1.26	83
2. Lack of skilled academic personnel	2.71	1.32	83
3. Implementation cost.	2.38	0.99	83
4. Lack of support from the academic staff to students.	2.96	1.25	83
5. No e-learning systems' training is offered to students and staff.	3.47	1.17	83
6. Lack of internet access	3.40	1.39	83

7. Lack of skilled personnel to compile e-learning study material.	2.97	1.34	83
8. No learning material in local languages e.g. Zulu, Afrikaans, Tswana etc.	2.61	1.31	83
9. Lack of technological infrastructure/resources.	3.07	1.31	83

The results shows that the respondents scored high 3.47 (standard deviation 1.17) on whether the university does not offer training on e-learning systems to academic staff and students and 3.40 (standard deviation 1.39) on whether there's lack of internet access at the university. They also scored low on whether the implementation costs are affecting e-learning practices 2.38 (standard deviation 0.99) and 2.61 (standard deviation 1.31) on whether the university does not have learning material in local languages.

The results suggest that respondents believe that lack of internet does not affect e-learning practices and in terms of implementation cost they are not affecting e-learning practices.

4.4.3 Statistics Reliability

Table 4.28: Statistical reliability

Statistics Reliability (Parts of the Questionnaire)	Statements or questions	Cronbach's Alpha
Part 2	12	0.667
Part 3B	11	0.774
Part 4	11	0.808
Part 5	9	0.844

The table above outline the Cronbach's Alpha of each part of the questionnaire, are all within the acceptable range which is 0.6 to 0.8.

4.5 Chapter summary

This chapter provide detailed results of the data analysed. The results of the survey are presented in graphs and tables. The results have been discussed in detail. The next chapter discusses answers to the research questions that were asked in this study. Conclusion and recommendations are done based on the results.

CHAPTER 5 CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses the answers to the research questions that were asked, it provides conclusions and recommendations based on the research findings. In the survey specific questions were asked and the analysis done based on the applications of statistical frequencies to compare the results based on the research findings.

The study identified issues affecting e-learning practices at North West University-Mafikeng Campus. The study was guided by the Activity Theory which is regarded as a framework for designing a learning environment that is very rich with the technology in order to improve the practices of assessing the learning technologies or used to understand the “changeability in implementation arrangements when it comes to events and determinations for which ICT is being utilised”. Activity theory is a conceptual framework that permits the bridging of the gap between motivation and action by proving with a clear interpretation for procedures at different ranks of acting in the world (Blin & Munro 2008).

The TRA (Theory Reason Action) was also used to guide the study. TRA is regarded as the theoretical basis of Technology Acceptance Model. TRA is basically concerned with determining of mindful intention behaviours. According to this theory the individuals’ behaviour can be determined by his or her behavioural Intention for a specific and as the intended behaviour of the person can be determined by his or her attitude and subjective norm (Lee, *et al.*, 2009).

5.2 Answers to research questions

The study had to identify issues affecting e-learning practices at the Mafikeng Campus of the North-West University. Results to questions that were asked to address the study are discussed below.

a) Technology Infrastructure

The aim of the first question which was proposed was to identify and determine the campus’s current information technology infrastructure. The proposed question also had 12 sub-questions that were asked in order to address it. Analysis of the research survey has shown that from 361 students respondents 38% disagreed that university had

enough computer resources and from 83 academic staff respondents agreed to all the sub-questions, only 45.21% were not sure whether the campus university had high energy-efficient computers (which uses less power).

Based on the findings, students and academic staff perception about university's current information technology infrastructure shows that they all agree that university has enough IT resources to practice e-learning.

b) The mostly used technology element and knowledge on e-learning systems.

The aim of the second question which was proposed was to identify e-learning elements and knowledge on e-learning systems. The fourteen sub-questions were also asked in order to address the proposed question. Out of 361 students respondents at least 78.7% said they had personal devices which included laptops and smartphones, the mostly storage devices they used were the USB and 12.2% store information in the computer memory. 89.9% of students accessed internet at the university.

Out of 83 academic staff respondents 61.97% have laptops and 21.13% use desktop computers. 67.6% of the respondents are using external storage media which include the USB and the external hard drive. 28.17% of the respondents use computer memory. Results indicate that 89.99% of the respondents also access internet at the university.

In terms of e-learning systems both the students and academic staff members agree that they are computer literate, they are aware of the university e-learning management system called eFundi, they are using it and they are it more helpful because they always find information they are looking for on eFundi. The respondents indicated that they were aware of other e-learning platforms that are available and the results shows that both the respondents 54.1% of students and 57.75% of academic staff are not using other e-learning platforms.

Based on the finding it shows that the respondents are aware of e-learning systems. Results also show that the respondents do have personal devices, they have access to internet and they use different types of storage media for data storage which are the elements of e-learning environment. With these results it means in terms of knowledge and technology elements the campus university is ready to practice e-learning which can enhance teaching and learning of the students and their lecturers.

c) Benefits of e-learning.

The aim of the proposed question was to identify the benefits of e-learning. There were eleven sub-questions that were asked to address the proposed question. The results shows that form 361 student's respondents 39.1% are not sure whether adopting e-learning at Campus University would benefit students financially. The other ten questions that were asked of students show that students agree that all e-learning would benefit the university financially, operationally, and it would also improve communication between students and instructors.

Out of 83 of academic staff respondents the results shows that they agree e-learning will benefit the students financially, and the university financially and operationally. They also agree that e-learning would benefit the students and instructors by improving communication. E-learning will benefit the university by allowing the sharing and managing of resources by reducing the printing costs. It would also be beneficial to the community by giving people an opportunity to further their studies.

Based on the results both the students and academic staff members respondents agree that e-learning would benefit community, students, university, academic staff and the public in different ways by implementing it.

d) Issues affecting e-learning practices.

The aim of the proposed question was to identify issues affecting e-learning practices. There were nine sub-questions that were asked to address the proposed question. Out of 361 students respondent 47.6% were not sure whether implementation costs were one of the issues affecting the practice of e-learning. The results also show that according to the students all other identified factors are not affecting the use of e-learning practices. The respondents (43%) agree that there is no learning material in local languages. e.g. Zulu, Afrikaans and etc.

From 83 academic staff respondents 55.71% agreed that the university was not offering training to students and staff members on e-learning systems and also 55.71% agree that there is lack of internet. This means both the identified factors might be having impact on e-learning practices. The results further show that according to academic staff members, the other identified factors may not have effect on the e-learning practices.

e) The Activity Theory in the consideration of NWU e-learning environment

The study was guided by Activity Theory (AT). Theories are defined to be the description of a natural or social behaviour, the occurrence or phenomenon. According to Murphy and Rodriguez-Manzanares (2008) Activity Theory (AT) is defined as “the best kept secret in academia”. It is a framework that offers the most integrated explanation of plans on the nature and the development of human behaviour. For technological use AT permits individuals to move from computers as an attention of concern but by also understanding technology as part of scope of human activities. AT studies human activity and is composed of seven components that are discussed in chapter 2.

Components of the Activity system include the raw material at which the activity is directed and which is shaped or changed into results with the help of physical and symbolic, external and internal tool. The object precede and motivates activity by answering the question of why is the activity being taking place. An outcome is the expected results of the activity that has been performed and the subject which is the individuals or group who are involved throughout the activity. Activity is a collective system determined by an object (e-learning platform) and the intention of a subject (academic staff and students).

In regard to the University e-learning platform/ environment at NWU-Mafikeng eFundi is considered as the object which is used by academic staff members and students, to perform activities and this activities should be determined by an object and the subject e.g. announcement, sharing of study material, assignments, test and etc. Outcome of the e-learning platform at the university determines the importance and the benefit of using the system which is to simplify teaching and learning at the University.

The other components of the activity system is the tools that assist the object of activity, these may include external and internal material (textbooks and computer, language). Tools lead to the change of the object into an outcome. Rules are clear and understandable standards that command activities and interactions within the system by addressing the norms, rules, regulations that might be governing the use and performance of the activity. In regard to the university system it does have rules on how it is used, who get access to specific module site and specify what an individual can do after being authorised to access the system.

The last two components of the activity system are the community and division of labour. Community talk about the members of an activity system, who share the same object and it also, refers to the environment on which the activity is going to be carried out e.g. Students and instructors. Division of labour consist of the separation of tasks and roles among members of the community and the separations of control and status, this answer addresses what needs to be done, when is it to be done and who is responsible for that activity e.g. Lecturer, programme manager, director and rector.

The AT theory contributed to this study in a manner that components of the activity system were considered in development of the questionnaire. The components of Activity system were evaluated by asking questions regarding some components of the activity system. Questions under the technology infrastructure (Part B of the questionnaire) address the tools as one of the activity system components, knowledge on e-learning systems (Part C of the questionnaire) address the tools, object and the outcome. Activities are done on the system and subject of the system are students and the academic staff members, other members that e-learning management system coordinator. The theory guided the study by influencing which factors to address during the survey.

5.3 Testing the hypothesis

Null hypothesis (H_0): Using e-learning systems has no effect on the improvement of teaching and learning.

Alternative hypothesis (H_A): The use of e-learning systems improves teaching and learning.

Testing the hypothesis: Out of the population sample of 444 majority of the students and academic staff respondents have indicated that they are using e-learning, they find it helpful and information they are looking for is always available on the e-learning management system of the university (eFundi).

The majority of the respondents indicated that e-learning improves communication among the students and instructors, e-learning can benefit the community by allowing people to further their studies, and help the university to share resources. It also

enhances public education and with the e-learning systems information or learning material is available in different formats.

Decision: To test the null hypothesis and alternative hypothesis a number of questions on the questionnaire were specifically asked in order to address these hypotheses, majority of the responses from the sample population disagreed to the questions that were asked to address the null hypothesis. The alternative hypothesis was tested were the majority of the respondents agreed to the questions that were asked to address the hypothesis. This means the null hypothesis is not accepted and the alternative hypothesis is accepted because the respondents agreed that using e-learning it does improve the teaching and learning.

5.4 Conclusion

This research study was an attempt to determine the issues or factors affecting e-learning practices at the university campus. For the university to practise e-learning it must have enough computer resources that are in good condition and it must also understand the user's attitude towards the system being implemented. The university policy must also be integrated with the IT policy to ensure that the system being implemented does not have a negative impact on the current operations on the organisations day-to-day operations.

It also includes in the literature overview the definition of e-learning, the importance of e-learning, virtual learning environment, an e-learning environment where Information Communication Technology is used to provide course material for education and training, e-learning tool or technologies which also consist of a number of technologies which can be used which determines the way in which learning is delivered regardless of the environment in which they are adopted (Kahiigi *et al.*, 2008). Furthermore the difference between the e-learning building blocks and traditional learning building blocks are outlined, the critical cross fields, the individual behaviour towards the use of technology and the technology acceptance model.

Chapter 4 discusses the research findings and provides analyses and interpretations of data. In the survey, certain specific questions were asked and the analysis was done based on application of frequencies and the Cronbach's Alpha coefficient was used to test the reliability of the questionnaire and the variables.

The questions were asked in order to find out if there are issues affecting e-learning practices. According to the results the university does have enough information infrastructures to use e-learning, the results also show that besides the university computers that students and academic staff members use they do also have personal computers that they use. Furthermore the results indicated that students and academic staff are aware of e-learning management system the university use, they are also using it and they also find it beneficial to the users. The results shows that the identified factors of a successful e-learning practice that are on this study are not affecting e-learning practices, this means that no other factor has been identified to be affecting the use of e-learning. The university is well equipped with resources and skilled personnel in to practice e-learning effectively.

5.5 Recommendations

Based on the results it would be recommended to the university to practise e-learning effectively because it is well-equipped. The university should consider increasing their computers because according to student' respondents the university does not have enough computer resources. The university should also consider buying computer resources that consumes less power.

It would be recommended that the university should encourage the academic staff members to use the e-learning platforms available which would enhance their teaching and learning, same as the student need to alert about the available resources that would improve their learning.

Overall the university should also consider having study material in other local languages which will give student an option to choose which language they would prefer for their study material. According to the academic staff there is no training provided to staff and students, this recommend that the university would ensure that it offers more training to the users on how to use the available e-learning management system and inform the users about other available e-learning platforms.

Based on the results the majority of the respondents agree that e-learning is helpful, it can benefit the community, student, academic staff and the university as a whole.

5.6 Research summary

The discussion above has yielded answers to research questions and the recommendations and it could be recommended that the NWU can use e-learning approaches and technologies / tools which has proven that it is ready for adopting e-learning. And with all the understanding and having the answers to the above research question it indicate that the university has been ready to use the e-learning.

Bibliography

- ALAEDDINI, M., & KARDAN, A. 2010. "E-learning governance-Towards an applicable framework". In *Education Technology and Computer (ICETC), 2010 2nd International Conference on* (Vol. 3, pp. V3-529). IEEE.
- AL-HARBI, K. A. S. 2011. "E-Learning in the Saudi tertiary education: Potential and challenges". *Applied Computing and Informatics*, 9(1), 31-46.
- ARMATAS, C., HOLT, D., & RICE, M. 2005. "Balancing the possibilities for mobile technologies in higher education". In *Proceedings of the 2005 ascilite conference*.
- BENIGNO, V., & TRENTIN, G. 2000. The evaluation of online courses. *Journal of computer assisted learning*, 16(3), 259-270.
- BENSON, A., LAWLER, C., & WHITWORTH, A. 2008. "Rules, roles and tools: Activity theory and the comparative study of e-learning". *British Journal of Educational Technology*, 39(3), 456-467.
- BHATTACHERJEE, A. 2012. "*Social Science Research: Principles, Methods and practices*". 2nd ed. Creative Commons Attribution Publishers.
- BLIN, F., & MUNRO, M. 2008. "Why hasn't technology disrupted academics' teaching practices? Understanding resistance to change through the lens of activity theory". *Computers & Education*, 50(2), 475-490.
- BROWN, T. A. 2015 "*Confirmatory Factor Analysis for applied Research*" 2nd edition. The Guilford Press, New York & London.
- BRYMAN, A. & CRAMER, D. 2001. "*Quantitative Data analysis with SPSS Release 10 for Windows: A guide for Social Scientists*" London: Taylor & Francis Inc.
- CALVERT, J. 2005. "Distance Education at the Crossroads," *Distance Education*, 26:2, 227-238
- COLDWELL, D. & HERBST, F. 2004. "Business Research". Cape Town: Juta Co. 148p.

- COLEMAN, R. K. N. 2011. "Assessing the Adoption of E-learning in Ghanaian Universities". *Department of Business Administration, Technology & Social Sciences*.
- CONOLE, G. 2004. "E-learning: The hype and the reality". *Journal of Interactive Media in Education*, 11.
- CONOLE, G. 2004. "E-learning-the hype and the reality" (in Special Issue on Designing and Developing for the Disciplines)". *Journal of Interactive Media in Education*.
- CRESWELL, J.W. 2009. "Research Design qualitative, quantitative and mixed methods approaches," 3rd edition. Sage Publications, London.
- CROSS, J., O'DRISCOLL, T., & TRONDSEN, E. 2007. "Another life: virtual worlds as tools for learning", *eLearn Magazine* v. 2007 n. 3.
- CURRAN, C. 2004. "Strategies for e-learning in universities". *Center for Studies in Higher Education*.
- DURRHEIM, K. 2006. "Research Design". (In Terre Blanche, M., Durrheim, K. & Painter, D. Eds. *Research in practice: applied methods for the social sciences*. 2nd ed. Cape Town: Juta Co.
- ELLAWAY, R., & MASTERS, K. 2008. "AMEE Guide 32: e-Learning in medical education Part 1: Learning, teaching and assessment". *Medical teacher*, 30(5), 455-473.
- FREUND, Y. P. 1988. "Critical success factors". *Planning Review*, 16(4), 20-23.
- GOLAFSHANI, N. 2003. "Understanding reliability and validity in qualitative research". *The qualitative report*, 8(4), 597-606.
- GRAVEN, O. H., & MACKINNON, L. 2005. "A survey of current state-of-the art support for lifelong learning". In *Information Technology Based Higher Education and Training, 2005. ITHET 2005. 6th International Conference on* (pp. F2C-19). IEEE.
- GUNASEKARAN, A., MCNEIL, R. D., & SHAUL, D. 2002. "E-learning: research and applications". *Industrial and Commercial Training*, 34(2), 44-53.

HAMID, A. A. 2001. "e-Learning: Is it the "e" or the learning that matters?". *The Internet and Higher Education*, 4(3), 311-316.

HANSSON, H. 2006. "The use of Net-learning in Higher Education in the Nordic Countries", *In Pre-Information for the presentation*, Kyoto, Japan.

Information Resources Management Association. 2006. "Emerging Trends and Challenges in Information Technology Management": *2006 Information Resources Management Association International Conference, Washington, DC, USA*, (Vol. 1). M. Khosrowpour (Ed.). IGI Global.

KAHIIGI, E., EKENBERG, L., & HANSSON, M. 2007. Exploring the e-learning state of art. In *Conference on E-Learning, Academic Conferences Limited* (pp. 349-368).

KAHIIGI, E.K., EKENBERG, L., HANSSON, H. TUSUBIRA, F.F & DANIELSON, M. 2008. "Exploring the e-Learning State of Art", *The Electronic Journal of e-Learning*, 6:2 77 – 88.

Kent School District 201 (2012) "Developing a Research Question". Developing the research questions. Empire State College, Developing Research Questions and Sub-questions, PPT, Web:24 Feb 2015.

KHAN, B. H. (Ed.). 2005. "Managing e-learning: Design, delivery, implementation, and evaluation". IGI Global.

KHAN, B. H. 2000. "A framework for e-learning". *Distance Education Report*, 4(24), 3-8.

KREJCIE, R.V. & MORGAN, D.W. (nd) "Determining sample size for research activities," *Educational and Psychological measurement*, 30, 608.

LAURILLARD, D. 2004. "E-learning in Higher education from changing higher education", *The Journal of Interactive Online Learning*, 2(3), 2004 [7] Edited by Paul Ashwin, 16 June 2004 version, retrieved May 2, 2014 from <http://www.immagic.com/eLibrary>

LEE, B.C. YOON, J.O. & LEE, I. 2009. "Learners acceptance of e-learning in South Korea.Theories and results", *Computers and education*, 53:1320-1329.

- LEEDY, P. D. & ORMROD, J. E. 2010. "*Practical Research: Planning and design*" 9th edition, Pearson Education, Inc., London.
- LIAW, S. S., HUANG, H. M & CHEN, G. D. 2006. "An activity-theoretical approach to investigate learners' factors toward e-learning systems," *Computers in human Behaviour* 23:1906-1920.
- LIAW, S-S., HUANG, H-H. & CHEN, G. D. 2007. "Surveying instructor and learner attitude towards e-learning". *Computer and Education* 49:1066-1080
- MACKEOGH, K. & FOX, S. 2008. "Strategies for embedding e-learning in traditional universities: drivers and barriers", Roy Williams (ed) 7th *European Conference on e-Learning*. University of Cyprus Reading: Academic Publishing Ltd. pp 135-141.
- MAHDIZADEH, H., BIEMAN, H. & MULDER, M. 2008. "Determining factors of the use of e-learning environments by university teachers", *Computers and Education* 51: 142-154.
- MINOU T, 2010. "Evolution of distance education in Iran," *Procedia Social and Behavioral Sciences*, 2:1043–1047.
- MORRISON, J. L. 2003. "The global e-learning framework: An interview with Badrul Khan". *The Technology Source. A Publication of the Michigan Virtual University*. Retrieved May, 18, 2003.
- MOUTINHO, L., & HUTCHESON, G. D. (Eds.). 2011. "*The SAGE dictionary of quantitative management research*". Sage.
- MOUTON, J. & MULLER J. 1998. "*Tracking trends in theory and method: Past and future*". (In MOUTON J., MULLER J., FRANKS P. & SONO T. (Eds). "Theory and Method in South African Human Sciences Research: Advances and Innovations". Pretoria: HSRC Press).
- MURPHY, E. & RODRIGUEZ-MANZANARES, M. A. 2008. "Using activity theory and its principle of contradictions to guide research in educational technology," *Australasian Journal of Educational Technology*, 24(4), 442 -457.

NENTY, H.J. 2009. "Writing a quantitative research thesis". *International Journal of Education Science* 1(1):19-32.

OMWENGA, E. I., & RODRIGUES, A. 2009. "Towards an education evaluation framework: synchronous and asynchronous e-learning cases". *Journal of the Research Center for Educational Technology*, 2(1), 46-59.

OZKAN, S. & KOSELER, R. 2009. "Multi-dimensional students evaluation of e-learning systems in the higher education context: An empirical investigation", *Computers and Education* 53, 1285-1296.

PAPP, R. 2000. "Critical success factors for distance learning", Paper presented at the Americas Conference on Information Systems, *Long Beach, CA, USA*.

PAYNE, G. & PAYNE, J. 2005. "*Key concepts in social research*" Sage Publications Inc., London.

PEÑA-AYALA, A., SOSSA, H., & MÉNDEZ, I. 2013. "Activity theory as a framework for building adaptive e-learning systems: A case to provide empirical evidence", *Computers in Human Behaviour* 30, 131-145

PHIPPS, L. & KELLY, B. 2006. "Holistic approaches to e-learning accessibility", *ALT-J, Research in Learning Technology*. 14(1): 69–78.

PUNCH, K.F. 2005. "*Introduction to social research: quantitative and qualitative approaches*". 2nd ed. Sage publications, London.

ROBERTSON, I. 2008. "Sustainable e-learning, activity theory and professional development". In *Ascilite* (pp. 819-826).

ROODE, J.D. (1993). "Implications for teaching a Process-Based Research Framework for Information Systems." Department of Informatics University of Pretoria 0002, South Africa.

RUANE, J. M. (2005). "Essentials of Research Methods: A guide to Social Science Research" Blackwell Publishing, Oxford.

RYON, K. 2013. "Descriptive and Inferential Statistics". *Publications Oboulo.com*.

SELIM, H. M. 2006. "E-Learning Acceptance Model (ELAM)". *Emerging trends and challenges in information technology management (Vols. 1–2, pp. 73–77)*. Hershey, PA: Idea Group Publishing.

SELIM, H.M. 2007. "Critical success factors for e-learning confirmatory factor model", *Computers and Education*, 49, 396-413

SHRESTHA, P.B. 2009. "Research Paradigm: An overview," Department of Mechanical Engineering, Institute of Engineering, Nepal.

SUN, P. -C., TSAI, R.J., FINGER, G, CHEN, Y-Y & YEH, D. 2006. "What drives a successful e-Learning? An empirical investigation", *Computers & Education*, doi:10.1016/j.compedu.2006.11.007

The Qualitative Report, 8(4), 597-606. Retrieved [04 March 2014], from <http://www.nova.edu/ssss/QR/QR8-4/golafshani.pdf>

THOMAS, E., & MAGILVY, J. K. 2011. "Qualitative rigor or research validity in qualitative research". *Journal for specialists in pediatric nursing*, 16(2), 151-155.

VAN RAAIJ, E.M. & SCHEPERS, J.J.L. 2008. "The acceptance and use of virtual environments in China", *Computers & Education*, 50:838–852.

Annexures

Questionnaire

Dear Respondent

We need your help for us to understand the issues affecting e-learning practices at the North-West University. If you decide not to participate, please just hand in the blank questionnaire at the end of the survey session. What you say in this questionnaire will remain private and confidential. No one will be able to trace your opinions back to you as a person.

How to complete the questionnaire

You can mark each response by making a tick or a cross, or encircling each appropriate response with a PEN (not a pencil), or by filling in the required words or numbers.

Part 1: GENERAL PERSONAL PARTICULARS

Age	17-31	1	32-41	2
	42-51	3	52 and above	4

Gender	Male	1	Female	2
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Race	Black	1	White	2
	Coloured	3	Indian	4

Occupation	Student	1	Academic staff	2
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Level of study	Undergraduate	1	Post graduate	2
	None	3		

Choose Faculty	Law	1	Education	2
	Human social sciences	3	Agriculture Science and Technology	4
	Commerce	5		

PART 2: Technology Infrastructure

Please rate how much you agree with each of the statements according to the scale provided:

1= I Strongly agree 2=I Agree 3= Not sure 4=I disagree 5= I Strongly Disagree

1.	The university has enough computers.	1	2	3	4	5
2.	The university has high energy-efficient computers (use less power).	1	2	3	4	5
3.	The university offers a wireless connection to the internet.	1	2	3	4	5
4.	The university uses a physical (wired) connection in the computer laboratories.	1	2	3	4	5
5.	You have access to computer resources around campus.	1	2	3	4	5
6.	It is difficult to have access to the computer laboratory.	1	2	3	4	5
7.	The university computer resources are easy to use.	1	2	3	4	5
8.	Disable students have access to computer resources.	1	2	3	4	5
9.	The electronic devices supports disable students.	1	2	3	4	5
10.	The computers are maintained regularly and they are free from viruses.	1	2	3	4	5
11.	Users need to be offered training on how to use computer resources.	1	2	3	4	5
12.	The university have enough skilled IT personnel who maintain the technological infrastructure and systems.	1	2	3	4	5

PART3: Knowledge on both e-learning systems and computers

Part 3A (Please tick ONLY ONE relevant Block or the ONLY the mostly used component)

1.	The device you own (Personal Device)	Laptop	1	Tablet e.g. Samsung Galaxy etc.	2	Smartphone	3	Desktop computer	4	PDA (Personal Digital Assistant)	5
2.	The storage media you use.	USB	1	External Hard drive	2	Online storage (SkyDrive, Google drive)	3	CD	4	Computer memory	5
3.	A place where you access the internet.	home	1	university	2	Restaurant/ hotspot	3	Internet café	4	None	5

Part 3B

Please rate how much you agree with each of the statements according to the scale provided:

1= I Strongly agree 2=I Agree 3= Not sure 4=I disagree 5= I Strongly Disagree

1.	You are computer literate.	1	2	3	4	5
2.	University offers Computer training is offered to students.	1	2	3	4	5
3.	University have e-learning management system called eFundi.	1	2	3	4	5
4.	You have used eFundi before.	1	2	3	4	5
5.	You have access to eFundi.	1	2	3	4	5
6.	You currently use eFundi.	1	2	3	4	5
7.	eFundi is helpful.	1	2	3	4	5
8.	Training is offered on how to use eFundi.	1	2	3	4	5
9.	Information that I need is always available on eFundi.	1	2	3	4	5
10.	You are aware of other related e-learning platforms	1	2	3	4	5
11.	You have used other e-learning platforms other than eFundi e.g. website offering courses like www.w3schools.com	1	2	3	4	5

PART4: Benefits of E-learning

Please rate how much you agree with each of the statements according to the scale provided:

1= I Strongly agree 2=I Agree 3= Not sure 4=I disagree 5= I Strongly Disagree

1.	Adopting e-learning benefits the students financially	1	2	3	4	5
2.	Adopting e-learning benefits the university financially	1	2	3	4	5
3.	Adopting e-learning benefits the university operational/operations.	1	2	3	4	5
4.	Adopting e-learning improves communication among the students and the instructors (lecturers).	1	2	3	4	5
5.	e-Learning benefits the community by giving people an opportunity to further their studies.	1	2	3	4	5
6.	Adopting e-learning helps the university to manage its resources.	1	2	3	4	5
7.	Adopting e-learning helps the university to share resources.					
8.	Adopting of e-learning enhances public education.	1	2	3	4	5
9.	Adopting e-learning helps the university to reduce the printing costs.	1	2	3	4	5
10.	Information that I need is always available on eFundi.	1	2	3	4	5
11.	Information on eFundi is available in different formats e.g. excel, word, pdf and etc	1	2	3	4	5

PART4: Issues affecting e-learning practices

Please rate how much you agree with each of the statements according to the scale provided:

1= I Strongly agree 2=I Agree 3= Not sure 4=I disagree 5= I Strongly Disagree

1.	Lack of IT personnel skills.	1	2	3	4	5
2.	Lack of skilled academic personnel	1	2	3	4	5
3.	Implementation cost.	1	2	3	4	5
4.	Lack of support from the academic staff to students.	1	2	3	4	5
5.	No e-learning systems' training is offered to students and staff.	1	2	3	4	5
6.	Lack of internet access	1	2	3	4	5
7.	Lack of skilled personnel to compile e-learning study material.	1	2	3	4	5
8.	No learning material in local languages e.g. Zulu, Afrikaans, Tswana etc	1	2	3	4	5
9.	Lack of technological infrastructure/resources.	1	2	3	4	5

List of Abbreviation

AT	Activity Theory
CD-ROM	Compact Disk Read Only Memory
CFA	Confirmatory Factor Analysis
CMS	Content Management System
CSF	Critical Success Factors
e-learning	Electronic learning
ICT	Information and Communication Technology
IRMA	Information Resource Management Association
IT	Information Technology
LMS	Learning management System
ODL	Open Distance Learning
SEM	Structured Equation Model
SPSS	Statistical Package for the Social Research
TAM	Technology Acceptance Model
TAM	Technology Acceptance Model
TRA	Theory Reason Action
TV	Television
VLE	Virtual Learning Environment
WIFI	Wireless Fidelity

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