PERCEPTIONS OF LEARNER NURSES AND NURSE EDUCATORS REGARDING INFORMATION AND COMMUNICATION TECHNOLOGY IN TEACHING AND LEARNING AT THE LIMPOPO COLLEGE OF NURSING SOUTH AFRICA

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DECLARATION

I **TSHILILO AUSTIN RAVELE** declare that this research report titled *"Perceptions of Learner Nurses and Nurse Educators regarding Information and Communication Technology in Teaching and Learning at the Limpopo College of Nursing, South Africa"* is my own work and that all the sources used or quoted have been indicated and acknowledged by means of complete references. This research report has not been previously submitted in full or in partial fulfilment of the requirements of an equivalent or higher qualification at any other recognized educational institution. This research report is submitted in full fulfilment of the requirements of the Master's in Nursing Science at the University of Limpopo, School of Health Care Sciences.

Signed: ……………………….   Date: 03/07/2020

DEDICATION

The study is dedicated to my parent, Masindi Mercy Ravele; my siblings; Mr Tshivhase Timothy Ravele, Mr Mboneni Ravele, Dr Mafhungo Ravele and Ms Shakandinnyi Ravele and also to the entire Learner nurses and Nurse Educators in Limpopo College of Nursing in the Limpopo Province of South Africa.

LIST OF ABBREVIATIONS

ICT: Information and Communications Technology

SANC: South African Nursing Council

TAM: Technology Acceptance Model

TREC: Turfloop Research Ethics Committee

ECG: Electrocardiography

LCN: Limpopo College of Nursing

ABSTRACT

The implementation of Information and Communication Technology (ICT) and its impact on teaching and learning have not been researched in the Limpopo College of Nursing and, therefore, learner nurses' perceptions and nurse educators are not known. The purpose of this study was to explore and describe the perceptions of learner nurses and nurse educators of the use of ICT in teaching and learning at the Limpopo College of Nursing (LCN). Upon obtaining clearance from the Turfloop Research Ethics Committee (TREC) to conduct the study, the College granted permission to conduct the study.

Research employing the exploratory-descriptive qualitative research design was conducted to achieve the aim and objectives of this study. Data were collected from forty-seven (47) learner nurses and sixteen (16) nurse educators using focus group interviews. Data were audio-recorded, and field notes were written. Trustworthiness was ensured by applying Lincoln and Guba's trustworthiness criteria. Transferability was ensured by utilizing purposive sampling techniques to include all participants. Data were analyzed qualitatively by using Tech's open coding method.

The study results indicated that there is no ICT implementation in teaching and learning at the LCN. Learner nurses complained about the unavailability of proper ICT infrastructure, the lack of training of all LCN stakeholders in the use of ICT, the lack of skills of the lecturers to facilitate the utilization of ICT platforms, and the lack of a structured curriculum that embraces ICT platforms. The results indicated that nurse educators were concerned about producing learners who are not familiar with ICT; however, nurse educators were willing to implement ICT, even though no training had been provided to both old and new staff on ICT use. The results indicated that the LCN employs no ICT personnel. It is recommended that on-going training of the learner nurses and nurse educators in the use of ICT facilities be considered to remedy the situation. The college management should take the initiative to provide ICT facilities that can serve all campuses.

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DEFINITION OF CONCEPTS

Information and Communication Technology (ICT)

Information and Communication Technology (ICT) is a specific term that stresses the role of incorporated communications and the integration of telecommunications (telephone lines and wireless signals); computers; and the necessary enterprise software, storage, and audio-visual systems (Bello, Hassan, Yunusa, Abdulrashid, Usman & Nasidi, 2017). Information and Communication Technology shall mean the electronic devices utilized to search process and make available information and communication services between nurse educators and learner nurses.

Learner nurse

According to South African Nursing Act (Act no. 33 of 2005), a learner nurse is a person undergoing education and training who is registered with the South African Nursing Council in terms of section 32. In this study a learner nurse shall mean a learner registered with Limpopo College of Nursing at the Thohoyandou, Giyani or Sovenga campuses.

Nurse educator

A nurse educator is someone who has the ability to transfer knowledge to learners, diagnose learners' educational needs and utilise different strategies to facilitate and evaluate learning for developing the learners' spontaneous skills (Ndawo, 2016). A nurse educator shall mean a person who teaches learner nurses at any given time on any campus of the Limpopo College of Nursing.

Views

Soanes and Hawker (2008) define views as personal opinions not necessarily based facts or knowledge. In this study, views shall mean the opinions of learner nurses and nurse educators regarding the ICT facilities used for teaching and learning on Thohoyandou, Sovenga or Giyani campuses of the Limpopo College of Nursing.

Teaching

Teaching refers to a deliberate and purposeful activity directed towards promoting learning, comprising a teacher who promotes learning and a learner who receives information provided by the teacher (Ndawo, 2016).

Learning

Learning refers to knowledge and skills gained through study, experience, or being taught (Soanes & Hawker, 2008). In this study, teaching and learning refer to transferring/sharing information and skills between learner nurses and nurse educators.

CHAPTER 1

OVERVIEW OF THE STUDY

1.1. INTRODUCTION AND BACKGROUND

Improvement in Information and Communication Technology (ICT) is one of the most important developments of the 21st century. The availability of ICT facilities provides opportunities to make things simple and easy in teaching and learning by making learning accessible, flexible, and learner-centered - as learners take charge of their learning (Chigona, Chigona & Davis, 2014). Irinoye, Ayamolowo, and Tijnai (2016) stated that the rapid growth in the development of ICT facilities enables leaner nurses to search for, build-up, analyze and present information, and solve problems. Learners of today are exposed to the digital world from their childhood making them different from older generations in terms of their preference of learning styles; this requires educators to adapt to the current educational needs of learners to accommodate all learners and their preferences (Tuominen, Stolt & Salminen, 2014). A lack of ICT facilities may limit learners from successfully negotiating a competitive world - a world that requires critical thinking. Learners will also face challenges when doing their assignments in the nursing training program (Mettiäinen, 2015).

The nursing profession in countries such as Malaysia, Denmark, Australia, and Ethiopia has considered the impact of ICT facilities on teaching and learning (Chong, Francis, Cooper, Abdullah, Hmwe & Sohod, 2016). For example, a study conducted in Malaysia by Chong et al. (2016) suggested that organizational support is required to encourage accessibility to ICT facilities by learners and nurse educators to motivate their involvement in e-learning. Chong et al. (2015) indicated that sustaining continuous nursing education would require nursing institutions to employ e-learning as a useful mode of learning for learner nurses. Therefore, both nurse educators and learner nurses need to be equipped with knowledge and skills concerning ICT in teaching and learning. Although many nursing schools in Denmark have ICT facilities, Kolbaek (2015) indicated their use of ICT facilities for teaching and learning exists with many questions. Furthermore, the above authors were concerned about nurse educators' attitudes regarding the use of ICT - indicating that nurse educators were reluctant to embrace ICT in nursing education.

Button, Harrington, and Bela (2013) indicated that limited access to ICT facilities in clinical and placement settings, difficulties accessing the internet; unreliable computer systems; and a lack of technical support discourages the use of e-learning in Australian nursing institutions. Button et al. (2013) and Chong et al. (2015) share those same sentiments regarding the provision of adequate ICT facilities and adequate technical support and training as essential to encourage learner nurses' and nurse educators' involvement in e-learning.

Access to ICT facilities in nursing educational institutions in the African continent has been a problem compared to western countries. Many African universities and colleges question the outcomes for colossal ICT investment and policy development in teaching and learning (Bello et al., 2017; Woreta et al., 2013). For example, in Egypt, Bello et al. (2017) indicated that, although access to the necessary information and lack of ICT facilities remain a challenge, nurse educators and learner nurses ought to attain the competencies required to utilize ICT successfully. This is similar to the sentiment that Woreta et al. (2013) felt that the level of knowledge among learner nurses and nurse educators regarding ICT was insufficient. As a result, there was low utilization of ICT facilities for teaching and learning in Ethiopian nursing institutions.

In South Africa, there are minimal studies relating to learner nurse's and nurse educators' views regarding ICT facilities in nursing colleges. For instance, a study by Chigona et al. (2014) indicated that learner nurses would be exposed to e-learning only when nurse educators are motivated to use ICT facilities. Chigona et al. (2014) argued that nurse educators' motivation for using ICT facilities relies mainly on the availability of ICT facilities, the satisfaction derived from using ICT, and the sense of achievement experienced when using technologies. A study conducted in Limpopo Province on the use of ICT in teaching and learning at Dinaledi School revealed that students (referring to matric students) performed better in mathematics using ICT compared to the student performance in previous years (Mogodi, 2013). Mogodi (2013) further indicated that the Department of Education allocated the school ICT resources to improve the results of Grade 12 learners in mathematics. However, despite the Department of Education's efforts regarding the allocation of ICT facilities in secondary schools, little has been done about the distribution of ICT facilities in the nursing colleges of Limpopo Province. It would appear that no studies regarding the

perceptions of learner nurses and nurse educators in the Limpopo College of Nursing have been undertaken. It should be noted that the lecture rooms and residences of the Limpopo College of Nursing do not have Internet, and most learner nurses at Limpopo College of Nursing access internet in the computer laboratory and the library. However, there is only one campus equipped with computer facilities.

1.2. PROBLEM STATEMENT

Current learners are digitally orientated, allowing them to be actively involved in their own learning and use different methods of acquiring information in different ways (Dube & Mlotshwa, 2018). The Thohoyandou campus has no ICT facilities, while the Sovenga and Giyani campuses are partially equipped with ICT facilities. E-learning as a way of mediating teaching and learning is growing fast in the education field and is considered more effective than traditional teaching and learning methods. The current traditional method might not respond to the needs and experience in the clinical training of today's learners; thus, the integration of e-learning into academic institutions should be considered (Lahti, Hatonen & Valimaki, 2014). A lack of ICT facilities exposes learners and nurse educators to traditional teaching and learning methods, where learners mostly depend on the lecturer and the textbook as sources of information. It is the researcher's view that this situation affects the learners' technological skills, skills that are needed from a professional point of view, at a later stage, for service provision. Therefore, the researcher considered it essential to explore the perception of learner nurses and nurse educators at Thohoyandou, Giyani, and Sovenga campuses of the Limpopo College of Nursing regarding the use of ICTs in teaching and learning.

1.3. AIMS OF THE STUDY

The aim of the study was to determine the perceptions of learner nurses and nurse educators regarding the use of information and communications technology in teaching and learning at Limpopo College of Nursing, Limpopo, South Africa.

1.4. RESEARCH QUESTION

What are the perceptions of learner nurses and nurse educators regarding the use of information and communications technology in teaching and learning at the Limpopo College of Nursing, Limpopo Province, South Africa?

1.5. THE OBJECTIVES OF THE STUDY

- The study explored and described the perceptions of learner nurses regarding the use of ICT in teaching and learning.
- The study explored and described nurse educators' perceptions regarding the use of ICT in teaching and learning.

1.6. OVERVIEW OF RESEARCH METHODOLOGY

A qualitative approach was an appropriate guide to this study as the researcher desired to explore and describe the perceptions of learner nurses and nurse educators regarding the use of ICT in teaching and learning. A qualitative exploratory-descriptive research design was utilised to meet the aims and objectives of this study. The focus for this study was on three campuses of the Limpopo College of Nursing, namely, the Thohoyandou, Sovenga and Giyani campuses. The three campuses were selected because Sekhukhune and Waterberg campuses only offer the first year of the study, while the campuses that formed part of this study offer first to fourth year of the study. The population for this study encompassed all registered 4th year learner nurses and nurse educators at Limpopo College of Nursing in Limpopo, South Africa. The researcher used non-probability sampling to purposively select the participants. Data was collected using focus group interviews, eight groups were interviewed with each group consisting of 8-10 learner nurses and 5-8 nurse educators. Data analysis was conducted using Tech's open coding method of data analysis (Creswell, 2013). The detail methodology is discussed in Chapter 3.

1.7. MEASURES TO ENSURE TRUSTWORTHINESS

According to Polit and Beck (2012), trustworthiness is the degree of confidence that qualitative researchers have in their data. Trustworthiness is assessed using the criteria of credibility, transferability, dependability, confirmability (objectivity) and authenticity. For trustworthiness to be recognised and accepted, research findings

have to reflect as closely as possible the meanings described by the research participants, ensuring that the findings represent the reality of the situations and persons being studied (Anney, 2014). In this study, trustworthiness was assessed using the criteria of credibility, transferability, dependability and conformability, as recommended by Lincoln and Guba's principles of truth-value (Creswell, 2013).

1.8. ETHICAL CONSIDERATIONS

Research ethics is a system of moral values that is concerned with the degree to which research procedures adhere to professional, legal and societal obligations (Polit & Beck, 2017). The researcher observed the common practices of research ethics to ensure that the study complied with the generally accepted ethical principles. In this study, ethical clearance was sought from the Turfloop Research Ethics Committee (TREC). Permission to collect data from participants at the Limpopo College of Nursing was obtained from the college vice principals, however, one campus (Giyani) did not give permission. Participants signed a consent form after the researcher explained to them the aims and objectives of the study.

The researcher did not subject the participants to any harm or discomfort, either physically or emotionally. This means that participants were, at all times, treated with the ethical courtesy due to them; they were treated with fairness and equity during all stages of the research. The participants in this study were protected from any harm as a full explanation of the study was given to the learner nurses and nurse educators prior to their participation. The researcher was prepared to terminate the session had any discomfort or harm arisen during data collection. Participants were kept in a private environment, away from disturbances, in order to safeguard their privacy and ensure the quality of interviews. The information obtained from the participants was kept private and withheld from those who were not part of the study. The participants in this study never disclosed their identity at any time, while fake names or codes were used to mask their identity in the focus groups sessions, to ensure that they are not identifiable from the audio-recorded data. Detailed ethical considerations are discussed in Chapter 3.

1.9. SIGNIFICANCE OF THE STUDY

The study is expected to contribute to practice and policy in as far as nursing education is concerned. The outcomes of this study might provide policy makers in nursing education, higher education, in the South African Nursing Council and commissioners with research information to help them to decide on the inclusion of e-learning in support of nursing curriculum delivery. The study may help educators to decide which instruction method and which media to use in order in order to cater for the needs of their learners. Implementation of the study recommendations may help learners to do their learning work with ease. The study could assist decision makers to identify methods that have an impact on the development of learners' skills and knowledge. Having ICT facilities at the Thohoyandou campus will ensure that learners have more access to literature through the use of different search engines.

1.10. CONCLUSION

In this chapter, the researcher focused on the orientation of the study; an overview of this study, which included the background and problem statement; the aims and objectives of the study; measures to ensure trustworthiness of data and the ethical considerations to be adhered to. Limited research has been performed in South Africa on perceptions of learner nurses and nurse educators regarding the use of ICT in teaching and learning; hence the need for the researcher to focus on the topic. The researcher realised that there was a need to explore and describe the perceptions of learner nurses and nurse educators regarding the use of ICT in teaching and learning in Limpopo College of Nursing.

CHAPTER 2
LITERATURE REVIEW

2.1. INTRODUCTION

According to Groove, Burns, and Gray (2013), literature reviews provide the researcher with a background to the problem being investigated. The literature review is an important part of a study since it provides an understanding of the identified problem's meaning and nature (De Vos, Strydom, Fouche & Delport, 2012). Creswell (2013) indicated that a literature review provides the reader with findings from studies similar to the study being undertaken and provides the researcher with an indication of how the current study could fill gaps. In this chapter, the researcher will discuss the literature relating to the use of ICT in teaching and learning, with specific emphasis on the perspective of learners/learner nurses and nurse educators. Preferred methods for education, the utilization of ICT facilities, and the challenges related to the utilization of ICT will also be discussed. In the chapter, the researcher will also discuss the theoretical framework that grounded the study.

2.2. LITERATURE SUPPORT RELATING TO ICT FACILITIES IN TEACHING AND LEARNING

2.2.1 Benefits of ICT facilities in nursing colleges

Geiler (2014) conducted a study in the North-West Province of South Africa on the enhanced use of ICT by professional nurses in distance education. The author discovered that ICT is viewed as a means to empower learner nurses to expand their horizons. Being able to be in contact with learners from the other side of the world left learners feeling empowered. The use of ICT in teaching and learning is convenient to all learner nurses and nurse educators. Educators are able to post study material online and learners are able to access the learning material at any time, regardless of where learners are. Learners can work on their assignments at their own pace (Lahti et al., 2014). Embracing ICT in nursing colleges may bring substantial benefits by supplementing traditional methods relating to teaching and learning, assessment and service organisation with online methods. For example, one lecturer can facilitate a group of learners from different campuses simultaneously through the use of webinar technology (While & Dewsbury, 2011). Lecturers are able

to discuss learners' performance with other lecturers through a secure connection, such as Skype and conference call (Esewe, 2013). Information sharing can be improved through the use of the Intranet, which may reduce the number of face-to-face meetings held. Portals allow lecturers to communicate directly with learners when providing feedback, and learners are able to store information, as well as access information, about their studies, in addition to receiving personalized messages (Bogossian, Cooper, Cant, Porter & Forbes, 2015). E-learning offers learner nurses a sense of control over their learning, which encourages them to correct their actions themselves. Learners can also write multiple response tests online and get immediate feedback through the use of computer technology (McDonald, Boulton, & Davis, 2018).

As nurse educators give learner nurses instruction, learner nurses become self-evaluators because of their involvement in planning, implementation, and assessment (Bogossian et al., 2015). Maureen & Rashmi (2017) stated that ICT facilities offer different methods of delivering education through e-learning. E-learning is a dynamic and innovative way of providing education and learning opportunities. Ndawo (2016) stated that learners could participate in class and group discussions through the Internet. The Internet has made possible distance interaction between educators and learners possible; learning has become flexible and convenient. E-learning can improve learners' management of their work and how they manage their time. Learners can acquire the necessary skills and knowledge faster than when learning using traditional methods (Button et al, 2014).

2.2.2 Learning preference during provision of lessons

The findings of a study conducted by Chigona et al., (2014) on learner preferences and attitude towards ICT, showed that learner-teacher interaction and method of teaching plays a vital role in teaching and learning, regardless of which generation the learners belong to. Some learners show an interest in the use of ICT and are proficient in computer skills (Slechtova, 2015) and, as such, one might anticipate that nurse educators take advantage of that fact or use it as grounds to employ ICT facilities for learning. Though Slechtova's (2015) study emphasized learner-teacher interaction, the use of ICT can enhance learner's learning and interaction between learner nurses and nurse educators. The satisfaction of using ICT could positively

impact the use of ICT in teaching and learning, an individual's expectations, and a sense of achievement when using ICT (Chigona et al., 2014).

2.2.3. The utilization of ICT in teaching and learning

Learner nurses possess a variety of ICT skills and have very little expectation of utilizing them in education. Nurse educators play a role in supporting the learner nurses (Wilkinson, Roberts & While, 2013). A study conducted in India by Frehywot, Vovides, Talib, Mikhali, Ross, Wohltjen, Bedada, Korhumel, Koumare, and Scott (2013) on the extent to which learners utilize computer-based literature searches revealed that most learners utilize literature searches once a month when preparing for presentations and when conducting research. The use of social media applications such as Twitter and Facebook by nurse educators to facilitate learning is considered good for developing communication skills among learners, and social media applications enable group learning and the development of relevant skills for nursing (Tuominen et al., 2014). Incorporating handheld technological devices into nursing education programs can provide learners with more reference materials that are up-to-date and which can be useful in both the clinical and the classroom settings (Willemse & Bozalek, 2015). A lack of access to ICT facilities indicates how the learners are being denied an opportunity to use current and evidence-based information and interact with each other. Through tablets or cell phones, learners can access recent information, provided there are Internet access hotspot areas in the facility (Kala, Isaramalai & Pohthong, 2010).

Though there is no data on nursing colleges with the successful use of online teaching, in her study of "the experience of teaching online in nursing education." Elizabeth (2017) reported that learners from different time zones were taught at any time of the day. Faculties that used online teaching managed several variables, including the length of a course, availability of resources used in online education, and the number of learners in a course. The physical location and live events of the learners were the influence of online teaching.

2.2.4. Challenges of using ICT in teaching and learning

A study conducted by Maureen and Rashmi (2017) identified several challenges in utilizing technology in teaching and learning, including a lack of computers,

unavailable information technology specialists to support and teach learners the required technology skills, and a lack of financial support. In addition, Bello et al. (2017) also noted slow speed during Internet downloads, low quality of videos/visuals, limited access to computers, power failure, and a lack of face-to-face interaction. Frehywot et al. (2013) added to the list of challenges by mentioning a lack of instructional technologists to support e-learning, which results in nurse educators not using the available ICT to facilitate teaching and learning. Yusif and Soar (2013) also identified the fact that ICT is expensive to maintain, as support is needed 24/7 at the institutions, and there is a limited number of Internet service providers. A study in Uganda revealed a lack of ICT infrastructure, requiring learners to access the unevenly distributed ICT infrastructure in shifts so that they are able to share limited computers (Geoffrey, 2010). Unavailability of the Internet in an educational setting makes it difficult to access global sources of information and the opportunity for learners to discuss and share experiences.

2.2.5. Use of variety methods of teaching and learning

The combination of traditional classroom teaching and online teaching is referred to as blended learning (Button et al., 2014). Educators should check carefully whether technology is featured in, or integrated into, their teaching preparation. Educators should also know the type of combinations that work better in developing teaching and learning for the benefit of the learners (Lencastre & Coutinho, 2015). A study conducted in China revealed that learner nurses were not satisfied with textbooks and traditional methods of teaching used by educators. This suggest that educators are faced with a challenge to develop the blended learning method to accommodate learners in order to satisfy the educational needs of learner nurses (Cai, Zhang, Wang, Xiong, Jin & Jin, 2016). A study conducted in the Gauteng Nursing Colleges by Naicker (2017) on the exploration of teaching strategies utilised in the facilitation of learning for first level learners in general nursing science, discovered that not all lectures knew how to utilise Microsoft Word and Microsoft PowerPoint, while only a few lecturers were utilising these tools all the times. This can be problematic when looking at the diverse population of the learners today; without the necessary computer skills the lecturer cannot operate ICT facilities (Naicker, 2017). Without technical support, the chances of effective use of technology are slim and the experience of ineffective use of technology is frustrating, which causes nurse

educators and learner nurses to be less willing to use ICT in future. In trying to determine the ambivalence of educators towards using and teaching with ICT, Reyes, Reading, Doyle and Gregory (2017) discovered that most of the educators were ambivalent towards the use of ICT because they lacked training, although they were willing to teach using ICT. Esewe and Adejumo (2014) also discovered that some lecturers provide learners with multimedia when giving assignments; learners are given content-filled CDs so that they can analyse content critically. This enables learners to relate to the content they watch, without facing the challenges of ICT (Sithole, 2011). Videos can be an effective way of presenting skills, such as the technical skills, interpersonal skills and observational skills required to become competent practitioners (McKenny, 2011).

2.2.6. Use and benefits of videos (You tube) in teaching and learning

According to Duncan, Yarwood-Ross and Haigh (2013) there is an increase in educational videos on YouTube which learner nurses and nurse educators can use if they are carefully selected. Duncan et al. (2013) further concluded that nurse educators should recommend appropriate YouTube videos to nurse learners in order to supplement learning materials. The use of video could be of significance in the development of clinical psychomotor skills for learners (Holland, Smith, McCrossan, Adamson, Watt & Penny, 2013), which are not easy skills to teach students and which are critical for rendering patient care. The use of videos provides visual demonstration of clinical skills which learners must practice in a clinical setting (Cardos, Moreli, Braga, Vasques Santos & Carvalho, 2012). The use of videos allows learners to integrate theory with practice and may help to ensure a high competency level (Forbes, Oprescu, Downer, et al, 2016).

2.2.7. ICT and change in nursing practice

There is a need to integrate ICT into nursing curricula to enable learners to provide care that is evidence-based, as required by the current nursing environment (Raman, 2015). With the use of new ICT facilities, more services can be made available, for example, a student portal will allow learners to store information as well as accesses and receive information about their studies (While & Dewsbury, 2011).

2.3. THEORETICAL FRAMEWORK

Brink, *et al* (2014) defines a theoretical framework as a logical grouping of related concepts created to draw several aspects relevant to a complex situation together. They agree that a theoretical framework is based on propositional statements resulting from an existing theory. The study adopted Technology Acceptance Model (TAM) by Davis (1989). The figure below illustrates TAM
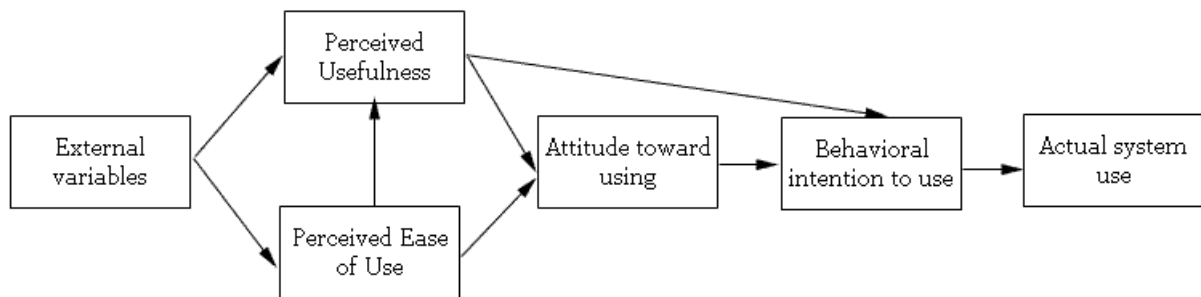
Figure 2.1. Technology Acceptance Model (adopted from Davis, 1989)

Davis (1989) used TAM as model that predicts the use and acceptance of information system and technology by individuals. According to Davis (1989) there are two important factor that predict the use and acceptance of Information system and technology that is perceived usefulness and perceived ease to use (See Figure 1 above). Perceived usefulness refers to the degree to which the user believes that using the technology will improve his or her work performance, while perceive ease of use refers to a degree to which a prospective user expects the target system to be free from effort (Davis, 1989).

External variables have an influence on perceived usefulness and the perceived ease of use (Maharaj, 2014). Davis (1989) further explains that the two predictors determine the attitude of using a technology that is referred as system used in the model. How ICT is viewed affect the attitude of the individual, if is viewed as being useful, it will have a positive effect. This result in change of change of behaviour towards usage of ICT which in turn improves the actual system usage (Maharaj, 2014). Nkosi, Asah and Pillay (2011) discovered that regardless of the positive attitude towards use of technology, challenges like access, unavailability of computers, finance and IT support can affect the positive attitude of individuals.

TAM was relevant for this study especially that the researcher aims to determine the perceptions of learner nurse regarding Information and Communication Technology in teaching and learning. In this study perceived usefulness refers to the extent to which learner nurses think utilizing ICT would progress their performance while perceived ease of use refers to the degree of benefits in using ICT by leaner nurses.

2.4. CONCLUSION

In this chapter, the researcher examined various ways in which ICT facilities can be used to improve teaching and learning. To guide this study, the researcher utilised information obtained from a literature review. The literature review provided the researcher with an understanding of the perceptions of learner nurses and nurse educators regarding the use of ICT in nursing education. The ways in which ICT can be used in nursing education include the ability to share information and knowledge, as well as accessing new sources for learning YouTube has been identified as a resource which can play a significant role in teaching and learning. In the next chapter, the researcher will discuss the research methodology used to answer the research question posed.

CHAPTER 3

RESEARCH METHODOLOGY

3.1. INTRODUCTION

In this chapter, the researcher will provide a detailed description of the research methodology used in the study. Special attention is paid to the research design, research methods; the measures to ensure the trustworthiness of the research; and ethical issues relating to the quality of the research. This section aims to inform the reader of the research design and methods followed to answer the research question posed to achieve the aim of the study.

3.2. RESEARCH APPROACH

Research approach is a plan and procedure used to determine the steps from broad assumptions to the detailed method of data collection, analysis, and interpretation (Chetty, 2016). A qualitative research approach was deemed appropriate as the researcher desired to explore and describe learner nurses and nurse educators' perceptions regarding ICT in teaching and learning. Burns and Grove (2011) referred to qualitative research as a 'systematic, interactive subjective approach used to describe lived experiences and give them meaning'. The qualitative research approach is useful as it enables the researchers to gain first-hand experience from the respondents and/or participants involved in the research (Polit & Beck, 2012). Qualitative research is interpretive in character; aimed at discovering the meaning that events have for the individuals who experience them; and the interpretation of this meaning by the researcher (De Vos et al., 2012).

3.3. RESEARCH DESIGN

The research design refers to the logical strategy used for gathering knowledge (Maleshane, 2012). This study explored learner nurses' and nurse educators' perceptions regarding information and communication technology facilities in teaching and learning. Exploratory-descriptive qualitative research was conducted to achieve the aims and objectives of this study. Exploratory-descriptive research designs greatly enhance the acquisition of rich, complex, and in-depth information about the characteristics and the views of the respondents and/or participants.

Exploratory-descriptive qualitative research attempts to address issues in need of a solution/or understanding (Groove et al., 2013). The researcher conducted focus group interviews to explore and describe learner nurses and nurse educators' perceptions regarding information and communication technology facilities in teaching and learning. The researcher explored participants' perceptions by probing for more understanding; and described participants' perceptions by asking the participants to describe their perceptions regarding ICT facilities.

3.4. RESEARCH SETTING

The research setting is defined as a context within which the events are happening, with data richness, unfamiliarity, and suitability being factors of its choice (Brink et al., 2012). It is a specific place or place where the data are collected. In this study the data was conducted at the Limpopo College of Nursing which has five campuses, namely: Sovenga, Giyani, Thohoyandou, Waterberg and Sekhukhune campuses. For this study's purposes, the focus was on two campuses, namely: Thohoyandou and Sovenga campuses, because the Sekhukhune and Waterberg campuses only offer the first year of Giyani campus did not grant permission to conduct the study. Thohoyandou campus is situated in the Vhembe District of Limpopo, next to Tshilidzini Hospital, and the Sovenga campus is situated in the Capricorn District of Limpopo, next to the Mankweng Hospital. **Figure 3.1:** The
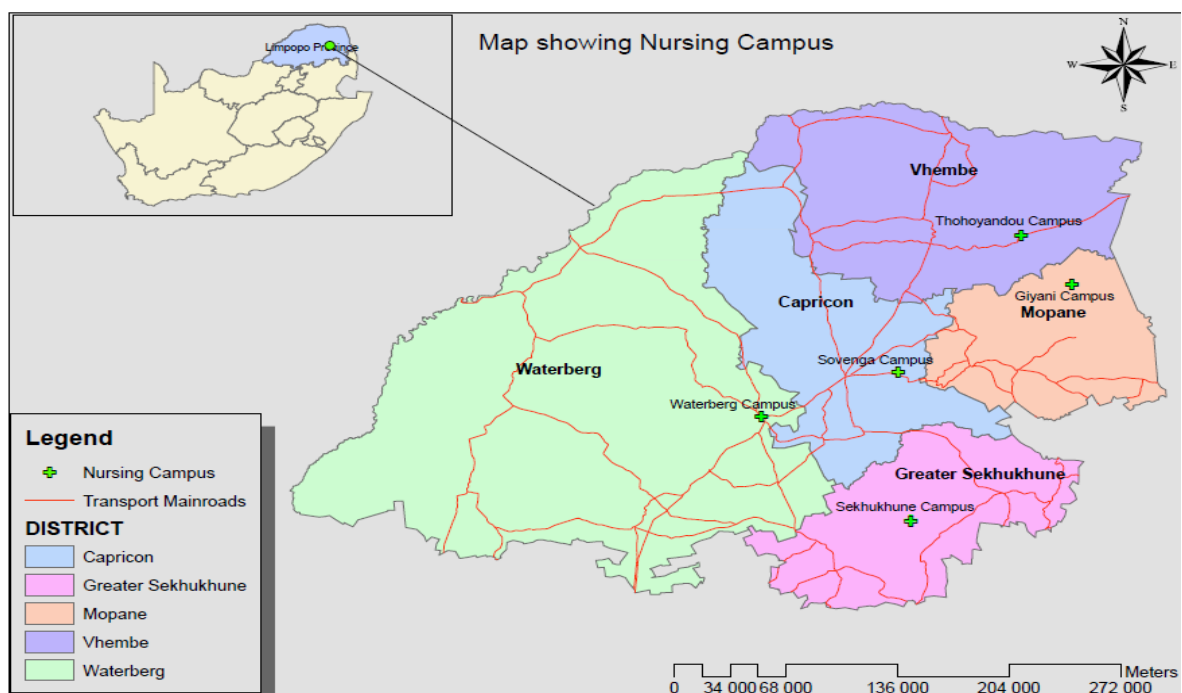
Figure 3.1: Limpopo College of Nursing campuses location.

The type of population group determines the setting for data collection. The interviews were held on the respective campuses, the quiet classroom was provided for the learner nurses, where focus group interviews were held. For the lectures, focus group interviews were conducted in the staffrooms of the selected campuses

3.5.   POPULATION AND SAMPLING

3.5.1 Population

According to Walliman (2011), a population in research does not simply mean a number of people; rather, the population is a collective term used to describe the total quantity of things (or cases) of the type which form the subjects of a study. This study's population consisted of learner nurses and nurse educators at two campuses of the Limpopo College of Nursing. The study encompassed all registered 4th-year learner nurses and the nurse educators at the Limpopo College of Nursing. At the time of this study, the two respective campuses had 152 4th-year learner nurses and 60 nurse educators. Out of 152 fourth year learner nurses, there were only 73 learner nurses from Sovenga campus, with only 23 actually participated in the study. At the same time, 79 learner nurses were from the Thohoyandou campus, with only 25 learner nurses participated in the study. From the total 60 nurse educators, only 28 nurse educators were from the Thohoyandou campus, with eight nurse educators participating in the study. While only 32 nurse educators were from the Sovenga campus, only eight nurse educators participated in the study.

A sample is a subset of a population, comprising those members of a population selected by the researcher for the purpose of data collection (Polit & Beck, 2012). The sample size for the study was 48 learner nurses and 16 nurse educators. The study participants were further divided into eight (8) focus groups for interviews, with six (6) focus groups for learner nurses and two (2) focus groups for nurse educators. Each focus group interview had between seven to eight members of either learner nurses or nurse educators.

3.5.2 Sampling procedure

The researcher used non-probability sampling, and the research informants were purposively selected. Burns and Grove (2011) defined sampling as the process of

selecting a group of people, events, behaviors or other elements on which to conduct a study. Sampling involves the selection of research participants from an entire population; and decisions about which people, settings, events, behaviours, and/ or social processes to observe. The main concern in sampling is the representativeness of the population on which the researcher aims to draw conclusions (Zikic, 2007). Therefore, the participants were purposively selected based on the inclusion criteria of a population that relates to the purpose of the study. Purposive sampling uses the researcher's knowledge of a population to select sample members It is regarded as a useful sampling technique because, through this method, the researcher can gather information from participants "typical" of the study population (Polit & Beck, 2012). The researcher used personal judgment when selecting participants with characteristics relevant to the problem studied based on their availability and inclusion criteria.

Polit and Beck (2012) also state that "The sample size is the number of participants participating in a study based on the specific information needs." The sample size is the number of participants participating in a study based on the study's specific information requirements. In this study, the number of participants was regarded as adequate once no new information was obtained (i.e., data saturation). Data collection continued until eight groups of learner nurses, and two groups of nurse educators were interviewed to obtain a full description of their perceptions regarding information and communication technology facilities in teaching and learning on the various campuses of the Limpopo College of Nursing.

▪ **Inclusion Criteria**

According to Brink, Van Der Walt, and Van Rensburg (2012), inclusion criteria refer to a number of individuals who will be included in the population. To be included in the study, the learner nurses should be:

- Enrolled in R425 program at LCON in 2018
- In the fourth year of study in 2018.
- Either in Sovenga or Thohoyandou campus.

To be included in the study, the nurse educators should be:

- Registered with South African Nursing Council as a nurse educator
- Either in Sovenga or Thohoyandou campus

- **Exclusion criteria**

All the leaner nurses and nurse educators who did not meet the inclusion criteria were excluded from the study.

3.6.   DATA COLLECTION

Polit and Beck (2012) define data collection as gathering information to address a research problem. In this study, the main research instrument used to collect data was the focus group interviews, guided by an interview guide. The setting for data collection as determined by the type of population group. A quiet classroom was provided for the learner nurses, where focus group interviews were held. For the lectures, focus group interviews were conducted in the staffrooms of the selected campuses.

3.6.1. Data Collection Method

Permission to conduct the study was obtained from both Sovenga and Thohoyandou campuses. Prior to data collection, the researcher built a positive and healthy rapport with the participants. The research's importance, objectives, length of the interviews, and research ethics were discussed with the participants. Consent forms were signed before the interviews were conducted, and permission for the interviews' audio recording was sought from the participants.

For the purposes of this study, the researcher was the main data collector. Data was collected using focus group interviews. Focus group interviews are interviews with groups of between 5 and 15 people whose opinions and experiences are requested by the researcher simultaneously (Brink, Van Der Walt, and Van Rensburg, 2014). The researcher used an interview guide as a tool to guide the interviews, which consisted of open-ended questions, for data collection purposes (Annexure 5). This guide was used to conduct the focus group interviews, focusing on an exploration of the perceptions of learner nurses and nurse educators regarding ICT facilities in teaching and learning. The three learner nurses focus groups from the Thohoyandou campus consisted of eight to nine members per group of learner nurses. While the three learner nurses focus groups in the Sovenga campus consisted of seven members of learners nurses. A focus group of nurse educators in Thohoyandou

campus consisted of eight nurse educators, while the Sovenga campus had eight nurse educators. The duration of focus group interviews was between 35 minutes and 1 hour. An audio recorder was utilized, and field notes were collected. The interview was conducted in English; however, participants were allowed to use their own language to fit the best description. The researcher asked the group one central question: "**Can you please tell me your perceptions regarding the use of information and communication technology facilities in teaching and learning?**" The responses to the initial question guided subsequent questions. Probing skills, such as minimal verbal responding, clarifying, reflecting, focusing, paraphrasing, and validation were used to acquire more information (De Vos, et al., 2012). The interview process was explained beforehand; and only started when participants had given voluntary consent to their participation.

3.6.2. Data Collection Tools

During the data collection process, the researcher remained focused and maintained eye contact with the participants to demonstrate to the participants he was with them. The researcher took notes to capture points to which the researcher may wish to return to at a later stage in the interview; or to locate a particular part of the recording on the audio recorder after the interview. This was done to reduce the loss of information during the researcher's interaction with the participants. The use of a digital audio recorder was explained to the participants, and permission to use the audio recorder was requested from the participants. The audio recorder was placed centrally in the group so that all participants would be audible. The researcher used a diary/notebook to capture any important information that may have needed clarity or reflection or indicated frustrations and challenges experienced by the group or suggested solutions.

3.7.   DATA ANALYSIS

Data analysis refers to giving meaning to the data, and study results are translated and interpreted to become findings and conclusions (Burns et al., 2011). The audio files were listened to repeatedly to immerse the researcher in the data, which were transcribed verbatim. During the translation of the transcripts from Sepedi and Tshivenda to English, the researcher ensured that no meaning was lost. In order to ensure that the analysis was thorough, the researcher read and re-read the

transcripts several times. In this research, data analysis was undertaken by means of Tech's coding method (Creswell, 2013). The following eight steps of Tech's coding method were followed:

- The researcher got a sense of the whole by reading through all data, writing ideas down;
- The researcher started with one document, asked himself "what is this about?", and wrote the topic in the margin of the document;
- The researcher made a list of all topics in columns, with headings representing major topics, one column per data document, placing all the columns on the same sheet;
- The researcher abbreviated those topics as codes. The researcher went back to the data and wrote the codes next to the appropriate segments of the text. New categories and codes emerged;
- The researcher found the most descriptive words for the topics, while categories relating to each other were grouped together. Subcategories were formulated;
- The researcher finalised the abbreviation of each category and alphabetise the codes, ensuring that there was no duplication;
- The researcher grouped the data belonging to each category together and performed a preliminary analysis;
- When necessary, the researcher recoded the existing data; (Creswell, 2013).

3.8.   PILOT STUDY

According to Polit and Beck (2008), "a pilot study is a small-scale version or trial run designed to test the methods to be used in a larger, more rigorous study, which sometimes referred to as the parent study". A pilot study or a pre-test was conducted to ensure the stability of the data-gathering instrument. In the pilot study, a small sample of the study population was used, taking into account the entire study. The pilot study aimed to look into the feasibility of the study and identify any flaws in the instrument for data collection. The researcher avoided mistakes during data collection as he obtained insight into unforeseen challenges before the main study was implemented. The pilot study was conducted on the Thohoyandou campus of the Limpopo College of Nursing, using one group of

learner nurses, which consisted of ten learner nurses. and one group of nurse educators which consisted of five nurse educators.

The participants who participated in the pilot study did not form part of the main study. The reason for using different participants was to avoid contaminating the sample; and the reason for using one group of learner nurses was because sufficient information was obtained from the pilot study. The reason for using one group of nurse educators was because doing otherwise would have reduced the sample size available to the main study, since the population of nurse educators is sparse. The study's purpose and objectives, and the researcher's expectations of participants, were discussed during the information session a day prior to conducting focus group interviews. The purpose of the informed consent form was explained to the participants who participated in the pilot study. The participants in the pilot study all signed the consent form.

- *The results of the pilot study*

Both learner nurses and nurse educators were asked to indicate whether they had any difficulty in understanding or answering the questions posed to them. Participants indicated that the questions were clear enough and that no problem in answering them was encountered. However, the results of the pilot study did indicate the need for time management during data collection. No modifications that necessitated changes in the questions were required. No difficulties were observed regarding the methodology and sampling method during the pilot study. During the pilot study, the researcher gained insights into the problems that might be experienced when conducting the focus group interviews in the main study. As a result of this awareness, the researcher sought guidance from his supervisor with regard to the best way to collect data.

3.9. MEASURES TO ENSURE TRUSTWORTHINESS

Trustworthiness is the researcher's ability to convince an audience that the findings of a study are worth paying attention to. As outlined by Botma, Greeff, Mulaudzi and Wright (2010), four criteria for trustworthiness are used to establish the trustworthiness of the study. These criteria are"

- **Credibility**

Brink et al. (2014) refer to credibility as confidence in the data's truth and how well the data process, analysis, and interpretation address the study's intended focus. In this study, credibility was ensured by prolonged engagement in the study, the use of audio recordings to record the data, and the taking of field notes during the unstructured interviews. The goal of credibility is to determine whether the participants are accurately identified and described. The researcher remained in the field for a period of two days, and spent an average of 30 minutes to 1 hour with each focus group (Creswell, 2013).

- **Dependability**

Dependability has to do with evaluating integrity over time and is analogous to reliability in research (Streubert & Carpenter, 2011). In this study, detailed field notes were kept, and an audit trail was prepared to provide a thorough and detailed explanation of how the data were collected and analyzed. Dependability was assured by the use of an inquiry audit since the researcher kept field notes after data collection for auditing purposes. A good quality digital audio recorder was used to record the interviews, transcriptions of the recordings were done verbatim, and Tech's coding method was used to assist with data management and the application of the codes.

- **Confirmability**

Confirmability refers to the potential for congruence between two or more independent people about the accuracy, relevance or meaning of the data (Polit & Beck, 2012). All study participants were interviewed and audio-recorded, and the data were transcribed verbatim. The researcher's supervisor was involved in the development of the codebook, and the transcripts and the recorded tape were sent

to an independent coder to conduct an inquiry audit on the data and the meaning attached to it. Confirmability was ensured by using a confirmability audit, where the researcher examined the interpretations, conclusions, and recommendations of the findings obtained from raw data. The data that was gathered during data collection is available in field notes and audio recordings.

- **Transferability**

Brink et al. (2014) believe that transferability refers to the ability to generalize or extrapolate meaning from data to the extent that the findings from the data can be transferred to other settings or groups. Transferability was ensured by providing sufficient descriptions of the research method and the design of the study. Purposive sampling was utilized to select the sample to maximize information generation to ensure transferability; sufficient descriptive data was provided by the researcher so that readers can judge the applicability of the findings in other contexts.

3.10. ETHICAL CONSIDERATIONS

In this study, the researcher adhered to ethical research principles since human beings were participants. Ethical considerations pertain to the protection of participants and are based on participants' human rights that need to be protected in research (Brink et al., 2014).

- **Permission to collect data**

Botma et al. (2010) stated that people's principles of respect should be adhered to when conducting research. In this study, ethical clearance was obtained from the Turfloop Research Ethics Committee (TREC) (see Annexure 6). Permission to collect data at the Limpopo College of Nursing was obtained from the acting vice-principals on both the Thohoyandou and Sovenga campuses (see Annexure 8). The following ethical considerations were applied in this study:

- **Principles of Confidentiality/Privacy and Anonymity**

Confidentiality refers to agreements between persons that limit access to private information by others not involved in the agreement (Brink et al., 2012). According to Streubert & Carpenter (2011), anonymity means that no one, including the researcher, should be able to identify any subject after completion of the research. This study adhered to this particular ethical consideration by ensuring that respondents' and/or participants' information was safely stored and was never shared with other people. To safeguard the participant's/respondents' privacy, they were interviewed in a private environment, away from passers-by or intruders. Their personal information was kept private and was withheld from others, both inside or outside of this study. This study was designed in such a way that the risks of breaking confidentiality were minimized.

On this particular aspect of ethics, namely privacy, the respondents and/or participants in this study did not disclose their identity, while fake names or codes were used to mask their identity in the focus group sessions to ensure that they are not identifiable from the audio-recorded data. Hidden apparatus, such as video cameras, microphones and one-way mirrors, were not used to ensure privacy.

- **Informed consent**

The participants signed informed consent after the researcher explained to them the aims and objectives of the study. The population of learner nurses and nurse educators who were included in the sample had a choice as to whether to participate or to decline participation. The researcher made sure that the participants were not forced to participate (Brink et al., 2014). According to Botma et al. (2010), participants should be given a choice to voluntarily participate in the research and to withdraw from the research at any point, without any penalty. The participants were informed of the nature of the study and that there was no risk anticipated, since the study did not involve any experiments.

- **Principle of Beneficence**

The researcher ensured that participants experienced no harm and discomfort, either physically or emotionally (Brink et al., 2014). The participants in this study were provided with a full explanation of the study before the researcher obtained their informed consent to proceed with data collection. If the participants experienced any form of discomfort or harm during data collection, the researcher undertook the session. No form of harm was anticipated in the study.

- **Principle of Justice**

The researcher was constantly mindful of the principle of justice during the research. The principle of justice implies that research participants are treated with what is due to them at all times. The participants in this study were treated with fairness and equity during all stages of the research (Brink et al., 2014). In this study, the researcher explained to the participants what he was going to do with the data. This meant that the participants' confidential information was not compromised at any time, without their permission.

- **Principles of Non-maleficence**

The researcher in the research applied the non-maleficence ethical principle. This principle supplements the autonomy principle and requires a researcher to ensure that no harm befalls research participants as a direct or indirect consequence of the research. In this regard, it must be noted that harm can include wrongs (Esewe, 2013). The participants in this study were protected since a full explanation of the study was provided to both the learner nurses and nurse educators. If there was any form of discomfort or harm experienced by the participants during data collection, the researcher was prepared to terminate the session.

3.11. BIAS

According to Brink et al. (2014), bias is an influence that produces an inaccuracy or misrepresentation, which can affect the quality of evidence. To prevent bias, the following were considered: the researcher did not twist information to suit his own expectations; all participants were granted equal probability of participating in the study, and the correct method of data collection was used, that is, focus group

interviews (Polit & Beck, 2008). During data collection, the researcher appeared in simple attire and not in nursing uniform as the researcher felt that appearing in uniform would influence the participants' responses. During data analysis the researcher avoided analysing data in a way that offered preference to the conclusion, in favour of the research question.

3.12. CONCLUSION

In this chapter, the researcher described the research design and methodology the used to carry out the study. Different research components were discussed when the researcher explored the methodology and design, including: methodology; population; data collection and data collection method; and the setting in which the study was undertaken. The study population was described as including all learner nurses and nurse educators on the college campuses that agreed to participate in the study. In the following chapter, the researcher will present the results of the research and discuss the findings. The research ethics was also discussed in Chapter 3

CHAPTER 4

PRESENTATION AND DISCUSSION OF FINDINGS

4.1.   INTRODUCTION

In the previous chapter, the researcher provided a full discussion of the research methodology used to answer the research question. This chapter presents and discusses the research findings obtained from the data collected from the eight focus group discussions conducted with the targeted participants on two campuses of the Limpopo College of Nursing. The three learner nurses focus groups in Thohoyandou campus consisted of eight to nine learner nurses. While the three learner nurses focus groups from the Sovenga campus consisted of seven to eight learner nurses. A focus group of nurse educators from both Thohoyandou and Sovenga campus consisted of eight nurse educators.

4.2.   DATA ANALYSIS

Six focus group interview sessions were conducted through which data saturation was reached, of which four were with learner nurses and two were with nurse educators. Audio tape-recorded data were transcribed verbatim. The data which were collected during focus group interview sessions were analyzed using the 8 steps of Tesch's open coding qualitative data analysis method as described by Creswell (2013), as outlined in the research methodology chapter. Data were also submitted to an independent coder who also used the 8 steps of Tesch's open coding method of qualitative data analysis, as described by Creswell (2013). A consensus meeting was set up between the researcher and the independent coder to discuss and agree on final themes and sub-themes, based on the themes and sub-themes which emerged when analysing the data independently. Table 4.3 depicts the final themes and sub-themes agreed upon by the researcher and independent coder, which serve as the study's findings.

4.3.   RESEARCH PARTICIPANTS

A total of sixty-four (64) participants were recruited and interviewed for this study. Forty-eight learner nurses and sixteen (16) nurse educators agreed to participate in the study. The total number of females was 52 (81%), with males being 12 (19%) in both the groups. The researcher approached the learner nurses and nurse educators

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by making a phone call. He went to nurse educators' offices during their lunch break and to learners' residences after classes to explain the research study he was undertaking. Only 48 learner nurses and 16 nurse educators indicated their interest in participating in the study. There was some degree of diversity with respect to the age, gender, educational level, educational qualifications, and designation of the participants. A detailed discussion of the groups follows below, along with the results.

4.4. Perception of learner nurses regarding ICT facilities in LCN

Documentation of the results of the analysis of learner nurses' perceptions regarding ICT facilities in LCN begins with a presentation of the demographic data.

4.4.1. Demographic data of learner nurses.

The summary of learner nurses' demographic data is presented in Table 4.1 below.

Table 4.1: **Demographics of the learner nurses who participated in the study**

VARIABLES OF LEARNER NURSES	TYPE OF VARIABLE	FREQUENCY	%
Gender	Male	10	21
	Female	37	79
Age	21-25 years	42	89
	26-30 years	5	11
Highest qualification	Matric	43	91
	Diploma	4	9
Total	Learners	47	100

Table 4.1 presents the main demographics of the sample population of this study. A total of 48 learner nurses were recruited and interviewed for this study, drawn from campus A and campus B. Most of the participants were females, constituting 79% (38) of the total number of participants, while males constituted 21% (10) of the participants. Most learner nurses were between 21 and 25 years of age, while only five learner nurses were between 26 and 30 years of age. Forty-three (44) learner nurses held a matric certificate, while only four learner nurses had a diploma as the highest qualification.

4.4.2. Main findings of learner nurses regarding ICT facilities

Table 4.2 provides a summary of the results of the perceptions of learner nurses regarding ICT facilities at the Limpopo College of Nursing.

Table 4.2: An overview of main themes and sub-themes reflecting the perceptions of learner nurses regarding ICT

MAIN THEMES	SUB-THEMES
Theme 1: Description of existing ideas learner nurses have in relation to ICT in teaching, learning and assessment	Sub-theme 1.1: Explanation that unavailability of proper ICT infrastructure leads to lack of interest by students to utilise ICT platforms Sub-theme 1.2: Explanation that ICT in teaching, learning, and assessment impossible versus a possibility to implement at LCN Sub-theme 1.3: Explanation that lack of training of all LCN stakeholders on the use of ICT platforms is problematic
Theme 2: Description of challenges experienced related to the use of ICT facilities at LCN	Sub-theme 2.1: Lack of skills by lecturers to facilitate utilization of ICT platforms mentioned as problematic in increasing its uptake outlined Sub-theme 2.2: Lack of structured curriculum that embraces ICT platforms blamed for lack of implementation pointed out
Theme 3: Description of the advantages and benefits of implementation of ICT platforms in teaching, learning and assessment	Sub-theme 3.1: Diverse existing opportunities to implement ICT facilities which can assist in implantation mentioned Sub-theme 3.2: Use of ICT facilities in nursing science perceived as equipping nurses with advanced skills, knowledge and information for patients' care Sub-theme 3.3: ICT facilities perceived as useful for easy, quick-thinking and provision of timeous implementation of world-class care to patients

	Sub-theme 3.4: An outline that ICT facilities facilitate self-directed learning and independence, which lead students' learning to become easy

The discussion that follows deals with the themes and sub-themes as findings that emerged from the perceptions of the learner nurses. The findings are supported by quotes, which represent the perceptions of learner nurses regarding each of the sub-themes of the main themes. The findings are compared to and contrasted with the literature from both national and international studies.

THEME 1:   Description of existing ideas learner nurses have related to ICT in teaching, learning, and assessment

Using this theme, the researcher provides a description of existing ideas that learner nurses had in relation to ICT in teaching, learning, and assessment. Learner nurses indicated a lack of training for both learners and nurse educators on use of ICT on teaching and learning; which makes it impossible to implement ICT facilities for teaching and learning on their campuses. Furthermore, learner nurses provided a description of the poor ICT infrastructure; which makes it even more impossible to implement ICT in teaching and learning at the LCN. The following sub-themes provide a detailed discussion of the theme.

Sub-theme 1.1:   Explanation that unavailability of proper ICT infrastructure leads to lack of interest by students to utilize ICT platforms

The study's findings indicated that the unavailability of a proper ICT infrastructure leads to a lack of interest by students to utilize ICT platforms. The researcher discovered that learner nurses do not have a strong desire to use ICT facilities because of the lack of proper ICT facilities in the college libraries. Furthermore, learner nurses reported that they receive their examination results posted on notice boards, which are only accessible on the campuses**.** The following quotes support the findings:

Participant 5t: "*When you check our library we don't use our library per se because we find it not [properly equipped]*"

Participant 2s: "*…there are no things like computers which all of us as student can access…*"

Participant 11s: "*…when it comes to receiving exam results, they still use the old way of displaying them on notice boards…*"

Similarly, Kala et al. (2010) found that a lack of proper ICT facilities will hinder students from enjoying the benefits of ICT, including increased learner motivation and satisfaction; engaging in active teaching-learning methods, and enhanced cognitive recall. Moniz, Pereira, and Marques (2016) supported these findings by stating that ICT stimulates learners' interest, reflection, and participation in a relaxed manner while allowing the use of existing knowledge; afford learners a chance to express themselves and their points of view on their own. Therefore, Chipps, Pimmer, Brysiewicz, Linxen, Ndebele, and Gröhbiel (2015) recommend that educational institutions support learners to use technology to perform academic activities with respect to the development of mobile literacy skills.

Sub-theme 1.2: **Explanation that ICT in teaching, learning, and assessment impossible versus a possibility to implement at LCN**

The study findings revealed that it would be impossible for educators to implement ICT in teaching, learning, and assessment without support from management. The researcher discovered that learner nurses could not see the videos necessary to reinforce learning because access to videos would require that the nurse educators have to use their Internet connection. Other learner nurses indicated that they are expected to use computer programmes without any form of training. The following quotations support these findings:

Participant 9t: "*…lectures don't want to give us all information, they would say "I should have been showing you videos but I can't use my own data*"

Participant 1t: "*[learner nurses] don't know how to [use computer] …but they are [expected] to use it…*".

Ecampus (2011) discovered that unreliable computer systems frustrate learners because they waste time trying to make the computer to work as expected. Çelik and Yeşilyurt (2013) further stated that ICT use among educators is low and limited to the use of the Internet, email and word processing, which makes it difficult for these

educators to transfer skills to their learners. Palomino (2017), therefore, recommended that education authorities should invest more money to provide more ICT-based equipment to support learning.

Sub-theme 1.3: **Explanation that lack of training of all LCN stakeholders on the use of ICT platforms is problematic**

Learner nurses indicated a lack of training of all LCN stakeholders on the use of ICT platforms as problematic. The researcher discovered that the campuses do not have people who are trained on how to utilise ICT facilities. Furthermore, leaner nurses indicated that educators are old of age and are challenged by the use of technology; with only one person available to assist all learners with ICT-related issues in the library. The findings are supported by the quotes from the participants below;

Participant 3s: *"… we lack people who are well equipped [with ICT knowledge and skills] who can help us on how to use this ICT"*

Participant 22s: *"…we [Learners] don't know how to use a computer, you get to the library you want to learn how to use a computer you get there only to find one person on assisting"*

Participant 5s: *"…we [learners] are having lecturers who are old fashioned; their skills are not well [aligned] to the new technology things, it's very hard for them to fit in the new technology…"*

Fiedler, Giddens and North (2014) identified a lack of technical skills associated with ICT as a barrier that institutions must overcome. In order to adopt new technologies, educators need training on how to use technology. In agreement with Giddens and North (2014), Ricks, Benjamin and Williams (2015) reported that, due to lack of training on ICT, learner nurses are unable to demonstrate computer skills, such as how to type using a keypad; and how to download and save information.

THEME 2: **Description of challenges experienced related to the use of ICT facilities at LCN**

Using this theme, the researcher describes the challenges experienced by learner nurses related to ICT facilities at the LCN. Learner nurses indicated that nurse educators' lack of skills in utilizing ICT facilities makes it difficult to implement ICT in teaching and learning on LCN campuses. Additionally, learner nurses reported the

lack of structured curriculum that embraces ICT platforms, leading to a lack of ICT implementation in teaching and learning at LCN. Using the sub-themes below, the researcher provides a full discussion of this theme.

Subtheme 2.1: **Lack of skills by lecturers to facilitate utilization of ICT platforms mentioned as problematic in increasing its uptake outlined**

Learner nurses reported that nurse educators' lack of skills to facilitate the use of ICT facilities is problematic to teaching and learning. Therefore, nurse educators are challenged with operating media devices, such as data projector, while some have difficulty using email and WhatsApp to communicate. This was reflected in the following statements:

Participant 1t: *"Even the lecturers don't even have skills on how to operate these new technology things…"*

Participant 11t: *"… lecturers…use data projectors [is not good] … When the lecturers try to make them work you find it's just a blank blue colour on the white sheet".*

Participant 14s: *"…lecturers do not even know how to use c[send] email. Some of them do not even know how to use WhatsApp…if they want to pass on a message they call the class rep…"*

Hebda and Calderone (2010) stated that training for both learner nurses and nurse educators should not be regarded as unimportant, since it is crucial for ICT implementation success. Palomino (2017) supported this finding by stating that educators are not advised on searching for information or selecting and assessing ICT tools to develop the teaching-learning process. Garrison (2011) discovered that nursing education leaders do not provide access to technology and adequate computer resources to encourage ICT integration into nursing activities.

Subtheme 2.2:   **Lack of structured curriculum that embraces ICT platforms blamed for lack of implementation pointed out**

This study's findings indicate that the lack of a structured curriculum that embraces ICT platforms is responsible for the lack of implementation of ICT in teaching and learning. The researcher discovered that the curriculum offered by the LCN does not cater for ICT utilization in teaching and learning. In addition, learner nurses reported that their modules do not involve technology in any way. These findings are supported by the quotes below;

Participant 2s: *"There's no single module which involves a computer; if the technology was taken seriously, a module which teaches computer would be available."*

Participant 22t: *"If we [learners] can have once in a year or week where they will teach people who are computer literate on how to operate computers and stuff."*

Participant 20t: *"...they can choose at which level they can teach you the computer and focus only on the computer literate..."*

Participant 6s: *"...The college itself doesn't even have a website...they don't want to adjust the college to the times that we are leaving in"*

Dickens (2017) explains that integrating ICT into the nursing curriculum allows educators to facilitate ICT use in the classroom and clinical settings. Button et al. (2014) supported the findings by stating that e-learning has been introduced to the nursing curriculum in western countries, including the curriculum for advanced learner nurses and nurse educators supported by ICT. Bembridge, Levette-jones, and Jeong (2011) recommended that failure to include technology-based modules in the curriculum be rectified so that the curriculum consists of competencies in using ICT in a teaching and learning environment.

THEME 3: Description of the advantages and benefits of implementation of ICT platforms in teaching, learning and assessment

Using this theme, the researcher describes the advantages and benefits of implementing ICT platforms in teaching, learning, and assessment. Learner nurses indicated that ICT facilities equip them with advanced skills, knowledge, and

independence leading to self-directed learning. Furthermore, learner nurses described ICT as a facility providing diverse learning opportunities, which makes it easy for them to access and share information at the various levels of learning. The following sub-themes provide a detailed discussion of the theme:

Sub-theme 3.1: **Diverse existing opportunities to implement ICT platform mentioned**

The findings of the current study revealed existing and diverse opportunities for implementing ICT platforms, which can assist in implementing ICT. The researcher discovered that the college has an association with the University of Limpopo, which is well equipped with ICT facilities. This could assist with the implementation of ICT in teaching and learning at the LCN. Learner nurses further reported that there are computers on their campuses that are not being utilized. The following quotes from the respondents supported this finding:

Participant 3s: "*… We are in association with the University of Limpopo, which in my view I think is well equipped in terms of ICT…*"

Participant 6s: "*So we are having one of the best universities I mean the internet there…one of the best libraries…We do have a laboratory there and there are computers which are still new…*"

Participant 2s: "*…there are many computers [at the campus] …but I don't know when they are being utilized…*"

Willemse and Bozalek (2015) mentioned that incorporating ICT devices into nursing education programs provides learner nurses with a rich resource of up-to-date reference material to use in both classroom and clinical settings. Wirihana, Craft, Christensen, and Bakon (2017) outlined the notion that the use of video learning has the potential to enhance clinical and classroom experience, in that nurse educators can disseminate information to and reach a large number of learners through podcasting. Willemse (2015) stated that flexible learning affords learners the choice of where, when, and how they can manage their learning. Flexible learning gives learners access to 'e-educator' whenever, wherever, and however guidance and clarification is needed.

Sub-theme 3.2:   **Use of ICT facilities in nursing science perceived as equipping nurses with advanced skills, knowledge and information for patients' care**

The study's findings indicated that the use of ICT facilities in nursing science is viewed as equipping nurses with advanced skills, knowledge, and information for patients' care. The researcher discovered that learner nurses find it easy to obtain information and learn new skills when using the Internet, which helps them access procedures on YouTube, providing on-the-spot in cases when they need to be remaindered procedure, using their cell phones. Learner nurses also reported that they keep abreast with what is happening worldwide. This was reflected in these statements:

Participant 15t: *"It is easy to learn skills on the internet you [learner] can just quickly go to your YouTube they always have skills there on how to do certain skills…"*

Participant 10t: *"…if maybe you [learner] don't know certain procedures you can just go through your phone and see how they do the procedure".*

Participant 9s: *"…We [learners] become more and more knowledgeable…we get updated on what's happening far worldwide, so with that you grow and you learn new things"*

In support of the current study findings, Ricks et al. (2015) explained that the introduction of ICT into health care facilities allows learners and educators to access recent clinical knowledge needed at the point-of-care of patients. Bloomfield and Jones (2013) supported this finding by stating that ICT is valuable for developing clinical skills; video clips are perceived as the most useful learning feature. Palomino (2017) further noted that smartphones allow learner nurses to access clinical information, allowing them to have more references at hand and to access prescription rules, drugs reference and interactions while consulting patients at point-of-care.

Sub-theme 3.3: **ICT facilities perceived as useful for easy, quick-thinking and provision of timeous implementation of world-class care to patients**

The study's findings indicate that ICT is helpful for easy and quick thinking; and for the provision of timeous implementation of excellent care to patients. Learner nurses reported that ICT facilities provide them with immediate solutions in times of need. Learner nurses further indicated that they can keep abreast of their profession when using ICT facilities by being able to health conditions in other countries outside South Africa. The finding is supported by the quotes below:

Participant 22s: *"Even when I'm in the clinical area they ask you [learner] a question you don't understand you can quickly go to your phone on the internet and search for it."*

Participant 23s: *"With technology, I [learner] get new information very fast and the things that are updated …".*

Participant 9t: *"We also get to know other health conditions that are affecting other countries…not only focusing on South Africa…"*

In support of the findings of the current study, Palomino (2017) argued that ICT equipment is an enabler in the learning environment in terms of promoting active participation; while facilitating individual, cooperative and interactive work in class and the clinical environment; which, in turn, enables learner-educator communication. Chipps et al. (2015) discovered that smartphones could be used for educational purposes, to provide quick access to educational resources and guidelines during class and clinical activities, or to support nurses at the bedside. Bloomfield and Jones (2013) found that direct links to articles provide learners with evidence-based information and videos demonstrating clinical skills. Willemse (2015) strongly motivated the use of WhatsApp group discussions to assist in understanding the application of theory during clinical practice, serving as a supporting platform for the integration of theory and practice.

Sub-theme 3.4: **An outline that ICT facilities facilitate self-directed learning and independence, which lead students' learning to become easy**

The current study's findings indicate that ICT facilities facilitate self-directed learning and independence, which lead to learning becoming easy for students. Learner nurses reported that, with ICT facilities, they could go to podcasts to reinforce what was learned and, therefore, their independent learning is facilitated. The following quotes support the finding:

Participant 8s: *"…if you have time you go through your internet or maybe podcast on that certain topic, it will help you to understand"*

Participant 17s: *"Like I can teach myself how to email, how to use those things like how to search for certain things. If we doing school work I can google things, assignments and all…"*

Participant 15t: *"So I think we learn differently and if you check these days we more used to tablets, we more used to phone we are used to using technology and it makes it convenient…"*

In support of current study findings, Cook, Levinson, and Garside (2010) stated that e-learning increases learner's control over the content, place, and time of learning; learners can gain skills and knowledge faster than when using traditional methods. Button et al. (2014) support this finding by stating that online learning platforms provide flexibility and self-paced learning for learners; learners enjoy the online learning environment because they get to know each other and assist each other. Wirihana et al. (2017) support the finding by stating that video learning promotes lecture dissemination and meets the learner's specific needs by promoting learner accountability, autonomy, motivation, and satisfaction. Learner nurses can attend classes, participate in discussions, and complete assignments through a website (Lahti et al., 2014).

In this section, the researcher analyzed learner nurses' perceptions regarding ICT facilities in teaching and learning. The findings revealed that the learner nurses' major challenges were the unavailability of ICT facilities, the lack of skills of educators, the unavailability of connectivity, and the lack of training of nurse educators. The following section provides the perception of nurse educators regarding ICT facilities.

4.4.3. Results of nurse educator's perceptions regarding ICT facilities

The results of the perceptions of nurse educators regarding ICT facilities are discussed below.

4.4.3.1. Nurse educators' demographic data

The demographic summary of the nurse educators who participated in the study is outlined in Table 4.3 below.

Table 4.3:   Demographics of nurse educators who participated in the study

VARIABLE	TYPE OF VARIABLE	FREQUENCY	%
Gender	Male	1	6
	Female	15	94
Age group	30-39 years	9	56
	40-49 years	5	31
	50-59 years	2	13
Years of teaching practice	0-5 years	9	56
	6-10 years	5	31
	11-20 years	2	13
Highest qualification	Diploma in nursing education	2	13
	Bachelor of nursing	1	6
	Masters in nursing	12	75
	PhD	1	6
Total participants	**Nurse educators**	**16**	**100%**

Focus group interviews were conducted with 16 (100%) nurse educators. Most of the nurse educators were females, who constituted 94% (15) of the total number of participants. The remaining 6% (1) of the participants were male. Nine (56%) nurse educators were between 30 and 39 years of age, five (31%) were between 40 and 49 years of age, while only 2 (13%) were between 50 and 59 years of age. Out of 16 nurse educators, 12 hold a Master's degree in nursing, hold a Ph.D. degree, hold a BA Cur degree, and 2 hold a diploma in nursing education. Among the nurse educators, nine had five years or less teaching experience, and five had teaching experience ranging from six to ten years, while only two nurse educators had experience ranging from 11 to 20 years.

4.4.3.2. Results about the perceptions of Nurse Educators regarding ICT Facilities in LCN

Table 4.4 below provides a summary of the results of the perceptions of nurse educators regarding ICT facilities at the Limpopo College of Nursing.

Table 4.4: Summary of main themes and sub-themes reflecting the perceptions of nurse educators regarding ICT in Limpopo College of Nursing

MAIN THEMES	SUB-THEMES
Theme 1: Description of existing ideas held by LCN educators on implementation of ICT platforms	Sub-theme 1.1: ICT platforms are perceived as relevant on aspects of teaching, learning and assessment though not implemented causing challenges on different levels Sub-theme 1.2: An explanation that educators are willing to implement and use ICT platforms in teaching, learning and assessment pointed out
Theme 2: Challenges experienced by nurse educators related to ICT platforms	Sub-theme 2.1: Description that there is lack of ICT resources at LCN which is perceived as problematic for implementation of fruitful teaching, learning and assessment aspects Sub-theme 2.2: Concern by lecturers on producing learners who are not familiar with ICT

THEME 1: Description of existing ideas held by LCN educators on implementation of ICT platforms

The theme provided the researcher with an opportunity to describe existing ideas that educators have in relation to ICT in teaching, learning and assessment. Nurse educators indicated that they thought that ICT is relevant for both learner nurses and nurse educators in teaching and learning. Furthermore, nurse educators indicated that they are willing to implement ICT in teaching and learning. The following sub-themes provide an opportunity for a detailed discussion of the theme:

Sub-theme 1.1: ICT platforms are perceived as relevant on aspects of teaching, learning, and assessment though not implemented, causing challenges on different levels

The findings of the study indicate that nurse educators perceived ICT platforms as relevant to aspects of teaching, learning, and assessment though not implemented. Furthermore, nurse educators reported that they have to physically deliver assignments when learners are in clinical practice because of a lack of ICT. These findings are supported by the quotes below:

Participant 8s: "*ICT on its own it's quite relevant to the institution, particularly looking at the era that we are in, but unfortunately in our institution, it's not practical.*"

Participant 9t: "*if there was the technology, we could post videos show the students how suctioning is done.*"

Participant 5s: "*I have read that technology enhances education, promotes critical thinking amongst students.*"

Raman (2015) explained that mobile technology improved nursing students' learning and performance in the clinical setting by providing them with easily accessible and current evidence-based facts. Supporting this finding, Holland et al. (2013) stated that ICT strategies, such as video use, assist in developing the clinical psychomotor skills that are critical for patient care; videos provide a visual demonstration of clinical skills in a simulated close-to-real setting. Goldschmidt (2013) further stated that technology use in nursing education is widely encouraged, as nursing education has adapted to include simulation, gaming, virtual reality, and interactive case studies that can teach acute care in a safe learning environment.

Subtheme 1.2:   An explanation that educators are willing to implement and use ICT platforms in teaching, learning, and assessment pointed out

The findings of the current study indicate that educators are eager to implement and use ICT platforms in teaching, learning, and assessment. The researcher discovered that nurse educators utilize their own means to enhance communication with learner nurses in teaching, learning, and assessment. Nurse educators further reported using their Internet data to provide visuals to learner nurses for their learning. This was reflected in these statements:

Participant 6t: "*we do try as lecturers sometimes, but we are using our means like we have our WIFI*".

Participant 4s: "*The other thing when we want to communicate with our students we have to use our cell phones because we don't have this information technology here*".

Participant 9s: "*I use my own money and internet to the class when I want to teach the students using visual learning…and I'm not being compensated*"

Participant 7s: "*I even went to incredible connection to buy an antivirus called Capeskin*"

In support of the current study findings, Goldschmidt (2013) stated that nurse educators develop learning activities using videos that evaluate knowledge, lead learners to question their values or behaviors, and focus on the performance of a particular psychomotor skill. Also, Kala et al. (2010) stated that nurse educators must design educational experiences that address knowledge and clinical decision-making skills. Therefore, Reyes, Reading, Doyle & Gregory (2017) suggested that educators and academic developers may use blended learning methods to enhance the acquisition of both cognitive knowledge and practical skills in health disciplines.

THEME 2:   Challenges experienced by nurse educators related to ICT platforms

The theme provided the researcher with an opportunity to describe the challenges faced by nurse educators related to the use of ICT facilities at the LCN. Nurse educators indicated that there is lack of ICT resources at the LCN, which makes it a challenge to integrate ICT into teaching and learning on their campus. Additionally, nurse educators reported a lack of maintenance of existing ICT resources, which impedes the continuous development of teaching and learning at the LCN using ICTs. A detailed discussion of this theme is provided in the following sub-themes:

Subtheme 2.1:   Description that there are a lack and non-maintenance of ICT resources at LCN, which is perceived as problematic for implementation of fruitful teaching, learning and assessment aspects

The findings of the current study provided information on the lack of ICT resources at the LCN, which is problematic for implementing fruitful teaching, learning, and assessment. The researcher discovered that existing ICT facilities are non-functional because of a lack of maintenance, which inhibits lecturers' continuous professional development. Furthermore, nurse educators reported that they do not have any software to assist them to schedule marks for learner nurses, which they have to do manually. The findings are supported by the quotes below;

Participant 6s: *"I believe if we need to use this information communication technology we need to have facilities like WIFI in the institution which is not there"*

Participant 9s: *"We do not have antivirus so some of us…we've installed our antivirus in the campus computers"*.

Participant 5t: *"…if you want to use videos to show students videos are difficult because we don't have resources"*.

Participant 7t: *"…we are still using a pen to write students final marks. We do not have a software or whatever that can help us to, even excel ordinary excel is not being used in our college."*

In support of current study findings, Clifton and Mann (2011) stated that classrooms equipped with Internet and projectors provide educators with quick access to YouTube to utilize videos to meet their classroom objectives. YouTube offers educators the opportunity to alternate between traditional teaching methods of teaching and providing visual stimulation that captures and maintains students' attention in the classroom. Therefore, Button et al. (2014) recommended that nursing education leaders should provide access to technology and adequate computer resources for educators to integrate nursing informatics into their professional activities.

Sub-theme 2.2: **Concern by educators on producing learners who are not familiar with ICT**

The findings of the current study described concerns raised by nurse educators on the training of students who are not familiar with ICT. The researcher discovered that nurse educators are concerned about not being able to cater to all students because some students cannot use ICT in teaching and learning. The nurse educators further reported that their lessons are not impressive since there are no visuals to stimulate the learner nurses. The following quotes support the findings;

Participant 9t: *"…we [are just producing learners who just have a theory … they have never seen it in the ward, some they have never seen it in the videos …students assumed from level 1 up level 4."*

Participant 5s: *"I feel that the lessons are boring because there's not much to view…our lessons are nor interesting because of a lack of resources"*.

While et al., (2011) stated that there is a shift from direct face-to-face contact between educators and learners to increasingly virtual contact because of technology. In support of these findings, Johansson, Petersson, and Nilsson (2012) stated that new technology might enable new services, meaning that nurses will be able to conduct virtual visits over the Internet and discuss a patient with other health social care professionals through a secure connection. Furthermore, Button et al. (2014) argued that nursing curricula must aim to prepare nursing graduates who are 'knowledge workers'; who can manage information and sophisticated technology, on the one hand, and make complicated clinical judgments other. Therefore, Bembridge et al. (2011) recommended that nurse educators look for ways to enhance the learning environment to fit learners' expectations and ensure transferability of ICT skills learned at the college into the healthcare workplace.

4.4.4. Generic perceptions regarding ICT Facilities in LCN

Table 4.5 below summarizes findings of the perceptions shared by both learner nurses and nurse educators regarding ICT facilities at the LCN.

Table 4.5: Summary of generic theme and sub-themes reflecting the perceptions of learner nurses and nurse educators regarding ICT facilities at Limpopo College of Nursing

MAIN THEME	SUB-THEMES
Theme 1: Generic challenges related to the use of ICT facilities in teaching and learning	Sub-theme 1.1: Lack of ICT department to facilitate usage and maintenance of the platforms mentioned as problematic
	Sub-theme 1.2: Correlation of theory into practice related to use of ICT platforms in teaching, learning and assessment outlined
	Sub-theme 1.3: Existing ICT platforms not used by learners and educators that is perceived as wasting off resources

THEME 1:   Generic challenges related to use of ICT facilities in teaching and learning

Using this theme, the researcher provides a description of generic challenges experienced by both learner nurses and nurse educators related to use of ICT facilities in teaching and learning. Participants reported that a lack of material, as well as physical and financial resources, contributes to a lack of ICT implementation in teaching and learning. Participants indicated that a lack of an ICT department and a lack of maintenance of existing ICT facilities leads to a lack of ICT utilisation. Furthermore, participants indicated that ICT plays an important role in turning theory into practice. The following sub-themes provide a detailed discussion of the theme:

Sub-theme 1.1:   Lack of ICT department to facilitate usage and maintenance of the platforms mentioned as problematic

Both sets of participants indicated that a lack of an ICT department to facilitate the use and maintenance of the ICT platforms prevents implementation of ICT in teaching and learning. Participants indicated that there is no ICT department on the campuses of the LCN to facilitate ICT use and to maintain the equipment. The participants further reported that no training or in-service support was provided on how to utilise ICT facilities. The finding is supported by the following quotes:

Participant 3s: "*We [educators] don't even have a technician on campus so if you are having problems with computers you have to consult*

	fellow lecturers or maybe sometimes students to come and assist you."
Participant 9s:	"*antivirus needs to be updated so if it's not updated you can have…the virus in the PC we need ICT.*"
Participant 6s:	"*having a person who is dealing with ICT services for both lecturers and the students to have WIFI even in the classroom then it will improve on our lesson plans on our facilitation in classrooms.*"
Participant 4s:	"*…a technician must come to the offices maybe once a month to come and fix whatever is broken and then the other thing I think we should have the workshops where they teach us about the new developments about information technology*"
Participant 3t:	"*[learners] there is no such department here we say this is our IT department, so I believe if we have such department we were not going to be lacking on [ICT]*"

Similarly, Ricks et al. (2015) stated that continuous technical support from information technology staff is required during ICT implementation to gain access to information at point-of-care because learners were not competent in using ICT. Bozdogan and Özen (2014) supported this finding by stating that educator-training technology components are essential in ICT self-efficacy level. Courses offered to educators must cover ICT-based equipment development and learners' hands-on teaching activities while maintaining current updates. Livingstone (2012) further stated that ICT tools are enablers in the learning dynamic in terms of content appropriation when developing learners and creating interesting platforms that promote interaction and information sharing. Therefore, Willemse (2015) suggested that mobile devices should enhance teaching and learning since they can become preceptors, shadowing educators, bringing them closer to the student in the clinical facilities.

Sub-theme 1.2: **Correlation of theory into practice related to use of ICT platforms in teaching, learning and assessment outlined**

Both participants of the study described the Correlation of Theory into practice related to the use of ICT platforms in teaching, learning, and assessment. The researcher discovered that the lack of ICT implementation in teaching and learning impacts the integration of theory into practice. Participants reported that due to a lack of resources, simulation is mostly used during clinical teaching. Participants further reported that ICT facilities award them an opportunity to watch the procedures online repeatedly. The following quotes support the finding:

Participant 5t: *"we are teaching learners how to cram and go, but there is no integration of the real practice with the theory that they are learning because some of the conditions or procedures you might not find them in the wards."*

Participant 1t: *"if there are new machines at the clinical side, we won't be able to operate them because we only know the theory part of doing certain procedures but not with the machines."*

Participant 7s: *"sometimes in the practical places you are alone, and the lecturers and the sisters are not there if you are using the technology, it might help you to find the information you are looking for."*

Participant 9s: *"…with technology you can watch a procedure over and over again…go to YouTube watch whatever the lecturer showed you in the class."*

In support of the current findings, Willemse and Bozalek (2015) stated that introducing learning using mobile devices (m-learning) to undergraduate nursing programs assists learners in bridging the gap between theory and clinical practice. Willemse and Bozalek (2015) supported this finding by stating that email and WhatsApp are appropriate tools for integrating theory and clinical practice. By using these tools, educators can attach short videos or slides via email and provide learners with pictures or case-based scenarios via a WhatsApp group to facilitate self-directed learning. Furthermore, Nyangeni, Du Rand, and Van Rooyen (2015) stated that the use of social media could improve clinical practice by providing learners and

educators with guidance from specialists throughout the world since they can share pictures or communicate through messages. This will ensure that they receive the best guidance on the provision of better patient care. Willemse (2015) concluded that social media applications provide learners with a support structure to enhance theory and clinical practice integration since these applications maintain academic support, information sharing, and collaborative practice.

Sub-theme 1.3: **Existing ICT platforms not used by learners and educators that is perceived as wasting of resources**

Both group of study participants indicated that learners and educators, which they viewed as wasting resources, do not use existing ICT platforms. It was reported that learner nurses do not use computer laboratories because they are not given academic activities requiring them to use such facilities, except for research. Additionally, the learner nurses indicated that only a few desktops are available to them in the library and the library is closed while they are attending classes. These findings are supported by the quotes below;

Participant 3s: "*We [learners] have a computer lab, but the way our course is, we do not have [academic activities], we do not see it of value that we can go to the computer lab.*"

Participant 2t: "*…we [learners] came here 2016 … we found those computers there, and we don't even know if they are working or not.*"

Participant 12t: "*Mostly the library closes at 16:30, and we [learners] are in class between 7:00 and 16:30 then you should be in class*".

Participant 8s: "*we [educators] do have some resources but are not in good working conditions.*"

In agreement with the findings, Willemse and Bozalek (2015) stated that incorporating personal digital assistance (mobile devices) into nursing education programs provides learners with a rich resource of up-to-date reference material to use in both classroom and clinical settings. Wirihana et al. (2017) supported the finding by stating that the use of video learning enhances clinical and classroom experience, educators can disseminate information and reach a large number of learner through podcasting and vodcasting audio and video files. These disseminated files can be transferred to computers and mobile devices. Dewah and Mutula (2013) suggested that, since most

learners own smart cell phones, educators could encourage learners to use their cell phones to engage in educational tasks.

4.5. CONCLUSION

In this chapter, the researcher outlined the main findings that arose from the group interviews conducted to answer the research questions. The researcher outlined main themes and their sub-themes that had emerged during data analysis. The literature control for the current study findings was identified and presented to embed and re-contextualize the existing literature results. The findings revealed the unavailability of proper ICT infrastructure, which leads to a lack of interest by learners. Learner nurses reported that educators lack the skills required to utilize ICT because of a lack of training provided to all the LCN stakeholders. The findings indicated the lack of a structured curriculum that embraces ICT platforms. The study revealed a lack of training for both old and new staff, despite the fact that nurse educators are willing to implement ICT. A lack of resources and a lack of an ICT department were indicated in the findings. Despite the willingness to implement ICT, factors such as lack of training and poor connectivity hindered the implementation.

CHAPTER 5

INTEGRATION OF THE THEORETICAL FRAMEWORK

5.1. INTRODUCTION

The findings of the study and literature control on the perceptions of learner nurses and nurse educators regarding ICT facilities in teaching and learning at the LCN were discussed in Chapter 4. The theoretical framework discussed in this chapter provided guidance to the study and the basis for interpreting and understanding the study findings. The theory highlights the perceived usefulness and ease of use, attitude, and intention to use ICT.

5.2. THE TECHNOLOGY ACCEPTANCE MODEL (TAM)

Brink et al. (2014) define a theoretical framework as a logical grouping of related concepts created to draw several aspects relevant to a complex situation together. They argue that a theoretical framework is based on propositional statements resulting from an existing theory. This study adopted the Technology Acceptance Model (TAM) conceptualized by Davis (1989).

Maharaj (2014) explained technology acceptance as "a learner or educators' psychological state concerning their voluntary or intended use ICT facilities". This study was based on Davis's (1989) theory, which suggests that learner nurses and nurse educators' acceptance of ICT facilities will determine how they will use these facilities (Maharaj, 2014). TAM provides a link between learners and educators' inner beliefs, attitudes, intentions, and behavior usage in determining whether ICT will be accepted or rejected by the learner nurses and nurse educators (Maharaj, 2014). In this study, ICT facilities were considered a system that utilizes computers, the Internet, and web technologies to promote teaching, learning, and interactions between learner nurses and nurse educators. The TAM model emphasizes five contracts, namely: perceived usefulness, perceived ease of use; attitude towards use; behavioral intention to use; and actual system use. For this study's purpose, the TAM and a discussion of the relationship between the constructs follow below. The figure below illustrates TAM.
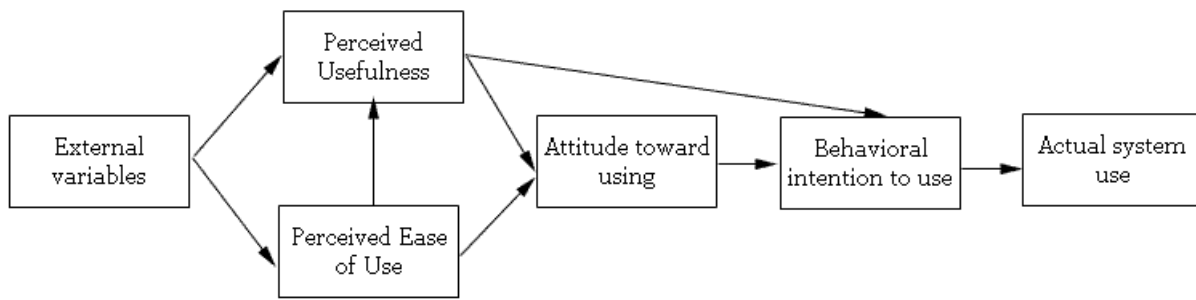
Figure 5.1. Technology Acceptance Model (adopted from Davis, 1989)

5.2.1. External variables affecting ICT usage

External variables have an influence on perceived usefulness and the perceived ease of use of technology (Maharaj, 2014). Davis (1989) explained that the two predictors determine a user's attitude towards using a particular technology, which is referred to as the system used in the model. Nkosi, Asah, and Pillay (2011) discovered that the actual implementation of ICT is influenced by certain variables, including the availability of internet at the campus, which would provide access to technology; the allocation of funds, which will allow the provision of computers; the provision of training on how to use ICT; and ICT support for the implementation of ICT for use in teaching and learning. The influence which external variables have on ICT acceptance behavior is mediated by the learner nurses' and nurse educators' beliefs and attitudes towards the technology. Belief relates to the nurse educators' and learner nurses' perceptions that using ICT facilities to perform a task will result in a specific outcome; while attitude relates to the feelings (positive or negative) of the learners and educators about performing a certain action (Erasmus, Rothmann & Van Eeden, 2015). The study results indicate that there are external variables at LCN that hinder the implementation of ICT. These variables include a lack of training, a lack of resources, and a lack of an ICT department. Should the LCN recognize external variables and determine their impact, they would stand a chance to manipulate them, resulting in the college having better control over the attitudes of learners and educators towards the use of ICT facilities and their behavioral intention to use ICT.

5.2.2. Perceived usefulness

According to Davis (1989), perceived usefulness is one of two important factors that predict the use and acceptance of information systems and technology. Perceived usefulness refers to the degree to which the learner nurses and nurse educators

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believe that using the technology will improve their work performance (Maharaj, 2014). This study indicates the greater importance of perceived usefulness of technology when determining the intention to use technology, rather than their attitude toward using technology. Learner nurses and nurse educators are willing to use ICT facilities for their theoretical and clinical teaching and learning, which suggests that learner nurses and nurse educators are focusing on the value of ICT itself. In this context, the provision of training is essential for directing learner nurses and nurse educators' perceptions of the usefulness of ICT facilities. Learner nurses and nurse educators perceive ICT facilities to ease their teaching and learning workload. The participants believe that ICT facilities will make things easier for them. External variables influence perceived usefulness since learner nurses, and nurse educators require access to ICT, as well as the knowledge and skills, and support needed to use ICT facilities in teaching and learning, as supported by the study's findings (Erasmus et al., 2015). Access to ICT facilities impacts directly on the perceived usefulness of the technology. The unavailability of, or inadequate access to, ICT facilities affects the rate of usage, since learner nurses indicated that the unavailability of ICT facilities leads to them losing interest in using the ICT facilities. It is essential to have access to ICT on the campuses and ongoing support, including in-service training or workshops, to implement ICT in teaching and learning.

5.2.3. Perceived ease of use

Davis (1989) identified perceived ease to use as an important factor in predicting the use and acceptance of information systems and technology. Perceived ease of use refers to how effortless learner nurses and nurse educators perceive using ICT facilities to be. Computer skills are an essential variable that influences perceived ease of use (Maharaj, 2014). If learner nurses and nurse educators do not have any knowledge of how to use ICT facilities, their attitudes towards such use will be affected. Learner nurses and nurse educators will use ICT facilities, depending on their perceptions regarding the effort required for them to complete a certain task. If using ICT facilities is perceived to simplify their tasks, they will most likely use ICT to complete the task (Erasmus, 2014). The study results indicated that nurse educators perceive ICT facilities as a system that could simplify their work since they stated that Excel would help them enter marks. Learner nurses also indicated that ICT could

assist them with the clinical aspects of their work when they are on their own because they would be able to watch procedures online and so deliver proper patient care.

5.2.4. Attitude towards using ICT

Perceived usefulness and the perceived ease of use determine attitudes towards using technology, which is referred to as a TAM system (Maharaj, 2014). If ICT is viewed as valuable, this will positively affect learner nurses' attitudes. A positive attitude of the learner nurses and nurse educators towards ICT is influenced by perceived usefulness. If learner nurses and nurse educators think using ICT would require less effort, they would have a positive attitude towards using it (Erasmus, 2014). The study's findings indicate that, although nurse educators have a positive attitude towards wanting to implement ICT, there are challenges that may hinder the implementation of ICT. Some of these challenges include unavailability of ICT platforms, a lack of training of the LCN stakeholders, and a lack of ICT support, which, if not addressed, could change a positive attitude into a negative attitude and create resistance towards the use of ICT. The study results reveal that the attitudes of learner nurses and nurse educators attitude were positive concerning their intention to use the ICT facilities. Nurse educators reported using their means, such as their data, to use ICT facilities. Learner nurses also indicated the use of their cell phones to access information on the Internet. Learner nurses and nurse educators should be given the assurance that ICT facilities will enhance their teaching and learning practices. Teaching and learning be more pleasant and more inspiring if they were to use technology. Provision of ICT will be a fruitless expenditure if learner nurses and nurse educators displayed negative attitudes towards its use.

5.2.5. Behavioural intention to use

Attitudes towards ICT have an impact on behavior towards the use of ICT (Nkosi et al., 2011). TAM suggests that the use of ICT is ensured by behavioral intention to use ICT, which tells of the learner nurses and nurse educators' intention to accept and use ICT facilities in teaching and learning. The study findings revealed that learner nurses and nurse educators have positive intentions to use ICT facilities. They reported that they are currently using their means to access ICT for teaching and learning. Perceived usefulness and attitudes towards using ICT facilities influence the behavioral intention to use ICT. The behavioral intention of learner nurses and

nurse educators to use ICT facilities directly influences the frequency and volume of ICT use.

5.2.6. Actual system use

Maharaj (2014) defined 'actual use' to measure how often learners and educators use ICT facilities and how much of the ICT facilities available they utilize. Behavior towards usage influences actual system usage (Maharaj, 2014). The findings of this study indicated that there are computers on the campuses that are not utilized. The most frequently used ICT in the college is a projector used by nurse educators. Learner nurses indicated that there are not sufficient computers to satisfy all the learners at once. The actual use of ICT facilities can be predicted by the behavioral intention to use these facilities.

5.3. CONCLUSION

This study's findings indicated that the positive perceptions of the learners and educators towards ICT are important. In contrast, the attitude of learners and educators towards using ICT facilities may not be equally important. Training and in-service education should focus mostly on how ICT facilities could improve teaching and learning effectiveness rather than on ICT's actual procedures. As TAM indicates, learner nurses and nurse educators accept ICT facilities in teaching and learning, though there are a hindrance in implementation.

CHAPTER 6

SUMMARY, RECOMMENDATIONS, AND CONCLUSION OF THE STUDY

6.1.   INTRODUCTION

In Chapter 5 the researcher presented the researcher discussed the theoretical framework that guided the study. The use of Tesch's coding method ensured the emergence of themes and sub-themes with regard to the perceptions of learner nurses and nurse educators with respect to the use of information and communication technology in teaching and learning at the Limpopo College of Nursing. In Chapter 6, the researcher presents a summary, conclusion, and a description of the recommendations emanating from this study. The recommendations are based on the identified themes. The limitations of the study are also discussed.

6.2.   SUMMARY OF THE STUDY

6.2.1. Aim of the study

This study aimed to determine learner nurses' and nurse educators' perceptions regarding the use of information and communications technology facilities in teaching and learning at the Limpopo College of Nursing in South Africa.

6.2.2. Research question

The question posed to the participants was, 'Can you please tell me your perceptions regarding Information and Communications Technology facilities in teaching and learning?'

6.2.3. The objectives of the study were to:
- Explore and describe the perceptions of learner nurses regarding the use of ICT in teaching and learning;
- Explore and describe nurse educators' perceptions regarding the use of ICT facilities in teaching and learning.

The researcher managed to explore learner nurses' and nurse educators' perceptions by probing for information and understanding in focus group interviews. A description of learner nurses' and nurse educators' perceptions was achieved by asking the

participants to describe their perceptions of ICT facilities in teaching and learning. The study's findings answered the research question, indicating that learner nurses and nurse educators have positive perceptions of the use of ICT facilities in teaching and learning. Recommendations have been developed using the data obtained from the learner nurses and nurse educators. The study has, therefore, been successfully completed, and the objectives of the study have been met.

6.2.4. Research method and design

A qualitative design approach to research was adopted in this study in order to explore and describe the perceptions of learner nurses and nurse educators regarding the use of ICT in teaching and learning. The population for this study encompassed all registered learner nurses and nurse educators at Limpopo College of Nursing in the Limpopo Province of South Africa. The researcher used focus group interviews, guided by two schedule guides, to determine the perceptions of both the learner nurses and the nurse educators on the use of ICT facilities in teaching and learning. The steps of data analysis were followed as described by Tesch in Cresswell (2013). An independent coder was given transcripts and analysed the data independently. After which a meeting was arranged between the independent coder and the researcher to discuss the themes. At this meeting the independent coder and researcher agreed on the themes and sub-themes reached independently of each other. The following criteria were used for establishing the trustworthiness of qualitative data, as outlined in Botma et al. (2010)., namely: credibility, dependability, confirmability, and transferability. The following ethical principles were adhered to: beneficence, justice; non-maleficence; the principle of human respect and dignity; permission to conduct the study; informed consent, confidentiality, privacy, and anonymity.

6.2.5. Findings of the study

The findings of the study indicated the following themes, as discussed in the previous chapter:

Theme 1: Description of existing ideas learner nurses have in relation to ICT in teaching, learning, and assessment. Participants shared some experiences related to lack of ICT infrastructure, the impossibility of implementation, and lack of stakeholders' training.

Theme 2: Description of challenges experienced related to the use of ICT facilities at LCN. Challenges experienced included educators' lack of ICT skills and curriculum not embracing ICT platforms

Theme 3: Description of the advantages and benefits of implementing ICT platforms in teaching, learning, and assessment. Learner nurses' experience indicated existing opportunities to implement ITC and skills knowledge and information gained through ICT.

Theme 4: Description of existing ideas held by LCN educators on implementation of ICT platforms. Nurse educators shared experiences challenges related to ICT implementation and their willingness to implement ICT.

Theme 5: Challenges experienced by LCN educators related to ICT platforms. Nurse educators experienced difficulties related to lack of ICT resources and concerns of producing learners who are not vested in technology

Theme 6: Generic challenges associated with the use of ICT facilities in teaching and learning. Both nurse educators and learner nurses experienced the same challenge relating to lack of ICT department, low correlation of theory into practice, and lack of utilization of existing ICT platforms.

6.3. RECOMMENDATIONS OF THE STUDY

The following recommendations are based on the themes that emerged during the interviews with learner nurses and nurse educators. Although learner nurses and nurse educators realize the importance of ICT, it is not currently rooted in nursing education at the LCN. The study indicates that it is essential that the college management work towards providing an environment that supports ICT for teaching and learning. The following headings discuss the recommendations made from the findings and suggestions received from both learner nurses and nurse educators. The recommendations aimed at addressing the challenges encountered by the use of ICT in teaching and learning at the LCN.

6.3.1. Nursing college

- The college management should initiate the provision of ICT facilities that can serve all campuses. The LCN should benchmark how the ICT platforms are managed in other higher education institutions.

- Provision of ICT facilities, such as the Internet and laptops for nurse educators and desktops for learner nurses, should be a basic requirement as part of college equipment.

- All classrooms for teaching and learning and the library should be equipped with the requisite ICT facilities for easy access and support of teaching and learning activities.

- To ensure the continued and reliable access to the Internet and a mechanism needs to be found to ensure the computers' serviceability.

- ICT experts and technicians should be employed at the college and be easily accessible to learner nurses and nurse educators to provide training and maintenance of ICT facilities. This will afford easy access to ICT services for learner nurses and nurse educators.

- With a speed dial number, an office help desk should be established to provide available support regarding the ICT challenges faced by both the learner nurses and nurse educators at the LCN.

- With broadband Internet access, a designated computer room should be established for regular access by the students.

- All classrooms should be installed with necessary ICT facilities for easy access during teaching and learning.

- The curriculum developers are urged to take a look at the changes required for the inclusion of ICT in the curriculum, so that the college can produce professional nurses who can operate ICT facilities when providing care to the patients.

- College management should invest in developing policies for the use of smart cell phones in the classroom and in the clinical area to support learning.

- Disciplinary procedures should be put in place in terms of such policies to ensure compliance.

6.3.2. Nurse educators

- Regular training on the use of ICT facilities for newly employed educators and other staff should be provided. The college could sign a contract with an enabling solutions provider or a personal computer training college.
- In-service computer education courses and workshops should be offered to enhance computer skills for previously employed nurse educators and those who require assistance in using ICT.
- Other employees should be included in the training because this study discovered a lack of training of all LCN stakeholders on the use of ICT platforms as a major challenge.
- Training can be done through the use of a public-private partnership with network service providers, such as Mobile Telephone Network (MTN), in order to equip the library and computer rooms with hardware and software
- An Internet connection should be made a priority in the offices of nurse educators to help them prepare for lessons.

6.3.3. Learner nurses

- Learner nurses should be formally trained on how to use ICT facilities for learning purposes. The college could achieve this through a partnership with a personal computer training college.
- Learner nurses should be encouraged to use ICTs by nurse educators by giving them tasks that involve the use of ICT facilities
- The utilization of ICT platforms by learner nurses should be monitored, which will result in the provision of quality care to patients.

6.4.   LIMITATIONS OF THE STUDY

The richness of the data provided the researcher with an understanding of learner nurses and nurse educators' perceptions regarding the use of ICT facilities in teaching and learning. The researcher identified the following limitations of the study: Permission to collect data could not be obtained from one campus of the LCN because of learner nurses and nurse educators' unavailability. The study was

conducted on two campuses of the Limpopo College of Nursing (LCN) in the Limpopo Province in South Africa; therefore, the current study findings cannot be generalized to other colleges and other provinces in South Africa. Data were collected only from undergraduate learner nurses; therefore, postgraduate learner nurses' perceptions regarding ICT are not known. Further research should be conducted, involving all other nursing institutions in the province and not limiting research to college-based education.

6.5.   CONCLUDING REMARKS

The aims and objectives of the research have been achieved by using focus group interviews, guided by an interview guide. During the interview sessions, the researcher allowed the participants to describe their perceptions regarding information and communication technology in teaching and learning at the Limpopo College of Nursing. Tesch's open coding method of qualitative data analysis was used. An independent coder was involved in the data analysis. The study indicated that the use of ICT in teaching and learning is a concern for both learner nurses and nurse educators. The most frequently used ICT facilities by learner nurses and nurse educators for teaching and learning at LCN are projectors, laptops and mobile technologies (smartphones). Educators, for teaching and learning purposes, are not using emails. Due to a lack of ICT facilities on the campuses, technologies like video transmission and video conferencing are not used. Learner nurses are challenged by the unavailability of ICT facilities and a lack of training on how to use ICT for learning purposes. Although educators are willing to implement ICT in teaching and learning, they are hindered by several factors, including inadequate ICT facilities; a lack of training for the newly employed and older educators, and connectivity unavailability. Therefore, the Limpopo College of Nursing must ensure that campuses have ICT facilities installed to facilitate teaching and learning.

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ANNEXURES 1: REQUEST FOR PERMISSION TO CONDUCT RESEARCH

Request to conduct research from Limpopo College of Nursing

P/Bag x935

Shayandima

0950

Cell Number
(076760371810)

10/02/2018

Dear Mr/Ms …………………

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN LIMPOPO COLLEGE OF NURSING

I am currently registered for a Master's Degree (Nursing Education) at the University of Limpopo. As part of the degree I should conduct research and I plan to Explore and describe the views of learner nurses regarding lack of ICT.

In order to achieve these objectives, interviews by means of unstructured individual interviews will be conducted with learner nurses.

Inclusion Criteria

- Registered as a student nurse at Limpopo college of nursing Thohoyandou Campus

- Student nurse must be registered with the South African Nursing Council (SANC)

- Should be able to understand medium of instruction

- Should be willing to participate voluntarily

Exclusion criteria

- Students who are not willing to participate freely

The interviews for those who agree to participate will be conducted during July and August 2018 at the facilities where the participants are working. The interviews will last approximately 30 minutes to an hour, by digitally voice-recorded and confidentiality will be ensured for all the participants and all research proceedings. Please note that I have also submitted a request for ethical clearance to Turf Loop Research Ethical Committee and await the ethics clearance certificate. Application number is ………………… I will forward this ethics clearance certificate to you as

soon as I receive it. To ensure optimal time management I have decided to inform all the key role players essential for ethical clearance and consent simultaneously.

ANNEXURE 2: CONSENT FORM

I…………………………………………consent to participate in the research project on the *"*views of learner nurses regarding lack of ICT in teaching and learning at Limpopo College of Nursing Thohoyandou Campus of Limpopo Province South Africa*"*. The full explanation about the research was given to me, including the benefits of the study. I understand that my confidentiality and privacy will be taken care of by the researcher. I also understand that the information collected from me will only be shared among people concerned with the study. I understand that I can terminate my participation in the study at any time without any intimidation/penalties. I understand that there is no personal gain or reward that will be given to me by the researcher for participating in the study. I confirm that I was not forced or coerced into participating in the study, but doing it on my own free will.

Signature…………………………………………. (Participant)

Date………………………………………………….

Signature of researcher……………………………….

Date…………………………………………………….

ANNEXURE 3: INTERVIEW GUIDES

INTERVIEW GUIDE FOR LEARNERS

The main question to be asked

What are the perceptions of learner nurses regarding Information and Communication Technology in teaching and learning at Limpopo College of nursing?

Probing questions

What role does ICT play in your teaching and learning process?

How do you think your learning is affected?

Question about viewpoints or perspective 'What would be an alternative?' Learner to realise that there are many perspectives to an argument.

Question about the question 'Why do you think I asked this question?' Learners to identify the reasons why the question was asked

A question that probes assumptions 'What could we assume instead?' Learner to eliminate assumptions that are not thought through.

Question of clarification 'How does this relate to our discussion?' Learner to state why they made a particular statement.

A question that probe reasons and evidence 'What do you think causes that to happen? Why?' Learner to clarify and prove that their arguments are based on facts.

INTERVIEW GUIDE FOR NURSE EDUCATORS

The main question to be asked

What are the perceptions of learner nurses regarding Information and Communication Technology in teaching and learning at Limpopo College of nursing?

Probing questions

How can you describe your perception regarding the use of ICT in teaching and learning?

Question about viewpoints or perspective 'What would be an alternative?' Nurse educators to realise that there are many perspectives to an argument.

A question that probe implications and consequences 'What are the consequences of that assumption?' To bring forth the logical implications or consequences that nurse educators can predict.
What methods of ICT are currently used in teaching and learning for learner nurses?

A question that probes assumptions 'What could we assume instead?' Nurse educators to eliminate assumptions that are not thought through.

ANNEXURE 4: FACULTY APPROVAL OF PROPOSAL

University of Limpopo
Faculty of Health Sciences
Executive Dean
Private Bag X1106, Sovenga, 0727, South Africa
Tel: (015) 268 2149, Fax: (015) 268 2685, Email:Kgagabi.letsoalo@ul.ac.za

DATE: 06 MAY 2019

NAME OF STUDENT: **RAVELE TA**
STUDENT NUMBER: **200520399**
DEPARTMENT: **NURSING**
SCHOOL: **HEALTH CARE SCIENCE**
QUALIFICATION: **MNURS**

Dear Student

FACULTY APPROVAL OF PROPOSAL (PROPOSAL NO. FHDC2019/3)
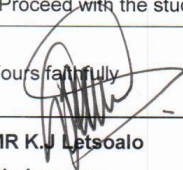
I have pleasure in informing you that your MNURS proposal served at the Faculty Higher Degrees Meeting on 06 May 2019 and your title was approved as follows:

Approved Title: "Perception of learner Nurses and Nurse Educators regarding information and communication technology facilities in Teaching and Learning in Limpopo College of Nursing South Africa".

Note the following:

Ethical Clearance	Tick One
Requires no ethical clearance	
Proceed with the study	
Requires ethical clearance (TREC) (apply online)	
Proceed with the study only after receipt of ethical clearance certificate	√

Yours faithfully

MR K.J Letsoalo
Chairperson

UNIVERSITY OF LIMPOPO
FACULTY OF
HEALTH SCIENCES
2019 -05- 06
PRIVATE BAG X1106
SOVENGA 0727

CC: Supervisor: Mr MO Mbombi
Co-Supervisor   : Mrs MA Bopape

Finding solutions for Africa

ANNEXURE 5: ETHICS CLEARANCE CERTIFICATE

University of Limpopo
Department of Research Administration and Development
Private Bag X1106, Sovenga, 0727, South Africa
Tel: (015) 268 3935, Fax: (015) 268 2306, Email: anastasia.ngobe@ul.ac.za

TURFLOOP RESEARCH ETHICS COMMITTEE
ETHICS CLEARANCE CERTIFICATE

MEETING: 4 July 2019

PROJECT NUMBER: TREC/135/2019: PG

PROJECT:

Title: Perception of learner Nurses and Nurse Educators regarding information and communication technology facilities in Teaching and Learning in Limpopo College of Nursing South Africa.

Researcher: TA Ravele

Supervisor: Mr MO Mbombi

Co-Supervisor/s: Mrs MA Bopape

School: Health Care Sciences

Degree: Master of Nursing

PROF P MASOKO
CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE

The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics Council, Registration Number: **REC-0310111-031**

Note:
i) This Ethics Clearance Certificate will be valid for one (1) year, as from the abovementioned date. Application for annual renewal (or annual review) need to be received by TREC one month before lapse of this period.
ii) Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee, together with the Application for Amendment form.
iii) PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.

Finding solutions for Africa

ANNEXURE 6: PERMISSION TO COLLECT DATA

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH

LIMPOPO COLLEGE OF NURSING

SOVENGA CAMPUS

To: Mr Ravele TA

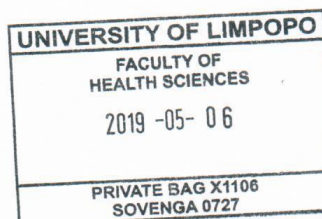From: Acting Vice Principal

Sovenga Campus

ENQ: Phosa RG

Date: 22 August 2019

**RE: PERCEPTION OF LEARNER NURSES AND NURSE EDUCATORS
REGARDING INFORMATION AND COMMUNICATION TECHNOLOGY
FACILITIES IN TEACHING AND LEARNING IN LIMPOPO COLLEGE OF
NURSING SOUTH AFRICA**

1. The above matter bears reference
2. Permission to conduct the above mentioned research study at Sovenga Campus is hereby granted
3. Research should be conducted in a manner that will not disrupt student learning
4. After completion of the study the findings should be submitted to Sovenga Campus to serve as a resource

Your cooperation is highly appreciated

Regards,

.... 22/08/2019

Acting Vice Principal

DEPARTMENT OF HEALTH

LIMPOPO COLLEGE OF NURSING: CENTRAL COLLEGE

THOHOYANDOU CAMPUS

Enq: Tshiswaise MI
Date: 2019.08.26

To: Mr Ravele TA
From: Acting Vice-principal
      Thohoyandou campus

Re: perception of learner nurses and nurse educators regarding information and communication technology facilities in teaching and learning in Limpopo college of nursing south Africa.

1. The above matter has reference
2. Permission to conduct the above mentioned research study at Thohoyandou campus is hereby granted
3. Research should be conducted in a way that will not interrupt learning
4. After completion of the study the findings should be submitted to Thohoyandou Campus to serve as a resource.

Your cooperation will be highly appreciated
Regards

_____   Date: 2019.08.26
Acting Vice-principal

ANNEXURE 7: SIGNED CONSENT FORMS

CONSENT FORM

I..consent to participate in the research project on the "perceptions of learner nurses and nurse educators regarding Information and Communication Technology facilities in teaching and learning at Limpopo College of Nursing of Limpopo Province South Africa". The full explanation about the research was given to me, including the benefits of the study. I understand that my confidentiality and privacy will be taken care of by the researcher. I also understand that the information collected from me will only be shared among people concerned with the study. I understand that I can terminate my participation in the study at any time without any intimidation/penalties. I understand that there is no personal gain or reward that will be given to me by the researcher for participating in the study. I confirm that I was not forced or coerced into participating in the study but doing it on my own free will.

Signature: .... (Participant)

Date: ...13/09/2019...

Signature of researcher: ....

Date: 13/09/2019

CONSENT FORM

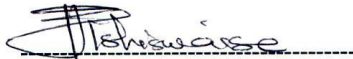I....Kgwadi   W....consent to participate in the research project on the "perceptions of learner nurses and nurse educators regarding Information and Communication Technology facilities in teaching and learning at Limpopo College of Nursing of Limpopo Province South Africa". The full explanation about the research was given to me, including the benefits of the study. I understand that my confidentiality and privacy will be taken care of by the researcher. I also understand that the information collected from me will only be shared among people concerned with the study. I understand that I can terminate my participation in the study at any time without any intimidation/penalties. I understand that there is no personal gain or reward that will be given to me by the researcher for participating in the study. I confirm that I was not forced or coerced into participating in the study but doing it on my own free will.

Signature: ....Kgwadi.............. (Participant)

Date: ......13/09/2019.........

Signature of researcher: ....

Date: ...13/09/2019..........................

ANNEXURE 8: LEARNER NURSES TRANSCRIPT

Good evening

How are you? My name is Mr Ravele TA, as I have already introduced myself I am a student from the University of Limpopo doing my Masters in Nursing Education. So as I've indicated previously it is a requirement that I conduct this research for me to meet this criterion to qualify or to graduate for the Degree that is why I am here. My topic is the perception of learner nurses and nurse educators regarding the use of ICT in teaching and learning at the Limpopo College of Nursing. I have given you guys the consent form which clearly indicates that you can withdraw your participation if you feel during the course of the study that you can't continue you are allowed to say that or you would like to withdraw your participation as well.

So guys what are your perception regarding information communication and technology in teaching and learning here in this College?

Participant number 19: with this college I don't know if I understand it correctly but with Information Communication and Technology I would say that it's not. With technology it's not being used that much it's very low.

What do you mean it's not used that much? Like for example as I compare let's say in class they want to give us good topics to present they have to come and tell us or they tell us by mouth. You have to do this and that or this day you will need this and that. Whilst in the university they have something like blackboards where they can just post simply on the internet where everybody will just access it easily submit it there and while in this college we are doing everything manually instead of using that approach.

Participant number 22: ok I agree with her on the issue of our college because especially with the time of the results we find out that some of us we far, we come from far being in the deep rural areas, we find out that we are home and we don't have anyone around here who stays here who is going to tell us about the results. You are home and then they told you we are closing on the 10th and the results will be out on the 22nd of December and you are home and you are stressed and you don't know how are you going to get the results so it was going to be simple if we are going to get information on our cell phones individually so maybe get a number they

just send you your results but here you get results on the board on which you have to find someone around, you tell that person, you beg that person to check the results for us sometimes you find the student number is not even visible you get stressed but if they try to have the technology then it's going to be better.

Participant number 20: this thing according. The use of technology in this college is very much poor to such an extent that we even a computer lab or so but it has never been used and also there at the library the only have limited desktops, computers that learners can access of which it's in the library. People cannot go to the library and start discussing on something. first they are looking for, they are researching on something they are on the internet they have to talk like this one is a valid content and this one can take and do more research about it but in the library you cannot do that because it's a place that should be quiet and another thing as she has said in terms of communication between lecturers and students of which we use WhatsApp of which is a personal thing of which if het college had something like a proper channel that can to all students for notices, meetings, within the college and the students it will be much better. So here it's very much poor it needs to be improved.

Participant number 18: I agree with him and in terms of communication and distributing of information. I can say we somehow left behind for example if they want to send us the assignment or if they want to give us rules the presentations we have to go to the lecturers and get them through USB or where else if they had a platform where they can post them and we just go and access them and print them on our own it was going to be simple and easier but then if you want notes and if you go to lecturers after hours you might find that they are not there and you still need to wait for them to communicate with them the through the phones and we need lecturers to and some topics because some topics you cannot find them on the books and sometimes when you need clarity we have to call them and but if we can have platform of communication where we can post our questions and they answer through emails on such things it was going to be simple and easier. So I'm saying we lack behind in terms of ICT we are not using it effectively here.

Ok participant number 22: and again with the issues of the computers that we have in the library we don't get to use them because you find out that you are computer

illiterate you from the rural area that side you don't know how to use a computer you get to the library you want to learn how to use a computer you get there only to find one person assisting and the very same person that is supposed to assist you make use of the computer is the very same person who is supposed to assist you on how to operate the computer is the very same person that is making copies for other people who do everything in the library who shows people books and everything so you might find that you are kind I don't know if I can say that you are disturbing that person you don't know maybe somehow you don't know how to search for the information in the computer. They end up saying you people should have learned how to use computers and everything and some of us we not from advantaged backgrounds. Some people learned computers back then and some of us we didn't have that opportunity so we thought we were going to learn computers here and here you find out that we are in class Monday to Friday. Saturday and Monday you are writing tests you will not or won't have enough time to learn how to use those computers and at the end of the day they will expect you to submit or do a research and you don't even know how to operate a computer. So if maybe we can have these computer studies I don't know maybe but it's not happening here they just expect you to know how to use a computer, know how to type, know how to do everything and submit researches they don't even have teachers who know how to use or operate a computer that's all. If we can have once in a year or week where they will teach people who are computer literate on how to operate computers and stuff. So It's very much difficult.

Participant number 21: like here in our college what I can say we lacking in terms of communication technology because our library doesn't open 24/7 like in universities I mean we know in universities its 24/7 like whenever you want to access it you just go there so here on Sunday it doesn't open so that is why we are lacking behind.

Participant number 23: what is your perception? With information and technology, I think it is very much poor in a sense that when you want information especially from lecturers I've noticed that they operate, you may sometimes not find them at the office but if they have this kind of things on the internet that we can access or via email if we could have their email address we were going to access them. That's why I'm saying it's poor.

Participant number 17: what do you say? I say its poor because we don't, we can't access our lecturers like right now if I for example like right now I want to access my lecturer I want to tell her that I need a letter or placement so I can't access her because when I know off she has already knocked off so I can't her. So maybe if I can email her or something like that if we use uh.

Ok, participant number 23: also in terms of what our library is lacking because we've been doing researches and you might find that we need some journals, we need some articles related to our research topic and you find that in our libraries we don't have such journals that are related to our topics and even if you want to access it from the internet you don't have anyone to assist you.

Participant number 18 you had your hand up: on the other hand back to communication you might find that they send us a WhatsApp text or WhatsApp messages where sometimes you find that you don't have data to read the messages on WhatsApp and if we had the WIFI connections it was going to be compulsory to open our messages every day to check the emails that they posted so because we don't have emails and we don't have a WIFI connection so they use WhatsApp sometimes the messages are delayed and sometimes some don't receive the messages and if we had a WIFI connection and they made it compulsory to go and check the messages early in the morning everyday on emails it was going to be simple but we don't have a WIFI connection here.

So I hear you guys and what you saying, what role does ICT play in your learning?

Participant number 18: okay I would say the role that ICT plays in our learning okay let me put it this way. It makes our work very easy and simpler, how? In this way if we have a lecturer and they teach us based on a certain topic and then we don't have clarity and we don't have access of the lecturer we would go through the internet and browse through the topic and ask more questions on the internet and find people whom we can communicate with on the internet so if we are computer literate we or we have our ICT development is very poor so we cannot have we cannot be so good in accessing internet. If we miss something in class then we should wait for tomorrow for the lecturer to give us clarity on that or we should call imagine if its twelve o'clock midnight and you are studying, you cannot call a lecturer at twelve o'clock and ask

questions based on a certain topic and imagine if tomorrow you are writing and it's over the weekend and you are calling them and they are not answering their phones, so it's going to be simple if we go on the internet check and the notes they posted or else check the lecture they posted or other topics that are related to the lecture.

Participant number 22: I think the role that the internet can play is that they will be, if they make that system of how they are going to send us our results our final year results is going to be easy as on this group WhatsApp thing of sending out results to me it's just not fair I know someone's student number and they post it on the group. Already I've seen that this one and this they have already failed and of which if they make a system where they individually send you your results it's going to be better because I'm the one who is going to see my results if people know that I fail they will only see next year in the other class, but it it's in the social group I don't think there is privacy but if they put that system there is going to be privacy and confidentiality will be maintained.

Participant number 23 you wanted to say how ICT play a role in the teaching and learning process: I wanted to add on participant number 18 in that its time saving that one, technology its time saving and we learn things very fast and you get. With technology you get new information very fast and the things that get to be updated to know them very fast earlier and then you get to improve on whatever you didn't know and then you get to do things right.

Participant number 21 how does ICT play a role in your teaching and learning process: what I can say it play an important role because you can download the text books and you can study wherever you go and even if you in a taxi you can just go through your textbook and study while you on your way.

Participant number 17: I think it makes communication easier like as they've already said if you have a question, like you studying and you want to ask your lecturer you can't call them during the night and ask them questions about school work but if at least you can email them and when they available they will get back to you it's easier that way. And then here its considered like very disrespectful to text a lecturer and ask such questions.

Participant number 20:   ok ICT is very much important as participant number 23 has said that its time saving so in terms of like we saying right now we are in class

and discussing a certain topic you find that every prescribe text book that we have right now the information that the lecture has presented is not there so it's much important that the lecture can post whatever content we have can be discussed in the class maybe for example in University they maybe have blackboards where they post notes and also the students have prescribed textbooks they can go to but the lecture also posts notes of what we discussed so you can look at them meaning you can compare these two. The lecturer notes and the textbook you find that more information not the textbook and but the lecture has the notes or the other way around you can add more information from the textbooks.

Participant number 19 what do you think, how is ICT playing a role in your teaching and learning processes: it saves time and makes learning easy let's say for example in the past if the lecturer is teaching and there is a topic that is nowhere to be found in our prescribed textbook and it will be easy to access it on the internet and phones if they are there but in this college they are not there and we waist time trying to find them in other textbooks. Sometimes the lecturers will refuse for us to use other textbooks if they are old editions and we end up not learning anything.

So how do you think your learning is affected at this present moment?

Participant number 20: all I can say right now what I can say at this college we are forced to look much on books on hard copies books so meaning that ok for example the lecturer is going to mark my script according to what it's in the book and you find that there is new information that has been updated 2 weeks ago and there are more points on it. So it pushes us back meaning whatever I'm learning right now I have to focus on the book disregard what has been posted recently.

Ok participant number 18: I wanted to say something more on that but on the other hand as he has mentioned we are forced to look into books and daily there is new information that has been updated on the internet and we will take the information and bring it to the table and say this is what we have found on the internet and they will ask us who wrote that and all that we debate much of where is the information coming from and how much valid and what does the books say and we compare that to the internet and if the information from the textbook is updated then they somehow deny it they say that the information can't be valid. We are forced to use the information that is in the book and we might find out that it's not sufficient to can

sustain the marks they want and require in the test or exam so they should. Ok our learning is going to be affected and we are going to be stereotyped and focus on the textbook even if it's not updated we will never know of and we are going to have insecurities on whether to trust the information that is updated or what.

Participant number 23: with information communication and technology and I think it's negatively affecting us in such a manner that we are forced not to look into the internet when we write exams or tests you might find that you have written information that you coming from the internet and then after marking your script they make you even refer you writing the page the name of the book that you should have focused on and not the internet telling you that you are not supposed to write the information from the internet you are supposed to write the information that is from the book, the prescribed book.

Participant number 19: I also say it's affected negatively I agree with her like in this college the information that we are given its like boxed in. It's so limited to what its written on the textbook, like if something is not there in the textbook to them it's like wrong. It's not allowed which affect us negatively because we are unable to learn new things like in medicine, in the medical field new information is updated every day and we are unable to learn new things and new methods on how to do things in the medical field because they are focusing on what is written exactly on the textbooks.

Participant number 23: adding on that you might find that a question is allocated a particular mark and you find out that mark the point that you are supposed to write they are not enough. Those points that are on the textbooks you find that they are 3 points and you find out the marks that allocated on the question paper are 10 and you are forced, they will be telling you that they only want the information that is in the textbook whereas you are required to write on the script not even the book, the book its only 3 points and you're expected to write 10 points from the very same book.

Participant number 22:   how is your learning affected?   Again with the information, technology at the collect we get affected because I can give an example the research. The researchers are expecting us to be computer literate to do research for which that thing can negatively affect our studies because we tend to be stressed and I have to, let's say I'm trying to type something I'm going to take too much time because I don't even know how to backspace and everything. You get to

you take too much time on that thing of which you still have books to study and you still have to focus on entering information on how to backspace that thing and everything so it makes. So you find out that you get to be stressed and then you tend to be under pressure because you don't know how to do that thing on the computer but they expect you to get results proper results of which sometimes you find out that you have been trying to type and then you printed out that thing and you go back they said your numbering is correct and you have to go back and redo this of which you don't know how to do this they just tell you go and redo of which they never taught you how to use a computer and you go back and try to redo and you still mess up and you back and they say go and redo again of which that thing affect you because you busy doing research and the exams are around the corner and they stressing you that I have to study and to look for more information and there is limited information and there is textbook and when you have to go back again and focus on research of which the research is not an individual thing. Sometimes you find out that you are busy with someone in the group and that person is advantaged and they know computers and just say you only just type you only provide me with information and with that person you end up fighting in the group amongst ourselves.

Participant number 21: you lost your point?

Participant number 17:   the issue of, it affects every practice like now we are doing midwifery practical, they didn't demonstrate pelvic assessment they expect us to know pelvic assessment, they expect us to write pelvic assessment in the case register and if they didn't demonstrate and then in the clinical the sisters they say they can't demonstrate its painful and its time consuming and stuff like that. So if we had computers or access it the internet maybe we will look into those things in the internet and it will save time and also the demonstrations it will save time like they will display those things it will be easier that way.

Participant number 22: and again it also affects us in a way sometimes you find that they allocated us to work in Thabamoope, Thabamoope is very far and we go there and when we get there they say we didn't receive your allocation, where is your allocation, now they say that 2 of you must go before you start working or you must go to the nursing manager go explain yourself why you are here. So you tend to go there and start explaining your objectives of why you are there.   So if they had a

system where they could just send the allocations it will be easy they don't have to go from here because it's a long distance and they don't have to go, leave here to go to Thabamoope and take allocation by hand if they get to have something that they can easily send allocation then we will get to work easily because it also affects our practical because even if we get to Thabamoope they would say we didn't receive your allocations, where is your allocations. Then you start going to your group WhatsApp asking can I please have the number this lecturer so that I can ask that we are here and they are telling just that there is no allocation. Did you send our allocations or not? But if we had that system that is going to send the information to the clinical areas then it was going to be easy for us because that thing if affecting us, you find out that we cannot work because we don't have the schedule now we go running around asking for the number to call. Sometimes you call and maybe that lecturer is in the meeting and is there until the lecturer gets to speak to the manager at the hospital it also affects our clinical area, clinical practical I mean.

Ok I hear what you saying regarding the issue of ICT of how your learning is affected, you also spoke of the state as well of ICT in college. Then what do you think should be done regarding ICT?

Participant number 20: ok what I think can be done here since we have 4 levels, level 1, level 2, level 3, level 4 maybe we think these 4 levels they can choose at which level they can teach you the computer and focus only on the computer literate like in UL, the BSC course all the first years they teach them computer literacy and at the end of the course they get the certificate. I think that can also be introduced at the college not necessarily that, ok they introduce it maybe they can introduce it on the first year whereas it can help, many learners to get more information as they progress through other levels so they can introduce that course maybe even for 6 months maybe because here the classes are very in a specific way month to month, so maybe they can introduce it there.

Participant number 21: ok I think they should open a computer lab and they should include computer as a subject of these college. Isn't it that we have different subjects so computer must also be included.

What do you mean when you say they should open a computer lab? We have a computer lab in our college but it's not functioning so if they open it then it starts

working and functioning. The students will access it and they will be assistance there, they will be able to assist the students to get used to the computer.

Participant number 18:   what can be done is that during our orientation week we spent much of the time when you come to the college there is a month of orientation we spend most of the time doing nothing sitting in the class they can utilise that time to teach introduction to computers and to use internet and all those. On the other hand, it's not only learners who are computer illiterate some of the lecturers they have negative attitude towards internet and all. If we request them to have a laptop in the class to have our notes in the laptop they disagree with us so I think they can also talk to the lecturers tell them the advantages of using or having ICT in term of technology, I can say.

Ok tell me more about the negative attitude of lecturers regarding ICT?

For example if we are in class and we having let's say maternal deadline we have 15 of them and in class we are 16 we have to share as per group so you tell lecturers that you can download maternal deadlines on the internet and have them into our laptops so you go to class with the laptops and tablets they will say they are not allowed in class so we cannot use that during the lecture, whereas it gets explained better on the laptop and you can have it in the laptop so I think if they can talk to management or the lecturers on having a good attitude towards ICT it's going to work for us.

Ok number 21 noted: ok one other thing is that seeing that we have a library in our college I suggest that it must be opened 24/7 since will be studying for the examinations. Seeing that there are some students using the library to study so they can access it whatever time they want to study at the library.

Participant number 23 ill come back to you: I was suggesting if they can do the way in UL are doing when you are registered the first year you are particularly being registered on the black board then when you go on the internet you find your own personal blackboard with your information, they do for you things like that so if at the college when we register for first year then they also open this thing called the blackboard where they will send notes, send information there. I think it will be far much improved.

Participant number 22: in the beginning I mentioned that you find that you are go to the library you won't get help on the computer you find out that there is only one assistance of which that can also be improved maybe if they can get 4 because 1 helping you making copies and printing out things for people and other 3 helping those people on the use of computers I think that thing is going to be easier but they should also make a room for specifically teaching computers because it's going to disturb the process of people who are studying at the library they are busy teaching me this is how you do it and busy disturbing other people. So if they can find a small room at least where they are going to teach. With the issue of computer lab, I understand it but because of the government money and everything it's going to be a big issue you find that we can go and say we want a computer lab but you find that it will be established in the next 10 years. So if they can make a small room at least there is more people. They can even use a small class or classes of which they are not functioning they just there grapping dust and everything if they can clean up those classes and take 2 or 3 computers where us who cannot use computers can go there and teach those 3 people I think it's going to be better.

Participant number 19: what do you think should be done? I think I will add on participant number 23's point that they should create a main channel of communication that can be accessed by both lecturers and the students where we can post notes and stuff like that allocations, results on time and everybody will be able to be assisted.

Participant number 17: what do you think should be done? Also they mentioned WIFI connection before I think they can do WIFI connection here at nurses' homes so we can at least when we are in our rooms we something's. Like I can teach myself how to email, how to use those things like how to search for certain things. If we doing school work I can google things, assignments and al, that like if in the practical I saw something I can google that thing and see how better explanation instead of going to the books.

So with all these that you mentioning which you have mentioned now, what impact is it going to have in your teaching and learning process? How is your learning going to be affected?

About the improvement? Ok.

Participant number: I was going to say that our learning is going to be improved because we will know when coming to procedures how are certain procedures being done. We do deliveries in South Africa and we can also know how they are doing deliveries in the USA abroad we would be having access to the internet and we will be learning how they are doing things differently compared to us and again it was going to enhance our knowledge based on the information that they update now and then on the internet.

Participant number 21: I think our learning will be improved because since not everyone understands when she or she reads the books but if she can access the internet maybe she can get better understanding.

You want to say something participant number 22?

Can we go to the previous question I want to add on to that?

You can.

So I want to add on the WIFI thing, so if they can't afford to install WIFI in the buildings I have seen somewhere someone had put personally put the WIFI thing is going to limit us because ill only be able to use the WIFI when I'm around here if I go to town I won't be able to get access to anything or when I go home sometimes you find out that you are going home for the weekend and Monday you are writing when come back so it means that I'm forced to stay around here. So if the other thing some University of Limpopo students they get them, they give them data 10G each student to access the internet wherever they are. They can do that because that's the way to say you going to have to use it properly knowing that I only have 5G that I'm going to use for the whole month to study so you won even have to do other personal things on it. You will just know that this is specifically for school that 10G and even with that I think it's going to improve. Even when you're in clinical area they ask you a question you don't understand you can quickly go to your phone on the internet and search for it. You won't even have to come back and search when you get to the rooms. Sometimes you find that you get here and you are tired you forgot that they asked you what is placenta .... at clinical area you get here you sleep. So if it's that time immediately you search and find answers it's going to be easy.

Ok participant number 20: ok I think it will be much better if like the lecturers will allow us to come with our laptops or tablets in class for example you might find that we are discussing a certain topic you know that in health we have ambiguous terms sometimes you might find out that we need to search immediately so that we can understand even more better.

Ok I have listened to you guys and also what you had to say regarding the issue of ICT as well so I think we have exhausted the points at this point I'm not sure if there is anybody who would still like to say something.

Yes, number 20: ok I think another improvement we can introduce here at Limpopo College of Nursing is that they can introduce things like online applications since the paper one is time consuming and you find that we walk around a lot of times so if they can introduce that online applications you know that you will get a reply via online. You'll find that the system that they after using right now they call you. You find that you applied this year you find out early January you lost your phone or you might have changed your numbers due to certain reasons but if they introduce this online application you know you get it through your email, through sms things like that. So you keep in touch with the college.

Adding on his point like the SMS **ICSP** the system that we use to apply for contacts that thing we use to update our personal system our personal information. You know you have changed your cell phone numbers you go there and you update, you know that you have changed your email you go there and update so you know you have a password you can change the password to be whatever that you want so it's very much easier with that. So with the thing of telephone it was very difficult to get you but that time I changed so they had to call my high school teachers, my reference to get to, me so it was going to be easier if I had the system I was going to go and check it.

Participant number 19:   also to add on to also something like online registration like it was going it save the time for example in order for us to register they come there maybe they swap us from the lesson take us away from class and we have to fill in papers which is time consuming and also it is going to take time for them to enter it into the computers. It would have been easier if they did online registrations we can just go to the internet and register online.

Does anybody still have something to say? In the absents of no additions I would like to thank you for this opportunity we have come to the end of this interview so I would like to denounce you and say you are no longer participant number 17, you are no longer participant number 18, you are no longer participant number 19, you are no longer participant number 20, you are no longer participant number 21͵ you are no longer participant number 22 and you are no longer participant number 23. You are going back to your names now. Ladies and gentlemen thank you very much.

This is the part where you say thank you.

Thank you

ANNEXURE 9: NURSE EDUCATORS' TRANSCRIPT

Good morning everyone my name is Mr. Ravele TA, I'm a student from the University of Limpopo I am currently doing my masters so it is a requirement that I conduct research to qualify for the degree that I am doing which is Masters in Nursing Education, so I'm here today to collate data. My topic is perceptions of learner nurses and nurse educators regarding ICT facilities in teaching and learning. Before we start I would like us to put our phones on silence so that we won't have disturbances and I've distributed the consent form which also stipulates that you are allowed to withdraw from participation any point should you feel uncomfortable to continue with the participation. So feel free to do should you get to that point. We won't be using our real names for privacy purposes for now or for this purpose I would be calling you a participant. So you are going to be participant 1, participant number 2, then participant number 3, participant number 4, participant number 5, participant number 6, participant number 7 and participant number 8. So I would also reassure you that the information that is going to be collected here no one is going to get access except me and my supervisor.

So what are your perceptions regarding information and communication technology in teaching and learning here in Limpopo College of Nursing?

How do we answer by line or we just?
Participant number.
Ok, how long are we going to take?
A maximum of 45 minutes.

Participant number 7: according to me ICT is not taken seriously at our institution or the Limpopo College of Nursing. I'm saying this because it's not even included in the orientation of staff. When you come as a new staff you'll never be orientated to say maybe this is how we would communicate. The only thing that we have is the library and at the library, we do not use ICT as such but it's for books mainly, but I was hoping that as educators we would have a formal orientation on internet or ICT as a whole so that we as lecturers also can use the ICT the communication system

to communicate amongst ourselves. We even don't have email addresses you have to have your email address to address issues of education in the college. Thank you.

Participant number 4: I think, we are not using technology adequately like now we don't have the equipment, we don't have the laptops and then we have the computers in the offices but unfortunately they have lots of viruses so they are not working properly and I don't think we are using information technology adequately.

Participant number 6: I believe if we need to use this information communication technology we need to have facilities like WIFI in the institution which is not there we do try as lecturers sometimes but we are using our means like we have our WIFI. Sometimes we need to, we feel that you need to show them a video but then you need to take your own, these Telkom things then you use it in the class here in the college we don't have WIFI which I feel it's a need.

Participant number 8 noted: ICT on its own it's quite relevant to the institution particularly looking at the era that we are in. But unfortunately in our institution, it's not practical yes sometimes we do have the resources but are not in good working conditions. Now, this makes the ICT not to be considered, where even in management you will find that somehow it's discouraged where you find that when you have to email a test to one of your colleagues may be in Thohoyandou or Giyani management still discourage that. They'll prefer to send the test as a hard copy so you can see that we are not going anywhere with the ICT because according to me I can just an email and my colleague could receive it and we modify it there and there. So generally ICT is needed but looking at the nature of our institution we are still very far from that but we recommend that. Thank you.

Participant number 1 you had your hand up: I wanted to that with lecturers I don't think we resisted much to the transaction or change moving with times the only disadvantage is that we have to pop out from your pocket that is the other thing that is making people reluctant in using it unlike if the employer would supply us with means, resources, WIFIs and everything else that is needed for us to can use the ICT effectively.

Participant number 2: it would be nice for me working in the office because I would be communicating with my supervisor through an email, for example, I would write a report then email it to my supervisor but it takes me quite a long time for my report to reach my supervisor because I have to type, go and print it get a hard copy, there I find my colleagues waiting there is a que there and after printing, I have to go to my supervisor to give and still that hard copy at times isn't it that she has to edit it, but now she has to edit there and I must go again on the computer unlike sending her the email she edits it and send it back that would even save more time. So because of the lack of resources, I'm unable to do that there and there is a lot of time wasted.

Noted participant number 4: the other thing when we want to communicate with our students we have to use our cell phones because we don't have this information technology here. We have a room full of computers but they are not working so it's a problem.

Participant number 4 what do you mean you have a room full of computers that are not working?

They are computers they are new and we never used them that is the problem may be because we don't have a WIFI or what I don't understand.

Participant number 5 you had your hand up: thank you, at Limpopo College of Nursing here in Sovenga campus we don't use technology if you want to use technology you'll use your own money or your resources even in class its difficult because we use hard copies, we group students and technology is not used even if you feel it is necessary to use technology maybe by giving examples you want to use videos to show students videos is difficult because we don't have resources.

Participant number 7 you had your hand up: my perception is still that the college is not serious about technology why because what I wanted to put forth is even the schedule because we are dealing with marks here we are still using a pen to write students final marks. We do not have a software or whatever that can help us to, even excel ordinary excel is not being used in our college or our institution the college at large the Limpopo College of Nursing so we have to use red pens, blue pens to

put in marks for all the students for the whole college. And technology again is changing over time, isn't it? If they were serious the management or whoever is responsible we were supposed to be having workshops on 6 monthly bases because really technology is revolving as mam has already indicated that it's a serious thing we need it to have workshops 6 monthly every year, every time whether you are new or whether you are old whether you exist in the system or going for pension you need to have a knowledge of technology to deal with students and to offer quality education and even our products, our students as they go to the workplace as they get absorbed in the workplace they must be familiar with these things so what if us the lecturers we are not familiar with these things. What will happen to our products? That's my input, that's why I'm saying I perceive this college as not being serious about the changing world that we live in today, thank you.

Noted participant number 3.

Participant number 9: thank you for this opportunity I support the previous speaker that our college is not serious. It's not serious about the quality of products we are producing as long as we have a quantity so what is the type of learning we are producing the quality is not serious, they are not serious about it. Why am I saying so? For example, we are teaching learners who are technology orientated you cannot go to the class and be lecturing the traditional lecturing the students do not concentrate but the moment you say open up your phones and google 1,2,3,4 everybody gets alive. So but then now in a space where we do not have the resources to be able to provide these types of students we are teaching or to **augment** the technology-based students and the other thing we do not have the backup system, for example, we are dealing records of lifetime here should your computer crush everything is lost concerning the students. If it crashes while you haven't printed remember the printers also most of the time are offline they are not working due to whatever logistics and then you have saved a lot of things even in the memory sticks but if your computer crash, it crushes with your memory stick because of virus and then the information is lost and nobody cares. All they need is just the information where you get it nobody cares. we have computers like the other speaker said, we have computers we have the nice lab but it's not utilized and its wasteful expenditure so like, for example, our student I use my own money and internet to the

class when I want to teach the students using visual learning so you find that you have to portray a video to augment what you were teaching. That's my own money and I'm not being compensated on that and I cannot do that daily it's not possible. So those kinds of things even if you bring them forward the management doesn't care or the department or whoever is responsible doesn't care as long as at the end of the day you say 50 students passed and are graduating but what type of quality is it. So at the end of the day, you are just producing learners who just have a theory that there is this and this in nursing a patient but they don't know that thing they have never seen it in the ward, some they have never seen it in the videos or something like that but if we had enough resources for technology certain things they can see them on the videos that this is what we are trying to say even if you don't come across it in the ward but they have an idea of what is happening especially to keep them away because with the traditional way of learning the students are not learning anything. Thank you

Participant number 3 you had your hand up: let me support the previous speakers that the college is not serious about technology. We don't even have a technician on campus so if you are having problems with computers you have to consult fellow lecturers or maybe sometimes students to come and assist you. Another thing is that we don't have the anti-virus software where sometimes you lose the information that you are having. So you don't even really care to find us a quality anti-virus software.

I hear what you guys are saying regarding, oh participant number 4 you have something to say?

Yes, I want to mentioned again that especially towards end of the year where we have to write a schedule if you make a mistake so it's a problem maybe 4 lecturers write their marks before you and if you make a mistake you must go and do a photocopy come back recopy the other lecturers work and do your work. If you make a mistake is a problem its very much frustrating this thing of not having the technology.
Participant number 4 what do you mean schedule?

We write marks on the schedule maybe let's say its midwifery, PNS, GNS. PNS will write, GNS will write, midwifery we write but if you make a mistake you must come and write the GNS, PNS and the starter it's frustrating.

Participant number 7: just to add on that it also affects us as lecturers in Afrikaans we even say we have "oor klaps" because you find that even with the textbooks the students are using we strictly want hard copies of textbooks we want to see them. If the students are having them on their gadgets we become doubtful as lecturers. So you see the issue of technology is still a monster even in us. That's why we are saying the management should they take it seriously then the technology and the communication system will also become serious in the campus because I understand if the students have got the book on the gadget and the other one is having it on the hard copy I mean they are equally useful those 2 gadgets but because also us we are not sure of this and we do not even perceive it maybe as something very important then we want them to come to carry those books from psychiatry to GNS thank you.

Participant number 6: so I wanted to mention the other thing like the issue of technology was up to standard it was a lot of time because even if the students will get their results through the internet but they have to be placed on the notice board so we are still traditional we are not moving. It will save them the time they have to come back from home to come and look at the notice board.

So as you were talking I heard you mentioning participant number 7 that you have a library and I also heard participant number 4 saying that you have a room which is full of computers but not working. I just wanted to find out what is in the current situation here in Sovenga campus what are the ICT facilities which are available the once which you guys have?

Participant number 7: thank you, as I've said the library, we have the library it has got computers but there is no technician even in the library, why because of late if you can go to the library and put your USB there everything goes viral it goes to they say it's a short cut and there is no show. Isn't it's we have a USB show even have a show in the very library that we are using so it's not user-friendly it's there. It has got

google it has got computers, we have user words we have got password but the library also doesn't have a technician but if it has got a technician I don't know if librarians are also technicians we have got 3 librarians but I don't know if ever they are also trained concerning the viruses or operation of computers because of late really we are struggling. We don't have any information on our USBs because of the library itself.

Participant number 1: or are you covered? You asked us what we are using at the moment. At the moment we are using our cell phones or sometimes we have to go to another office to or maybe to access a computer or the internet. Like myself now my computer is not working and then I have to go to my next-door maybe if I want to write something from the computer so it's frustrating really.

Participant number 9: ok myself I try to improvise or to I don't know where to use or yes ill use the word improvise. In the class, for example, remember we do not have a WIFI internet in the college or the campus. Sometimes when we are busy in class you find that there are some things that we need to google so when you say to student google on your phone they complain about their data of which to me it's relevant even though it's for their benefit they would complain that they do not have data and I cannot force them to google things at their cost or maybe if they do not have data how are they going to google. So even our textbooks that we are using most of them they are old they are not updated so we need the current information of what is happening at the moment and the only source at the moment is internet so but then if we do not have access to the internet how do we bring in the evidence-based knowledge to the class. So we always teach students at some point we fill embarrassed we teach students that this and this is what is happening in the management of a certain condition and the student say now these days they do this so because it's what in the clinical practice they are doing at the current moment to the evidence-based. So we are far because we cannot access information so remember internet brings the whole world to your space instantly so even there are eBooks and whatever but you cannot access them because we do not have internet even in my office I do not have internet I utilize my internet so for you to provide proper education we need to improvise we use money from your pocket and at the end of the day we want that quality nurse who will be able to function efficiently in the

hospitals. But then when they do not practice that way after they have graduated we raise our ears we say but we taught them but what is it that we taught them. We taught them the old knowledge and things have changed but we couldn't have space where we can embrace the new literature that is available because we do not have the recourses we don't have the current books; we do not have access to the digital books because of lack of this technology thing.

Participant number 2: she has just reminded me of, I'm trying to support the lack of resources like let me give an example of the discipline that I'm in you find that we are only having 2 laptops and there is this I'm giving examples there is this so-called bosberad meeting and then the one that is attending obviously will take one laptop with her. Now the remaining lecturers who are supposed to go to class use the technology will be having one laptop and then that's why there is a problem because one should use what the book, the hard copies of what whilst one is utilizing say its level 2 and level 4 and classes are running concurrently. So now she will have to have that laptop and I will have to remain and another challenge is that if the very same laptop she is having a problem we are both stuck. So technology-wise we are not covered.

Participant number 5: thank you, I am participant number 5 and I am still on the point of laptop. In my department, we are 5 sharing 1 laptop which is currently crushed because of the viruses because we are using different USBs as some are having viruses and the laptop is not working and then the overhead projector we are sharing one being 2 departments. It's a problem because we are having some periods at the same time for both disciplines and then as for the internet because some of the offices we are having internet in the office which is always not accessible. The internet is only in the office if I want to use the internet in the class there is a problem so I don't see it being useful because it's only in the office and I was also not trained or in-serviced on how to access some of the information. So it's only there only to check maybe the news the google or I don't use it for teaching and learning so I think we need to be trained or in-serviced on how to use that internet.

Participant number 7 you had your hand up: I thank you very much for giving me this opportunity you will bear with us researcher your topic is a burning issue its a

burning issue. That's why we want to say everything with the hope that maybe you'll come up with some recommendations and we will be saved. What I want to say now is adding to what my colleague has already mentioned. What do we do when we have got this challenge? Sometimes we do trial and error or we just act on hearsays, how. There is this thing called free viruses, free antiviruses on google. You know sometimes I'll spend half a day trying to access or download the free antivirus but because I'm not trained I don't know how to do it. You find that I'm failing because there is this thing that says free antivirus for 30 days or 6 months or so much so you'll find me trying to access and access until I give up. Hence we say training is the best to show seriousness.

Participant number 9: alright uh researcher you are raising our emotions now. I never thought that this is serious but now I can feel it's serious because it's taking us back. As colleagues, we are also fighting due to this issue of technology, why. We do not have antiviruses so some of use we've got; we've installed our antiviruses in the campus computers. The computers that are allocated to us I have put my antivirus I don't take any one's memory stick in my computer so now colleagues come they want information from my computer and I say no, then they say this is a state computer. Is the state computer serviced and managed or maintained by me as allocated to me? And then another lecturer wants to put his or her memory stick in that computer allocated to me which is maintained by me for the free virus. So now when you disagree with that person so there is that commotion we start to fight to say you are trying to own this thing we want the information you see. Sometimes we want to print the information for the person the printer is not working and so this is a very serious problem because if the person put their memory stick all your information is gone and nobody cares the next thing you are going to class and you don't have the lessons plans, you don't have the schedules you are just going to start afresh and nobody cares they want all those things and you as the lecturers also you need to go to class but then now where is the information, the information crushed because of someone's memory stick. The virus is very dangerous so it has caused a lot of. Allow me Mr researcher.

Participant number 7: I wanted to tell you that we are not just saying these things. I even went to incredible connection to buy an antivirus called **Capeski** and then it has got information on the box and it says it lasts a year and you must activate it. I

brought the box I tried to install it you know what I failed it expired without working. It even expired it's still there the box is still there in my office I failed. And then there was somebody who was coming here to install the ant viruses I asked about it and he just said I don't know maybe it will be overload antivirus. But his antivirus he was supposed to install also failed he said he is coming back but they never came back. Because I did it that one failed because I thought maybe mine will work but it didn't work so we are frustrated the department or Limpopo College or whoever is responsible for teaching and learning students is not serious that's my perception, thank you.

Participant number 6 you had your hand up participant number 6 I'm thinking to say what quality products are we producing as we are training our students because we are not using any ICT. Because when they go to the workplace as I once came across one professional nurse to say at the workplace there are challenged because they can't use computers sometimes they need reports that are typed but some of their pieces of training they were never exposed to ICT so they find themselves challenged and as they work with other teams they work with physio's other people they find themselves very, not having the skill on the computer so they find themselves challenged. So my question is now how many students we are training to know how to use the computer? That's my concern because right now they qualify without knowing how to use the computer.

So with all this which you are saying regarding ICT how is it affecting your teaching?

Participant number 9, I'll come back to you participant number 5: as we've already admitted that it is impacting on the quality of learners we are producing. It sort of like we are teaching learners how to cram and go but there is no integration of the real practice with the theory that they are learning because some of the conditions or procedures you might not find them in the wards but if you embrace technology to see in other worlds wheat is the learner that we will produce will be broad minded because of the lot of things that are not there at the end of the day students assumed from level 1 up level 4 they will just say I assumed and assumed because even the very same books as we've said they've got old information we don't

have new books but if we have ICT we would download the new books and then disburse the new information so even us as lecturers it's not easy to dish out the information we want to dish out if we teach a patient about spatula if you can't project it for a student to see a spatula while in the hospital due to lack of resources the spatula is not there the student will just know the spelling of the spatula but the real spatula the student will not know. Like for example right now we talk about suctioning a patient and tracheal sucti9on there are not suctioning equipment in the hospitals due to lack of resources so you just singing to the students that you suction the patient, open airway then the student just know that there is suctioning but they don't know and they've never seen but if there was technology we could post videos show the students how suctioning is done so it really affects the quality of nurses we are producing and we are very far to reach the I don't know if its government or the millennium goals or the G4 whatever it is called. So because we are producing nurses that do not have the quality experience in nursing patients.

Participant number 5: thank you, it's hurting myself because it's time-consuming. I take a lot of time preparing for lessons because I have to go office to office borrowing books to prepare a lesson. So if we were having the technology it was going to be easy because I was going to access the books online. Again on the part of students, I feel that the lessons are boring because there's not much to view. We are just, they are just imagining things so our lessons are nor interesting because of a lack of resources. So it's also having a negative impact on students.

Participant number 8 you had your hand up: thank you, sir, just to answer your question of how does it affect teaching and learning. It affects it negatively because as we have indicated that we are using a traditional method which is only your discussion and lecture method so towards the end of the day you find that students are bored because they have seen teaching methods are used remember our classes starts at 7 o'clock up to 16 hour so 7 o'clock to 10 o'clock lecturer method and group discussion 10:30 to 1 o'clock lecture method and group discussion towards the end of the day from 1:30 up until 16:30 then you find that students are in class but psychological you can see that they are very bored because of the same teaching strategy that we are using so with ICT it was going to make a difference so in short it is affecting teaching and learning in Limpopo College of Nursing.

Participant number 3 you had your hand up: it brings out a lot of frustration on the side of the lecturers because once you lose information you have to start afresh because we don't have antivirus so we lose a lot of information so if it's a lesson then we have to start afresh, type another lesson plan and another thing is that it wastes time because I go to class with a mobile data projector because we don't have the fixed one we have to go there all the time so we have to connect sometime you connect when you want to project whatever it's not displaying on the screen so there is nobody to assist you on that. You find that maybe 15 or 20 minutes still trying to fix the computer and data projector. So even on the side of communication with the students,

let's say the students are in the clinical area you want to give them an assignment or maybe whatever you have to personally drive and go and give them that assignment if the technology was well advanced you can still communicate with them while they are in clinical area and give them whatever assignment or whatever thing you want to give totem.

Sorry to highjack **participant number 9**. I'm just baking the previous speaker another frustrating thing is the information remember we are dealing with a lifetime students records here should I pass on, the records must remain but in these days I doubt, if I pass if I don't wake up tomorrow they will be able to access the records because you save students records tomorrow they are not there. And I'm the only one who knows about that but if we had a backup system where we type the information, we compile the information and we just send it through to the backup system I don't know. Other institutions that are advanced after capturing the information go to ICT so it is saved there. Should anything happen the laptop gets lost or you're PC or there's a fire there is the backup of information. They can still print and do wherever but in our case should anybody come and say I want information for Ngwatle or so and so I'm telling you, you won't find that information the virus has chowed it and even the manual records also a problem because we thought it's a backup but by the time the records are needed maybe by so and so. Even the students' records at the students' affairs you find that they are not there. We are just having a problem in general that is affecting us but if we can have a backup system for ICT whereby we know that after I've saved the information and

I've sent it through to ICT or whatever or whoever the department they will save the information as the backup.

Participant number 5: thank you another thing is that as lecturers we become frustrated and angry as managers tell us to bring hard copies to them because we are not having the technology. We use hard copies we submit they get lost they always request to give them the same copies that we have submitted so it's frustrating for us and then another thing the students do not get up to that information because of lack of technology. We are using old books so they get old information.

Ok so with all this which you are saying regarding ICT state in this Sovenga campus, what do you think should be done?

Participant number 9: the answers are obvious to the researcher I think we have already covered them but then the problem is who we are talking to. We are talking we are raising concerns but we are always told about budget but the most annoying thing is that nursing is not taken seriously from National up until to where we are. If nursing was taken seriously in every nursing college especially for the government colleges, we would be having ICT so because it snot taken serious anything related to nursing training is abundant. It's up to you lecturers they expect you as a lecturer to work miracles for the students to be educated to be competent. But then now we've been complaining we've been saying these issues out and they say see what you can do. If the records are lost see what you can do. Not long our computers were stolen you expected to be in class the following day, see what you can do. You don't even have a computer in front of you but it's seeing what you can do. How do I see what I can do in somebody's house? I can see what I can do in my own house I know my budgets and everything but if I come to your house and then you tell me to see what I can do with what because you must give me something to see with. Thank you.

Noted participant number 4: I think maybe we should have a technician who must come to the offices maybe once a month to come and fix whatever is broken and then the other thing I think we should have the workshops where they teach us about the new developments about information technology.

Participant number 8: ok sir thank you, trying to answer your question. What can be done in Limpopo College of Nursing particularly the Sovenga campus? So I think management should be informed and be made aware about the positive effects of ICT so what we have discussed some of the issues include department they include national and others but still, at the college, the management should be informed about the positive aspects or the advantages of ICT because some other ICT relevant aspects can be done amongst us but if you find that management has negative attitude towards that as we were talking about emailing the tests some are not comfortable with that because maybe they don't, they are still traditional. Communicating with the students may be communicating with the students' class rep maybe using my cell phone or WhatsApp but sometimes it appears that it's unprofessional to the management but if the management can be aware of that and be empowered about that then it will be taken into consideration because these are the aspects that can be done in our level without involving many finances from the provincial or from the national or others. But if we are acquainted and the management I acquainted with what we are doing at the moment we are doing can introduce more. I think that is something that can be done with the Sovenga campus without including other sectors from outside. Thank you.

Participant number 1: I wanted to support participant number 9 what she said that nursing is not being valued because if it was being valued from the department then they will see a need to make improvements on the education system on the nursing education system that we are currently working under because I am sure that they know what is happening outside. They are fully aware of how other institutions are operating so why are they failing to do it for the nursing colleges. Why are not doing anything to help improve as much as we as lecturers we can say these I can do, these I can manage but if we not getting enough support from above then we are not doing anything because it's only what I can manage to do that is going to work and which is not much for the students which is not much on the final product because we not doing any justice on the final product, thank you.

Participant number 6: I will like to suggest or recommend that we have an ICT officer the department should see to it have a person who is dealing with ICT services for both lecturers and the students to have WIFI even in the classroom then it will

improve on our lesson plans on our facilitation in classrooms. And the rest will come together.

Participant number 9 you had your hand up, ok colleagues I want to sort of differing a bit with participant 8. Our management is very aware that technology is important to teaching and learning. They are aware but we've got a very serious problem in nursing in general. Nursing management or nursing is led by old people that have passed their retirement age. 2 they are reluctant to change if they knew things are coming especially with the younger people that are technology orientated to them it's an insult it's like a threat and then they don't want to hear anything. Once you start they don't want to listen because they feel you are threatening them on their positions or what I don't know. Secondly or fourthly another big challenge is our managers they are not teaching that's why they don't know what we are experiencing. The traditional method was good then but now with this generation that their concentration span is 10 minutes including myself I can't sit in a class for 30 minutes you will talk alone, I won't be listening but what I have seen in my class you allowed, you talk for 10 minutes you engage the students. I say to them open up your google let's look at 1,2,3 you'll see the whole class being awake they can even go for 7 periods without students sleeping because of technology but at whose expense. Our management doesn't care from local I'm not talking about nationally. Nationally it's something else and provincial but they know exactly what our challenges are. They always talk about the budget I don't know for health what are they budgeting for because education and training of nurses are part of the budget but if nursing could be taken seriously as other health professions for example like medicine. The way people with medicines are being taught it's very different from how our students are being taught is because ours, our managers being nurses they devalue our nursing and that is why it's going down. Let's embrace the people who know ICT the young generation in this profession they know about ICT lets embrace them and come up with the thing that technology is here to stay and there is no way in the next few years we will no longer have textbooks in classes it will be iPad. In most schools they are using iPad no more carrying of this big bag so I don't know how to convince this big management to say people you are going out and we are the once who are remaining and if we don't fix these things now we are going to be left in chaos. Thank you

Ok, participant number 7 noted: I thank you to let me support participant number 6 when she says there is a need for a technician in the department. Because I don't want us to be relying on another lecturer, we cannot rely on colleagues to get very unprofessional information. I cannot be going to young people but that's what I'm doing now and it's stressing me. I use young once to help me with technology and its tiring and it's delaying my going to class to teach those students for as long as I am still here old as I am I need a technician to come and help me until I reach my retirement age which will be comfortable with. So I support the one who is saying let's have a technician full time in the campus so that when I've got problems I'm class the technician will come before I go to class I find the technician has already put things out for me mine is to go ahead with lecturing. That's my view of a technician full time on campus.

Participant number 8 you have your hand up: thank you, sir, I'm still emphasizing the point that management should be empowered or be informed about the significance of technology in the classroom. Like one of the participant, my colleague indicated that the use of cell phones in the classroom it makes us to be awake. So now if for example it is in my class and I say let's open our cell phones google this and that you in the presence of my boss or anyone who is part of management may see it how do you allow cell phones in class because somehow. Because of the traditional method that she used or he used previously. As my colleague indicated that the traditional method of facilitating was effective then but now it's no longer effective so but if management is aware of that and is empowered and is made aware that this another method that can make us to be awake from 7 o'clock up until 16:30 then it will be quiet relevant so but if the management is not empowered that is when we will have some differences. One of my colleagues will use then it will differ according to the supervisor then she or she accept that but when it comes to me then it's a problem that is when students are behaving inappropriately in the classroom because you as the teacher you allow them to use their cell phones in the classroom. Can you see the incompatibility that would be talking about but if the management is made aware and emphasize that ICT in the classroom can be effective then we will be on the right track. Thank you, sir.

Participant number 4: we previously mentioned that we have a computer lab that is not working I think maybe if they can open that computer lab and let the students and the lecturers utilize it I think it will be better and then the other thing another recommendation is of the installation of the antivirus in our computers. I think it is a very much important antivirus on our computers.

Participant number 9: the most crucial thing with the antivirus is they've installed antivirus in our PCs but they are only for 7 days so if we have a technician they will be able to update our antivirus. Remember antivirus needs to be updated so if it's not updated you can have it and you'll still have the virus in the PC so what we need I support the idea of having a technician even though you know treasury and the budget but that's a recommendation to a technician a full-time technician. They know that they will address the issue of antivirus updates in our computers including those in the lab because our memory sticks will be moving from the lab to our own allocated computers in the offices. So I think this issue of updating we are leaving it somewhere because people just think we need an antivirus in the PCs because of lately we were told that somebody is coming to install antivirus in our laptops it lasts for 7 days from there you are back to Trojan and it crushes everything.

Alright I have listened to all that you have been saying and I hope that the report which I will provide will be taken into consideration by so saying I would just want to draw us your attention that we have come to the end of this interview and before we disburse I will like to denounce you and saying you are no longer participant number 1, you are no longer participant number 2, you are no longer participant number 3, you are no longer participant number 4, you are no longer participant number 5, you are no longer participant number 6, you are no longer participant number 7, you are no longer participant number 8 and you are no longer participant number 9. You go back to your original names now. Thank you very much for this time and opportunity.

Before you pause or you close or we disburse should you feel to come back you are welcome for any clarity

ANNEXURE 10: Editor's letter

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To Whom it May Concern

I hereby confirm that I have proof-read the document entitled: "Perceptions of Learner Nurses and Nurse Educators Regarding Information and Communication Technology in Teaching and Learning at the Limpopo College of Nursing, South Africa" authored by Tshililo Austin Ravele and have suggested a number of changes which the author may or may not accept, at his discretion.

Each of us has our own unique voice as far as both spoken and written language is concerned. In my role as proof-reader I try not to let my own "written voice" overshadow the voice of the author, while at the same time attempting to ensure a readable document.

Please refer any queries to me.

Andrew Scholtz

ANNEXURE 11: Independent coder's letter