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FACILITATORS AND BARRIERS TO THE USE OF E-LEARNING TOOLS AMONG NURSING EDUCATORS IN A SELECTED NURSING SCHOOL IN THE EASTERN CAPE, SOUTH AFRICA

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at the

University of Pretoria

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DECLARATION

I, Ngozi Mbah,

Student Number: 16336331,

declare that:

"Facilitators and barriers to the use of e-learning tools among nursing educators in a selected nursing school in the Eastern Cape, South Africa**"**

is my original work and that it has not been submitted before for any degree at the University of Pretoria or at any other institution. All sources that have been used or quoted have been acknowledged by means of complete references in the text and in the list of sources.

_____ _____

Signed **Date**

Ngozi Mbah

DEDICATION

I dedicate this study to the following persons, who greatly helped, supported and inspired me throughout the course of my study:

- Awesome God the Holy Spirit, my teacher, who made all things possible for me to persevere and complete my study.

- My daughter Anita and son Munachi for the courage to set an example of the rewards of hard work and sacrifices.

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ABSTRACT

TITLE

"Facilitators and barriers to the use of e-learning tools among nursing educators in a selected nursing school in the Eastern Cape, South Africa**"**

The aim of this study is to determine the facilitators and barriers to the use e-learning tools among nurse educators in a selected nursing school in Eastern Cape.

This study followed a quantitative research approach that used a descriptive survey design. A questionnaire was used to collect data from nurse educators on the factors that facilitate and the barriers to the use of e-learning tools in the selected nursing education institution. 110 questionnaires were distributed and 85 (74%) were returned and N=3 questionnaires had missing data so the remaining 82 (71%) was analysed.

From the research, inadequate information and communication technology (ICT) facilities have been identified as one of the major barriers to effective use of e-learning tools in teaching and learning. It was also discovered that high costs of accessing the internet negatively affect the use of e-learning tools in the nursing school.

These findings of this study might add to the knowledge of e-learning in nursing education as an approach to improve the quality and efficiency of teaching and learning if incorporated into the nursing education curriculum. Additionally, the study might add to the body of knowledge in nursing practice regarding the use of e-learning tools in teaching and learning.

Key words: e-learning, e-learning tools, teaching, learning, educators, nursing education institution.

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LIST OF ABBREVIATIONS

ABBREVIATION	MEANING
BEL	Blended e-learning
BELSs	Blended e-learning systems
CBT	Computer-based training
CD-ROM	Compact Disc, read-only-memory
CINAHL	Cumulative Index of Nursing and Allied Health Literature
E-LEARNING	Electronic learning
HE	Higher education
ICT	Information and communication technology
NEI	Nursing education institution
PE	Port Elizabeth
SANC	South African Nursing Council
SPC	Statistical Process Control
UN	United nations
UNESCO	United Nations Organization for Education, Science and Culture

CHAPTER 1

OVERVIEW OF THE STUDY

"FACILITATORS AND BARRIERS TO THE USE OF E-LEARNING TOOLS AMONG NURSE EDUCTAORS IN A SELECTED NURSING SCHOOL IN PORT ELIZABETH, EASTERN CAPE"

1.1 INTRODUCTION AND BACKGROUND

Information and communication technology (ICT) has persistently played an important role in moulding socio-economic and personal structures (Akoh 2012:4). The growth in ICT has transformed our way of life, work, as well as teaching and learning (Mdlongwa, 2012:1). In the 21st century, higher education (HE) has approved e-learning tools as the means for the development of the required basic and professional skills to function efficiently in the 'knowledge economy' (Petit dit Dariel, Wharrad & Windle, 2013:1290). A knowledge economy is concerned with the production of knowledge-intensive activities and services that quicken technical and scientific progress driven by various technologies (Powell & Snellman, 2004:199).

Many terms have been used to describe ICT use in pedagogy (Bhattacharjee & Deb 2016: 2). Such terms include Computer-based training (CBT), web-based learning, online learning, virtual learning and mobile learning (Bhattacharjee & Deb, 2016: 2). In web-based learning, instructions and information are delivered by the Internet (Uslu, Buldukoglu & Zayim, 2014:176). Educational institutions and governments mainly use this type of e-learning tool for teaching purposes. In computer-based training, learners take lessons either offline or online using personal computers and teaching materials delivered through digital video disc (DVD) and compact disc (CD) or even on flash drive (Guan, Ding, & Ho, 2015:349).

Virtual learning is an internet learning system that allows teachers to share educational materials with students via the web, for example Moodle or WebCT (Kybartaite, Nousiainen, Marozas et al., 2007:1). According to Mather and Cummings (2014:101), mobile learning is a way of acquiring knowledge delivered through any mobile device, for example, mobile phone, tablet or Amazon Kindle, or other portable devices.

The most common online education systems include e-learning, which refers to any educational activities offered through ICT for asynchronous, decentralized content presentation and distribution

of knowledge (Koch 2014: 1383). E-learning can be considered a natural development for distance learning, which has always taken advantage of the latest tools to emerge in the context of technologies for constructing good education (Sangrà, Vlachopoulos & Cabrera, 2012:145). Tarus, Gichoya and Muumbo (2015:141) define e-learning as learning that is facilitated and enhanced by the use of information and communications technology. E-learning approaches have varied widely in forms, teaching methods and presentation (Cook, Garside, Levinson et al., 2010:766). Garrison & Randy (2011:120) define e-learning as 'electronically mediated asynchronous and synchronous communication for the purpose of constructing knowledge'. In this regard, synchronous learning uses a learning model that initiates a classroom course, lecture or meeting using Internet technologies. In synchronous learning, the interaction is live; it requires all the participants to be available online at the same time. On the other hand, asynchronous learning is an internet-based version of computer-based training (CBT) typically offered on a CD-ROM or across an organization's local area network. When using asynchronous learning, the learner could access the course at any time at his or her own pace (Takalani, 2008:36). Through asynchronous learning the learners join in the online courses at different times, most of the time at their own schedule (Chang, Pham, Sobolewski, Doughty, Jamal, Kwan, Little, Brenkert, & Mathison, 2014a).

Through e-learning, old and new skills are integrated to overcome the restrictions placed by time and different locations (Amara & Atia, 2016:3). Hence, sometimes e-learning is called 'anytime-and-anywhere' learning (Katuk, Kim & Ryu, 2013:748). The introduction of e-learning does not take away from the face-to-face classroom nor cancel out traditional educators' skill and practice (Lahti, Hätönen and Välimäki, 2014: 137). Hence e-learning can also be used in combination with educator-to-learner or other traditional methods of teaching and learning, which is often referred to as blended learning (BL) (Röhrig, Hempel, Stenger, Armbruster, Seibel, Walcher & Breitkreutz, 2014:745).

Currently, many universities are using blended learning systems (BELSs) (Lin & Wang, 2012:89). In blended learning, the e-learning systems and traditional face-to-face learning systems are integrated to bring about a learning approach that includes both conventional virtual education and traditional classroom learning (Lin & Wang, 2012: 89; Wu, Tennyson & Hsia, 2010: 157; Akkoyunlu & Soylu, 2008:183).

Technological-based teaching and learning approaches come with different challenges that go over and above the technical aspects for nurse educators (Elemam, 2016: 34). In nursing education it is debated whether nurse educators' views and perceptions regarding the use of technology have had a great influence on whether they include it in teaching or not (Schleicher, 2012: 11; Neville, Lam & Gordon 2015:76). Therefore, the nurse educators have a critical role to play in supporting or inhibiting

the uptake of new technology for curriculum delivery (Chigona, 2014:36). In the same vein, Alkharang and Ghinea (2013:6) suggest that the successful adoption of new technologies has positive impacts on the nursing education institution. However, ICT in teaching and learning plays a valuable role in changing the responsibility of learning from the educator to the learner (Koch, 2014:1383).

ICTs used in teaching and learning enhance a social constructivist educational approach which is student-directed, creates open dialogue and construction of knowledge, as advocated by Santally, Rajabaleean and Cooshna-Naik (2012:1). Research carried out in many schools in Kenya has confirmed that there is a deficiency in the effective adoption and use of ICT to support teaching and learning (Mingaine, 2013:32). Consequently, Khan, Abdou and Clement (2016:63) cite the adoption and use of e-learning in schools as enhancement of active, lifelong learning, provision of better access to information and assisting students with reasoning and creative communication. Even though the e-learning approach has been widely adopted by nursing education institutions, many challenges are still noticeable, especially in middle-income countries like South Africa (Bharuthram & Kies, 2013:412). According to Najafabadi, Poorsadegh and Mirdamadi (2013:105) some of these challenges include a lack of resources, inadequate computer literacy, lack of quality e-content, problems with online facilitation of learners, and language barriers in e-learning.

From the nursing fraternity, Salyers, Carter and Cairns et al. (2014:2) indicate that nursing education has continued to make a significant impact on adult learning, continuing, and professional education in the twenty-first century. Therefore, the implementation of technology in nursing education has demanded a change in the nurse educators' teaching methods or approaches (Govender, Wesley & Govender, 2014:2199). It was for this reason that The United Nations Educational Report (2013) urged the present-day nurse educators to become adequately prepared and updated with current trends in nursing education especially in the use of e-learning tools.

The current study intended to determine the facilitators and barriers to the use of e-learning tools by nurse educators in teaching and learning. Although, according to the approval letter issued for this study to be carried out in the selected nursing school, it stated some of the challenges like lack of computers, no internet connectivity and adequate knowledge to use of e-learning tools for teaching and learning purposes.

1.2 PROBLEM STATEMENT

The emergence of educational technologies and e-learning have brought about substantial improvements in the way programs are taught and delivered in higher learning (Kirkwood & Price, 2014: 636). Nursing education is highly technologically-centred in current years through the use of e-tools for teaching and learning (Neville, Lam & Gordon, 2015:75). Nurse educators are under an obligation to use technology and e-tools to improve teaching and learning (D'Souza, Karkada & Castro, 2014:74; Ramnarine-Singh, 2014:1). However, certain factors needed to be addressed for the uptake of technology in nursing education as a measure to enhance teaching and learning.

The efficient use of e-learning tools is determined by the knowledge of use of computers and ICT materials. This has been pointed to globally as the main issue that affects the initiation and adoption of e-learning in nursing education (Boyle & Wambach, 2001:129). In South Africa and other developing countries in Africa like Nigeria and Ghana, educators have been inspired to adopt e-learning to improve pedagogy throughout the curriculum. In spite of the extreme desire for e-learning implementation to be spread across the length and breadth of Institutions of higher learning, there are some factors that make it difficult to succeed (Mdlongwa, 2012:4). Some of these factors include, among others, the high cost of internet connections, poor infrastructure, and lack of technical support for nurse educators (Lwoga, 2012:10). In particular, the provision of internet access in the rural and remote areas like Eastern Cape is a challenge as it is inconsistent and often absent (Fourman, 2016: 33). In the process of this study, it was discovered that the above-mentioned problems were being experienced in the selected nursing school in the Eastern Cape Province of South Africa. This was seen as a problem because it will negatively affect the nursing students in their performances in the clinical areas that is now technology compliant.

The adoption of e-learning tools in nursing education offers assistance and sustenance to e-learners either in or outside the classroom (Tiase, 2015: 520). Through the use of e-tools, opportunities for teaching and learning can take place at anytime and anywhere (Llamas-Nistal, Fernández-Iglesias, González-Tato & Mikic-Fonte 2013: 73; Joshua, Obille, John, & Shuaibu, 2016: 62). However, lack of resources, inadequate computer literacy, and difficulties with facilitating learners are often issues that make the use of e-learning unsuccessful. Therefore, these problems can be addressed by the nursing school by putting in place the facilities that will enhance the use of e-learning.

1.3 RESEARCH QUESTION(S), AIM AND OBJECTIVES OR HYPOTHESIS OF THE STUDY

The research question of this study is:
What were the facilitators and barriers to the use e-learning tools among nurse educators in a selected nursing school in Eastern Cape?

- **Aim**

The aim of this study was to determine the facilitators and barriers to the use of e-learning tools among nurse educators in a selected nursing education institution in Eastern Cape.

- **Objectives**

The objectives of the study were to:

- determine the facilitators to the use of e-learning tools among nurse educators in a selected nursing school in Eastern Cape.
- determine the barriers to the use of e-learning tools in teaching and learning in a selected nursing school in Eastern Cape.
- recommend the e-learning and e-teaching measures that could be used by nurse educators in a selected nursing school in Eastern Cape.

1.4 IMPORTANCE OF THE STUDY

The findings of this study might add knowledge to the following:

- **Nursing education**

The findings of the study might enhance the efficiency of delivering didactics and knowledge acquisition in nursing education through the incorporation of e-learning into the nursing curriculum. E-learning might also enhance teaching and learning by removing boundaries and distances to the classroom.

- **Nursing practice**

The findings of the study might improve the body of knowledge on nursing practice concerning the adoption of e-learning tools as instructional activities in nursing practice.

- **Nursing research**

This study on e-learning can be use to expose factors that can hinder proper implementation of e-learning in nursing education and will increase knowledge regarding e-learning use in the delivery of quality teaching and learning in nursing education in the 21st century.

1.5 DELINEATIONS AND ASSUMPTIONS

1.5.1 Delineation of the research

The study was conducted in a selected nursing education institution in the Eastern Cape. The focus of the study was only on the facilitators and barriers to the use of e-learning tools among nurse educators in a selected nursing education institution in the Eastern Cape.

1.6 DEFINITION OF KEY TERMS

- **E-learning**

E-learning is the teaching and learning approach that delivers course content via electronic media, such as the Internet, intranets, extranets, satellite broadcast, audio/videotape, interactive TV, and CD-ROM (Chen, 2014). In this study, e-learning is defined as the adoption and use of technology for pedagogical purposes in the selected nursing school in the Eastern Cape.

- **E-learning tools**

E-learning tools are learning objects for e-learning, that might be granular, small, and reusable in different learning situations, and deliverable over the Web, enabling many people to access them. In this study, e-learning tools are short message service (SMS), WhatsApp, discussion forums, Skype and email messages that are used in teaching and learning.

- **Teaching**

Richards and Schmidt (2013) defined teaching as the activities of educating or instructing that impart knowledge. When it comes to professional learning, ‘it’s all about the conversation’. Through this conversation, educators engage the learners and help them to understand a challenging concept (Danielson, 2015:1). In this study, teaching meant certain tasks or activities undertaken by nurse educators in the selected NEI using e-learning tools as part of teaching and learning.

- **Learning**

Learning is defined as the knowledge and skills received by instruction or study that brought about change in a person (knowledge, skill and attitudes) that occurred at any time or place, (Siemens, 2014:11). Learning is whatever one does to get better at that work (Lampert, 2010:21). In this study, learning is considered in terms of e-learning as a teaching and learning strategy that uses technology to enhance learning.

- **E-learner**

An e-learner can be described as a learner participating in an online learning environment. In this study, an e-learner is a learner that accessed instructional information using technology and multimedia.

- **Nursing education institution**

A nursing education institution, according to the Nursing Act No. 33, 2005, of the South African Nursing Council, is an institution that delivers instructional activities for the acquisition of knowledge and skill that would lead to registration and practice in any of the nursing categories. In this study, a nursing education institution (NEI) is the institution where the data was collected.

- **Nursing educator**

A nursing educator is a registered nurse with an extra qualification in nursing education and has been registered as such with the South African Nursing Council (Nursing Act, no 33 of 2005). A nurse educator in this study refers to the teacher that delivers teaching and learning in the selected NEI by the use of technology.

- **Information and communication technology (ICT)**

Information and communication technology implies various sets of goods, applications and services used to produce, process, store, disseminate and exchange information. These include the radio, television and telephone, and the current ICTs of computers, satellite and wireless technology and the Internet (United Nations Development Programme, UNDP: 2013). In this study, ICT is the programs that will help to solve problems in a shorter time period in teaching and learning at the selected nursing institution.

1.7 RESEARCH METHODS

This study followed a quantitative research approach that used a descriptive survey design. A complete enumeration sampling method was used to collect data from the entire population of nurse

educators in the selected nursing education Institution. The sample size for this study was (n=110) nurse educators in both the main and sub-campuses of the selected nursing education institution. The study obtained ethical approval from the University of Pretoria's Faculty of Health Sciences Ethics Committee, and permission was also obtained from the management of the NEI to allow staff to participate in the research. The respondents also signed informed consent forms. A questionnaire was used to collect data from the respondents. The questionnaire was developed by the researcher with the aid of a statistician following a rigorous and extensive literature review. The questionnaire focused on factors that can act as facilitators or barriers to the use of e-learning tools in the selected nursing education institution in Eastern Cape. The respondents were given the questionnaires to complete in their offices while the researcher was around. Collected data was analysed using descriptive statistics. More information on Research Methods will be discussed in Chapter 3.

1.8 ORGANISATION OF THE STUDY

Chapter 1: Overview of the Study
This chapter discussed the introduction and background to the study. It also dealt with the problem statement, the research questions, and the aims and objectives of the study.

Chapter 2: Literature Review
Chapter two discusses the literature review which was conducted on the factors that hinder the use of e-learning tools, the benefits and disadvantages of e-learning tools, and teaching strategies that enhance e-learning.

Chapter 3: Research Methodology
Chapter three is on the research methodology that was followed to determine the facilitators and barriers to the use of e-learning tools among nurse educators in the selected nursing education institution.

Chapter 4: Data Analysis and Interpretation
This chapter discusses how the collected data was analysed and interpreted to answer the research question.

Chapter 5: Discussion
This chapter discusses the findings, limitations, conclusions and recommendations of this study.

CHAPTER 2
LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter described the overview of the study on aspects such as the introduction and background to the research topic, problem statement, research questions, aim and objectives of the study, importance of the study, delineation and definition of key terms, as well as the research methods and study design. The objectives of this study were:

- determine the facilitators to the use of e-learning tools among nurse educators in a selected nursing school in Eastern Cape.
- determine the barriers to the use of e-learning tools in teaching and learning in a selected nursing school in Eastern Cape.
- recommend the e-learning and e-teaching measures that could be used by nurse educators in a selected nursing school in Eastern Cape.

This chapter discusses the review that was conducted on the barriers and facilitators to the use of e-learning tools among nursing educators. The review created an idea of the established knowledge and also what was not yet known about the problem to be researched (Brink, Van der Walt & Van Rensburg, 2012: 54). An integrative approach was followed to extract literature during the period 2012-2017. Both peer-reviewed articles as well as grey literature that directly or indirectly refers to facilitating factors and the barriers to the use of e-learning tools among nurse educators were reviewed.

2.2 INTEGRATIVE REVIEW

This review followed an integrative approach. This approach was chosen over systematic review methods. Systematic review refers to a rigorous and systematic synthesis of findings from a quantitative study on a common or strongly related research question (Grove, Burn & Grey, 2013:28). An integrative review makes a rigorous summary of all research evidence possible

including both qualitative and quantitative literature (Aromataris & Pearson, 2014:53). An integrative review was chosen as it deals with specific concepts or content areas in the literature (Christmals & Gross, 2017:7). Moreover, this type of review includes both research studies and grey literature that were summarized, analysed, and overall conclusions drawn from them (Squires and Amico, 2015:3). In this case, the research findings from many studies on the same topic were combined and all the information gathered supported the findings of the main study (Whittemore & Knafl, 2005: 546).

2.3 METHODOLOGY

2.3.1 AIM AND QUESTION OF THE REVIEW

This integrative review study was conducted with the aim of mapping out the available knowledge on the facilitators and barriers to the use of e-learning tools among nurse educators. The question that guided the review was: what are the facilitators and barriers to the use of e-learning tools among nurse educators?

The integrative review includes the following steps: searching for literature that addresses the research questions and problem, the search strategy, screening the articles searched, and quality review of the articles. This was followed by extraction of the needed information from the articles and reports, and then analysis and reporting of results as recommended by Squires and Amico (2015:3).

2.3.2 SEARCH STRATEGY

Only the Scopus database was searched for scientific evidence and reference lists of the articles as well as several books that dealt with e-learning in higher education and educators. Scopus database was chosen as the largest curated abstract and citation database of peer-reviewed literature. Scopus is a comprehensive database of the world's research output in various fields that include, technology, medicine, social sciences, and arts and humanities. The intention for the choice for Scopus was also based on not missing crucial available evidence from global perspectives. The search words were:

- E-learning in higher education.
- The factors that facilitate and the barriers to the use and adoption of e-learning tools.
- Benefits and disadvantages of e-learning tools.
- Teaching strategies to enhance e-learning.

2.3.3 THE INCLUSION AND EXCLUSION CRITERIA

The aim of inclusion and exclusion of literature was to map out what is available on the facilitators and barriers to the use of e-learning in nursing education. Common sense principles of evidence search for this review were engaged as it was not a systematic review which follows the traditional hierarchy of evidence criteria (Hagger & Orbell, 2003). The literature searched needed:

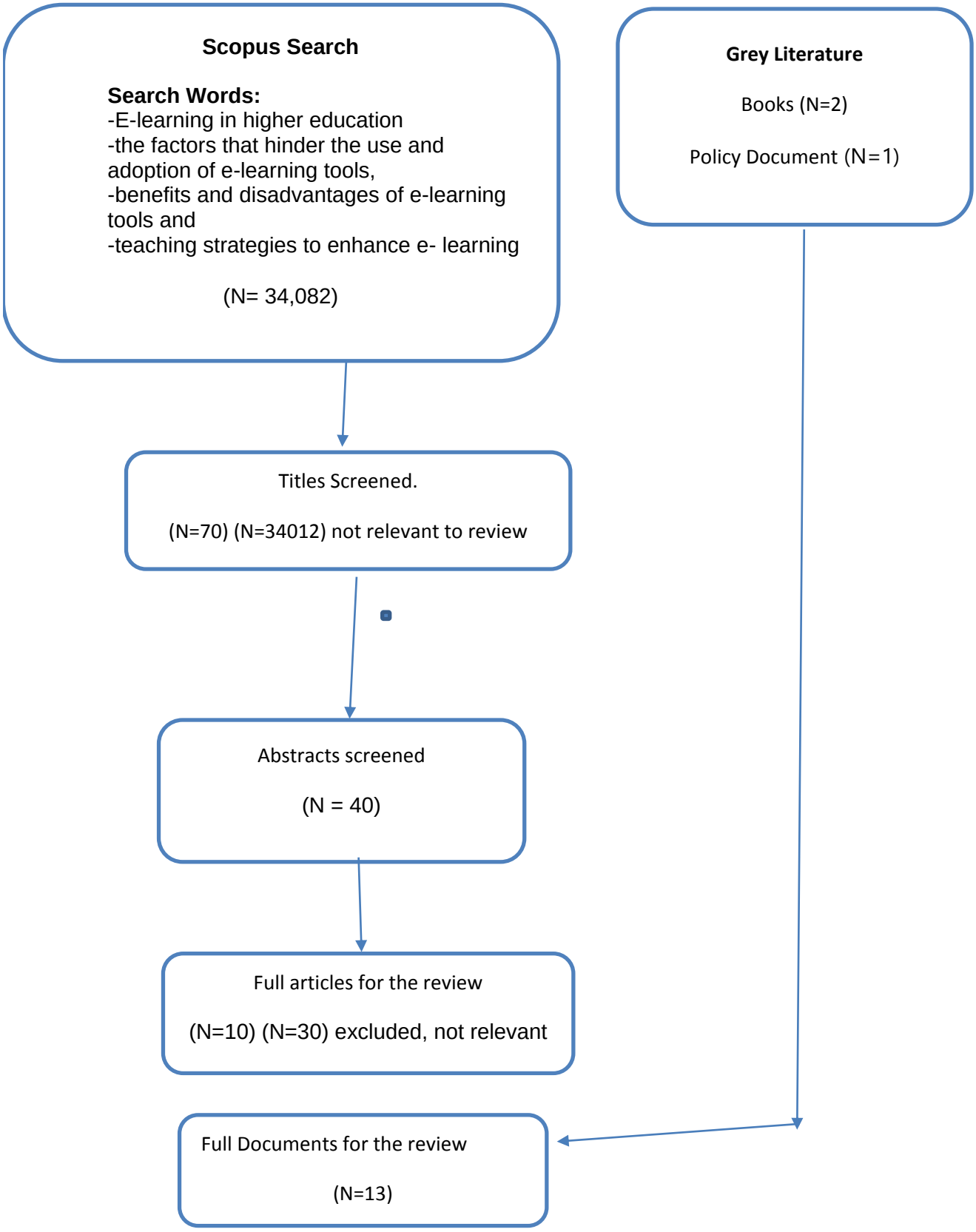
- To be in English
- To have been published between 2012 to 2017 to ensure that the literature or study is recent.
- To discuss facilitators and barriers to the use of e-learning in higher education.

The literature that was not written in English, or not discussing e-learning, or the facilitators and barriers to use e-learning, was excluded.

2.3.4 SEARCH OUTCOME

The initial search yielded (N= 34,082) hit counts from Scopus database. Titles of the literature were screened for their relevancy and only (N=70) remained within the scope of the review. The (N=34012 was excluded because they were not relevant to this review. Subsequently the title review was followed by a review of the abstracts of the published literature and (N=40) remained. From the (N= 40) abstracts only (N=10) full articles as well as (N=3) grey articles/books remained to conform to the inclusion criteria. The excluded (N=30) articles were also not relevant to the review. The full ten articles were obtained and they will be reported on in this review. However, some articles that are mentioned in this review were not part of the two searches, but they are briefly used in this review as they provide a pedestal for this review. Refer to Figure 2.1 for the search outcome.

FIGURE 1.1: LITERATURE SEARCH



2.3.5 DATA EXTRACTION

The ten articles and grey literature meeting the inclusion criteria were extracted into tables. Table 2.1 provides a summary of the thirteen sources, presenting them under the following headings: author(s), year of publication, the country of the publication, the title, aim/ purpose(s) of the study, the research design, and the teaching strategies that were used in the study.

Figure 1.2: Description of articles reviewed

AUTHOR(S) AND YEAR	COUNTRY	TITLE	AIM/PURPOSE	DESIGN	TEACHING STRATEGIES
Abdullah & Mtsweni, 2014	South Africa	The role of e-tutors in promoting e-learning	To study the use of technology-enhanced learning by e-tutors	Not indicated	Facilitation and guidance in the learning of students
Arkorful & Abaidoo, 2015	Ghana	The role of e-learning, advantages and disadvantages of its adoption in higher education	Usage of e-learning in teaching and learning in higher educational institutions	Not indicated	Integration of e-learning technologies in education
Bhardwaj, Nagandla, Swe & Abas, 2015	Malaysia	Academic staff perspectives towards adoption of e-learning	To analyse the extent of adopting and integration of e-learning into traditional teaching methods	Quantitative research	Not indicated
Bonk & Graham 2004	San Francisco, USA	Handbook of blended learning	To define, explain the usefulness and importance of blended learning	Not indicated	Face-to-face learning and computer-mediated
Button, Harrington & Belan, 2014	Australia	E-learning & information communication technology (ICT) in nursing education	To facilitate technological skills as the basic prerequisite to e-learning	Qualitative exploratory research	Not indicated

AUTHOR(S) AND YEAR	COUNTRY	TITLE	AIM/PURPOSE	DESIGN	TEACHING STRATEGIES
Conole, 2016	United Kingdom	Strategies for enhancing the learner experience and quality of MOOCs	To explore the nature of learning and the learner experience in the use of e-learning	Not indicated	Through interaction with multimedia, and through communication and collaboration with peers
Department of Education, 2004 Government Gazette No. 26734	South Africa	Transforming learning and teaching through information and communication technologies	Government's response to a new information and communication technology environment in education	White Paper on e-education	Not Indicated
Goosen & Van Heerden, 2015	South Africa	E-learning management system technologies for teaching	To offer the learner the opportunity to choose when to learn irrespective of geographical location	Not indicated	Discussion forums and blogs were preferred strategies
Koch, 2013	Germany	The nursing educator's role in e-learning	To explore how e-learning transforms the role of nurse educators	Narrative approach	Not indicated
Czerniewicz, Ravjee & Mlitwa, 2006	South Africa	ICTs and the South African higher education landscape	To illuminate some of the challenges presented by the utilization of ICTs in higher education	Qualitative research	Not indicated

AUTHOR(S) AND YEAR	COUNTRY	TITLE	AIM/PURPOSE	DESIGN	TEACHING STRATEGIES
Najafabadi et al., 2013	Iran	Challenges of application of information and communication technology	To identifying technical challenges and hindrances to the use of e-learning tools	Descriptive and quantitative research	Not indicated
Ndlovu & Lawrence, 2012	South Africa	The quality of ICT use in South African classrooms	Assistance in the implementation of e-learning and provision of supplies and ICT skills development	Paper presentation	Not indicated
Stodel, Thompson & MacDonald, 2006	Canada	Learners' perspectives on what is missing from online learning	To evaluate the insights gained into what makes an online learning experience successful	The inquiry was qualitative in nature and conducted from a constructivist perspective	The teachers and students were using e-discussion forums

2.3.6 QUALITY ASSESSMENT

In order to increase the robustness of the search approach an independent reviewer was used to conduct different reviews and was requested to assist in the review of titles, abstracts and full articles. The independent reviewer and the researcher came together to share the results and reach consensus on the literature that was addressing the review aim. The ten (N=10) full articles as well as the three (N=3) grey literature/books were then synthesised and reported in Table 2.1. The section that follows will discuss the key findings of the review.

2.3.7 FINDINGS

The section that follows will summarise the findings of the ten articles and the three books that were clustered under facilitators and barriers to use and adoption of e-learning tools, benefits and disadvantages of e-learning tools, as well as teaching strategies to enhance e-learning.

Though the objectives of the study were separated to determine both the facilitators and barriers for the use of e-tools in nursing education, the review reports them both in the same section.

2.4 FACILITATORS AND BARRIERS TO THE USE AND ADOPTION OF E-LEARNING TOOLS

Lately, the classroom scenario is changing from the traditional way of teaching, i.e from one-way to two-way communication and interaction; with teachers and students participating on e-discussion forums (Stodel, Thompson & MacDonald, 2006:4). However, there are still technical challenges such as insufficient infrastructure for virtual learning, reduced internet connectivity and many more that serve as hindrances to the use of e-learning tools (Najafabadi, Poorsadegh & Mirdamadi 2013: 108). According to Button, Harrington and Belan (2014: 1311), ICT facilities and technological skills are the basic prerequisites for learners and educators to successfully participate in e-learning.

The ability to use ICT has become significant for nurses alongside clinical skills. ICT training should be organised to enable the educators to use technology in teaching and learning activities. These skills should incorporate training on technological equipment and web searching for information. There is a need to support teaching staff in using e-learning tools for teaching and learning (Abdullah & Mtsweni, 2014: 68) as well as students. Choosing to use new technology is an important task that requires strong support and the readiness of the educators and learners using it. Consequently, it is

essential to develop an overall plan for the achievement of the adoption of e-learning in an institution of higher learning (Bhardwaj, Nagandla, Swe, & Abas, 2015:15).

In Malaysia, according to Chong, Francis, Cooper, Abdullah, Hmwe and Sohod (2016: 370), the use of e-learning tools as part of continuous nursing education has been cost-effective. Nevertheless, the development of e-learning for nursing education requires the availability of computers and internet access, the learners' interest and preferences, and positive attitudes towards e-learning, to enable the educators to understand the learners' needs and perspectives. The availability and use of computer and internet facilities was relatively low in the selected nursing education institution, and only a small percentage of the respondents had e-learning experience. According to a study by Ma'arop and Embi (2016: 41), the main barriers to the implementation of e-learning in higher education institutions in Malaysia are staff shortages (84.5%) and a lack of motivating factors among those implementing e-learning.

2.5 BENEFITS AND DISADVANTAGES OF E-LEARNING TOOLS

It is an undisputed fact that higher education globally and locally are both in transition and under pressure and it is also generally agreed that Information and Communication Technologies (ICTs) form an intrinsic part of that turmoil and change (Czerniewicz, Ravjee & Mlitwa, 2006: 3). Globally, e-learning has become one of the major aspects of delivering teaching and learning. It has become an alternative way of delivering education around the globe. The majority of the developing countries suffer from a gross academic staff shortage (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2014); therefore, e-learning has enhanced accessibility to teaching and learning and increased the chances for relegated groups to be educated (Omer, Klomsri, Tedre, Popova, Klingberg-Allvin, & Osman, 2015: 268). A sudden and vast global change is currently taking place in education and training. It is driven by the changing nature of work, the realities of the information age, new global partnerships and an awareness of the need for equal distribution of educational opportunities (Government Gazette No. 26734, 2004).

Information and communication technology in education is used for the online development of skills, acquisition of information and research purposes. Nevertheless, it is obvious that policies for ICT adoption in higher education institutions are still lacking. And in the absence of a basic conceptual policy structure, ICT use in teaching and learning will not be acknowledged as a tool for encouraging educational systems (Maharaj, 2015:17).

The literature indicated several benefits related to the adoption of e-learning tools in teaching and learning (Goosen & Van Heerden, 2015: 121) as educators could encourage learners to make use of teaching strategies and technology to enhance metacognition. E-learning offers the learner the opportunity to choose when to learn irrespective of geographical location. Additionally e-learning allows learners to discover and explore new ideas from experts globally (Oyovwe-Tinuoye & Adogbeji, 2013: 24). Global development goals seek to increase access to education for all, and the ability of existing educational systems to meet such a demand is enhanced by incorporating various e-learning tools in order to enhance performance outcomes (Goosen & Van Heerden, 2015:116). Through e-learning, educators and learners become on a par with current education trends, as a way to meet the demand with modern tools and industrialization (Bhattacharjee & Deb, 2016: 3).

The literature reiterates the need for continuous training: that includes assistance in the implementation of e-learning and the provision of supplies and ICT skills development. ICT skills development for educators should be in relation to the curriculum to implement e-tools as a teaching and learning strategy efficiently (Ndlovu & Lawrence, 2012: 21). According to Hennessy et al. (2010a: 45) integrating technology in e-learning has brought about the expansion of distance learning programmes. Nursing programmes are expanding globally in order to avail learners in the remote areas with access to educational information (Oyovwe-Tinuoye & Adogbeji 2013: 23). E-learning use in nursing education can be a positive step in addressing the unsuitable situation involving critical nursing workforce shortages and multiplying health needs in a number of areas that are deprived of much needed healthcare (Effken & Abbott, 2009: 440).

An important debate from the literature on e-learning is that educators' perceptions and views regarding the use of technology have a significant influence on whether they include it in their teaching or not. Therefore, considering the critical role of educators, it is relevant to understand their contributions that bring about supporting or inhibiting the uptake of new technology for curriculum delivery (Chigona, 2014: 1701).

According to Arkorful and Abaidoo (2015: 34), some advantages and disadvantages of e-learning are as follows: e-learning provides an opportunity for relations between learners by the use of discussion forums. Consequently, e-learning helps to break the barriers that were capable of preventing participation including the fear or being shy of talking before other learners. E-learning promotes students' interaction with each other, exchanging ideas and gaining respect for other views. Seyoum (2004:3) believes that the use of e-learning tools helps to make up for academic staff shortages and within a larger environmental context may include the need to develop a competitive

workforce. Due to reduced contact with educators, explanations and clarifications of areas of confusion for the learners are reduced and this will render e-learning tools less effective.

Raba (2017: 56) states that effective teaching strategies have a positive impact on producing good lesson objectives that can be finished successfully in the shortest possible time with ease. The educators and the students learn better and keep up with knowledge development provided by specialists' experience in various academic fields.

Despite the stated potential benefits e-learning stands to offer in nursing education, there are disadvantages such as the complete absence of essential personal interactions (Arkorful & Abaidoo, 2015: 35). This personal interaction is not only between the learners and educators, but also among the learners themselves, irrespective of all the advantages of e-learning tools. Swanson, Davis, Parks, Atkinson, Forde, Choi and Washington (2015:67) believed that a lack of 'facial expressions and body language' sometimes makes it difficult for learners to accurately interpret messages. The methods and techniques involved in e-learning require intensive preparation for the nurse educators (Koch, 2014: 1382). Additionally, e-learning offers students autonomy that may compromise the nurse educators' standing. Most important is the challenge of constant evolution in technology (Vica, 2015: 37).

2.6 TEACHING MEASURES TO ENHANCE E-LEARNING

From the review, it is clear that e-learning encourages the use of different teaching measures and approaches that have been informed through research in teaching and learning (Conole, 2016:3). These measures include: making lectures accessible, recording lectures, creating opportunities for small group participation, giving students time to prepare for classes, encouraging contributions in class, encouraging critical analysis, explaining assessment expectations and giving written feedback promptly (Arkoudis, 2012: 6). Often, ICT in the educational policy of the government stipulates the levels at which e-learning tools will be placed in schools, and how learners and educators would be provided with the principal ICT skill acquisition programs to provide for the multiplying job market (Bhattacharjee & Deb, 2016: 3).

Koch (2013: 1385) urges that educators should be able to create a multimedia, information-rich learning environment putting into consideration students' learning needs. The traditional instructive lectures are gradually becoming a thing of the past as many higher education institutions make use of ICT to aid the print content that they deliver to students (blended learning) (Graham, Woodfield,

& Harrison, 2013). Bonk and Graham (2004) described the rising of blended learning as the convergence between traditional face-to-face learning environments and computer-mediated (or distributed) learning environments. Some of the measures used in blended learning are: broadcast audios and videos issued to students as part of a learning kit. In recent times, multimedia content such as recorded lessons in audio/visual forms is being delivered offline (Reddi, 2012:182). Some NEIs use electronically mediated interaction and communication, for example Wikis, Skype, e-blackboard, e-lecture, learning management systems, etc. (Price & Kirkwood, 2014:553). Nursing education is absorbing numerous innovative and efficient ways of interactive teaching which is actually run by live teaching and learning technology software that could be combined with a Whiteboard or Blackboard learning system that could be used as a platform for asynchronous and synchronous teaching, and provides the blended teaching and learning environment which integrates face to face teaching with clinical practical sessions (Bhardwaj at el., 2015:12).

The review pointed out the importance of investing in infrastructure and internet bandwidth in higher education institutions (Marcial, Caballero, Rendal, & Patrimonio, 2015:38). Equally, there was a need to improve awareness about online learning among educators to enhance teaching and learning (Billings & Halstead, 2015: 23). Educators should use the opportunity of the many massive open online courses (MOOCs) available to improve their skills (Conole, 2016: 12).

This study sought to determine the factors that were barriers to the use of e-learning tools. These factors might be technical, financial and even personal in nature (Rogier, 2012).

2.7 CONCLUDING REMARKS ON THE REVIEW

Evidence on e-learning indicated that there were factors that facilitated the use of e-learning tools in higher education institutions as well as barriers that frustrated the adoption of e-learning. From the review it is noticeable that the use of e-learning tools made teaching and learning easier for the learners and the educators. Of importance from the review is that the use of e-learning for delivery of educational information may improve the training of nurses. Regardless of the enormous use of e-learning in didactics, further research is needed to unveil the factors causing the barriers to its use and policy formation to guide the implementation.

2.8 SUMMARY

This chapter presented an integrative review of literature on the factors that facilitate and the barriers to the use of e-learning tools, the benefits and disadvantages of e-learning tools, as well as teaching

strategies that enhance the use of e-learning tools. The chapter described the processes that were followed to obtain and synthesise the available knowledge on factors that facilitate and the barriers to the use of e-learning tools. The next chapter will discuss the research methodology and design used for this study.

CHAPTER 3

RESEARCH DESIGN AND METHOD

3.1 INTRODUCTION

Chapter two discussed the literature review that took an integrative approach in this study. The review was on the facilitators and barriers to the use of e-learning tools, benefits and disadvantages of e-learning tools, and teaching strategies that enhance the e-learning approach.

The current chapter will explain the research design and method used in this study. An overview of the research design, as well as the research method, will be described in order to answer the research question and how the research objectives were approached.

3.2 RESEARCH AIM

The aim of this study is to determine the barriers and facilitators to the use of e-learning tools in teaching and learning in a selected nursing education institution in Eastern Cape.

3.3 RESEARCH OBJECTIVES

The study was directed by the following objectives in order to achieve the above-mentioned aim:

- determine the facilitators to the use of e-learning tools among nurse educators in a selected nursing school in Eastern Cape.
- determine the barriers to the use of e-learning tools in teaching and learning in a selected nursing school in Eastern Cape.
- recommend the e-learning and e-teaching measures that could be used by nurse educators in a selected nursing school in Eastern Cape.

3.4 RESEARCH METHODS

Polit and Beck (2012:733) define the research method as the steps, procedures, and strategies for gathering, organizing, or analyzing data in a study. In this study, the following methods and

procedures were followed: the research design, research setting, unit of analysis, sampling techniques, data collection and data analysis and validity and reliability.

3.4.1 Quantitative Research

In a quantitative research design, objective and systematic process are implemented to obtain numerical data for the purpose of understanding aspects of the world (Grove et al., 2013:23). In addition, O'Leary (2010:105) sees quantitative research as often characterized by an objective and positivist search for singular truths that depend on the hypotheses, variables and statistics that are usually on a large scale but without much depth in the form of a questionnaire. Quantitative research is designed to test hypotheses and use deductive reasoning to generate estimations that are tested in the real world. Quantitative research is used to describe the variables, examine relationships between variables, and determine the cause and effect interactions between variables (Grove *et al*., 2013:23). Quantitative research has the following characteristics as expounded by Brink *et al*. (2012:11):

- Uses structured procedures and formal instruments to collect information
- The research is objective or unbiased
- Analyses numeric information through statistical procedures
- The study usually involves many respondents

The current study used a quantitative research approach which is a research approach that emphasizes objective measurements and the statistical, mathematical, or numerical analysis of data collected through polls, questionnaires, and surveys, or by manipulating pre-existing statistical data using computational techniques (Babbie, 2015; Polit & Beck, 2012a). Data collected were analyzed using descriptive statistics. Data analysis will be presented in-depth in Chapter Four.

3.4.2 Research Design

According to Polit and Beck (2008: 765), research design is the plan for addressing a research question and obtaining answers. A research design also includes specifications to enhance the study's integrity. In another definition, by Grove, Burns and Gray (2013:43), a research design is described as the blueprint for conducting a study that maximizes control over factors that could interfere with the validity and findings of the study.

According to LoBiondo-Wood and Haber (2010:159) research design is described in relation to its three functions which are:

- to give the blueprint or plan for the research study;
- to test research questions and hypotheses; and
- to involve structure and strategy.

The current study followed a quantitative research approach that used a descriptive survey design. The researcher considered a positivist research paradigm with a quantitative design that is descriptive and a contextual approach for this study to determine the barriers and the facilitators to the use of e-learning tools among nurse educators in the selected nursing education institution.

3.4.3 Descriptive Surveys

The term survey is used in two ways within scientific practice. Surveys in a broad sense mean any descriptive or correlational studies. Surveys imply non-experimental studies. Sometimes surveys are used as data collection techniques in which the researcher uses questionnaires (collected by email, by mail, or in person) to gather data about an identified population (Grove et al., 2013:215). Descriptive survey is a non-experimental design that is used when a researcher wants to describe the variable(s) of interest as it/they occurs naturally (Botman, Greeff, Mulaudzi, & Wright, 2015:110). According to Polit and Beck (2012:236), the purpose of descriptive research is to observe, describe and document the characteristics of a situation. Furthermore, descriptive research was created to gain more information regarding the characteristics within a field of study (Grove et al., 2013:215).

This study was a descriptive survey as it was designed to determine the facilitators and barriers to the use of e-learning tools in a nursing education institution in Eastern Cape. The aim of using descriptive research in this study was to describe and categorize information on facilitators and barriers to the use of e-learning tools in nursing education among nurse educators through a structured questionnaire.

3.4.4 Descriptive study

According to Polit and Beck (2012:236), the purpose of descriptive research is to observe, describe and document the characteristics of a situation. Grove *et al*. (2013:215) agree that descriptive research was created to gain more information about the characteristics within a particular field of study. Descriptive research attempts to describe something. The main purpose of descriptive

research is to describe cause and effect between variables. A descriptive study may be used to develop theory, identify problems with current practice, justify current practice, make judgments or determine what others in similar situations are doing (Grove, et al, 2013:215). A descriptive survey aims to gain more information about the characteristics within teaching and learning, and specifically e-learning in this case.

This research study was descriptive as it aimed to describe and categorize information by means of a structured questionnaire, which determined the facilitators and barriers to the use of e-learning tools in teaching and learning among nurse educators of the selected nursing education institute in Eastern Cape, South Africa.

3.4.5 The setting of the study

The research setting referred to the place where the data was collected (Grove, et al, 2013:373). In this study, data were collected at a nursing education institution (NEI) that has 23 sub-campuses across the Eastern Cape Province of South Africa. The selected NEI has about 110 nurse educators with an annual enrolment of more than 200 nursing students. The student nurses apply through the Eastern Cape Department of Health and on admission are distributed to all of these different campuses. In these campuses, their major method of teaching was face to face between the nurse tutor and nursing students. They rarely used electronic methods in their teaching, hence making this study essential.

3.5 STUDY POPULATION AND SAMPLING

3.5.1 Study population / Unit of analysis

According to Grove et al., (2013:351), population is defined as all the elements (individuals, objects or substances) that meet certain criteria for inclusion in each universe so that the interest of the researcher is represented. Polit and Beck (2012:569) concur that the targeted population is the entire population in which the researcher is interested from whom data could potentially be collected. The targeted population was the group from which the researcher aimed to draw a sample.

In this study, the research target population was the nurse educators in the selected nursing education institution in Eastern Cape.

3.5.2 Sampling method

A sample is defined as a subset of the population or the elements which are selected to be included in the study. Brink et al. (2012:215) explain two methods of sampling which are non-probability and probability. Non-probability sampling is a process by which a sample is selected from elements or members of a population through non-random selection. In contrast, in probability sampling, a random sampling procedure is used to select a sample from elements or members of a population. The main principle of non-probability sampling techniques in quantitative research is the selection of a sample based on the researcher's subjective judgment.

The researcher in this study used complete enumeration, which is sometimes also referred to as total population sampling. Complete enumeration is a type of purposive sampling technique that involves collection of data from the entire population with a given set of characteristics. This type of sampling was chosen because the population in this study was relatively small (Fanzana & Srunv, 2001: 217). In this study, the statistician recommended that every nurse educator in the selected nursing education institution, if willing to participate, be used. It was anticipated that all 110 nurse educators would participate by filling in the questionnaire for the study. Questionnaires were distributed to all nurse educators in all the campuses of the selected nursing school. (N=82) questionnaires was returned by the participants which gave rise to.

3.5.3 Sample size

The sample size for this study was the entire N=110 nurse educators in both the main and sub-campuses of the selected nursing education institution. See Chapter 4 for the descriptive statistics of the respondents. The sample size included all nurse educator and the principals in all the campuses.

3.6 DATA COLLECTION

3.6.1 Measurement instrument / technique

Data collection is the precise and systemic gathering of information relevant to the research purpose or the specific objectives, questions or hypotheses of the data (Grove et al., 2013:45). In quantitative research, the data collection is usually numerical. Planning data collection would help the researcher to foresee problems that are likely to present and to explore possible options for solution.

In this study, a questionnaire was used to collect data from the nurse educators in the selected nursing education institution in Eastern Cape. The researcher, with the statistician, developed a questionnaire following rigorous and extensive literature review trends. The questionnaire has four sections. The first section comprised the demographic information of the respondents. The next was section B that comprised one open-ended question to address the facilitators of e-learning tools. Section C consisted of 18 items which were designed to measure factors that were barriers to the effective use of e-learning tools in teaching, as well as how often it occurred in the institution. The last section (section D) comprised the teaching measures that facilitate or enhance e-teaching and learning. (See Annexure B.) The sections of the questionnaire were as follows:

Section A: Demographic data

The demographic profile of the respondents was explored by the development of seven aspects which are items 1-7: age, gender, race, academic qualifications, professional designation, additional qualifications, and years of experience.

Section B: The facilitators to the use of e-learning tools

Information on this section was obtained from an open-ended question which required the respondents to state what they thought could facilitate the use of e-learning tools in the selected NEI.

Section C: The barriers to the use of e-learning tools

In this section with 18 items, respondents were expected to indicate how often the questions occurred in their experience. The respondents were to choose only one option for a statement by marking an (X) in the appropriate column. Item 24 has an added open-ended question to assess if the nurse educator has experienced challenges using e-learning tools in teaching and learning and to specify these challenges.

Section D: The teaching strategies used to facilitate teaching and learning

Twenty-two (22) items were created to measure teaching strategies used to facilitate teaching and learning. Respondents indicated whether the statement was typical of what they had experienced. They were also expected to mark an (X) in the space provided if they “strongly disagree” or “disagree” or “neutral” or “agree” or “strongly agree”.

Finally, the questionnaire also had three open-ended questions as a way to get respondents' own suggestions on the barriers and facilitators as well as teaching strategies that can facilitate teaching and learning in the use of e-learning tools.

3.6.2 Pilot study

A pilot study is a smaller version of study carried out by the researcher before the actual investigation is done. The aim of the pilot study is to refine or modify the research methodology (Brink et al., 2012:20). A pilot study according to Denscombe (2014:1144) is a version of a proposed study that is conducted to refine the research procedures making sure that all questions are understood. The authors among others stated various reasons for conducting pilot studies such as: to determine whether the proposed study was feasible, to refine a research treatment or intervention, and to give the researcher experience with the subjects, setting and methodology.

The researcher used five respondents in one of the campuses of the selected NEI to undertake the pilot study. The aim of the pilot study was to test the adequacy and usability of the tool. The pilot study was carried out in the same conditions in which the main study would be conducted. The information leaflet which contained the aims and objectives of the study was explained to the participants and thereafter informed consent was obtained. The questionnaires were given to the respondents to complete. The researcher remained with the respondents while they were completing the questionnaire. They finished responding to the questions and handed these over to the researcher. All the respondents responded very well to all the items in the questionnaire, hence making the pilot study a success and the instrument was used for the main study.

The results of the pilot study were not included in the main study and the five respondents used for the pilot study were also excluded from the main study as they had already seen the questionnaire.

3.6.3. Data collection process

According to Burns et al. (2013:45), data collection is a process of selecting subjects and gathering data from the subjects. Before embarking on the field work of this study, the researcher obtained ethical approval for the study from the University of Pretoria's Faculty of Health Science research and ethics committee. Written permission was also obtained from the management of the NEI to allow staff to participate in the research.

The nursing education institution was visited on a pre-arranged date for a briefing meeting and to conduct a pilot study. The researcher visited the sub-campuses of the NEI to brief the management and respondents about the scope and procedures entailed in the study. The briefing meetings were held during staff meetings. After the briefing meeting respondents were given the informed consent form together with the questionnaire. The respondents were requested to sign the informed consent form before filling out the questionnaires. The respondents were instructed to respond to all the questions in the questionnaire. They were also instructed not to use any aid or assistance to respond to the questions as there was no right or wrong answer. The respondents were assured of the utmost confidentiality and anonymity throughout the process

The selected NEI has a main Research Committee that oversees the research activities of the institution. Within each sub-campus there was a sub-committee as well. These sub-committees were very helpful as the researcher, after distributing the questionnaires to the nurse educators, left marked boxes for the completed questionnaires in the office of the chairperson of the committee. The respondents were given a maximum of two weeks to complete and put the questionnaires in the provided marked box. The researcher collected the completed questionnaires at the end of two weeks from the office of the Chairperson of the Research Committee.

Finally, out of the 110 copies of the questionnaire distributed to respondents in various campuses of the NEI, 82 copies were correctly filled and returned, giving a return rate of 75%. Some participants refused to participate and a total of 28 questionnaires were never returned.

3.6.4 Data Analysis

Data analysis was conducted to reduce, organize and give meaning to the data (Grove *et al*., 2013:46). In quantitative research, data analysis tends to take place after all the data has been collected. Furthermore, Grove *et al*. (2013:46) highlighted that the choice of analysis techniques implemented is determined primarily by the research objectives, questions or hypotheses, the research design and the level of measurement achieved by the research instruments. In this study the researcher used descriptive statistics to analyse and describe the data.

As alluded to by Plichta and Garzon (2009:14), statistical analysis of the data occurred in three stages. First, the data were cleaned, and this was done by the researcher to make certain that all the variables had valid and usable values. Accordingly, a completed questionnaire must not have more than three missing or incorrectly marked answers in order to be included in the data analyses. The next step was to check for variables with missing data. Secondly, descriptive statistics were

employed. The open-ended question on the facilitators of the use of e-leaning tools (**Section B**) was analysed through descriptive statistics and frequencies. Thirdly, inferential statistics (F test and Chi-square) were used to test the relationship between teaching strategies and demographic characteristics as well as the differences.

Data were coded, in which the variables were categorized as follows:

- **Gender**: Male = 1 and Female = 2.
- **Age**: 25–30 years = 1; 31–40 years = 2; 41–50 years = 3; 50+years = 4
- **Race**: White=1; Black/Indians = 2
- **Level of the Profession**: Professional Nurse = 1; Nurse Educator = 2; Principal = 3
- **Academic Qualification**: Diploma = 1; Baccalaureate = 2; Master = 3; Doctorate = 4.

The descriptive statistics permit the researcher to organise the data in a way that gives meaning and facilitates insight such as frequency, distributions and measures of central tendency and dispersion. The common practice in using descriptive statistics is to create tables that display sample socio-demographic characteristics, such as age, gender, ethnicity and level of education (Plichta & Garzon, 2009:15). In this study, descriptive statistics such as frequency tables, charts, percentage, etc. were used to show the demographic characteristics of the respondents. The study also used both descriptive and inferential statistics (Fisher, Chi-square etc) in data analysis to achieve the objectives of the study.

3.6.5 Measurement and Data Quality

Quality control was an essential aspect in conducting the research. Unless the measurement tools' validity and reliability reflect the concepts being investigated and tested, conclusions drawn from the empirical phase of the study will be invalid (LoBiondo-Wood & Haber, 2010:65). In this study, quality control was achieved through validity and reliability.

3.6.6 Validity

Validity in quantitative research refers to whether one can draw meaningful and useful inferences from scores on the instrument (Creswell, 2013). The word validity includes the truth, strength and value of the data. According to Parahoo (2006:80), the concept of validity reflects the accuracy with which the findings reflect the phenomenon being studied. In addition, validity was defined as the degree to which an instrument measures what it is supposed to measure (Brink et al., 2012). There

are various types of validity but only two (content and face validity) were applied in this study. According to Grove et al. (2013:690) content validity examines the extent to which the measurement tool includes all the major elements relevant to the construct being measured.

The content validity of the instrument for this study was obtained through extensive exploration of relevant literature related to the construct and it is representative of the relevant population as well as content experts. The questionnaire was later given to the statistician for critique as well as experts in the field such as the supervisor and co-supervisor and some nurse educators during the conducting of the pilot study.

Face validity simply means validating a research instrument on a superficial base by experts in the field (Grove et al. 2013:394). On the 'face' of it, the instrument appears to be an adequate means of obtaining the desired data (Brink et al., 2012:36). Face validity authenticates that the instrument gives an appearance of measuring the content desired for a study and this was done by experts in this field in this study.

3.6.7 Reliability

Reliability refers to the consistency of a method in measuring or observing the same phenomenon (Parahoo, 2006:36). Internal consistency of a measuring scale can be determined by using the Cronbach's alpha reliability coefficient test. The coefficient ranges between 0.00 and 1.00 with coefficients higher than 0.80 being the most reliable. Babbie (2013:190) agrees that another way to help ensure reliability in getting information from people is to use measures that have proved their reliability in previous research. To ascertain the reliability of the instrument used in this study, a pilot study was conducted using five respondents from NEI (see pilot study). The internal reliability was tested in this study and the full questionnaire proved to be very reliable with a Cronbach's alpha coefficient score of 0.78.

3.7 ETHICAL CONSIDERATIONS

Ethical clearance for the study was obtained from the University of Pretoria's Faculty of Health Sciences Research Ethics Committee (Ethics Reference No: 220/2017), as well as from the selected nursing education institution in Eastern Cape where the study was conducted. The institutional departmental heads in each sub-campus gave permission for the study. Principles of research ethics followed were:

- **Respect of persons**

  Written informed consent (Creswell, 2013) was obtained from every respondent. No participant was forced to take part in the study. All the essential information regarding the study was fully explained to the participants and they signed the information leaflet showing proper understanding of what the study entails. The researcher made sure that anonymity was provided by not asking for personal information or names in the questionnaires.

- **Justice**

  The principle of justice entails that the respondents were treated fairly. This means adhering to the research protocol and information given in the information leaflet (Botma *et al.*, 2010). In respect of this study, all nurse educators of the nursing school were treated equally despite their professional levels.

- **Beneficence**

  This principle was grounded in the premise that a person has the right to be protected from harm and discomfort. It also entails that one should do good, and above all no harm (Botma *et al.*, 2010). In this study, no harm was caused to the respondents in the course of data collection and this study.

- **Confidentiality**

Four key areas to address and to maintain confidentiality were adhered to, in terms of content of the data-capturing forms, limited access to data, safe and secure storage of data and the anonymity of reporting of data. In this study, respondents' information was coded and kept anonymously (Botma *et al.*, 2010). Their identities were kept anonymous and the responses of the participants confidential.

3.8 SUMMARY

This chapter discussed the research method of this study which includes research design, research setting, sampling technique, data collection and analysis, validity and reliability as well as the ethical considerations. The study was based on a quantitative, survey, descriptive and contextual design in

order to determine facilitators and barriers to the use of e-learning tools among nursing educators in a selected nursing education institution in Eastern Cape Province.

CHAPTER 4

PRESENTATION AND INTERPRETATION OF RESULTS

4.1 INTRODUCTION

The previous chapter discussed the research design and methods to provide details of how the data was collected. This chapter presents the results as per the data obtained from the questionnaire. Descriptive statistics were used to provide information about the respondents with reference to their demographic characteristics and responses to the questionnaire. The objectives of the study were to:

- determine the facilitators to the use of e-learning tools among nurse educators in a selected nursing school in Eastern Cape
- determine the barriers to the use of e-learning tools in teaching and learning in a selected nursing school in Eastern Cape
- recommend the e-learning and e-teaching measures that could be used by nurse educators in a selected nursing school in Eastern Cape.

4.2 DESCRIPTIVE STATISTICS

Descriptive statistics can be described as either the characteristics of a sample or the relationship among variables within a sample and are measured by means of central tendency and variability or dispersion (Brink et al., 2012:179). In this research study, descriptive statistics are presented to provide information about the respondents with reference to demographic characteristics and responses to the questionnaire.

4.2.1 A brief description of the data collection methods

A total of 110 copies of the questionnaire were distributed to nurse educators at the selected nursing school in Eastern Cape. However, only 85 (74%) copies were returned. Out of these, three copies had missing data (two had section C missing and the other had the open-ended section missing) but the rest were not spoilt and were used. Therefore, the usable population size was (n=82) (71%).

However, with a Cronbach alpha coefficience of 0.78 the reliability of the questionnaire is very strong. It also yielded an internal consistency of 0.79 making it reliable and valid.

4.2.2 The Research Instrument

The questionnaire consisted of the following:

- **Section A: Demographic data**

- The demographic profile of the respondents consisting of seven items was explored.

- **Section B**: **The facilitators to the use of e-learning tools.**

- This was answered through an open-ended question designed to answer: What can facilitate the use of e-learning tools among nursing educators?

- **Section C: The barriers to the use of e-learning tools**

- In this section with 18 items, respondents were expected to indicate how often the questions occurred in practice. They were to choose only one option for a statement by marking an (X) in the appropriate column. Item 24a added an open-ended question to assess if the educators had experienced challenges in using e-learning tools in teaching and learning and to specify these challenges.

- **Section D: The recommended teaching measures used to facilitate teaching and learning**:

- Twenty-two (22) items were created to measure teaching strategies used to enhance teaching and learning. Respondents indicated whether the statement was typical of what was recommended. They were also expected to mark an (X) in the space provided according to “strongly disagree” or “disagree” or “neutral” or “agree” or “strongly agree”. Finally, there were three open-ended questions designed to:

    - Assess the respondents’ views on the use of e-learning
    - Assess the barriers to their use of e-learning tools for teaching and learning

- Assess the facilitators to the use of e-learning tools among nursing educators. However, this last question was in **Section B** of the questionnaire.

The open-ended questions were analysed descriptively using content analysis even though the study was quantitative.

4.3 SECTION A: Demographic data

4.3.1 Age of the respondents

From the results (n=50) of the respondents were above 50 years old, (n=18) were between 40 and 50 years of age; thus, 61% of the respondents were around 50 years of age and this means that the greater number of the nurse educators are nearing retirement. This indicates that there is a need to train and employ younger nurse educators. The results on the age distribution of respondents in the study is supported by the National Strategic Plan for Nursing Education 2012/13-2016/2017. This strategy indicates that among current registered nurses, 43,7% are over 50 years. This revealed the need for a succession plan. The researcher intended to examine the length of time the respondents had worked together with their age and their ability to use e-learning tools.

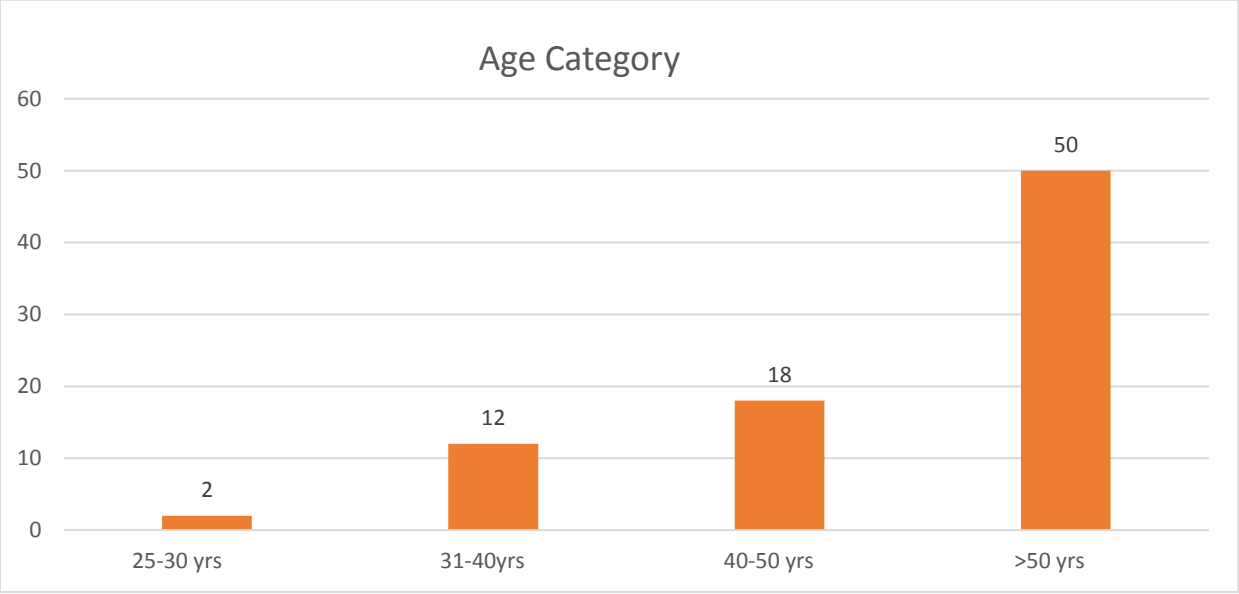


Figure 4.1: Age categories of the respondents

Figure 4.1 shows that out of 82 respondents, 2% (n=2) were between 25–30years, 15% (n=12) were between 31–40 years, 22% (n=18) were between 41–50 years, while 61% (n=50) were more than 50 years. It can be observed from this chart that most of the respondents were above 50 years of

age. It will be necessary to infuse younger nurse educators into the system as the older ones will be retiring in a short time leaving the workforce depleted.

4.3.2 Gender of the respondents

In this study, it was noted that females formed the greater number of the respondents which was (n=74) forming 90% of total respondents while males were only 10% (n=8).The results indicate that nursing remains a gendered profession with few men considering entering the profession. This is supported by statistics from the South African Nursing Council (2013b:2) which states that only 5 302 nurses are males. Ndou and Moloko-Phiri (2017:1) also expound on this when indicating that men have moved towards the nursing profession, but they remain in the minority in South Africa and other parts of the world.

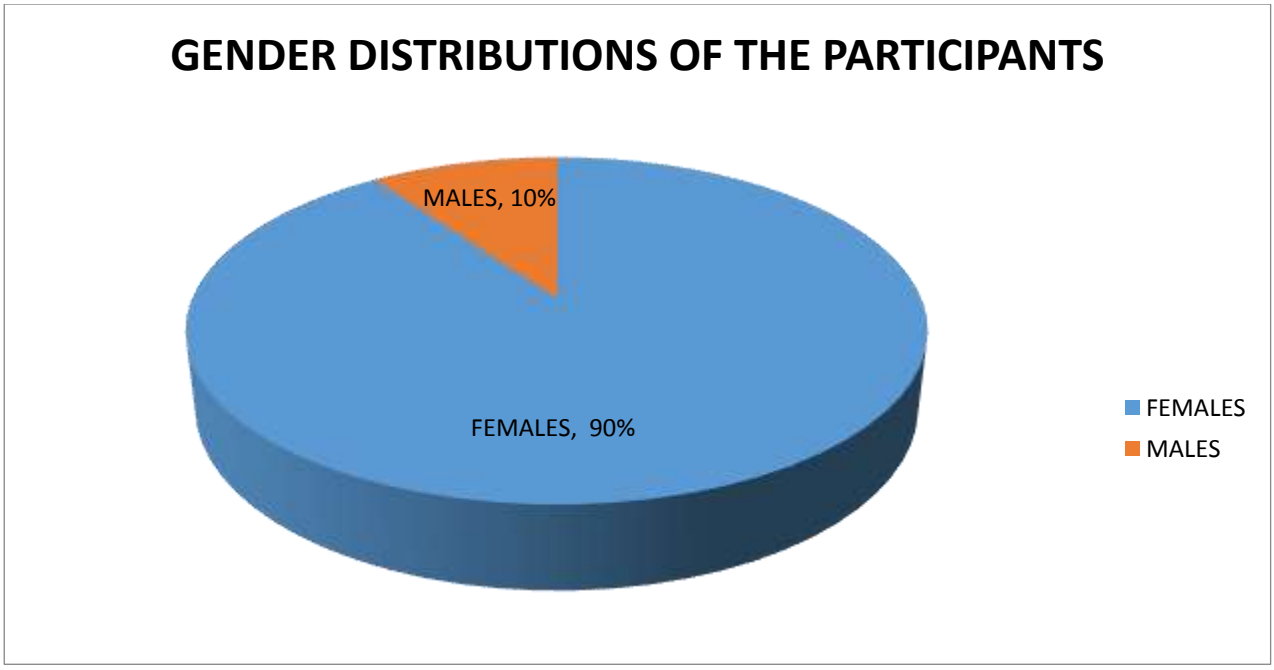


Figure 4.2: Gender distribution of the respondents

Figure 4.2 shows that the majority were females while 10% were males. This indicates the nurse educators are predominantly females. According the SANC (2018:1), in Eastern Cape where the study took place, there is a total of 15,552 registered nurses with only 1,663 being males.

4.3.3 Race of the respondents

The table shows that majority of the respondents were Blacks (Africans, Indians and Coloureds) at 90.24% (n=74). The grouping of the respondents in this regard is in accordance with the Constitution of Republic of South Africa Act 106 1996 as well the Employment Equity Act 55 of 1998 as amended which classifies Africans, Indians and Coloured as Blacks.

Table 4.1: Race distribution of respondents

RACE	FREQUENCY	PERCENTAGE
White	8	9.76
Black (African/Indian/coloured)	74	90.24
Total	82	100

Table 4.2: Summary of mean teaching measures based on race of respondents

A3 Race	n	MEAN	SD	MIN	MAX	P50
Whites	8.0	71.6	2.1	68.2	72.7	72.7
Blacks (Africans/Indians/coloured)	74	63	13.6	40.9	95.5	63.6
Total	82.0	64.5	13.1	40.9	95.5	63.6

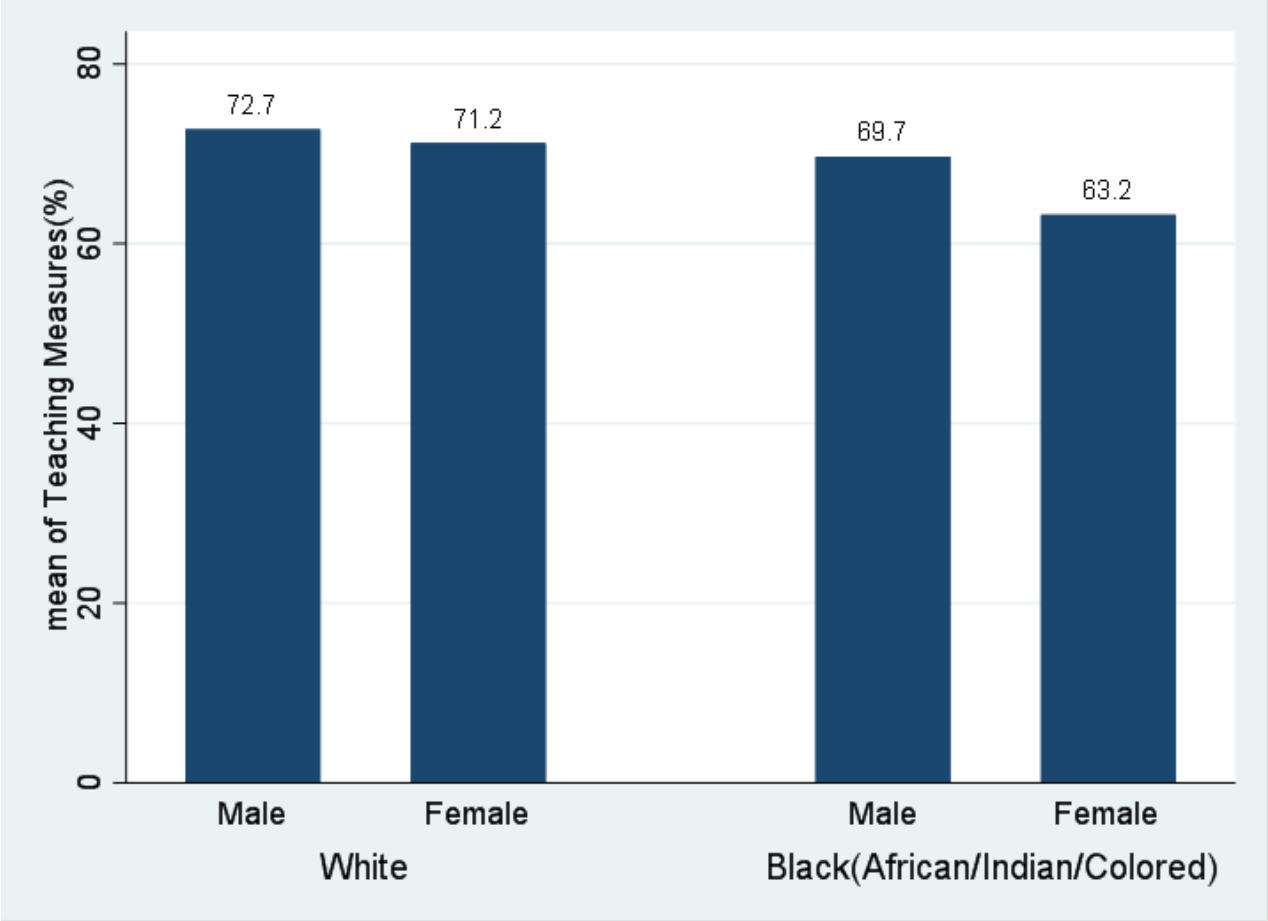


Figure 4.3: Race distribution

The research setting is dominantly a Xhosa area with a majority of Coloured people and few Indians, hence Blacks (n=74) as defined by Employment Equity Act No 55 of 1998 as amended in South Africa form the majority.

The results indicate a high mean score (72.7) among the White males and 71.2 of females with lesser mean scores among Black males (69.7) and females (63.2). This particular result in this study is not surprising as the histo-political landscape of South Africa is well known (Stull, Bell & Ncwadi 2016: 369). Blacks are continued to be marginalized especially women hence the results point out that Blacks, both males and females, have a lower mean score on the use of e-learning tools.

4.3.4 Academic Qualifications

The researcher wanted to explore the impact of academic qualifications on the use of e-learning tools among the respondents that participated in this study. Most of the respondents held a baccalaureate degree qualification. The data are summarised in Figure 4.4.

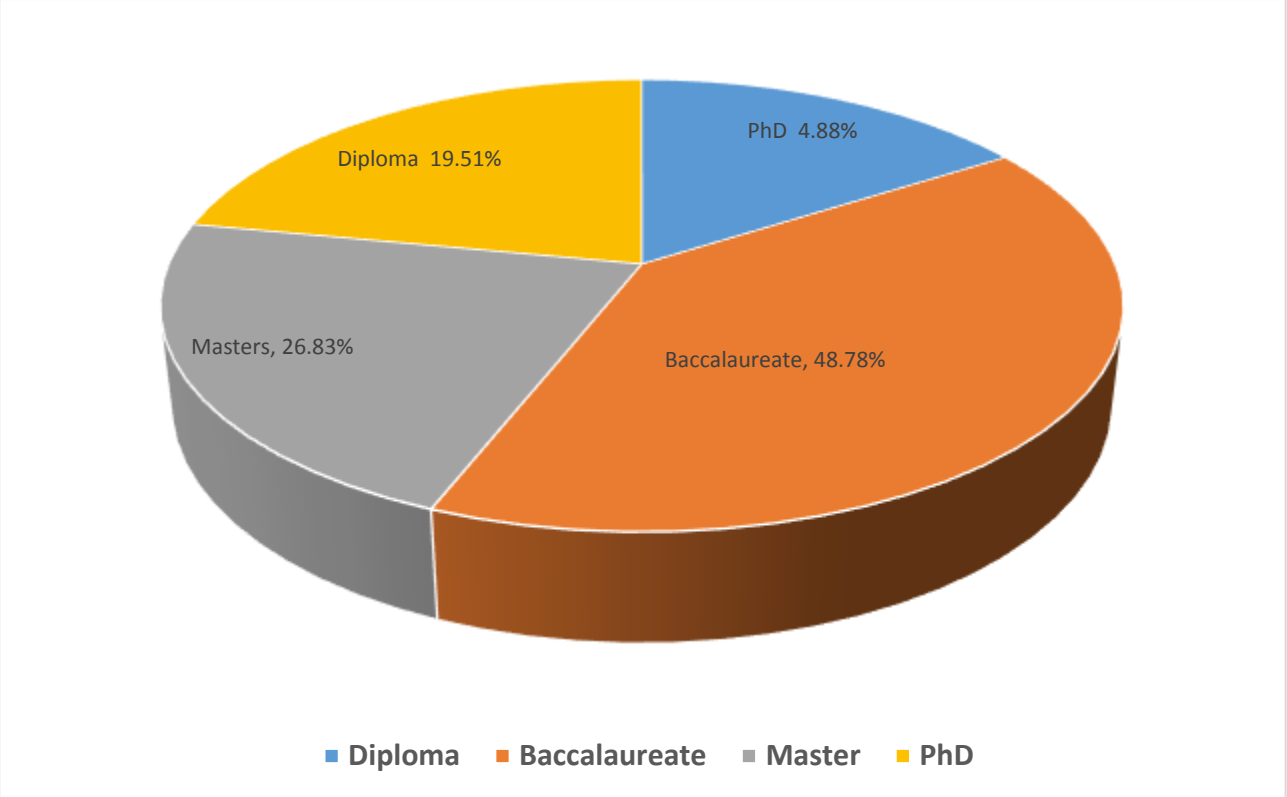


Figure 4.4: **Educational qualifications of the respondents**

Figure 4.4 shows that the majority of the respondents n=40 (48.78%) were Baccalaureate holders followed by Masters Degree Holders n=22 (26.83%). Those with only a diploma were n=16 (19.52%) while only n=4 (4.88%) had obtained their PhD.

Table 4.2: Summary of respondents' academic qualifications

QUALIFICATIONS	n	MEAN	SD	MIN	MAX	P50
Diploma in General Nursing	16.0	59.1	11.3	45.5	72.7	59.1
General Nurse with additional qualification in Nursing Education Bachelor's degree	40	63.4	12.3	40.9	90.9	63.6
Master's Degree	22.0	70.7	14.9	40.9	95.5	72.7
PhD	4.0	63.6	5.3	59.1	68.2	63.6
Total	82.0	64.5	13.1	40.9	95.5	63.6

The results indicate that there were many respondents with bachelor's degrees (n=40). A degree is a requirement by the South African Nursing Council to teach in NEIs (Nursing Act no 33 of 2005). In accordance with the South African Nursing Council, a nurse educator must acquire a qualification

higher than the entry point for which the educator is teaching (Nursing Act, 33 of 2005: 30). From the results, (n=22) had a master's degree in nursing. Currently in South Africa a master's degree is a requirement for nurse educators to teach at the nursing college (National Strategic Plan for Nursing Education 2012/13-2016/2017). Mulaudzi, Daniels, Direko, and Uys (2012:3) indicate that minimum standards for the nurse educator program are set by SANC regulations, however, outcomes of the different programs differ markedly. Those with doctoral degrees were (n=4) and these were the principal and the research committee members of the selected NEI. In as much as (n=16) of the respondents in this study had a General Nursing qualification for teaching in this NEI, they were mandated by Section 39 of the Nursing Act, 33 of 2005 on Continuous Professional Development.

4.3.5 Work experience of the respondents

The question on work experience from the respondents was intended to get information about the years of experience as nurse educators in the selected nursing education institution. Respondents were requested to indicate how many years they had worked as such.

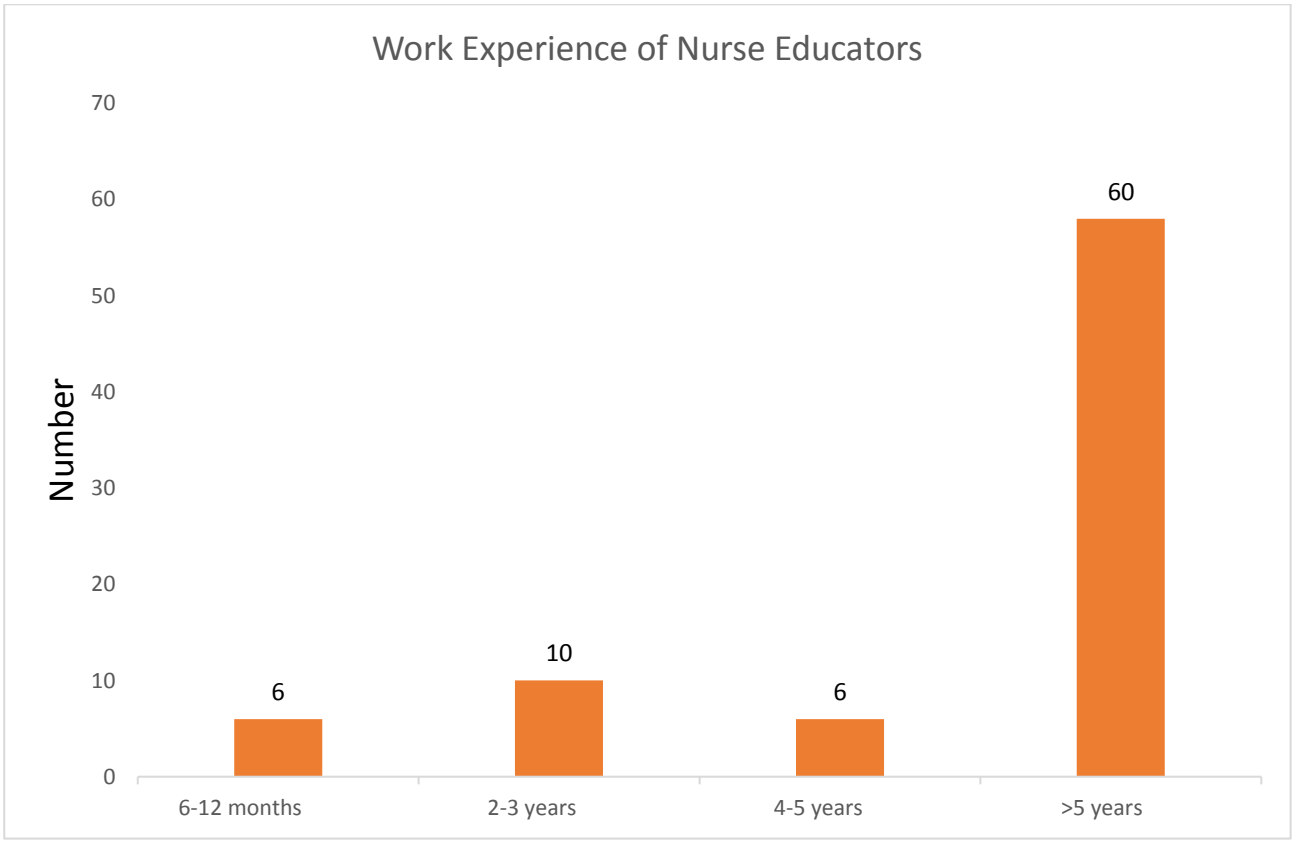


Figure 4.5: Work experience of the respondents in the selected NEI

The result on work experience of the respondents shows that 73% (n=60) of the respondents in the selected NEI had worked as nurse educators for more than five years. This was followed by 12% (n=10) who had worked in the NEI for 2-3 years. Additionally, 7% of the respondents had worked for just 6-12 months. Only 7% (n=6) had 4-5 years of work experience. The researcher intended to examine the length of time the respondents had worked and their ability to use e-learning tools.

The study also exposed the low rate of employment of nurse educators hence there were few nurse educators working in the selected NEI, which could lead to work overload and burnout among the nurse educators (Yusoff & Khan, 2013:90).

4.4 SECTION B: FACILITATORS TO THE USE OF E-LEARNING TOOLS

This section consisted of one of the open-ended questions that was asked to get the information on the facilitators to the use of e- learning tools in teaching and learning. The question was: What are the facilitators to the use of e-learning tools in teaching and learning? The facilitators listed were: training and re-training, availability and accessibility of internet, provision of reliable internet, provision of adequate ICT tools, and government support. The data from the question was analyzed descriptively with frequencies and percentages.

Table 4.3: Perceived facilitators to the use of e-learning tools in teaching and learning

S/NO	FACILITATORS TO THE USE OF E-LEARNING TOOLS IN TEACHING	FREQUENCY	PERCENTAGE (%)
1	Training and re-training	**30**	**36.6**
2	Availability and accessibility of internet	**19**	**23.2**
3	Provision of reliable internet	15	18.3
4	Provision of adequate ICT tools	15	18.3
5	Government support	3	3.7
	Total	**82**	**100%**

The results in Table 4.3 revealed the facilitators to the use of e-learning tools in teaching and learning in the selected nursing education institution. The table revealed that 36.6% (n=30) of the respondents believed that training and re-training of educators on the use of e-learning tools for e-teaching purposes will facilitate the effective teaching and learning. Button, Harrington and Belan (2013:1320) supported that ICT facilities, computer skills, and information skills are essential requirements for educators and learners to engage successfully in e-learning. Therefore, nurse educators need to increase their level of ICT skills to enable them to effectively facilitate e-learning.

As far as the availability and accessibility of the internet is concerned, 23.2% (n=19) of the respondents agreed that the availability and accessibility internet services will facilitate the use of e-learning tools. Coming to the provision of reliable internet, 18.3% (n=15) of the respondents believed that this would also enhance the use of e-learning tools. Equally, 18.3% (n=15) of the respondents indicate that provision of adequate ICT tools would make their integration and use of e-learning in teaching and learning effective.

Furthermore, the results indicated that only 3.7% (n=3) recommended that government support in the provision e-learning tools would facilitate e-teaching and learning.

4.5 SECTION C: BARRIERS TO THE USE OF E-LEARNING TOOLS

This section addressed the barriers to the use of e-learning tools. this part of the questionnaire contained 18 items. Questions 8-25 stress the barriers that the respondents encountered in the use of e-learning tools. The respondents were required to check the answer that applied to them with yes/no/not sure and to state how often they used such e-learning tools.

Table 4.4: The use of e-learning tools

NO	QUESTION		YES		NO		NOT SURE	
9	Does your nursing education institution (NEI) have a computer laboratory?		n	%	n	%	n	%
			70	**85.33**	12	14.65		
10	Does your NEI have laptops?		**54**	**65.85**	26	31.71	2	2.44
11	Does your NEI use audio-visual technology for teaching?		**52**	**63.41**	26.	31.71	4	4.88
12	Does your NEI use an electronic whiteboard/ smart board?		10	12.20	**70**	**85.37**	2	2.44
13	How often do you use the electronic whiteboard/ smart board?	Never	**70**	**88.37**				
		Once a month	2	2.44				
		Once a week	2	2.44				
		Every day	4	4.88				
		No response	4	4.88				
14	Does your NEI use interactive lessons on CD-ROM?		16	19.51	**60**	**73.17**	6	7.32

NO	QUESTION	YES	NO		NOT SURE		NO	
15	Do you have a personal computer or laptop?		68	82.93	12	14.63	6	7.32
16	Do you use a smart phone or tablet for e-teaching purposes?		22	26.83	58	70.73	2	2.44
17	Do you feel pressured to use ICT as part of teaching and learning?		28	34.15	48	58.54	6	7.32
18	How skilful are you in the use of computer?	Poor Fair Good Very good Excellent	4 24 40 8 6	4.88 29.27 48.78 9.76 7.32				
19	Which of the following programmes can you use with confidence?	Word processing PowerPoint presentation Database access Excel Internet access	66 68 22 34 58	80.49 82.93 26.83 41.46 70.73	6 8 24 20 14	7.32 9.76 29.27 24.39 14.07	10 6 36 28 10	12.20 7.32 43.90 34.15 12.20
20	How often do you surf the internet?	Never Once a month Once a week Every day	8 14 14 46	9.76 17.07 17.07 56.10				
21	Do you have any form of computer training with a certificate?		48	58.54	34	34	41.46	
22	Have you been involved in any online computer-based training?		30	36.59	52	30	36.59	

NO	QUESTION	YES	NO		NOT SURE		NO	
23	Does your NEI use e-learning tools in teaching and learning?		14	17.07	52	63.41	16	19.51
24	Does your NEI use blended learning?		20	24.39	32	39.02	30	36.59
25	Have you experienced challenges using e-learning tools in teaching and learning?		34	41.46	40	48.78	8	9.76
26	Do you have efficient internet connectivity in your NEI?		8	9.76	68	82.93	6	7.32

Table 4.4 indicates the barriers that the respondents encountered in the use of e-learning tools. About 85.33% (n=70) of the respondents agreed that they were using a computer laboratory and 63.41% of the respondents use audiovisual technology in the selected nursing education institution. For the question, 'Does your NEI use an electronic whiteboard/smart board?, the results indicated that only 12.20% (n=10) of the respondents used an electronic whiteboard/smart board while 88.37 (n=70) indicated that they have never used an electronic whiteboard. The results also revealed that 73.17% (n=60) do not use interactive CD-ROMs in pedagogy. Interestingly, 82.93% (n=68) had personal computers but this did not show any relationship with the use of instructional tools in their practice. Alemu (2015: 2) indicated that access to computers by the nurse educators is one of the major factors that influences the use of e-learning tools in teaching and learning. Additionally, the results indicate that 58.54% (n=48) of the respondents feel pressured to use e-learning tools in teaching and learning.

Regarding the assessment of the respondents' skilfulness in the use of computers, 48.78% (n=40) indicated their skill level as good. A great percentage of respondents were confident in the use of word processing and PowerPoint presentations at 80.49% (n=66) and 82% (n=68) respectively, but few used Access for databases (26%, n=22) or Excel spreadsheets (41%, n=34). A good number of respondents (70.73% or n=58) used Internet access tools. This indicated that the nurse educators need training in the use of e-learning. The future demands more and more upgrading in knowledge and teaching methods (Thorsteinsson, 2012:10).

The results revealed that 58.54% (n=48) of the respondents had any form of computer training. Training and retraining of the nurse educators is required for them to conduct their practice and use of e-learning tools professionally. Around 41.46% (n=34) of the respondents showed that they

experienced challenges in the use of e-learning tools. As various researchers indicated, the instructors are the key element to the successful integration of ICT and their professional training cannot be over-emphasized (Albion, Tondeur, Forkosh-Baruch & Peeraer, 2015: 5). Respondents also expressed that internet connectivity was a big issue as 82.93% (n=68) answered “No” to the question, ‘Do you have efficient internet connectivity in your NEI?’ Kisanga and Ireso (2015: 129) also agreed that insufficient internet connectivity (bandwidth capacity) poses a big challenge in the use of e-learning too, either by being slow or not available at all.

The results further indicated that inadequate ICT facilities are a barrier to the use as 44% (n=36) of the respondents strongly agreed with this variable. Information and Communication Technology (ICT) generally relates to those technologies that are used for accessing, gathering, manipulating and presenting or communicating information. Surprisingly, 29% (n=24) gave neutral as their response on the issue of high costs of internet services as a barrier. Poor power supply was also implicated as a barrier to the use of e-learning tools as 27% (n=22) of respondents agreed with this variable.

The ICT technologies include hardware i.e the physical part of the computer system. The software application is the set of instructions that tells a computer what to do, for example Office, Excel, Word and PowerPoint and connectivity through the use of internet services. Therefore, nurse educators play an important professional role in ensuring the incorporation of ICT into teaching and learning (Alemu, 2015: 2). Where the ICT facilities are lacking, the use of e-learning tools will be impossible.

4.6 SECTION D: TEACHING MEASURES TO FACILITATE THE USE OF E-LEARNING TOOLS IN TEACHING AND LEARNING AMONG NURSE EDUCATORS

There were 22 questions under this section that were analyzed in Table 4.5. The respondents were to select strongly disagree (SD), disagree (D), neutral (N), agree (A) and strongly agree (SA) by marking an X in the space provided. The questions asked in this section were about the recommended teaching measures that might be used in the NEI and also some other questions assessing the effects of the measures as indicated by the respondents.

Table 4.5: Teaching measures to facilitate the use of e-learning tools

QUESTION	SD		D		N		A		SA		NO RESPONSE		TOTAL	
	n	%	n	%	n	%	n	%	n	%	n	%		n
C26 Blended learning	20	24.39	10	12.20	18	21.95	18	21.95	10	12.20	6	7.32	82	100
C27 Use of recorded lectures	24	29.27	20	24.39	8	9.76	20	24.39	8	9.76	2	2.44	82	100
C28 Use of electronic smart board	28	34.15	24	29.27	12	14.63	4	4.88	6	7.32	8	9.76	82	100
C29 Use of electronic media	12	14.63	16	19.51	12	14.63	26	31.71	12	14.63	4	4.88	82	100
C30 Use of email, Skype, Facebook etc	18	21.95	10	12.20	12	14.63	24	29.27	14	17.07	4	4.88	82	100
C31 Face-to-face only	16	19.51	6	7.32	6	7.32	30	36.59	24	29.27	-	-	82	100
C32 It is student centred	2	2.44	8	9.76	16	19.51	36	43.90	16	19.51	4	4.88	82	100
C33 Reduces dominance of educators on teaching context	8	9.76	12	14.63	18	21.95	28	34.15	14	17.07	2	2.44	82	100
C34 Reduces face-to-face interaction between learners	14	17.07	20	24.39	12	14.63	24	29.27	12	14.63	-	-	82	100

QUESTION	SD		D		N		A		SA		NO RESPONSE		TOTAL	
C35 Reduces face-to-face interaction between educators and learners	8	9.76	16	19.51	6	7.32	44	53.66	6	7.32	2	2.44	82	100
C36 E-learning application improves teaching and learning	4	4.88	2	2.44	18	21.95	38	46.34	20	24.39	-	-	82	100
C37 Every educator must be ICT compliant	2	2.44	-	-	6	7.32	38	46.34	36	43.90	-	-	88	100
C38 Online support needed	2	2.44	-	-	-	-	44	53.66	36	43.90	-	-	82	100
C39 Technical staff needed	-	-	-	-	2	2.44	40	48.78	38	46.34	2	2.44	82	100
C40 Inadequate ICT facilities	6	7.32	-	-	8	9.76	30	36.59	36	43.90	2	2.44	82	100
C41 Educators need ICT training	-	-	-	-	4	4.88	30	36.59	**48**	**58.54**	-	-	82	100
C42 Internet provision is expensive	10	12.20	10	12.20	24	29.27	18	21.95	20	24.39	-	-	82	100
C43 Power supply can be an issue	14	17.07	24	29.27	12	14.63	22	26.83	10	12.20	-	-	82	100

QUESTION	SD		D		N		A		SA		NO RESPONSE		TOTAL	
C44 ICT has changed the way we live	2	2.44	-	-	10	12.20	38	46.34	38	39.02	-	-	82	100
C45 ICT is widely accepted	-	-	8	9.76	10	12.20	30	36.59	32	39.02	-	-	82	100
C46 Saves time for both the students and teachers	-	-	-	-	6	7.32	40	48.78	36	43.90	-	-	82	100
C47 Increases learning motivation among learners	-	-	-	-	6	7.32	42	51.22	34	41.46	-	-	82	100

Table 4.5 summarizes the recommended teaching measures that can facilitate e-learning. It was found that 24.3% (n=20) of the respondents strongly disagree that blended learning as a teaching measure cannot facilitate e-learning, with 12.2% (n=10) of the respondents disagreeing. However, a good number of respondents (21.95%, n=18) in this study agreed that blended learning is a teaching measure that can facilitate e-learning if given a chance as a way to initiate e-learning methods. On this issue, 21.95% (n=18) of the respondents were neutral and 7.32% (n=6) respondents did not respond to the question.

Around 53.66% (n=44) respondents did not agree that the use of recorded lectures can be used as a teaching measure to facilitate e-learning. In contrast, 34.15% (n=28) agreed that recorded lectures can be used to facilitate teaching and learning while 9.76% (n=8) of the respondents remained neutral and 2.44% (n=2) did not respond to the question. The reason for this could be that these e-learning tools are not used in this NEI.

From these responses, it can be seen that most respondents strongly disagreed that blended learning does not facilitate e-learning. Ramakrisnan, Yahya, Hasrol & Aziz, 2012.153 agree that currently, higher institutions are trying to run full e-learning methods due to space limitations in term of storage and/or in terms of locating students in the classrooms. But this type of learning is still new to most NEIs. Some institutions use the traditional face-to-face classroom and most of the institutions would provide the technology and prefer to include e-learning methods in the traditional classroom with the aim of engaging the students with the lesson taught and to ensure that the facts delivered could be easily understood as compared to the full e-learning method alone (Ramakrisnan, Yahya, Hasrol & Aziz, 2012.153).

According to the results, the use of electronic smart boards as a teaching measure was among the recommended measures even though 34% (n=28) of the respondents had never used these electronic board and strongly disagreed that this measure could facilitate e-learning: 29.27% (n=24) of the respondents disagreed that electronic smart boards can facilitate e-learning. However, 4.88% (n=4) of the respondents agree and 7.32% (n=6) of the respondents strongly agreed that the use of electronic smart boards as a teaching measure can facilitate e-learning. Only 14.63% (n=12) respondents remained neutral about the use of electronic whiteboards in e-learning and 9.76% (n=8) did not respond to the question. This meant that the highest number of respondents implied that electronic smart boards are not used in the selected NEI.

Manny-Ikan, Dagan, Tikochinski and Zorman (2011: 254) also cited in their study on the use of electronic smart boards in e-learning that a lack of digital learning materials is one of the primary

difficulties cited by educators. Electronic whiteboards are seen as replacements for traditional whiteboards or flipcharts because it is a technology made up of a computer connected to both a projector and a touch-sensitive board that presents the pictures projected from the computer and provides ways to show students everything contained in educational software, websites, and so on (Chhabra, 2012: 2234). The important of the use of electronic whiteboard according to Chhabra cannot be over emphasized as an e-learning tool. However, irrespective of its uses it was indicated in Annexure C in the letter of approval for this study that e-learning is not being used.

The respondents strongly disagree (14.68%, n=12) that the use of electronic media can facilitate e-learning as a teaching and learning measure, while 19.51% (n=16) of the respondents disagree with the use of electronic media for e-learning. However, 31.71% (n=26) agree and 14.63% (n=12) of the respondents strongly agree that electronic media as a teaching and learning measure can facilitate e-learning. As with the other measures, 14.63% (n=12) of the respondents remained neutral with the question and 4.88% (n=4) did not respond. From this result, it is obvious that most of the respondents see the use of electronic media as a teaching measure that could facilitate e-learning.

This also tallies with the study of Ozuorcun and Tabak (2012: 301) which supported that e-learning is delivered through electronic media like internet, intranet, extranets, satellite broadcast, audio and video tape, interactive TV and CD-ROM. In as much as the selected nursing school is not using these e-learning tools currently, they are significant tools that can be used to promote e-learning.

Another recommended measure was the use of email, Skype, Facebook, etc as a teaching measure to facilitate e-learning. The results indicate that 21.95% (n=18) of the respondents strongly disagree with the use of email, Skype, Facebook, etc as a teaching measure that can facilitate e-learning. Twelve percent (n= 10) of the respondents disagree. However, 29% (n=24) of the respondents agree while 17.07% (n=14) strongly agree that the use of email, Skype, Facebook etc as a teaching measure can facilitate e-learning. Fifteen percent (n=12) remained neutral and 4.88% (n=4) did not respond to the question. The results implied that the greater percentage of the respondents were in support that the use of use of email, Skype, Facebook, etc were among teaching measures that could facilitate e-learning.

As posited by Hustad and Arntzen (2013: 21), higher education needs to provide an interactive environment that maintains, engages and fosters active interaction of students, with each other and with educators, therefore, students prefer tools such as Skype, Facebook, and e-mails to support asynchronous communication.

Another recommendation was the face-to-face method of teaching and learning. The results indicate that 21% (n=18) of the respondents strongly disagree that the face-to-face method of teaching and learning can facilitate the use of e-learning. Twelve percent (n=12) of the respondents disagree that the face-to-face method of teaching and learning can facilitate the use of e-learning. Seven percent (n=6) of the respondents remain neutral on this aspect. Most of the respondents, 36% or n=30, however, agree and 29% (n=24) strongly agree that the face-to-face method of teaching and learning can facilitate the use of e-learning. This shows that many of the educators still prefer or only practice face-to-face teaching as a teaching and learning measure.

The face-to-face learning method, also known as traditional classroom teaching, uses a number of approaches that include lectures, case studies and team environment, meaning that the students and the educators must be in the same place at the same time in order to teach and learn. The traditional method offers face-to-face interaction between the student and educator as well as between the students themselves (Black, 2002: 2). As can be observed from the responses presented above, some educators and learners are not flexible in nature. Most are familiar with the traditional classroom or face-to-face method because they understand their roles, and what is expected of their behavior, effort, and participation, hence, since online learning technologies change these expectations, some feel that the e-learning method will not be as effective as the traditional face-to-face classroom (Oriji & Anikpo, 2018:56).

4.7 SECTIONS C AND D OPEN-ENEDED QUESTIONS: CONTENT ANALYSIS

Under this section, content analysis was used to analyze questions 25a, 48, 49, and 50. Content analysis was used in a quantitative manner to describe and to classify these open-ended responses. With content analysis, the breakdown of information from the responses of the respondents on the open-ended questions formed into themes. The content analysis was carried out on the statements presented in Table 4.6.

Table 4.6: Open-ended questions

NO	QUESTION	REQUIREMENT
C25a	Have you experienced challenges using e-learning tools in teaching and learning? If yes specify…	Provided own response
D49	How do you see the use of e-learning tools in teaching and learning?	Provided own response
D50	What are the barriers to your using e-learning tools in teaching and learning?	Provided own response

Table 4.7: Have you experienced challenges using e-learning tools in teaching and learning?

S/NO	ITEMS	FREQUENCY	PERCENTAGE
1	No internet connectivity	45	54.9
2	No knowledge or skill of the use of e-learning tools	19	23.2
3	Not in use in the NEI	8	9.23
4	Lack of ICT facility	10	12.2

Section C25a tried to assess what form of challenges the educators had encountered in their attempt to use e-learning tools. With the above table, the researcher tried to sum up their responses. The majority expressed that a lack of internet connectivity was a major challenge to the use of e-learning tools as the item "no internet connectivity" scored 54.9% (n=45). Kisanga and Ireso (2015: 129) agreed that lack of internet connectivity hinders the use of e-learning tools. That was also followed by "no knowledge or skill of the use of e-learning tools" with 23.20% (n=19) response. For e-learning use among nurse educators to be effective, the need to have adequate knowledge and skill as supported by Button, Harrington and Belan (2013:1320). Another identified item of importance was "not in use in the NEI" which had a score of 9.23% (n=8). This was also stated in Annexure D that the NEI where the study was carried out does not use e-learning, but this study was important as it will initiate the awareness of what should be in place.

Table 4.8: General perceptions on the use of e-learning for teaching and learning

S/NO	ITEMS	FREQUENCY	PERCENTAGE
1	Beneficial to teaching and learning	36	43.9
2	It is a necessity	25	30.5
3	It is a faster means of communication in teaching	6	7.3
4	It saves time	6	7.3
5	It serves as motivation in teaching and learning	5	6.1
6	Most people lack the knowledge	4	4.9
	Total	82	100

The responses of the respondents were summarized into six themes. As observed from Table 4.8, 43.9% (n=36) of the respondents see the use of e-learning as beneficial to teaching and learning despite the fact that e-learning was not in use in the NEI. Other researchers believed that the adoption of e-learning in teaching and learning, especially in higher educational institutions, has several benefits, and based on its several advantages, e-learning is considered among the best methods of education (Arkorful & Abaidoo, 2015: 34). Around 30.5% (n=25) of the respondents perceived e-learning as a necessity. In this age and time, the importance of the use of e-learning

tools cannot be over emphasized. 7.3% (n=6) believe it saves time and 7.3% (n=6) see it as a faster means of communication in teaching and believe that it can be very useful in providing access to distant learning, as also revealed in the study of Tirziu and Vrabie (2015: 379). However, 4.9% (n=4) believed most people lack the knowledge of ICT as has been discussed earlier.

Table 4.9: Perceived barriers to the use of e-learning and teaching

S/NO	BARRIERS	FREQUENCY	PERCENTAGE
1	Inadequate ICT facilities	**30**	**36.6**
2	Lack of training	**20**	**24.4**
3	Poor funding of ICT	11	13.4
4	No/poor internet network	11	13.4
5	Lack of proper knowledge of ICT	10	12.2
	Total	82	100

Looking at the barriers to effective use of e-learning tools for teaching and learning, the researcher summarized the responses of the respondents into five themes. The researcher used these items in this open-ended question to assess the barriers to the use of e-learning tools. It was observed in the category of inadequate ICT facilities, that 36.6% (n=30) blamed the lack of inadequate ICT facilities as a barrier to the use of e-learning tools in the NEI. Information and Communication Technology (ICT) facilities generally relate to those technologies that are used for accessing, gathering, manipulating and presenting or communicating information. The technologies include hardware, software applications and connectivity; therefore, nurse educators play an important professional role in ensuring the incorporation of ICT into teaching and learning (Alemu, 2015: 2). Where the ICT facilities are lacking, the use of e-learning tools becomes impossible. The lack of use of ICT at nursing colleges in South Africa was further revealed in a study carried out by Maboe and de Villiers (2011: 96), showing that computer-based learning was not well conceptualized at nursing colleges.

Moreover, 24.1% (n=20) of the respondents see lack of training as a major barrier, while 13.7% (n=11) see poor internet network as the major barrier. Insufficient internet connectivity (bandwidth capacity) poses a big challenge in the use of e-learning either by being slow or not available at all (Kisanga & Ireso, 2015: 129). Just 13.7% (n=11) of respondents noted the poor funding of ICT, while 12.2% (n=10) were of the opinion that lack of adequate knowledge of ICT, which has been mentioned earlier, is a major barrier to affective e-teaching and learning. Lack of skills in the use of computers is a serious barrier to the use of e-learning tools because course contents and curriculum are designed and delivered by the use of computer technology and where the skill is lacking the program will fail.

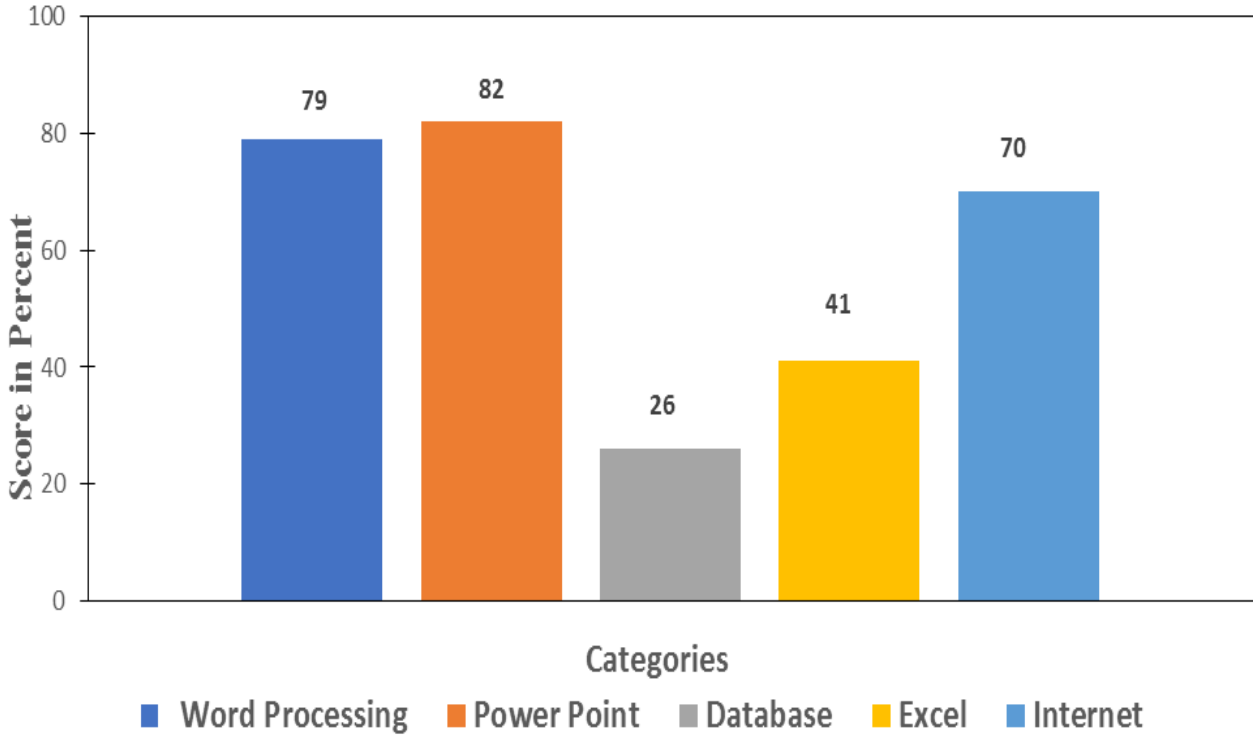


Figure 4.6: Knowledge of ICT as a facilitator to the use of e-learning among nurse educators

Figure 4.6 shows the results of the assessment of the basic ICT knowledge that the respondents had. A large 79% (n=68) of the respondents were confident in the use of word processing,and 82% (n=68) of respondents were able to use PowerPoint, but only 26% (n=22) were confident in using databases. The respondents who could use Excel were 41% (n=34) while 70% (n=58) respondents could use the internet. The internet has made accessibility to information fast and effortless. Obtaining information through the internet has enabled nurses and educators to provide the best practice (McGonigle & Mastrian 2009: 107). From the above results it can be seen that most of the respondents have basic knowledge of ICT use like word processing, PowerPoint and internet.

4.8 ASSESSING THE ASSOCIATION BETWEEN DEMOGRAPHICS AND TEACHING MEASURES

This analysis was done using Fisher's exact and Chi-square tests. The Fisher's exact test for 2 x 2 tables is used when members of two independent groups can fall into one of two mutually exclusive categories. The test is used to determine whether the proportions of those falling into each category

differ by group. Fisher's exact test computes the probability, given the observed marginal frequencies, of obtaining exactly the frequencies observed and any configuration more extreme (Preacher & Briggs, 2015). The Chi-square statistic is a non-parametric (distribution free) tool designed to analyze group differences when the dependent variable is measured at a nominal level. Like all non-parametric statistics, the Chi-square is robust with respect to the distribution of the data. Specifically, it does not require equality of variances among the study groups. It permits evaluation of both dichotomous independent variables, and of multiple group studies (McHugh, 2013: 144). In this analysis, the p-value below 0.05 will be regarded as significant, but above 0.05 is not significant.

Table 4.10: Fisher's exact test on assessing scores of demographic characteristics and teaching measures to the use of e-learning tools

A1 AGE	NEGATIVE	POSITIVE	TOTAL
25-30 years	0 0.00 0.00	2 100.00 2.78	2 100.00 2.44
31-40 years	2 16 20	10 83.33 13.89	12 100.00 14.63
40-50 years	4 22.22 40.00	14 77.78 19.44	18 100.00 21.95
>50 years	4 8.00 40	46 92.00 63.89	50 100.00 60.98
Total	10 12.20 100.00	72 87.80 100.00	82 100.00 100.00

Fisher's exact = 0.378

No association between age group and teaching measures category

A2 GENDER	NEGATIVE	POSITIVE	TOTAL
Male	0 0.00 0.00	8 100.00 11.11	8 100.00 9.76
Female	10	64	74

	13.51 100.00	86.49 88.89	100.00 90.24
Total	10 12 100.00	72 87.80 100.00	82 100.00 100.00

Fisher's exact = 0.587

No association between gender and teaching measures category

A3 RACE	NEGATIVE	POSITIVE	TOTAL
Whites	0 0.00 0.00	8 100.00 11.11	8 100.00 9.76
Blacks(Africans, Indians and Coloured)	10 13.51 100.00	64 86.49 88.89	74 100.00 90.24
Total	10 12.20 100.00	72 87.80 100.00	82 100.00 100.00

Fisher's exact = 0.587

No association between race group and teaching measures category

A4 PROFESSION DESIGNATION	NEGATIVE	POSITIVE	TOTAL
Professional Nurse	2 14.29 20.00	12 85.71 16.67	14 100.00 17.07
Nurse Educators	8 12.50 80.00	56 87.50 77.78	64 100.00 78.05
Principal	0 0.00 0.00	4 100.00 5.56	4 100.00 4.88
Total	10 12.20 100.00	72 87.80 100.00	82 100.00 100.00

Fisher's exact = 1.000

No association between professional grouping and teaching measures category

A5 ACADEMIC QUALIFICATION	NEGATIVE	POSITIVE	TOTAL
Diploma	4 25.00 40.00	12 75.00 16.67	16 100.00 19.51
Baccalaureate	4 10.00 40.00	36 90.00 50.00	40 100.00 48.78
Master	2 9.09 20.00	20 90.91 27.78	22 100.00 26.83
PhD	0 0.00 0.00	4 100.00 5.56	4 100.00 4.88
Total	10 12.20 100.00	72 87.80 100.00	82 100.00 100.00

Fisher's exact = 0.401

No association between Academic qualification group and teaching measures category

A7 WORK EXPERIENCE	NEGATIVE	POSITIVE	TOTAL
6-12 months	0 0.00 0.00	6 100.00 8.57	6 100.00 7.50
2-3 years	0 0.00 0.00	10 100.00 14.29	10 100.00 12.50
4-5 years	0 0.00 0.00	6 100.00 8.75	6 100.00 7.50

A7 WORK EXPERIENCE	NEGATIVE	POSITIVE	TOTAL
>5 years	10 17.24 100.00	48 82.76 68.57	58 100.00 72.50
Total	10 12.50 100.00	70 87.50 100.00	80 100.00 100.00

Fisher's exact = 0.420

No association between work experience and teaching measures category

TABLE 4.11: SUMMARY OF FISHER'S EXACT TEST ON ASSESSING OF SCORES OF BARRIERS, CHARACTERISTICS AND TEACHING MEASURES (SECTION C)

CATEGORY	P-VALUE	REMARK
9 Does your nursing education institution (NEI) have a computer laboratory?	0.34	No significance
10 Does your NEI have laptops?	0.07	No significance
11 Does your NEI use audio-visual technology in teaching?	0.08	No significance
12 Does your NEI use an electronic whiteboard/ smart board?	0.35	No significance
13 How often do you use an electronic whiteboard/ smart board?	0.24	No significance
14. Does your NEI use interactive lessons on CD-ROM?	0.11	No significance
15. Do you have a personal computer or laptop?	0.35	No significance
16. Do you use a smart phone or tablet?	0.45	No significance
17. Do you feel pressure to use ICT as part of teaching and learning?	0.70	No significance
18. How skilful are you in the use of computers?	0.54	No significance
19. Which of the following programmes can you use with confidence?	0.67	No significance
20. How often do you surf the internet?	0.08	No significance
21. Do you have any form of computer training with a certificate?	1.00	No significance

CATEGORY	P-VALUE	REMARK
22. Have you been involved in any online computer-based training?	0.16	No significance
23. Does your NEI use e-learning tools in teaching and learning?	0.38	No significance
24. Does your NEI use blended learning?	**0.01**	**Significant difference**
25. Have you experienced challenges using e-learning tools in teaching and learning?	0.50	No significance
26. Do you have efficient internet connectivity?	0.07	No significance

The Chi-square test was used to compare the scores of teaching measures with the demographic characteristics to show significance in the satisfaction in the use of e-learning tools.

- **Race:** chi-squared 5.01 and probability of 0.02 revealed that there is evidence to demonstrate that Whites score significantly higher satisfaction compared to Blacks (Africans, Indians and Coloureds) in the use of teaching measures. This could be attributed to the economic conditions of the Black population and the unaffordability of the e-learning tools.

- **Gender:** chi-squared 2.34 and probability of 0.12, showed no evidence to demonstrate that satisfaction differed between genders. Measurement of mean knowledge and use of e-learning demonstrated no difference in the practice between male respondents and female respondents.

- **Age:** chi-squared 3.01 and probability 0.34. There is no evidence to demonstrate that satisfaction differed between age groups. This means that all age groups could use e-learning tools if they had the access and knowledge in teaching and learning.

- **Academics:** There is evidence to demonstrate that satisfaction differed between academic categories using e-learning tools as shown in this result; chi-squared 7.56 and probability = 0.07.

- **Profession:** chi-squared 10.92 and probability 0.01 shows there is evidence to demonstrate that satisfaction differed between professional levels. According to Fetter (2009: 78), the fact is that information technology skills are vital for professional development and advancement in nursing in order to achieve access, quality and cost

effectiveness. The mean was male 72.2, and female 53.8 among professional nurses while nurse educators, i.e professional nurses with additional qualifications in education, recorded 63.6 for male and female 65.6. The principal of the sub-campuses was male 81.8 and female 72.7. All showed differences in satisfaction between the different professional designations. The higher the post, the more satisfied they become.

4.9. SUMMARY OF THE CHAPTER

This chapter provides detailed empirical and descriptive results of analysed data. The response rate for the study and descriptive statistics on the demographic data and other analysis were outlined and discussed. The descriptive statistics in relation to the barriers to the use of e-leaning tools were presented. Mean and standard deviations were used to reveal those factors that are barriers and enhancing factors to the use of e-learning tools in teaching. Also highlighted and discussed was the result of the analysis of the e-learning strategies.

CHAPTER 5
DISCUSSIONS, LIMITATIONS, CONCLUSIONS AND RECOMMENDATIONS OF THE STUDY

5.1 INTRODUCTION

The previous chapter presented the results from the analysed data obtained through the questionnaires. This chapter describes the overall conclusions emerging from the results of the study on the facilitators and the barriers to the use of e-learning tools among nurse educators in a selected nursing education institution in Eastern Cape. The research question has been answered.

5.2 OBJECTIVES OF THE STUDY

The aim of this research was to determine the facilitators and barriers to the use of e-learning tools among nurse educators in a selected nursing education institution in Eastern Cape. The following were the study's objectives:

- To determine the facilitators to the use of e-learning tools among nurse educators in a selected nursing education institution in Eastern Cape
- To determine the barriers to the use of e-learning tools in teaching and learning in a selected nursing education institution in Eastern Cape
- To recommend the teaching measures that will enhance e-learning in the selected nursing education institution.

5.3 SUMMARY OF FINDINGS

Results from the data collection instrument were discussed in the previous chapter according to the variables. The variables included demographic data, facilitators to the use of e-learning tools among nurse educators, the barriers to the use of e-learning tools and the teaching measures to facilitate teaching and learning.

5.4 DATA COLLECTION INSTRUMENT

This was a quantitative research study that used descriptive survey as design. Data was collected through a self-administered questionnaire as described in Chapter 3.

5.4.1 Section A: Demographic profile of the participants

From the demographic data presented, it was evident that females (n=74) were predominantly employed as nurse educators in the selected nursing education institution. According to the South African Nursing Council statistics, there is a high percentage of female registered nurses in the Eastern Cape where the study was conducted. Of the eighty two (82) respondents, 61% (n=50) were more than 50 years, hence the need for succession planning. The majority of the respondents 48.78% (n=40) were Bachelor's degree holders but still not using e-learning tools for teaching and learning. In assessing work experience, 73% (n=60) have worked as a nurse educator for more than five years. Therefore, there is a need to incorporate e-learning and train them to use it in order to be on par with other higher education institutions in South Africa.

5.4.2 Section B: The facilitators of e-learning

In the subsection containing the open-ended questions that enquired about the facilitators of e-learning from individual considerations, 36.6 % (n=30) of respondents believed that the training and re-retraining of nurse educators would facilitate the use of e-learning tools in teaching and learning. Bradshaw and Lowenstein (2007: 279) point out that promoting computer literacy, incorporation and the use of technology in nursing education is very important in order to ensure that nurse educators will be on par with other education institutions. This is in agreement with the findings of this study. About 23.2% (n=19) of the respondents viewed availability and accessibility to the internet as a facilitator to the enhancement and use of e-learning tools in teaching. According to Asah (2010:85), access to the internet and ICT is a required condition for the use of e-learning tools. Another 18.3% (n=15) of the respondents indicated that the provision of adequate and reliable internet service would improve the use of e-learning tools in the selected nursing institution. Also, about 18.3% (n=15) indicated that the provision of ICT tools would facilitate e-learning. Interestingly, only 3.7% (n=3) of the respondents suggested that government support is an important factor that will enhance the use of e-tools in teaching and learning.

From the results, the majority of the respondents on the open-ended questions on how the nurse educators see or perceived e-learning were as follows: the highest number of respondents being

43.96% (n=36) perceived the use of e-tools in teaching and learning as beneficial while 30% (n=25) see it as a necessity in 21st century teaching and learning. About 14.6% (n=12) believed it saves time and is a faster means of communication. Few respondents 6.1% (n=5) perceived that the use of e-tools might motivate staff in teaching and learning.

5.4.3 Section C: Barriers to the use of e-learning tools in teaching and learning

As observed from the results of this study, inadequate ICT facilities have been identified as one of the major barriers to the effective use of e-learning tools in teaching and learning. The reduced access to ICT facilities and training revealed in this study could affect the functioning of nurse educators in developing the important skills necessary for functioning in a specialized environment such as a nursing education institution and clinical setting. The study also revealed low levels of technology use in teaching and learning, which significantly affect the graduate nurse's skills in coping in a healthcare environment that is evolving technologically, as supported by While and Dewsbury (2011: 1302) who emphasized the need for nurses to be more developed in ICT skills. A total of 44% (n=36) respondents indicated that inadequate ICT facilities were a barrier to the use of e-learning by the nurse educators. The changing healthcare platform makes the adoption and use of electronic technologies in education essential (Dzidonu, 2010: 4). This is because e-learning encourages the ability to engage learners and customise the learning process which has been seen to support its use for clinical skill acquisition (Bloomfield & Jones, 2013: 1606). Nursing education is evolving with regard to adopting the latest technology in the teaching and learning environment. According to Nkosi, Asah and Pillay (2011: 880), computer literacy is an essential skill that allows for teaching and learning technologies. Lack of ICT facilities will result in ignorance of the use of e-learning tools. It was also discovered that lack of internet connectivity to a large extent negatively affected the use of e-learning tools in the nursing education institution with 82.93% (n=68) of the respondents attesting to this. Another barrier to the use of e-learning tools for teaching and learning was poor power supply.

About 12.2% of the respondents were of the opinion that lack of knowledge and skills of the use of e-learning tools was a barrier e-learning. Then 24.4% expressed that lack of training and re-training of nurse educators was also a barrier to e-learning as it also created a lack of confidence and the feeling that the learners were more knowledgeable that the educators. This study was supported by Dzidonu (2010: 19) who pointed out that many African educational institutions have not invested in staff skills training and development of e-teaching. Poor funding of ICT was also pointed out by 13.4% of respondents as a hindrance to the use of e-learning tool in teaching and learning. Poor funding and support for integrating technology use in nursing education will impact on the usage of

e-learning tools. Hassler, Hennessy and Lubasi (2011: 17) and Hennessy, Onguko, Harrison, Angondi, Namalefe, Naseem and Walmakote (2010b: 41) stated that the lack of support in the use of ICT has effects on the attitude of the individual expected to use the ICT, which is in support of this finding. These findings highlighted the barriers that should be given attention in order to promote and encourage the use of e-learning tools in teaching and learning. The current trends are that the world is a global village and without the effective use of e-learning tools, the institution obviously would be lagging behind.

5.4.4 Section D: The teaching measures that facilitate the use of e-learning tools in teaching and learning

The results of this study relating to the use of blended learning as a teaching measure to facilitate e-learning were assessed and analysed, and most respondents (44%, n=36) strongly disagreed that blended learning will not facilitate e-learning. Recorded lectures as a teaching measure to facilitate e-learning were also assessed and the result gathered showed that recorded lectures were not used, as 53.66% (n=44) respondents attested to this. Similarly, 34% (n=28) were in disagreement with the use of electronic smart boards as a teaching measure, although 31.71% (n=26) scored the highest in agreement that the use of electronic media would facilitate the use of e-learning in the selected NEI. In this category, 29% (n=24) agreed and 17.07% (n=14) strongly agreed that the use of email, Skype, Facebook, etc. would facilitate e-leaning among nurse educators. About 36% (n=30) agree and 29% (n=24) strongly agree that the face-to-face method as a teaching measure would enhance teaching and learning in the selected NEI although adhering to face-to-face will not allow e-learning to thrive.

5.5 ASSOCIATION BETWEEN VARIABLES

5.5.1 Associations between demographics and teaching measures

Associations between the demographics and teaching measures used to facilitate e-learning were determined. In this study, there was no significant association between the age, gender, race, professional designations, academic qualifications and the work experience of the respondents with the use of teaching measures. However, respondents indicated that availability of e-learning facilities, steady and efficient internet connectivity and training of the nurse educators would be of great importance to the use of e-learning tools for teaching and learning.

5.6 RECOMMENDATIONS

5.6.1 Recommendations for research

- It is recommended that similar studies should be carried out in other nursing education institutions in South Africa. This will provide a true reflection of the facilitators and barriers to the use of e-learning tools in teaching and learning among nurse educators in nursing education institutions across South Africa.
- In addition, studies can be done using a qualitative approach to explore the experience of nurse educators with reference to barriers and what can facilitate the initiation of e-teaching and learning in nursing education institutions.

5.6.2. Recommendations for nursing education

- The curriculum for the training of nurse educators and nurses in general should include ICT with more emphasis on the use of e-learning tools in teaching and learning. The need for the incorporation of computer training in the training curriculum of nurses is an area that requires further exploration, to ensure that nurses graduate having ICT knowledge.
- The acquisition of personal laptops and smart phones by staff and students should be supported by management. If possible, institutions should assist nurse educators and students in the provision of e-tools.
- Adequate and reliable internet facilities should be provided in the various nursing education institutions in Eastern Cape.
- In addition, the staff need to be trained and re-trained on various e-teaching methods.
- Internet provision should be reliable and accessible to enable both the educators and learners to access and deliver information online as and when needed.
- Government should also give adequate support to the schools in the provision of Information and Communication Technology.
- They must also formulate an ICT policy for the NEIs. The policy would bring about the regulation of ICT issues at NEIs and the Eastern Cape Province as a whole. The recommendation includes that the policy should addresses the issues surrounding access to e-learning tools, training of all nurses and students, and the use of ICT for instructional purposes.
- The management of nursing education institutions should look into the identified facilitators and barriers to effective use of e-learning tools in teaching and learning with a view to

controlling the barriers and implementing the strategies that will facilitate e-learning tool use.

- The results indicated that it should be mandatory for every nurse educator to undergo training on the use of e-learning tools in teaching and learning. Nurse tutors should be encouraged to acquire ICT facilities such as laptops and smart phones of their own.

5.7 CONTRIBUTION TO THE BODY OF KNOWLEDGE

There was a need for conducting surveys in nursing education institutions to determine areas of ICT needs and support. The results obtained could be used to improve ICT adoption and use for teaching and learning in the NEI. Conducting more research on e-learning will help us to use the results to compare the standards of e-learning use in South Africa and globally. The results can be used for monitoring purposes.

5.8 LIMITATIONS OF THE STUDY

This study was conducted in the Eastern Cape Province of South Africa and in one of the NEIs, which may limit the generalization of the findings to other NEIs in the Eastern Cape and in other provinces of South Africa. Different results may have been achieved; therefore, it will be beneficial if more NEIs in Eastern Cape and elsewhere could be included. The data collection tool may have been structured differently to include questions that would yield further significant information. And a larger sample size could be obtained so that more generalizable results would emerge.

The information available in this study was obtained from self-reporting methods of response, which may have resulted in results that do not reflect the actual situation and experience. Interviews may have yielded different results.

This study involved only nurse educators which excluded the responses and perceptions of the learners. It would be necessary in further studies to include learners who were the end receivers of teaching and learning to obtain a valuable result.

5.9 FINAL CONCLUSIONS

This study aimed to determine the facilitators, barriers and recommendations regarding teaching measures to facilitate e-learning in the selected nursing education institution in Eastern Cape. The discussions of the study were guided by the objectives. This study followed a quantitative, non-experimental, descriptive survey to collect data from the NEI.

This chapter draws an overall conclusion emanating from this study. Information has been gathered on the benefits of the use of e-learning in nursing education. Use of e-learning tools can potentially transform the teaching and learning environment significantly and consequently contribute to positive learning outcomes. However, this study has revealed that the nursing education institution in Eastern Cape has been challenged in incorporating e-learning into the instructional system in order to benchmark with education in other sectors.

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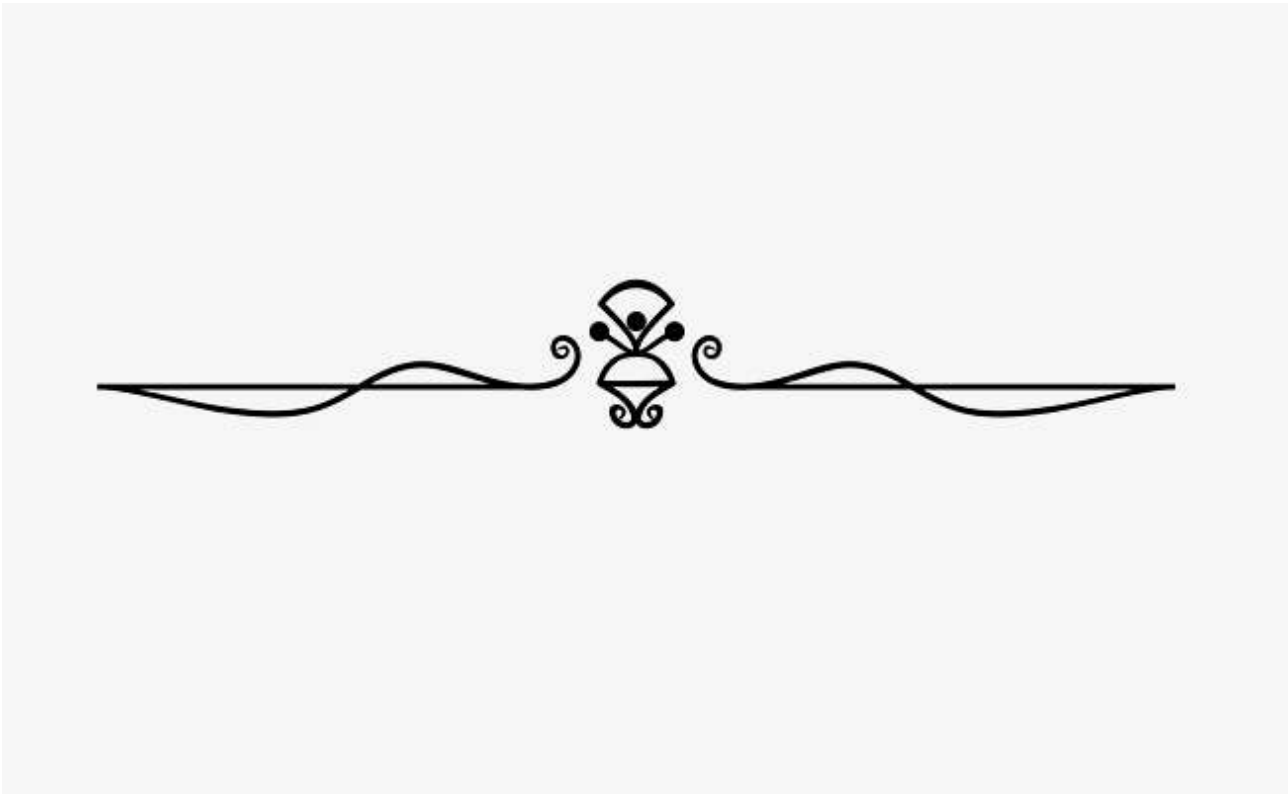
ANNEXURE A

DECLARATION REGARDING PLAGIARISM



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences

ANNEXURE A

Declaration regarding plagiarism

Full Names of Student: Ngozi Mbah

Title of the study: FACILITATORS AND BARRIERS TO THE USE OF E-LEARNING TOOLS AMONG NURSING EDUCATORS IN A SELECTED NURSING SCHOOL AT EASTERN CAPE

Declaration

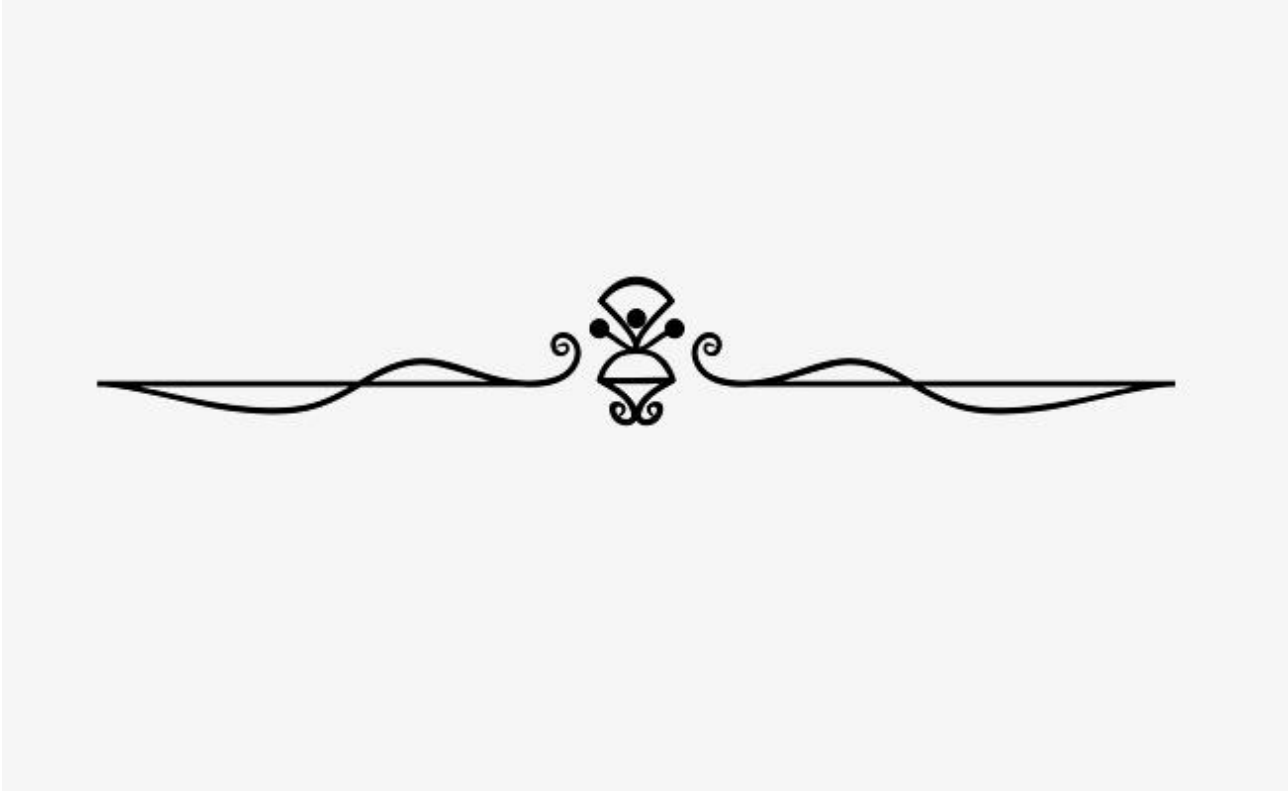
I, Ngozi Mbah understand what plagiarism is and am aware of the University's policy in this regard. I declare that this research is my own original work. Where other people's work has been used (either from a printed source, Internet or any other source), this has been properly acknowledged and referenced in accordance with departmental requirements. I have not used work previously produced by another student or any other person to hand in as my own.

I have not allowed, and will not allow, anyone to copy my work with the intention of passing it off as his or her own work.

SIGNATURE: _____

ANNEXURE B

E-LEARNING TOOLS



ANNEXURE B

TITLE OF THE STUDY:

FACILITATORS AND BARRIERS TO THE USE OF E-LEARNING TOOLS AMONG NURSING EDUCATORS IN A SELECTED NURSING SCHOOL AT EASTERN CAPE

AIM:

The aim of this study is to determine the facilitators and barriers to the use e-learning tools among nurse educators in a selected Nursing Education Institution (NEI) in Eastern Cape.

INSTRUCTIONS

- Please answer all the questions. The questionnaire will take around 25 minutes of your time.
- Give your personal responses where needed.
- Mark your selected choice an X in the spaces provided, e.g:

  Are you a registered nurse?

Yes	X
No	

SECTION A: DEMOGRAPHIC PROFILE

1. Age categories

25-30	
31-40	
40-50	
>50	

2. Gender

Male	
Female	

3. Race

White	
Black (includes African, coloured Indian)	
Other	

4. Professional Designation

Professional Nurse	
Nurse Educator	
Principal	

5. Academic qualification

Diploma	
Baccalaureate	
Master	
Doctorate	

6. Do you have any additional qualifications?

Yes	
No	

6a. If yes,

Specify……
……

7. Years of Work Experience as a nurse educator?

6-12 months	
2-3 years	
4-5 years	
>5 years	

SECTION B (OPEN ENDED QUESTION)
Participants are expected to give their personal responses

8, What can facilitate your use of e-learning tools in teaching and learning? .....

……

SECTION C
THE BARRIERS THE USE OF E-LEARNING TOOLS
In this section, please indicate how often the following occur. Choose only one option for a statement by marking an (X) in the appropriate column.

9. Does your nursing education institution (NEI) have Computer laboratory?

Yes	
No	

10. Does your NEI have laptops?

Yes	
No	

11. Does your NEI use audio-visual technology in teaching?

Yes	
No	

12. Does your NEI use electronic whiteboard/smart board?

Yes	
No	

13. How often do you use electronic whiteboard/smart board?

Never	
Once a month	
Once a week	
Every day	

14. Does your NEI use Interactive lessons on CD-ROM?

Yes	
No	

15. Do you have a personal computer or laptop?

Yes	
No	

16. Do you use smart phone or tablet for e-teaching purposes?

Yes	
No	

17. Do you feel pressured to use ICT as part of teaching and learning?

Yes	
No	

18. How skilful are you in the use of computer?

Poor	
Fair	
Good	
Very good	
Excellent	

19. Which of the following programmes can you use with confidence?

	Yes	No
Word processing		
PowerPoint presentation		
Database access		
Excel		
Internet access		

20. How often do you surf the internet?

Never	
Once a month	
Once a week	
Every day	

21. Do you have any form of computer training with a certificate?

Yes	
No	

22. Have you been involved in any online computer based training/program?

Yes	
No	

23. Does your NEI use e-learning tools in teaching and learning?

Yes	
No	
Not sure	

24. Does your NEI use blended learning?

Yes	
No	
Not sure	

25. Have you experienced challenges using e-learning tools in teaching and learning?

Yes	
No	

25a, If yes,

Please specify ……..

…….

26. Do you have efficient internet connectivity in your NEI?

Yes	
No	

	SECTION D: IMPLEMENTING TEACHING MEASURES TO FACILITATE TEACHING AND LEARNING						
	In this section, please indicate whether the statement is typical of what you have experienced. Please mark an (X) in the space provided if you "strongly disagree" or "disagree" or "neutral" or "agree" or "strongly agree".						
	No.	**Teaching strategy**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
	27	Use blended learning					
	28	Use of recorded lecture					
	29	Electronic smart board					
	30	Use electronic media					
	31	Email, Skype and Facebook					
	32	Face-to-face only					
	33	It is student centred					
	34	Reduces dominance of educators on teaching context.					
	35	Reduce face-face interaction between learners.					
	36	Reduce face-face interaction between educators and learners					
	37	e-learning application improve teaching and learning					
	38	Every educator must be ICT compliant					
	39	Online support needed					
	40	Technical staff needed					
	41	Inadequate ICT facilities (computer and accessories)					
	42	Educators need ICT training					
	43	Internet provision is expensive					
	44	Power supply can be an issue					
	45	ICT has changed the way we live					
	46	ICT is widely accepted					
	47	Saves time for both the students and teachers					
	48	Increase learning motivation to learners					

49. How do you see the use of e-learning tools in teaching and learning?

……

……

50. What are the barriers to your using e-learning tools in teaching and learning?

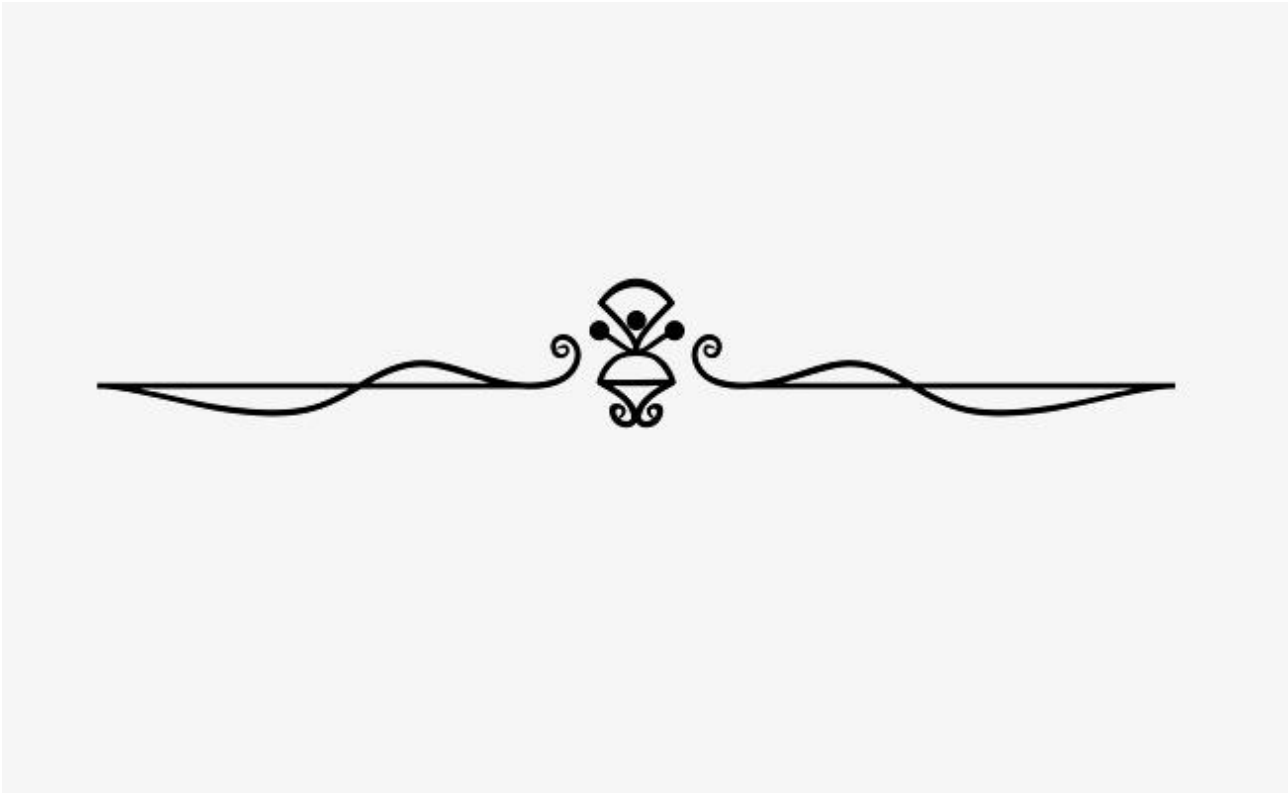
……

……

Thank you for your participation!

ANNEXURE C

PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM



ANNEXURE C

PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM

TITLE OF THE RESEARCH PROJECT:

FACILITATORS AND BARRIERS TO THE USE OF E-LEARNING TOOLS AMONG NURSING EDUCATORS IN A SELECTED NURSING SCHOOL IN THE EASTERN CAPE

PRINCIPAL INVESTIGATOR: NGOZI MBAH
CONTACT NUMBER: 0738735175

You are hereby invited to take part in this research project. Please read the provided information to familiarise yourself with the details of the project. You are free to ask the researcher questions regarding any part of the research that you do not understand for clarification. Please be sure that you are satisfied with the information provided to you regarding this research and what your participation would be. Your involvement is entirely voluntary and you are free to refuse participation and to withdraw and know that it will in no way affect you negatively.
This study protocol has been submitted to the University of Pretoria Ethics Committee and approval was obtained. This study will be conducted according to the ethical principles and guidelines of the international Declaration of Helsinki (October 2013: E1-E4),

ABOUT THE RESEARCH:
This study aims at determining the factors that hinder e-learning in Nursing Education Institution in Eastern Cape.

RESPONDENT'S RESPONSIBILITIES
An envelope containing a consent form and questionnaire will be delivered to the respondent by the researcher. Respondents are expected to return the questionnaire and consent form in

sealed envelope provided. This data collection will take two weeks' period. The questionnaire will be delivered by the researcher personally between the hours of 8am – 10am and collected before 16:00Hours daily after the period of two weeks. The respondent places the sealed envelope in to a sealed box marked "Completed Questionnaire" that will be sitting at the staff office.

RISKS AND BENEFITS

There are no financial benefits accrued to or incurred by you for participating in this study. Only that you will be helping us to know about the use e-learning in your institution and how to improve teaching and learning in the nursing education institutions using e-learning. There is also no known health risk for getting involved in the study.

VOLUNTARY PARTICIPATION

Participation is absolutely voluntary. You may withdraw from the study any juncture without being penalised.

You may refuse to be part of agree this study. If you do not agree with any part of this research, you may withdraw from the study. But know that whether you participate or not, your job will not be affected.

For questions regarding your rights as a research participant, or if you feel that you have been unfairly treated, please contact the principal investigator or the supervisor.

CONFIDENTIALITY OF THIS STUDY

The information you provided will be confidential and protected. The anonymity of your identity will be maintained. The information gathered will available to the researcher, the supervisor and co-supervisor and the statistician.

FOR FURTHER ENQUIRY

If there is anything more you desire to know, please contact Ms Ngozi Mbah on 0738735175 as earlier indicated or the supervisor.

DECLARATION BY PARTICIPANT

I ……. hereby agree to take part in this research study by signing below.

- I have read and understood the information provided on the consent form
- I had opportunity of asking questions and receiving appropriate answers.

- I admit that I am aware that my participation is voluntary and I have not been forced to participate.
- I may at any point refuse participating without punishment of any sort.
- I may also be requested to withdraw from the study before the study ends if the researcher thinks that it is for my good or if I have not participated according to study plan.

Signed at (*place*) …….. on (*date*) …… 2016

…….. …….. Signature of Respondent Signature of witness

DECLARATION OF RESEARCHER

I, Ngozi Mbah declare as follows:

- I clarified the information in the consent form to …….
- I encouraged him/her to asking question and provided answers to the questions.
- I am pleased that the participant well understood what the research is all about.
- No interpreter was required.

Signed at (*place*) …… on (*date*) ……2017

…… ……

Signature of Researcher Signature of witness

ANNEXURE D

PERMISSION TO CONDUCT RESEARCH: EASTERN CAPE

Province of the
EASTERN CAPE
HEALTH

Lilitha College of Nursing in Association with the Consortium of Universities
(WSU, NMMU & FORT HARE)
PORT ELIZABETH • Eastern Cape
Private Bag X6047 • PORT ELIZABETH • 6000 • REPUBLIC OF SOUTH AFRICA
Tel.: +27 (0)41 373 7829 • Fax: +27 (0)4 373 2614 • Website: www.ecdoh.gov.za
@impilo.ecprov.gov.za

TO: Masters Student: Mrs. N. Mbah
University of Pretoria

FROM: The Campus Head
Lilitha PE Campus

DATE: 2016/10/21

SUBJECT: Permission to conduct Research (Topic: Factors that hinder the use of E – learning tools by nurse educators).

The above matter refers: This serves to inform you that your application to conduct research at PE Campus on the above topic is granted. But it must be noted that currently E – learning is not utilized due to lot of factors as follows:

- Connectivity challenges to the internet. The campus server is connected to complex hospitals and therefore is difficult to upgrade it.
- Student management system that has a portal of student affairs and use of e – learning has got challenges of its own and is not yet functional. Information is still loaded in the system at central administration.
- Staff members are developed into use of technology as there were two workshops this year on blended learning by Nelson Mandela Metropolitan University.

Lilitha College is a provincial College that consists of five main campuses and 23 sub – campuses that are under the main campus.

Main campuses are strategically placed throughout the province to cover two or more districts e.g. PE Main Campus covers Nelson Mandela Metro and Sarah Baartman Districts. It has four sub-campuses reporting to it viz. Andries Vosloo at Somerset, Dora Nginza here in PE, Midland at Graaf Reinet and Settlers at Grahamstown.

You are requested that the data collection be conducted within the rules of the Ethics Committee.

The Campus wishes you well in your studies and we hope that you will share your findings and recommendations with the campus, for the betterment of future use of E - learning.

Thanking you in advance.

Compiled by:
L.H.Zonke

Lilitha Nursing College: PE Campus
Private Bag X6047, Port Elizabeth 6000
Tel: 041 - 373 7829 Fax: 041 - 3732614

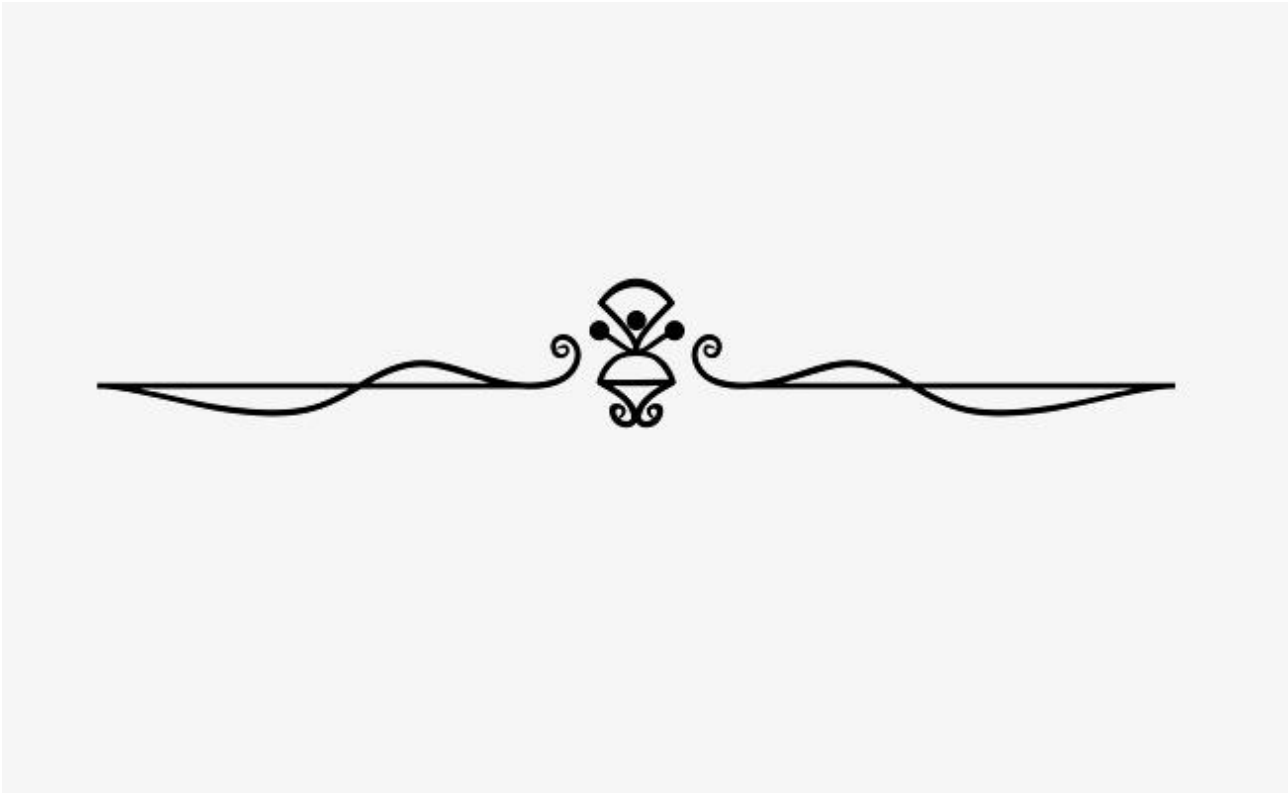
Campus Head

2016.10.21
Date

Ikamva eliqaqambileyo!

ANNEXURE E

PERMISSION TO CONDUCT RESEARCH IN LILITHA COLLEGE OF NURSING



Province of the
EASTERN CAPE
HEALTH

Room • 1st[th] Floor • Global Life Building • Independence Avenue • Bhisho • Eastern Cape
Private Bag X0028 • Bhisho • 5605 • REPUBLIC OF SOUTH AFRICA
Tel.: +27 (0)40 608 9509 • Fax: +27 (0)40 608 9689/0866816407
Website: www.ecdoh.gov.za
Email: nomvuyiseko.links@impilo.ecprov.gov.za

Enquiries: Miss V. Delihlazo

MEMORANDUM

TO	**Ms NGOZI MBAH**
FROM	**MRS N LINKS: PRINCIPAL: LILITHA COLLEGE OF NURSING**
SUBJECT	**PERMISSION TO CONDUCT RESEARCH IN ALL OF LILITHA COLLEGE CAMPUSES: (E/L,PE,MTHATHA,LUSIKISIKI AND QUEENSTOWN CAMPUS)**
DATE	**25.10.17**

1. The subject matter above refers.

2. This correspondence serves to confirm that permission is hereby granted for you to conduct research in Lilitha College of Nursing (Central Office) and Campuses: E/L, PE, Mthatha, Lusikisiki and Queenstown Campus.

3. The College will be waiting to be forwarded the results/recommendations from your study for implementation purpose by the college campuses.

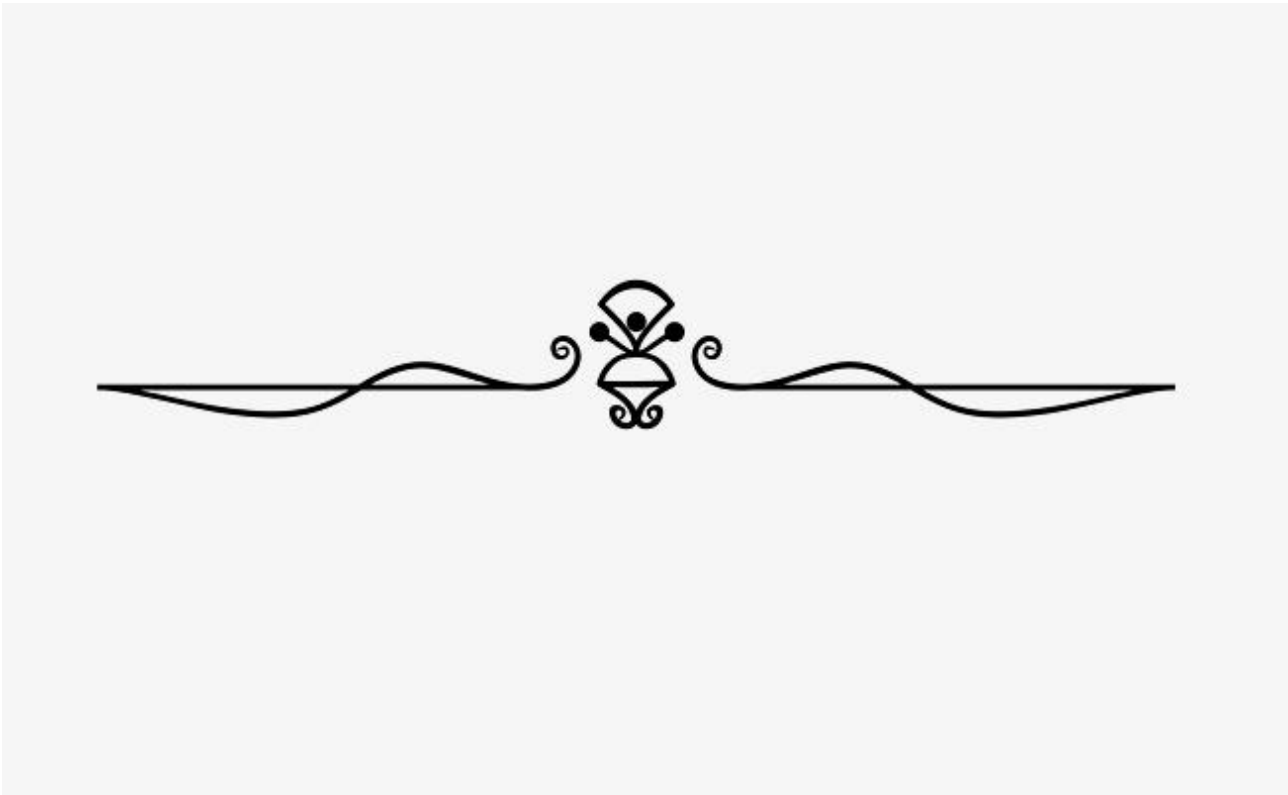
4. The organization takes this opportunity to wish you success in your studies.

……..

Mrs N Links: Principal Lilitha College of Nursing

ANNEXURE F

APPLICAION FOR COLLECTION OF DATA



No 32 Newington Street

Richmond Hill

Port Elizabeth

6001.

26/ 10/ 2017

The Principal

Lilitha Nursing College

East London Campus.

Dear Madam,

Application for permission to carry out a research project at Liltha Nursing College.

I, Ngozi Mbah, a post graduate Master student of Nursing Science Department of University of Pretoria, hereby request for permission to conduct a study at Lilitha College of nursing as part of the requirements for the completion of the degree.

The title of the research study is: Facilitators and Barriers to the use of e-learning tool among nurse educators in Eastern Cape, South Africa.

Data will be collected from all nurse educators that will voluntarily participate in this researcher in all the campuses of this college.

This study will be beneficial to both the Department of Health and the institution where the research is conducted because it will sensitize the educators on the use of e-learning and help the Department of health to achieve its “going paperless” program in nursing services in the nearest future.

I hereby attach to this application; the protocol for this study, the ethics clearance certificates from the University of Pretoria and Eastern Cape Department of Health Ethics Committee.

Thanking you in advance for your kind consideration of my application.

Yours Faithfully

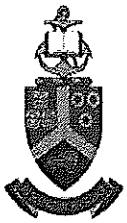
Ngozi Mbah

0738735175

ANNEXURE G

ETHICS APPROVAL:

UNIVERSITY OF PRETORIA



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences Research Ethics Committee

1/06/2017

Approval Certificate
New Application

Ethics Reference No.: 220/2017

Title: FACILITATORS AND BARRIERS TO THE USE OF E-LEARNING TOOLS AMONG NURSING EDUCATORS IN A SELECTED NURSING SCHOOL IN THE EASTERN CAPE

Dear Ms Ngozi Mbah

The **New Application** as supported by documents specified in your cover letter dated 22/05/2017 for your research received on the 26/05/2017, was approved by the Faculty of Health Sciences Research Ethics Committee on its quorate meeting of 31/05/2017.

Please note the following about your ethics approval:
- Ethics Approval is valid for 2 years
- Please remember to use your protocol number (**220/2017**) on any documents or correspondence with the Research Ethics Committee regarding your research.
- Please note that the Research Ethics Committee may ask further questions, seek additional information, require further modification, or monitor the conduct of your research.

Ethics approval is subject to the following:
- The ethics approval is conditional on the receipt of **6 monthly written Progress Reports**, and
- The ethics approval is conditional on the research being conducted as stipulated by the details of all documents submitted to the Committee. In the event that a further need arises to change who the investigators are, the methods or any other aspect, such changes must be submitted as an Amendment for approval by the Committee.

Additional Conditions:
- Approval is conditional upon the Research Ethics Committee receiving permission from Nursing Educational Institution.

We wish you the best with your research.

Yours sincerely

Dr R Sommers; MBChB; MMed (Int); MPharMed,PhD
Deputy Chairperson of the Faculty of Health Sciences Research Ethics Committee, University of Pretoria

The Faculty of Health Sciences Research Ethics Committee complies with the SA National Act 61 of 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 and 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes, Second Edition 2015 (Department of Health).

☎ 012 356 3084 deepeka.behari@up.ac.za / fhsethics@up.ac.za http://www.up.ac.za/healthethics
✉ Private Bag X323, Arcadia, 0007 - Tswelopele Building, Level 4, Room 60, Gezina, Pretoria

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences

The Research Ethics Committee, Faculty Health Sciences, University of Pretoria complies with ICH-GCP guidelines and has US Federal wide Assurance.

- FWA 00002567, Approved dd 22 May 2002 and Expires 03/20/2022.
- IRB 0000 2235 IORG0001762 Approved dd 22/04/2014 and Expires 03/14/2020.

17 July 2019

Approval Certificate
Annual Renewal

Ethics Reference No.: 220/2017
Title: FACILITATORS AND BARRIERS TO THE USE OF E-LEARNING TOOLS AMONG NURSING EDUCATORS IN A SELECTED NURSING SCHOOL IN THE EASTERN CAPE, SOUTH AFRICA

Dear Miss N Mbah

The **Annual Renewal** as supported by documents received between 2019-06-18 and 2019-07-17 for your research, was approved by the Faculty of Health Sciences Research Ethics Committee on its quorate meeting of 2019-07-17.

Please note the following about your ethics approval:

- Renewal of ethics approval is valid for 1 year, subsequent annual renewal will become due on 2020-07-17.
- Please remember to use your protocol number (220/2017) on any documents or correspondence with the Research Ethics Committee regarding your research.
- Please note that the Research Ethics Committee may ask further questions, seek additional information, require further modification, monitor the conduct of your research, or suspend or withdraw ethics approval.

Ethics approval is subject to the following:

- The ethics approval is conditional on the research being conducted as stipulated by the details of all documents submitted to the Committee. In the event that a further need arises to change who the investigators are, the methods or any other aspect, such changes must be submitted as an Amendment for approval by the Committee.

We wish you the best with your research.

Yours sincerely

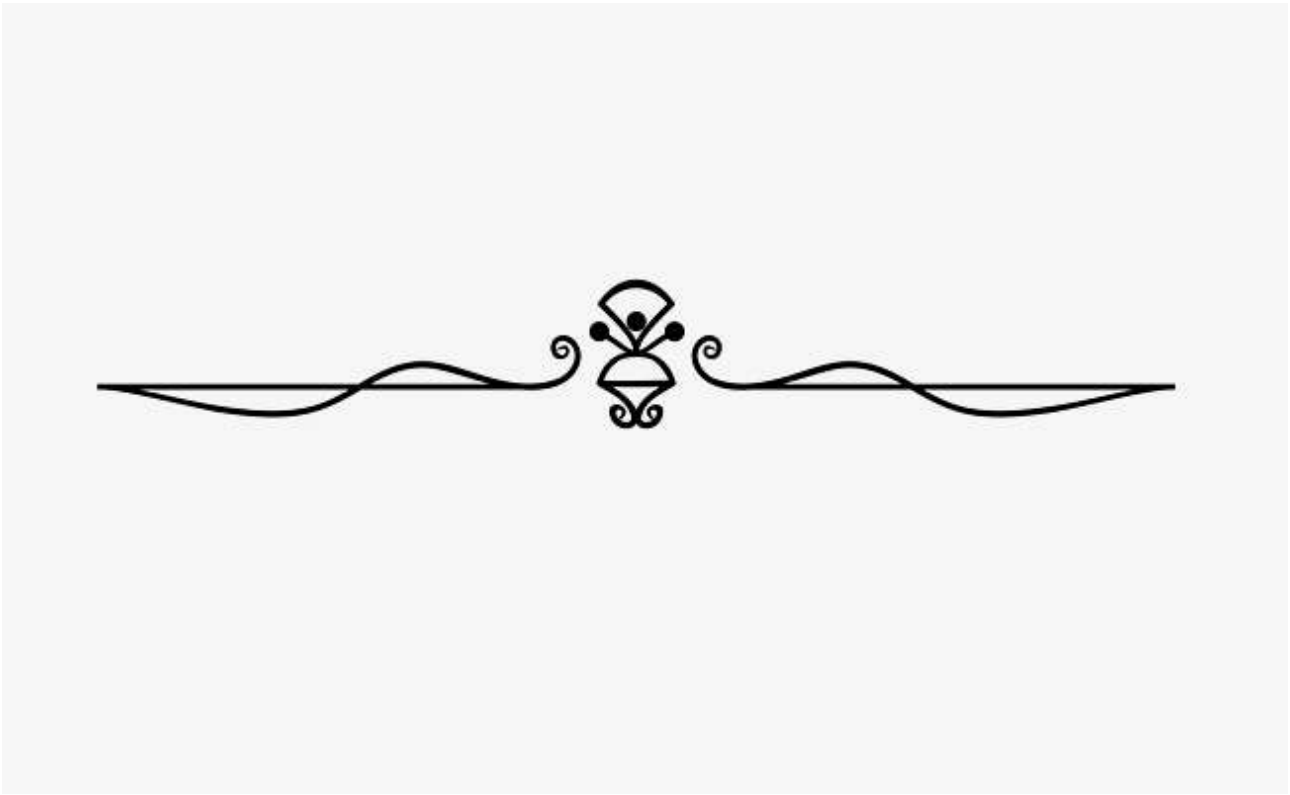
Dr R Sommers
MBChB MMed (Int) MPharmMed PhD
Deputy Chairperson of the Faculty of Health Sciences Research Ethics Committee, University of Pretoria

The Faculty of Health Sciences Research Ethics Committee complies with the SA National Act 61 of 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 and 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes, Second Edition 2015 (Department of Health)

Research Ethics Committee
Room 4-60, Level 4, Tswelopele Building
University of Pretoria, Private Bag X323
Arcadia 0007, South Africa
Tel +27 (0)12 356 3084
Email deepeka.behari@up.ac.za
www.up.ac.za

ANNEXURE H

PERMISSION TO CONDUCT RESEARCH



- The Research Ethics Committee, Faculty Health Sciences, University of Pretoria complies with ICH-GCP guidelines and has US Federal wide Assurance.
- FWA 00002567, Approved dd 22 May 2002 and Expires 03/20/2022.
- IRB 0000 2235 IORG0001762 Approved dd 22/04/2014 and Expires 03/14/2020.

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences Research Ethics Committee

1/06/2017

Approval Certificate
New Application

Ethics Reference No.: 220/2017

Title: FACILITATORS AND BARRIERS TO THE USE OF E-LEARNING TOOLS AMONG NURSING EDUCATORS IN A SELECTED NURSING SCHOOL IN THE EASTERN CAPE

Dear Ms Ngozi Mbah

The **New Application** as supported by documents specified in your cover letter dated 22/05/2017 for your research received on the 25/05/2017, was approved by the Faculty of Health Sciences Research Ethics Committee on its quorate meeting of 31/05/2017.

Please note the following about your ethics approval:
- Ethics Approval is valid for 2 years
- Please remember to use your protocol number (220/2017) on any documents or correspondence with the Research Ethics Committee regarding your research.
- Please note that the Research Ethics Committee may ask further questions, seek additional information, require further modification, or monitor the conduct of your research.

Ethics approval is subject to the following:
- The ethics approval is conditional on the receipt of **6 monthly written Progress Reports**, and
- The ethics approval is conditional on the research being conducted as stipulated by the details of all documents submitted to the Committee. In the event that a further need arises to change who the investigators are, the methods or any other aspect, such changes must be submitted as an Amendment for approval by the Committee.

Additional Conditions:
- Approval is conditional upon the Research Ethics Committee receiving permission from Nursing Educational Institution.

We wish you the best with your research.

Yours sincerely

Dr R Sommers; MBChB; MMed (Int); MPharMed, PhD
Deputy Chairperson of the Faculty of Health Sciences Research Ethics Committee, University of Pretoria

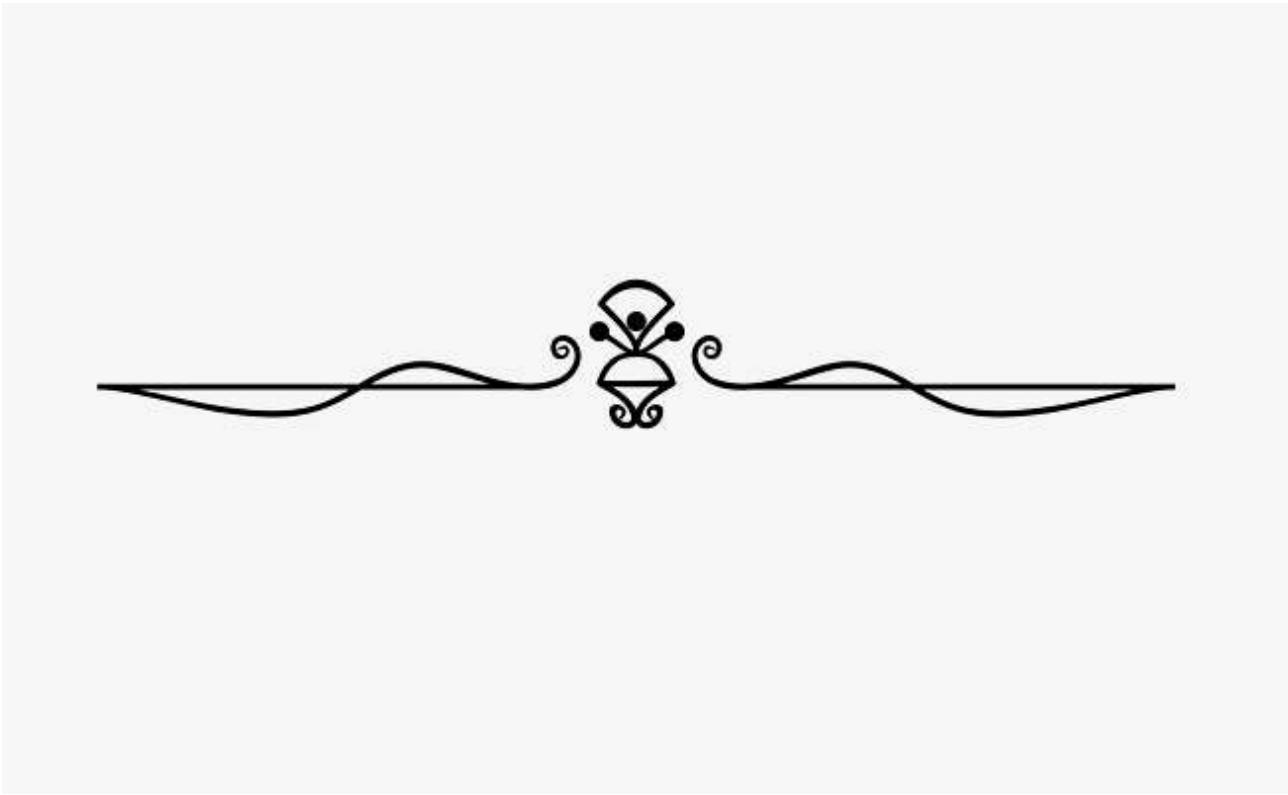
The Faculty of Health Sciences Research Ethics Committee complies with the SA National Act 61 of 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 and 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes, Second Edition 2015 (Department of Health).

012 356 3084 deepeka.behari@up.ac.za / fhsethics@up.ac.za http://www.up.ac.za/healthethics
Private Bag X323, Arcadia, 0007 - Tswelopele Building, Level 4, Room 60, Gezina, Pretoria

Ngozi Mbah

ANNEXURE I

PROVINCIAL RESEARCH PERMISSION



Eastern Cape Department of Health

Enquir1es:	Madoda Xokwe	Tel No:	040 608 0710
Date:	05 September 2017	Fax No:	043 642 1409
e-mail address:	madoda.xokwe@echealth.gov.za		

Dear Ms. N. Mbah

Re: Facilitators and Barriers to the Use of E-Learning Tools among Nursing Educators in a Selected Nursing School in the Eastern Cape (EC_201708_004)

The Department of Health would like to inform you that your application for conducting a research on the abovementioned topic has been approved based on the following conditions:

1. During your study, you will follow the submitted protocol with ethical approval and can only deviate from it after having a written approval from the Department of Health in writing.
2. You are advised to ensure, observe and respect the rights and culture of your research participants and maintain confidentiality of their identities and shall remove or not collect any information which can be used to link the participants.
3. The Department of Health expects you to provide a progress on your study every 3 months (from date you received this letter) in writing.
4. At the end of your study, you will be expected to send a full written report with your findings and implementable recommendations to the Epidemiological Research & Surveillance Management. You may be invited to the department to come and present your research findings with your implementable recommendations.
5. Your results on the Eastern Cape will not be presented anywhere unless you have shared them with the Department of Health as indicated above.

Your compliance in this regard will be highly appreciated.

SECRETARIAT: EASTERN CAPE HEALTH RESEARCH COMMITTEE

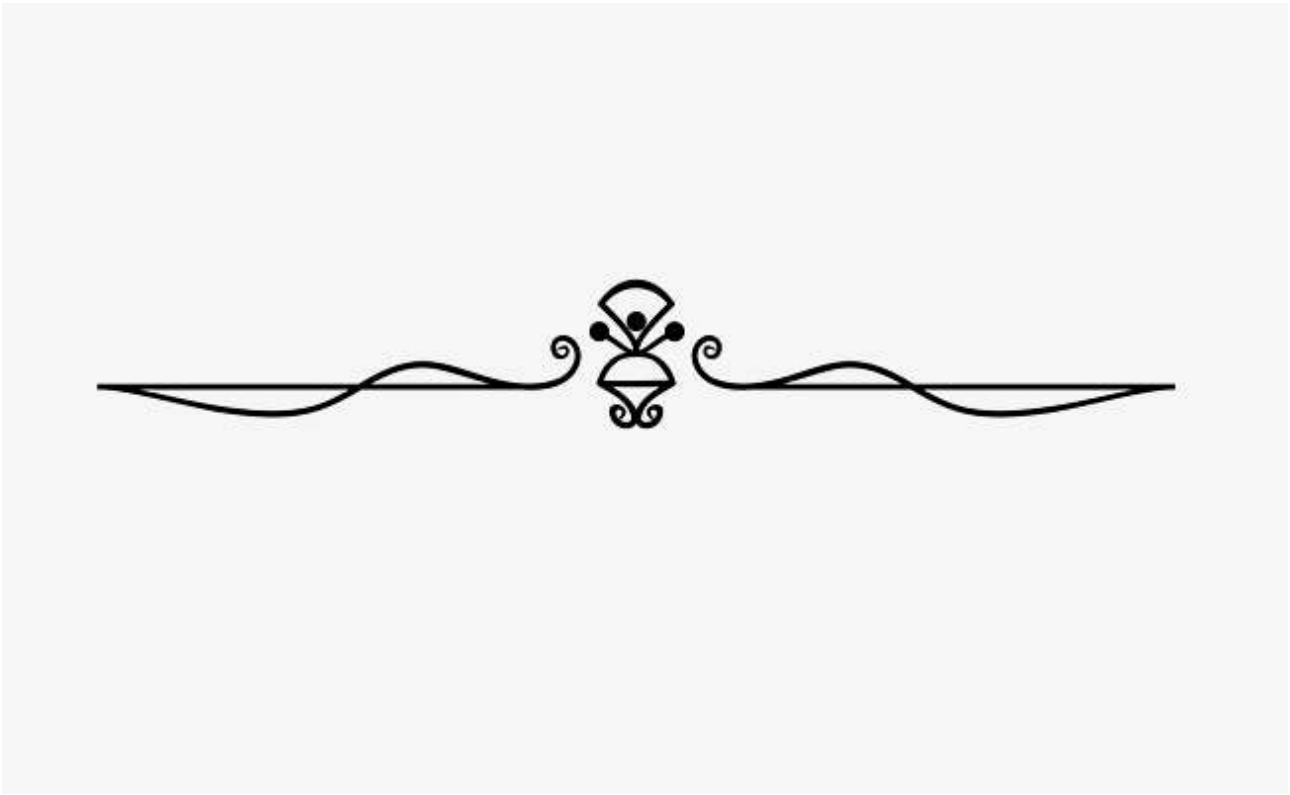
PGDP EASTERN CAPE 2004 - 2014

Ikamva eliqaqambileyo!

ANNEXURE J

ETHICAL APPROVAL:

UNIVERSITY OF PRETORIA



Favorites ▾ Main Menu ▾ > Research Scientist Office > Ethics WorkCentre > Add Post Submissions

Protocol Number: 220/2017

Application Status: Submitted for Approval

On whose desk: Student's Supervisor

Date: 28/06/2019 Default Date: 06/08/2019

Submit for Approval

Post Approval Submission

- Amendment
- Annual Renewal Application
- Serious Adverse Events
- Other Submissions
- Reports on Medication Trials (Additional to Annual Renewal)

Annual Renewal Application

Describe the progress during the past year

Awaiting renewal, request for my thesis

Which protocol deviations have occurred during the past year?

None

Which protocol violations have occurred during the past year?

None

Which unforeseen risks have emerged during the past year?

None

Confirm that no changes to the study in any respect have been made without obtaining prior ethics approval of such amendments

Documents

Attach all relevant documents Delete selected versions

Name Save

https://upnet.up.ac.za/psp/pscsmpra/EMPLOYEE/HRMS/c/UP_ETH_MENU.UP_ETH_WC.GBL?pslnkid=UP_ETH_WC&PORTALPARAM_PTCNAV=UP_... 1/1

Ngozi Mbah

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences

SUBMISSION FORM / RESUBMISSION FORM: MINI-DISSERTATION, DISSERTATION, THESIS

(This form must be submitted together with the copies of the mini-dissertation, dissertation or thesis to the Student Administration office of the faculty)

STUDENT NUMBER: 16336331
Miss N Mbah
PO Box 12
Port Elizabeth
6000
South Africa

(Please print)
Tel: **Mobile tel:** 073 873 5725
Work adress: Provincial Hospital Port Elizabeth
Postal code: 6001 **Tel:** (041) 360 2351

Details of mini-dissertation/dissertation/thesis:

Programme: MNurs	**Plan:** Nursing Education
Department:	NURSING
Supervisor:	PROF SS MOHALE
Co-supervisor(s):	PROF SS PHIRI

Title of the mini-dissertation/dissertation/thesis:
(Exactly as approved by the postgraduate committee including upper case, lower case and punctuation)
Facilitators and barriers to the use of e-learning tools among nursing educators in a selected nursing school in the Eastern Cape

Statement by candidate:

1. I am aware that, should the mini-dissertation, dissertation or thesis be accepted, I must submit the additional copies as well as a copy of the draft article (Doctoral students: proof that it has been accepted for publication or published by an accredited journal) before 15 February for the Autumn graduation or before 15 July for the Spring Graduation as required by the relevant regulations and that the degree will not be conferred if this requirement has not been fulfilled.
2. I declare that the mini-dissertation, dissertation or thesis, which I hereby submit for the degree programme at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at another university. Where secondary material is used, it has been carefully acknowledged and referenced in accordance with University requirements. I am aware of the University's policy and implications regarding plagiarism.

Signature: Mbah Ramadimetja Ngozi **Date:** 11/02/2019

Statement by the Supervisor:
I hereby declare that I approve that Miss N Mbah may submit his/her mini-dissertation/dissertation/thesis for examination. The co-supervisor has agreed to the submission.

Signature (Supervisor): Mohale **Date:**
Signature (Co-supervisor(s)): **Date:**

FOR OFFICE USE

Received by: **Date:**

Ngozi Mbah