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EVALUATION OF UNDERGRADUATE NURSING STUDENTS' CLINICAL LEARNING IN A DEVELOPING COUNTRY: A FORMATIVE ASSESSMENT FRAMEWORK

Annie Nancy Msosa

A thesis submitted to the Faculty of Health Sciences, University of the Witwatersrand for the Degree of Doctor of Philosophy

Johannesburg, 2017

DECLARATION

I, Annie Msosa, declare that this thesis is my own, unaided work. It is being submitted for the degree of Doctor of Philosophy at the University of Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.

……..

30th day of May 2017

DEDICATION

I dedicate this study to my family Edson, Mphatso, Annie, Florence and Nompumelelo

In memory of

My father Shadreck Magombo (1979)

My mother Mary, Fennia Magombo (2009)

My Best friend, Mary Kamphinda Banda (2017)

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Poster Presentation:July 2014

"The Nurse Educators' Perspectives of Clinical Teaching in the Skills Laboratory: A Malawian Experience". Presented at the Sigma Theta Tau 26th International Nursing Research Congress in Puerto Rico, USA, 23-27 July 2015.

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ABSTRACT

Simulation laboratories help students build a strong foundation of clinical competence in an environment that is stress free prior to clinical placements. A number of Investigations regarding simulation impact in college-based training institutions in developed countries have taken place. However, there is paucity of such research from nursing education institutions in developing countries. With this in mind, an evaluation study was conducted to assess how clinical teaching, learning and the OSCE method of evaluation are experienced from the nurse educators' and students' perspectives in the skills laboratory. Additionally, the study sought to determine the effect of the Formative Assessment Framework for learning in the skills laboratories. The specific objectives were to explore the students and educators' perspectives of teaching and learning and describe how the current mode of assessment, namely, the OSCE is experienced. From these perspectives, the researcher extrapolated the factors and issues that affect students' clinical learning and the OSCE. Finally, the objective was to develop, validate, implement and evaluate the impact of a Formative Assessment Framework (FAF) by determining and comparing students' competence in selected general nursing and midwifery skills between and within the experimental and control groups.

A sequential, mixed methods design was chosen, starting with a qualitative approach in phase 1 followed by a quantitative approach using a quasi-experimental design in phase 2. In phase 1, in-depth and focus group interviews were used to collect data from nurse educators (n=6) and students (n=45). Data were organized and managed with the MAXQDA software version 11 and were analysed thematically. The synthesis of the teaching, learning and evaluation gaps with input from the literature reviewed on concepts of formative assessment and deliberate practice supported the development of a Formative Assessment Framework (FAF). The FAF involved a minimum of 2 demonstrations on each procedure before and after practise sessions, a minimum of two supervised return demonstrations, feedback and supervised practise. Nursing education experts validated the FAF using the Delphi technique. Quantitative data from the senior students (n= 101) and junior students (n= 160) was collected using the FAF. Data was collected using structured checklists from the eighteen selected nursing and midwifery procedures. Pre and post-testing of the students' performance and competence was tested. Quantitative data were analysed using the STATA software version 13.

Qualitative findings showed that demonstrations and return demonstrations contribute effectively to students teaching and learning in the skills laboratories. The practise sessions, presence of the nurse educators and availability of resources make the learning environment more conducive than teaching and learning in the practice sites. However, students have limited practise sessions, which seriously affect teaching and learning in the skills laboratories

negatively. In terms of the OSCE, the method is good because the environment resembles the clinical setting; it is appropriate for large student numbers and ensures standardization of the examinations. However, the preparation for the OSCE is inadequate.

Quantitatively, the paired t-tests, Wilcoxon sum rank and Wilcoxon, sign rank tests, were used to test the results. Usage of a formative assessment framework had a significant effect on senior students' clinical performance in physical examination of a pregnant woman, the triage process in under five clinic, contraceptive implant insertion, contraceptive implant removal, breast examination, episiotomy repair, management of the third stage of labour, subsequent examination of the newborn and speculum examination procedure among the junior students. There were also significant effects on the junior students' performance in the procedures of blood transfusion, female catheterisation, health education, and insulin intravenous injection, naso-gastric tube insertion, airway suctioning and wound dressing except on colostomy care. The mean differences between the control and experimental groups for most of the tested procedures were significantly different. The results were statistically significant with a p-value of <0, 05, set at 95 % confidence intervals.

In conclusion, the integration of the FAF in students' learning in the skills laboratories has the capacity to improve the student's clinical performance and competence. The use of the FAF has the capacity to prepare a student adequately for the summative OSCE in the skills laboratory and ultimately, his/her clinical competence for better patient and client care.

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Above all, I would like to give glory to the Almighty God and the unseen heavenly host that kept me company. Glory and Honour be to YOU.

Finally,

"Let us hear the conclusion of the whole matter: Fear God and keep His commandments, for this is the whole duty of man" (Ecclesiastes 12 v 13)

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LIST OF ABBREVIATIONS

BSN	- Bachelor’s Degree in Nursing
COMREC	- College of Medicine Research Ethics Committee
FAF	- Formative Assessment Framework
HREC	- Human Research Ethics Committee
KCN	- Kamuzu College of Nursing
NLN	- National League of Nursing
OSCA	- Objective Structured Clinical Assessment
OSCE	- Objective Structured Clinical Examination

CHAPTER ONE

ORIENTATION TO THE STUDY

1.1 INTRODUCTION AND BACKGROUND

Since its origin, nursing education internationally and nationally has gone through many changes from what it was to what it is today. Prior to and during the era of Florence Nightingale, the training of nurses took place at the hospitals by skilled nurses and midwives working in mission hospitals (Sellew and Nuesse, 1946). The ward sisters conducted the training (Potgieter, 1992). Nursing and midwifery training used the apprenticeship model, where learners acquired their skills while providing a service to the patients in hospitals (Bastable, 2006). Since then, remarkable changes have taken place in nursing education. Apart from moving away from the hospital-based training, new developments such as the amalgamation of colleges of nursing and midwifery, their transfer into higher education and the need for nurses and midwives to attain higher degrees or a higher level of study have occurred (Nicol and Glen, 1999). These changes have led to an increase in the time spent studying other subjects such as psychology, sociology and health service management systems, to mention a few, in order to comply with the standards of higher education (Russell, 2005). As a result, time spent in the clinical sites reduced for students to transfer theory into practice appropriately (Scheckel, 2009). This has led to the recommendation by many researchers to increase the utilization of college simulation laboratories. It has been suggested that simulation laboratories help students build a strong foundation of clinical competence in an environment that is stress free prior to clinical placements (Lateef, 2010; Aggarwal, Mytton, Derbrew, Hananel, Heydenburg, Issenberg, MacAulay, Mancini, Morimoto, Soper, Ziv and Reznick, 2010). Advancement in nursing programs also led to the development of accreditation boards to ensure that the quality of nursing and midwifery care and nurse-midwifery training programs are being met (Keating, 2006; Quinn and Hughes, 2007; Scheckel, 2009; Armstrong and Rispel, 2015).

O'Connor (2006) asserts that college laboratories/simulation laboratories or resource centers provide an opportunity for students' introduction to the technical skills they will be using throughout their career as professional nurses and midwives. O'Connor (2006) further explains that a well-designed laboratory facility enables the student to practice the full range of nursing and midwifery activities including communication techniques, problem-solving strategies and documentation practices, in addition to the usual technical skills. Such hands-on experience provides a good foundation for the eventual transfer of skills to real life clinical exposure (O'Connor, 2006). As a result, the use of

simulation laboratories to strengthen clinical teaching and learning among students has been widely supported by the literature. Nursing and midwifery training institutions, therefore introduced college-based clinical training initiatives which have guided nursing institutions on the types and implementation of curricula methods of instruction and evaluation of learners in the classroom, the use of simulation laboratories and clinical sites (Doll in Billings and Halstead, 2012; Gaberson and Oermann, 2007; Quinn and Hughes, 2007). With the emerging technologies, the skills laboratory has expanded from being just a center for psychomotor skills practice and performance. Carton (2012) asserts that the contemporary skills laboratory serves as a multifunctional teaching and learning center. In addition, Carton states that the learning resource center, regardless of the different names used by various institutions, remains a central hub of clinical instruction for students. The nursing curricula prescribe the appropriate knowledge, skills and attitudes good for the learner to be a safe practitioner, having acquired the prescribed competencies upon completion of the program. In many developing countries, the skills laboratory remains a center for clinical teaching and learning of students and not for continuous professional development, as is the case in developed countries (Carton, 2012).

Findings from studies investigating the impact of the college-based training initiatives from developed countries exist, but there is paucity of such research from nursing education institutions in developing countries. With this in mind, the author sought to conduct an inquiry into how clinical teaching, learning and the OSCE experiences from a developing country perspective in the skills laboratory. Furthermore, the impact of the Formative Assessment Framework on teaching and learning of the students in the skills laboratories was tested. Thus, the present study wanted to provide evidence to support or refute the effectiveness of clinical training initiatives in the college-based skills laboratories from a developing country perspective. Quinn and Hughes (2007) point out that there is a wide range of curriculum models existing for clinical teaching and learning, each reflecting the “particular ideological stance of the author”. However, for the purposes of this research, the study was based on the behavioural objective (product) model type of curriculum, which is currently in use for the training of the undergraduate nurses and midwives at Kamuzu College of Nursing in Malawi.

1.2 NURSING EDUCATION IN DEVELOPING COUNTRIES

1.2.1 The Malawian Context

Although nursing and midwifery education has developed rapidly in many developed countries, African nursing and midwifery education has lagged behind in many countries (Mogobe, Bruce and Meyer, 2009; Klopper and Uys, 2013). A number of factors have contributed to the delay, with poverty being one of the major setbacks to the delayed development in many African countries. This background has had an impact on nursing and midwifery education and nursing practice as well. Thus, the health sector has lost a high number of nurses and midwives to developed countries in search for better living conditions and education. Malawi is one of the African countries that has endured the most of an exodus of nurses and midwives to the United Kingdom and others. In a survey conducted in 2011 by the Malawi Ministry of Health and its development partners, reports that there is a 65% shortage of nurses and midwives in Malawian health facilities (Malawi National Training Operational Plan, 2011). In another study conducted by Hoffman, Mofolo, Salima, Hoffman, Zadrozny, Martinson and Horst (2012) on the use of guardians in Malawian hospitals, reported that there is only one health care professional to every 277-hospital patients resulting in poor patient care. Additionally, the clinical teacher to student ratio in Malawi is one to twenty or more students (Malawi National Training Operational Plan, 2011). As a result, clinical teaching and the students' learning has been extremely difficult compromising the students' learner role. More often, the teacher becomes the provider of care while the learner is like a pair of hands due to the severe nurse and midwife shortage (Stockhausen, 2005). The extreme shortage of nurses and midwives in Malawi compelled the government of Malawi to mandate to all nursing and midwifery training institutions to increase the intake of students because they are a major contributor of nurses and midwives in the country (Malawi National Training Operational Plan, 2011). KCN is one of the colleges that responded to the nation's need for more registered nurses and midwives by increasing students' intake from 115 to 250 students beginning from 2012. The Malawi government has pledged to support and maintain quality teaching and learning in all nursing education institutions by educating lecturers in clinical teaching and conducting preceptorship programs in clinical teaching, learning and evaluation. In addition, the government has also pledged to support the college with clinical supervisors on secondment. However, clinical teaching still remains a challenge to the college because of the few registered nurses and midwives in the hospitals to teach the students, when the nurse educators are busy with other academic responsibilities (Peabody, Taguiwalo, Robalino and Frenk, 2006; Olson, Davis, Milazi, Lufesi, Miller, Preidis, Hosseinipour and McCollum, 2013). There is also a lack of appropriate resources for clinical teaching in the hospitals because their priority is on resource mobilisation for patient care. As a

result, the college staff realised the need to strengthen clinical teaching and learning in the skills laboratory so that students could develop their competencies prior to graduation. As part of this initiative, the college provides teaching resources to students allocated in the hospitals, to improve their learning experience.

1.2.2 Kamuzu College of Nursing Context

The Kamuzu College of Nursing opened in 1979 with two campuses, the main campus situated in Lilongwe and the other in Blantyre. It is the oldest college for the training of high calibre registered nurses and midwives in Malawi. The initial programs were diploma in general nursing and a certificate in midwifery on a compulsory basis. Currently, it runs a four year integrated Bachelor's degree program in nursing and midwifery for undergraduate students, a two-year post-basic Bachelors' degree for mature entry students, Masters and Doctor of philosophy programs for postgraduate students. The college has over 500 undergraduate nursing and midwifery students from year one to year four. It utilises a competence-based curriculum for the generic Bachelor of Science degree in Nursing and Midwifery (BSN) program. The undergraduate students in year one and two cover the foundation courses of nursing including community, medical and surgical courses. In addition, allied courses such as sociology and psychology became part of the course. Students in year three and four learn reproductive health courses, such as gynaecology, midwifery and community midwifery. The college uses a semester system beginning with theoretical courses with exception of the fourth year. Clinical teaching and learning in all courses takes place in both the skills laboratory and various clinical placements. The curriculum has stipulated hours for clinical learning in the skills laboratory, during all theoretical blocks, to allow teacher demonstrations and student practice. As such, students are expected to use the skills laboratory during the allocated times, as well as during their free time to observe demonstrations, practise different skills and have feedback. These laboratories have basic resources for each level to allow the students to acquire new knowledge, skills and attitudes and to attain the required competences appropriate for each level. Implementation is through a modular system and all nursing courses with a practical component have specific practice modules. Apart from clinical assignments and projects, student clinical performance evaluation occurs through objective structured clinical examination (OSCE) both in the clinical laboratory and at the clinical sites at the end of each semester. OSCE grades are weighted more (70%) than the marks the students obtain from the clinical assignments and projects (Kamuzu College of Nursing Curriculum, 2008).

1.3 MOTIVATION TO THE STUDY

A great deal of research has been done in nursing education globally to identify the issues and factors that promote or hinder effective clinical teaching and learning in both the clinical sites and the simulation laboratories from a developed world perspective. Thus, most of the knowledge in nursing education is from these countries and not all fits with the needs and conditions of the developing world. To date, very little research findings exist on enhancing teaching and learning without compromising the quality of nursing education, in the developing world skills laboratories. This poses a big challenge to adaptation and implementation of the evidenced-based ways of teaching, learning and evaluation because in most cases feasibility studies have not been undertaken. In some situations, there is bench marking prior to implementation. As such, this prompted the researcher to conduct the present study to evaluate how clinical teaching, learning and the OSCE experiences in the skills laboratory since its inception at the college. The other observation is that Kamuzu College of Nursing and all the other nursing institutions in Malawi adopted the skills laboratories for clinical teaching and learning as well as the OSCE as a method of nursing students' evaluation. There is minimal usage of the skills laboratories despite the evidence that support their effectiveness.

1.4 OVERVIEW OF THE THEORETICAL UNDERPINNINGS

This section briefly introduces the theoretical concepts that anchor the entire study. The major concepts for the study include curriculum, deliberate practice and formative assessment. Some of these concepts together with results from phase one of this study led to the development of a Formative Assessment Framework. The section begins with a literature review on a competency-based curriculum followed by a discussion of the literature on formative assessment and deliberate practice. A detailed discussion on reviewed literature follows in the appropriate chapters.

1.5. CURRICULUM

The term "curriculum" describes a plan or design that guides an education institution to administer its programs (Quinn and Hughes, 2007). It encompasses all the educational elements such as learning outcomes, the subject matter, teaching and learning process and assessment under the umbrella of education and training (Quinn and Hughes, 2007). Quinn and Hughes (2007) further postulate that the elements relate to each other in that curriculum development begins with the formulation of learning outcomes. These learning outcomes guide decisions about selecting the subject matter and the teaching and learning strategies that are relevant and appropriate for the institution (O'Neill, 2010). Some of these strategies include lectures, skills laboratory learning experiences, portfolios and clinical placements, which help the learner to achieve the learning

outcomes. Finally, the curriculum stipulates the learners' mode of assessment using relevant assessment methods to determine the achievement of the learning outcomes stipulated in the curriculum. However, a wide range of curriculum models exist such as subject centred models, problem-based models and experiential and social critical models just to mention a few (O'Neill, 2010).

In this study, the focus is on a competence-based curriculum model in use at KCN. Emphasis in this model is on developing competent learners through the acquisition of specified competencies (Kouwenhoven, 2009). For the purposes of this study, competence is the potential ability and capability of a student to achieve the key up-to standard professional tasks in the different levels of academic progression characterising the nursing profession (Schroeter, 2008; Kouwenhoven, 2009; Carton, 2012). At the college, teaching and learning is structured according to the competence-based curriculum but the curriculum is not actually followed in practice. Theory is presented according to the number of hours stipulated in the curriculum. Likewise, the clinical practice schedule is adhered to with the correct number of practical hours. However, a gap exists in the teaching and learning of students in the simulation laboratories at the institution. Although the timetables stipulate the number of hours for skills laboratories teaching and learning experience, most of the hours are for theory, which results in inadequate readiness of the undergraduate nursing students for successful clinical learning practice. In addition, the Objective Structured Clinical Examination is the stipulated mode of evaluation for most of the undergraduate nursing courses in assessing students' clinical competence in the skills laboratory. However, most of the students gain their clinical learning experiences in the hospitals and community outreach clinics. Students have very minimal clinical learning exposure in the skills laboratory. Thus, using this evaluation strategy in the skills laboratory does not correlate with the principles of teaching and evaluation in a competence-based curriculum. It is recommended that students be examined where they have had appropriate learning experiences in the same learning environment where teaching and learning has occurred (Quinn and Hughes, 2007; Kouwenhoven, 2009). Kouwenhoven (2009) further derived a list of characteristics that form what this researcher calls the 'archetype' of a competence-based curriculum, in that the educational process places the learner as the focus, and considers learning to be an active process and not a passive process. Furthermore, the learner, exposed to regular practice and feedback has room for improvement in the performance outcomes.

In addition to the above characteristics of a curriculum, Harris, Eccles, Ward and Whyte (2012) advocated marrying the concept of deliberate practice in nursing as a framework for simulation. Engaging in deliberate practice provides opportunities for individuals to develop appropriate skills through engagement in tasks and situations that have been

determined to be relevant. This background led to the development of a formative assessment using the concepts of deliberate practice and formative assessment in order to fill the gap identified from the qualitative experiences of the teaching, learning and evaluation at the college.

1.5.1 **Deliberate Practice**

Deliberate practice is a concept that has been studied mostly in music, sports and chess (Wiel, Bossche, Jansen and Jossberger, 2010; Ericsson, 2015). Deliberate practice refers to the individualised training activities that aims at improving the individual's performance through repetition and successive refinement (Ericsson and Lehmann, 1996). Similarly, Barr (2012) defined it as a highly structured activity aiming at improving performance when coupled with immediate and regular feedback. The emphasis for its success is placed on supervised regular practice designed by a teacher or coach and immediate feedback to allow the learner to identify the learning gaps and refine them with new knowledge, skills and attitudes within the period of practice. The impact of deliberate practice was tested from violin students attending an international music academy was done (Ericsson, 2015). On evaluation, the violinists indicated that time spent practising individually, on weekly set goals by their teachers was the main activity that improved their performance. The results showed that violinists with many practice sessions had significant differences than those with less time of practice. In medical education, deliberate practice enhanced the quality of laparoscopic surgical performance in a randomised controlled trial (Hashimoto, Sirimanna, Gomez, Beyer-Berjot, Ericsson, Williams, Darzi and Aggarwal, 2015). Similarly, Joyce, Byrne, O'Connor, Lydon and Kerin (2015), in their study results showed significant differences in reduction of blood products prescribing errors through deliberate practice. Macus, Vakhari, Kirkman, Murphy and Nandi (2012) commented that the application of deliberate practice is limiting in neurosurgical trainees because the costs of failures is very high (death or serious morbidity). In addition, it is not always possible for the trainees to benefit from the surgeons and the opportunities to repeat a neurosurgical procedure is unpredictable. Further research in simulation-based deliberate practice is proposed. This is contrary to the findings of a systematic review by McGaghie, Siddall, Mazmanian and Myers (2009) who commented that deliberate practice is best suited in medical simulation education and conforms to the adult education principles. Its goal is to have a constant improvement in skill and knowledge acquisition other than just aiming at a minimum level. However, in relation to nursing education, Liou, Chang, Tsai and Cheng (2013) conducted a study at Chang Gung University in Taiwan. The purpose was also to examine the effects of deliberate practice and technical skill testing conducted before the clinical practicum on nursing students' clinical competence. The learners

were taught different technical skills tasks and tested before and after on the performance and feedback sessions. Analyses on the different subscales revealed significant differences on the students' professional ethical behavior, core nursing skills and procedures, developing nursing care plans and performing advanced nursing procedures. Analysis of the findings from the few studies above concluded that deliberate practice is a concept that has not been a common practice in nursing education. However, it has the capacity to improve students' clinical performance in nursing students based on the study by Liou, Chang, Tsai and Cheng (2013). Sessions of practice and feedback improved performance and professional ethical behavior of the students. Lessons from the writings of Macus, et al. (2012), the author, attempted to test the concept of deliberate practice in conjunction with the concept of formative assessment in the skills laboratories. In the same manner, an attempt in this research is made, to determine the effect of the formative assessment framework during the teaching and learning of students in the skills laboratories.

1.5.2 **Formative Assessment**

Formative assessment in this case is a feedback process in which both the teacher and the learner receive feedback from the response of teaching and learning and make necessary adjustments before the final summative evaluation (Dunn and Mulvenon, 2009). Summative evaluation refers to the final assessment where the teacher measures the achievement of learning outcomes (Peterson, 2008). Peterson (2008) states further that formative assessment enhances motivation, helps the learner to identify the learning gaps, fosters self-effort, clarifies desired outcomes and helps in the diagnosis of specific misunderstandings.

Some principles in Malawian nursing students are adhered during theoretical teaching and learning but irregularly in practice sites and the skills laboratory. The use of summative clinical evaluation has been a common practice in the skills laboratory at the end of each semester. Thus, the study aimed at assessing clinical teaching and learning and the OSCE experiences by both nurse educators and learners. Furthermore, the study aimed at assessing whether deliberate practice embedded in formative assessment (Formative Assessment Framework) in the college skills laboratory would make a difference to students' clinical competencies.

1.6 **ASSUMPTIONS**

At present, the college skills laboratories have basic resources for all the nursing students pursuing the undergraduate Bachelor's degree, such as simulation manikins for general nursing, gynaecological and midwifery procedures. These resources allow

students to practice a number of skills, such as bed bathing, bed making, oxygen and drug administration, conducting normal and abnormal deliveries of babies, and insertion of a catheter. The environment is more conducive to learning than the clinical sites where the students go for their clinical experience. The author's assumption is that having these resources in big or small quantities in the skills laboratory, the nurse educators and students should use these skills laboratories as learning centres to develop new skills. They have the ideal environment for maximising practice prior to clinical placements. In addition, the students will gain more hours of learning as preparation since OSCE, the method of evaluation, which has more weighting than the other methods of student evaluation, is used there.

1.7 PROBLEM STATEMENT

The competency-based curriculum model, which places emphasis on the achievement of learning outcomes, is the model of choice for nurse education in Malawi. Nursing courses within such a curriculum have specific modules with a practical component to meet the clinical learning outcomes. Skills laboratories are widely used in nursing education institutions worldwide, as well as in Malawi to allow the students to acquire the appropriate clinical competencies in their different levels of study. Regular practice, formative assessment and feedback are implicit for learning effectiveness in an environment that allows mistakes and their rectification, without fear of causing harm to patients. Anecdotal evidence and laboratory attendance records suggest that college students use the skills laboratory irregularly and infrequently, despite specified practical hours on students' weekly schedules during theoretical blocks. Students, lecturers and the institution as whole lack the commitment in the use of the skills laboratories. Comparing the learning environment in the skills laboratories and the clinical practice, skills laboratories are equipped with adequate resources than the practice sites. Students require many hours to practice more in the clinical site that currently is not feasible due to staff shortage, in adequate learning resources and increased patient population (Hoffman, Mofolo, Salima, Hoffman, Zadrozny, Martinson and Horst, 2012). Evaluation of students' competence occurs through the Objective Structured Clinical Examination strategy in the skills laboratory contributing to 70% of the final clinical grade for the students. Yet students spend most of their clinical learning practise outside the skills laboratories. In addition, there is students' apathy regarding learning and weakened lecturer accountability for practical teaching in the skills laboratories. This among others is not in tandem with curriculum expectations.

RESEARCH QUESTIONS

Identifying the gaps in teaching and learning in the skills laboratory would help the students and nurse educators to identify the need for regular practice. Additionally, it helps the students make corrections through the feedback that eventually improve their competencies (Peterson, 2008). Therefore, the following research questions guided the study:

- How is clinical teaching and learning perceived and characterized in the skills laboratory from both the student and educator perspectives?
- How is the OSCE method of evaluation experienced by the nurse educators and students
- What needs to be changed or modified in the teaching, learning and OSCE, as a result of their perspectives?
- How does a Formative Assessment Framework affect clinical teaching, learning and OSCE in the skills laboratory?

1.8 STUDY PURPOSE AND OBJECTIVES

The purpose of the study was to evaluate clinical teaching, learning and the OSCE method of evaluation in the college-based skills laboratories and determine how a Formative Assessment Framework (FAF) affects the quality of clinical teaching and learning. The specific objectives of the study were set in two phases as follows:

Phase 1:

- To explore and describe the students' and educators' perspectives of clinical teaching and learning in college-based skills laboratories.
- To explore how nurse educators and students experience the current mode of assessment, namely the OSCE.
- To extrapolate from these perspectives, the factors and issues that affect students' clinical teaching, learning and the OSCE in the skills laboratories.
- To develop and validate a Formative Assessment Framework (FAF) for the assessment of clinical teaching and learning in the skills laboratories

Phase 2:

- To implement the validated Formative Assessment Framework for the assessment of clinical teaching and learning among students in experimental and control groups; and
- To evaluate the effect of FAF by determining and comparing students' competence in selected general nursing and midwifery skills:

- between experimental and control groups of students and
- within groups

1.9 RATIONALE FOR THE STUDY

Although simulation-based teaching and learning has been in existence for more than 40 years, much of its successes come from the experiences of Western countries like the United Kingdom, United States of America, Canada and Australia. There is little evidence on the successes and challenges of the use of simulation laboratories in a developing country. Therefore, the study evaluated teaching and learning in the skills laboratories in developing countries. In addition, an assessment of the OSCE method evaluation took place. The findings from the study would inform the nursing institutions in Malawi and other nursing education institutions for proper modifications. The identified gaps in teaching and learning and the OSCE led to the development of the FAF. The success of the use of the FAF in teaching and learning will contribute to the body of knowledge in nursing education.

1.10 SIGNIFICANCE OF THE STUDY

Conducting an evaluation of clinical teaching, learning and the OSCE method of evaluation in a college-based skills laboratory is very vital in institutions of learning. The evaluation process critically examines the activities, characteristics and outcomes to make judgments that help improve the quality of teaching, learning and evaluation strategies. The use of the newly developed and tested formative assessment framework has the capacity to improve the quality of teaching and learning in the skills laboratories. The adoption of the FAF by educational institutions in teaching and learning and other researchers will eventually improve clinical teaching and learning practises, assessment and evaluation of the students. Thus, students' clinical competences upon graduation should improve.

1.11 DEFINITION OF CONCEPTS

A student is the undergraduate learner pursuing a Bachelor of Science in Nursing and Midwifery degree at the University of Malawi, Kamuzu College of Nursing. 'Student' will be used interchangeably with 'learner'.

Junior students are the students in the second of study while **senior students** are the students in third and fourth year of study

Nurse educators refer to both lecturers and clinical instructors responsible for the clinical teaching of students in the college laboratory and in clinical placements.

Clinical learning refers to the acquisition of the cognitive, affective and psychomotor nursing skills by the student nurse. The context for skills acquisition in this study was the skills laboratories.

Skills laboratory or simulation laboratory is a designated college space that is equipped with simulated material resources for students to practice nursing skills and the professional roles of patient care.

Formative assessment framework is defined as a process of incorporating assessment clinical learning tools and activities in simulated learning to determine evidence on what students know, identify teaching and learning gaps on students' clinical performance and modify instruction to improve clinical learning and competence. It is characterized by regular supervised practice and individual feedback during teaching to improve clinical knowledge, skills, attitudes and competencies.

Competence refers to the potential ability and capability of a student to achieve the key up-to standard professional tasks in the different levels of academic progression characterising the nursing profession.

1.12 THESIS OVERVIEW

The thesis has seven chapters. Chapter one contains the introduction, background and describes the context of the study and the theoretical underpinnings that guided the study. Chapter two describes the literature reviewed and studies that are relevant to the study. Chapter three describes the research design and methods used to answer the research questions and meet the study purpose. Both qualitative methods followed in phase one and quantitative approaches followed in phase two have been described. The chapter has also highlighted the ethical permissions obtained prior to the conduct of the study in both phases. Chapter four presents the results and discussion from phase one supported with the relevant literature and verbatim excerpts. The results are in four parts: parts A and B contains the results from the in-depth interviews with the nurse educators and parts C and D present the results from the focus group interviews with the undergraduate nursing and midwifery students. In chapter five the process of developing and validating the Formative Assessment Framework has been described. Chapter six presents the results and discussion from phase two while chapter 7 presents the main findings, recommendations, limitations and conclusions of the study.

1.13 CONCLUSION

In this chapter, the introduction, purpose and study objectives are presented. The context where the study occurred has been described, followed by, a brief description of the theoretical background, motivation, problem statement, research significance and the meanings of the terms used in this study. Finally, the outline for the thesis outlined. The next chapter presents the literature review that aided the process of enquiry

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

Research regarding theory-practice integration has been going on for a number of decades worldwide. Many studies have been conducted to demonstrate that the use of the skills laboratories help students integrate theory and practice in practical settings. In this chapter, a review of the literature relevant to the study of undergraduate nursing students' clinical teaching and learning and the OSCE is presented. In addition, the literature in relation to formative assessment and a review of deliberate practice. However, most of the reviewed literature and research studies available are from the developed countries. The literature as well as research findings from developing countries are very scant.

The chapter begins with a brief background of nursing education globally that reflect the progress of nursing education and the related developments with a special focus on clinical nursing education. This is followed by the theoretical underpinnings of the study which have guided the process of inquiry to answer the research questions and to develop a Formative Assessment Framework (Figure 2.1)

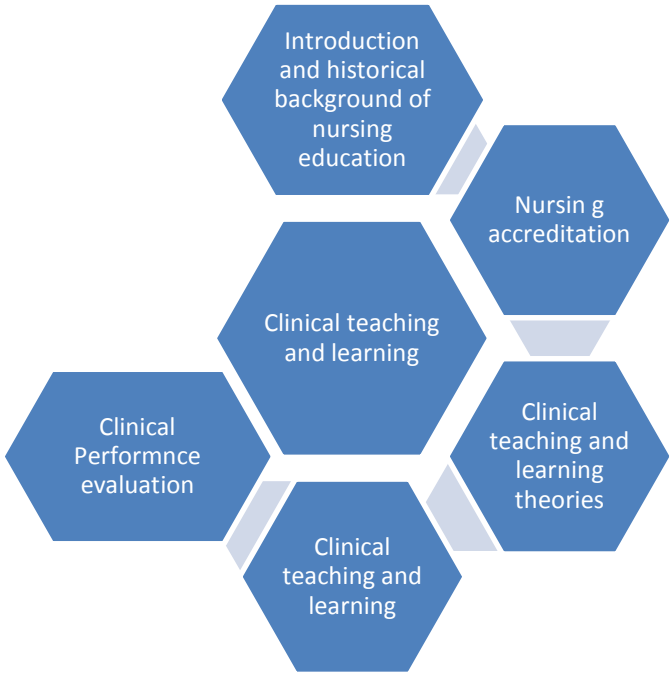

Figure 2.1: Literature Map

The literature map highlights how nursing education came into existence emanating from the historical background of nursing. It also explains the phases of nursing and nursing education developments to meet higher education requirements and still maintain professional nursing and midwifery standards.

2.2 HISTORICAL BACKGROUND OF NURSING AND NURSING EDUCATION WORLDWIDE

Nursing and nursing education concurrently, have gone through tremendous changes throughout the time man has lived. Irrespective of the tremendous developments that experience internationally and nationally, nursing originates from the concept of caring which has been there throughout human history. Important to note, is the fact that nursing and medicine developed concurrently for many centuries (Sellew and Nuesse, 1946). Although modern scientific medicine developed rapidly, nursing development lagged behind. Bedside care was of poor quality though the medical profession appeared to be developing. The different challenges in the hospitals of the world such as lack of good bedside care for patients and the advent of the humanitarian movement which revealed and published the sufferings of the poor, the sick, children and many more led to developments in the caring aspect as well (Sellew and Nuesse, 1946). Therefore, the modern profession of nursing founded by Florence Nightingale became a response in order to improve the caring of the poor, the sick, the children and the wounded. The public recognition to her devoted services in the army hospitals, led to a contribution of money for her to establish a school for nurses (Seymer, 1960). The aim was to train nurses for various hospitals in need of nursing services upon completion.

Thus, the opening of the Nightingale school in 1860 marks the beginning of modern nursing and nursing education era. Marked progress existed in nursing education in many places where nurse training was non-existent under the influence of the Nightingale nurses (Seymer, 1960).

In pursuit of new ideas was Florence Nightingale who believed that nursing education should take place outside the hospitals (Scheckel, 2009). The rationale was that nursing students needed to learn more theory in anatomy and physiology, surgery, chemistry, nutrition, sanitation and professionalism (Stewart, 1943 cited in Scheckel, 2009). Several nursing leaders also continued to believe in university education for nurses and persistently advocated for baccalaureate nursing education. Therefore, in 1909, a new nursing program began at University of Minnesota (Scheckel, 2009). Scheckel (2009) further states that after the initial nursing program, efforts by the

National League for Nursing (NLN) to redesign the diploma nursing programs took place. Since then, many nursing schools followed the university system nationally and internationally. These developments trickled down to all countries including Africa though literature is silent on how nursing education developed in most African countries. The number of hours for theory and clinical practice varies from one institution to the other. The new developments led to the advent of accreditation organizations at national level for monitoring purposes.

2.3 NURSING EDUCATION ACCREDITATION

Advancement in nursing programs led also to the development of accreditation boards to for quality nursing care and nursing programs. Accreditation refers to the review by an external accreditation body to determine whether the college or school of nursing is meeting the professional standards (Scheckel, 2009). It is a means of fostering quality improvement through the feedback given after accreditation process. In measuring the quality of nursing programs, the accreditation body nationally establishes standards or criteria for use in this process. These standards consider how the school is fulfilling its mission, philosophy, curriculum and to what extent the qualifications of the nursing faculty facilitate the preparation of the proper nurse graduate (Keating, 2006; Quinn and Hughes 2007; Scheckel, 2009). Different countries have different accreditation boards but with one common agenda, to monitor and approve nursing education. The nursing education programs prepare graduates to practice professionally and meet the required standards and competencies. In Malawi, the Nurses and Midwives Council (NMC) is the regulatory body of nursing and midwifery education, training, practice and professional conduct of nursing and midwifery personnel. The NMC opened in 1966 under an Act of Parliament and Cap36:02. However, currently, the nursing council operates under the Nurses and Midwives Act No.16 of 1995. The overall objective of the Council is to develop, maintain, monitor and evaluate the nursing and Midwifery nursing education. It also regulates and controls nursing and midwifery profession in order to improve the health status of people in Malawi.

2.4 NURSING CURRICULA

Many authors have defined curriculum in different ways. Doll (cited in Billings and Halstead, 2012) defined it as the formal and informal content and process through which learners gain knowledge, understanding and develop skills that alter attitudes, appreciations and values. In education, Quinn and Hughes (2007) describes curriculum as a plan or design in which an education provision is based on. It encompasses all the educational elements such as learning outcomes, the subject matter, teaching and learning process and assessment under the umbrella of education and training that

relate to each other. From this premise, a nursing curriculum is the overall nursing education program reflecting the schools mission, philosophy, course of study, and outcomes of learning and methods of program evaluation (Quinn and Hughes, 2007; Scheckel, 2009; Doll, 2012). To date, different nursing curricula exist. However, common to all curricular are the four basic components namely, learning outcomes, subject matter, teaching and learning processes and assessment (Quinn and Hughes, 2007). What differs is the point of emphasis based on the models that the institution has adopted. During the Nightingale era, the curriculum aimed at developing character traits and habits for a service to the hospital (Tomes, 1984 cited in Keating, 2006). As such, the number of theoretical hours and practice were depended on the needs of the hospital the schools were affiliated. The program length varied from one year to three years. In all the nursing schools, lectures and practice were common but the length, quality and arrangement varied. In some schools, the proportion of theoretical hours was larger than clinical and vice versa in other schools. Thus, in response to these differences, a standard curriculum developed in 1913 by the American National League of Nursing to guide those responsible for nursing schools (Symer, 1956; Keating, 2006). This was in form of recommendations in book form and the reaction of others to this second curriculum led to a series of reviews in 1917, 1927 and 1937 with input from a smaller group to a broader group in the later developments (Keating, 2006). Upon each review, the curriculum book increased the number of classroom hours while decreasing the recommended hours for patient care. Keating (2006) further states that between 1950 and 2000 nursing curricular transformation occurred tremendously with the influence of accreditation processes. The quality of nursing programs became an important issue. The basic principles behind accreditation were and still are to ensure that the graduate nurse has the right professional status and interests legally safeguarded and to protect the public from semi or untrained nurse-midwives (Seymer, 1956; Keating, 2006; Scheckel, 2009).

With the ongoing developments, discoveries of new theories and curriculum models of teaching and learning in general education and nursing education occurred. Therefore, the next section will briefly present the literature reviewed on nursing education theories and models currently in use in nursing education.

2.5 CURRICULUM MODELS

Because of the advances in technology, nursing knowledge, new trends and issues in patient care, a variety of nursing curriculum models are in use today. Some of the models include the Stenhouse's process model of curriculum, the Beattie's fourfold model and the behavioural objectives model of curriculum also known as a competence-based curriculum (Quinn and Hughes, 2007). However, in this study the discussion centers on a competence-based curriculum because of its use at the college. Institutions have a mandate to use a combination of models and are not limited to one model.

2.5.1 Competence-Based Curriculum

According to Tyler (cited in Quinn and Hughes, 2007) education is a means of transforming behaviour of human beings in terms of thinking, feeling and overt action. In this model, curriculum designers ought to answer the following four questions during the development of this curriculum:

- *What educational objectives should the school seek to attain?*
- *How learning experiences be selected to attain the objectives?*
- *How learning experiences should be organised for effective instruction?*
- *How the effectiveness of the learning experiences be evaluated in the learner?*

In summary, the cornerstones of the model derived from the above questions include learning outcomes, content, methods and evaluation with emphasis placed on achievement of objectives. Kouwenhoven (2009) further asserts that in this model of curriculum the emphasis is on developing competent learners through the acquisition of specified competencies. Quinn and Hughes (2007) further postulate that the elements of a curriculum relate to each other in that curriculum development begins with the formulation of learning outcomes (see Figure 2.1).

In a competence-based model, the learners' behavioural outcomes or competencies become the point of emphasis. Billings and Halstead (2012) assert that shifting the focus from the teacher and teaching, learner centered curriculum focuses on student learning needs. Furthermore, Billings and Halstead (2012) state that in a competence-based curriculum, understanding the learning background, experience of the students to enroll in the program, identifying how the courses fit into the overall program outcomes and competencies becomes core prior to course design. Thus, learning objectives and competencies should be according to the different levels of learning domains: cognitive, affective and psychomotor domains. In accordance to the different levels of academic progression, the elements should be clearly understood by the students, with relevance

to clinical practice and be able to guide performance evaluation. Faculty are held responsible for quality learning experiences and have to consider strategies that facilitate effective learning even when student numbers increase (Burruss and Popkess, 2012). Student competences become the subject matter theoretically as well clinically. As such, in a competence-based curriculum, the learner competences become the subject matter. Thus, it dictates the teaching and learning environment for theory-practice integration.

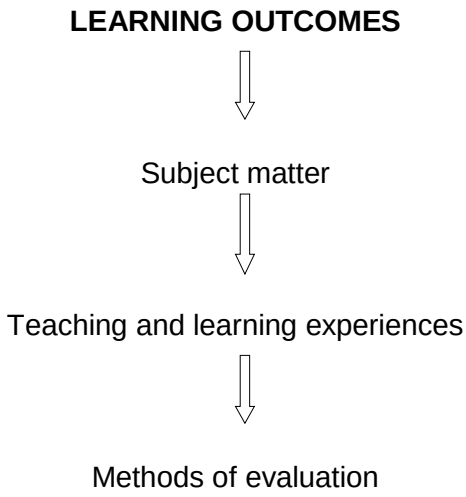

Figure 2.2: Components of a Competence-Based Curriculum

(*Quinn and Hughes, 2007*)

In this case, at the college under study, faculty have shown lack of sensitivity to students' learning environmental needs. The under-utilization of the skills laboratories, the use of the skills laboratories hours for theory and clinical placements away from the teaching institutions have shown that there is partial commitment to curriculum requirements and expectations on students learning environment.

In summary, nursing education curricula remain dynamic. Its response to the various trends and issues affecting the consumer of nursing will continue to influence the nature and implementation of nursing curricular today and in future. In order to produce a competent nurse-midwife for the ever-changing health care system teaching and learning environments needs improvement. . The section that follows describes the environment for clinical teaching and learning in a competence-based curriculum and the theoretical underpinnings adopted in the study for the development of a Formative Assessment Framework.

2.6 NURSING EDUCATION THEORIES OF CLINICAL TEACHING AND LEARNING

A number of nursing education teaching and learning theories exist. Learning, studied from the lenses of many disciplines specifically psychology, physiology and sociology that conventionally are divided into two main categories: behavioural and cognitive theories. There are two groups of cognitive theories. However, in this study, the discussion centers on the nursing education theories. The theories of behaviorism are from the works of Pavlov, Thorndike and B.F. Skinner, the psychologists who developed the foundational principles of behaviorism derived from learning through observation of animals (Emerson, 2007; Quinn, 2007; cited in Bruce et al., 2011). However, the fundamental premise states that the environment in which it occurs influence behaviour. Rewards provide an encouragement to the learned behavior. However, it is true that not all behaviors that are learned are good and acceptable behavior. As such, learning professional behavior is very vital. Observation, monitoring and feedback are required by educators with relevant expertise and are a key for professional behavior development. Thus, the learning environment in the skills laboratories has the capacity for nurse educators to build professional behavior in the undergraduate students.

The success of nursing faculties in clinical teaching and learning depends on their prior understanding of the theoretical foundations of clinical nursing practicum, models of clinical nursing education and the characteristics of today's' students. This knowledge provides the guiding principles in terms of the methods of instruction and evaluation of clinical learning because the clinical practicum is termed as the heart and soul of nursing education where nursing knowledge shapes it into professional practice (Emerson, 2007). Burns, Beauchesne, Krause and Sawin (2006) commented that successful clinical teaching and learning is a complex process that requires personal attributes and expertise of the nurse educators and all that participate in clinical teaching. Familiarity with the characteristics of the learners is critical. Learning to teach clinical practice remains profoundly experiential, and is a form of on the job training (Emerson, 2007). Learning is a process for acquired knowledge with meaning for growth, change in thinking, feeling and doing (Emerson, 2007).

2.7 THE ENVIRONMENT FOR EFFECTIVE CLINICAL TEACHING AND LEARNING

The environment for practicum experiences refers to any place where students interact with technology, lecturers, patients (real or simulated), guardians and other members of the health care system for the purposes of acquiring appropriate clinical learning experiences. In today's language, it can be the simulation, skills laboratories or learning resource centers. Stokes and Kost (2012) define the practicum environment as an interactive network of forces that influence students' clinical learning outcomes within

the clinical setting. The environment provides opportunities for students to learn and transform theory into practice. During the era of Florence Nightingale, hospitals were the major environments where teaching and learning took place. The learners had more hours in the hospitals and had to acquire their skills by providing a service to the patients in these hospitals (Bastable, 2006). The move away from the hospital led to an increase in time spent studying other courses such as psychology, sociology, chemistry and many more others in order to comply with the standards of higher education. The number of hours spent in the clinical area reduced greatly and it led to the advent of the college-based skills laboratory termed learning resource center in other institutions, to maintain the quality of a competent nurse midwife. Thus, the centers are like a first stop over for the students in the transformation of theory into practice prior to contact with the real life experiences with the consumer of health care.

However, Gaberson and Oermann (2007) posit that clinical teaching is a complex interaction that takes place within a planned environment between a student and a teacher. The teacher encourages the discovery of knowledge through deliberate teaching actions that leads the students to go through a learning process phase that results in a change of behavior. Teaching is not dispensing information or demonstrating skills. Instead, teaching is a series of deliberate actions to guide students in learning and it requires active participation of the learner to facilitate learning and acquisition of new knowledge, skills and appropriate attitudes. Gaberson and Oermann (2007) further describe clinical teaching as a process that has five steps, each step influencing the other. The process of clinical teaching includes identifying the outcomes for learning, assessing the learning needs, planning clinical learning activities, guiding learners in clinical practice and evaluating clinical learning and performance that serve two purposes namely formative and summative. The formative learning role aims at providing learning needs from the students for further instruction. The intention is not for grading purposes. Formative assessment diagnoses learner needs as a basis for further teaching different from determining grades or certify competences. It evaluates what the student internalized rather than what the students ought to learn more in order to improve their competences.

2.8 CLINICAL SITES TEACHING AND LEARNING

There are a number of studies on teaching and learning experiences of students at the clinical sites. In a systematic review, shortage of staff and resources has shown to affect student learning during their clinical placements. In the review of all the studies conducted in Canadian and Australian students, 112 studies were extracted, analysed and grouped using the Ecological model (Killam and Carter, 2010). This review

highlighted how political, environmental, community, nursing, organizational, relational and personal factors affect students teaching and learning positively or negatively. Thus, the findings are informative for planning purposes to facilitate effective clinical teaching and learning environments. Similarly, Stockhausen (2004) conducted a study in Australia to determine significant events of undergraduate student nurses during their clinical experiences as they learn to become nurses. The purpose was to discover experiences of students in the clinical area through reflective journals and group debriefing. From the results, the issue of staff shortage contributed negatively to students learning because the students ended up being used as a pair of hands. Patient care was a priority other than students' teaching. Thus, in such environments, simulation learning becomes the possible option for students' clinical teaching and learning. From a different perspective, students had difficulties to integrate theory into practice in real practical settings (Sharif and Masoumi, 2005) in Iran. The aim was to determine students' experiences during clinical placements. In their case, lack of support from the educators contributed to the difficulties of transferring theory into practice. The clinical educators were considered to be more of evaluators than clinical teachers. However, the report says that effective learning still occurred when they had friendly ward in-charges and nurses who were willing to teach them.

In line with challenges of theory transfer, Morgan (2005) in Ireland, Irish students were able to integrate theory to practice during their first practical placement. The objectives of the study were to investigate where students were able to learn from, what skills they learnt during their first placement and to identify if the skills laboratories were helpful to the students prior to their clinical placement. A qualitative design with the incorporation of the Heideggarian approach (Mohajeri, 2006) of phenomenology was used to meet the research objectives. The results indicated that the skills laboratories are essential in preparing students prior to clinical placement. Correct demonstrations and adequate time for students to practise in the laboratory are very essential. Students were able to remember most of the skills they learnt in the skills laboratory. They had confidence in performing procedures they practiced mostly in the skills laboratory. In Australia, Penman and Oliver (2004), found positive findings on how the skills laboratory clinical learning environment contributed to students' clinical learning. The study purpose was to assess the impact of clinical placement areas for the Bachelor Nursing program. The response indicated that the students' clinical experiences were pleasant and satisfying. The staff members were supportive and they gave them good orientation, instruction and supervision. This contributed to many students achieving their clinical objectives. Only few clinical placements were reported to contribute negatively to students' learning in the clinical area.

In Africa, Eta, Atanga, Atashili and D'Cruz (2011) conducted a study on challenges of nurses and nurse educators during clinical teaching in Cameroon. The study objectives were to describe the major challenges faced by clinical educators, assess the impact of these challenges on quality of clinical teaching and supervision, and to describe the strategies they use to overcome these challenges. The results were grouped into two, those related to the students and those related to the nurse educators themselves or the environment. These challenges made the quality of learning to be poor and resulted in failure to meet the learning objectives and students not being taught the ideal techniques. To overcome some of the challenges, nurse educators learned to use the internet for evidence-based information and where possible, they participated in research to keep abreast with the current trends and issues in nursing. Their study shows that clinical teaching in developing countries can be challenging just like in any other countries like Australia. In addition to the above study findings, Ahmed (2008) and Junger, Schafer, Roth, Schellberg, Ben-David, and Nikendei (2005) commented that it is not easy to standardize the learning experiences in practice sites because the appropriate learning experiences are not always available for all students. Resource constraints among other factors make teaching and learning difficult. Strand, Naden, and Slettebo (2009) further commented that while hospitals in developed countries are stocked with resources and fewer patients/clients, hospitals in developing countries have fewer resources with increased number of patients, making it difficult for students to gain the appropriate learning experiences.

In summary, the few studies above have highlighted some insights on how various clinical sites impact on learning experiences of students. From these studies, one can deduce that there are variations in clinical learning environmental challenges for students. Thus, the clinical environment has the capacity to influence clinical learning positively or negatively. It is therefore, the responsibility of the nurse educators to assess the learning environments prior to clinical allocation of the students.

2.9 SIMULATION AND SKILLS LABORATORIES

Due to the profound changes in nursing and nursing education, creative and innovative methods of delivering the curriculum are advocated to provide cost-effective and quality programs to diverse students' population (Dillard and Siktberg, 2012). Hospital-based clinical teaching and learning only, is no longer reliable for the preparation of a competent graduate with comprehensive learning experiences in the health profession (Ahmed, 2008; Junger, Schafer, Roth, Schellberg, Ben-David and Nikendei, 2005). Apart from the classroom, both the college-based skills laboratory and clinical area

experiences make essential contributions to the development of knowledge, skills and appropriate attitudes (Budgen and Gamroth, 2007). Carton (2012) posits that the learning resource center of today is the central hub of clinical instructional facility for students considering the challenges in the various clinical settings. It is further said that in developed countries, the resource center/skills laboratory is not only for students but also for faculty and other professionals' continuous professional development. On the other hand, in most developing countries, the skills laboratory remains an area for clinical teaching of students. However, regardless of the specific name used today, it is no longer an area for teaching psychomotor skills only but it also encompasses the teaching and learning in the cognitive and affective domains (Carton, 2012; Gaberson and Oermann, 2007).

In response to technological changes in the world today, simulation has been designed to encourage students 'active participation for them develop appropriate practical skills in a simulated learning environment (Sinclair and Ferguson, 2009; Lapkin and Levett-Jones, 2011). Based on affordability, three types of simulation with different abilities to mimic clinical reality namely high fidelity, medium or intermediate fidelity and low fidelity simulation (Yuan, Williams and Fang, 2011). High fidelity simulation uses expensive manikins that require enough financial input. As such, simulation is common in first world countries. On the other hand, the adoption of medium and low fidelity simulation has taken place in developing countries. Although, simulation based training has become more common in nursing education, evidence still shows some inconsistencies on its use and effectiveness of technology in simulation. In response to this challenge, researchers have conducted studies with different foci to provide evidence on the effectiveness of low, medium or high fidelity simulation.

Yuan, Williams and Fang (2011) conducted a systematic review of all studies conducted from 2000 to 2011 on the contributions of high fidelity simulation to nursing students' confidence and competence. The aim was to describe the available evidence on the effects of high fidelity on students' confidence and competence. Findings from qualitative data showed that participants were confident to care for critically ill patient requiring intubation, cardio-version, defibrillation, tube insertion and many more procedures. Similarly, data from quantitative studies showed that students had confidence in clinical skills for managing patients with post-partum problems, newborn baby problems and chest problems. Conversely, some studies found no significant difference in confidence between students who participate in high fidelity simulation and those who do not participate. Findings from these studies reported that students' confidence and competence increased during clinical practice. However, the studies

identified a gap in measurement tools to evaluate high fidelity simulation outcomes and competence. As such, there is need for further conduct of research in nursing education on measurement tools for competence. Similarly, Harder (2010) conducted a systematic review of literature in schools of Health Sciences to examine the effectiveness of simulation as a teaching tool. The study findings supported the hypothesis that using simulation as a learning tool influences students learning. There is increased confidence and competence among students who use simulation tools than those that have not used simulation. More studies are required to develop the evaluation tools for simulation use.

From a different perspective, Lapkin and Levett-Jones (2011) conducted a study in relation to the resources in the simulation laboratories. The study purpose was to determine the costs associated with the use of medium and high fidelity manikins in the simulation laboratories The findings showed that medium fidelity manikins are more cost effective than high fidelity manikins and that it was possible to obtain the same effects on clinical reasoning, knowledge acquisition and student satisfaction outcomes. This is valuable information to help decision makers when planning to invest in simulated learning environments. On the other hand, one of the systematic reviews on use of the skills laboratory revealed that students who have been practicing in the skills laboratory experience difficulties in applying the skills to the clinical setting if they are not exposed to the clinical area early enough during their practical experience (Dornan, Mangolis, Scherpbier, Spencer and Ypinazar, 2006). As such, suggestions for early students' clinical exposure emerged from the study findings.

Still in line with skills laboratory learning, Widyandana, Majoor and Scherpbier (2012) conducted a study in Indonesia. The study purpose was to compare experiences of students exclusively trained in the skills laboratory only with peers who had both the skills laboratory and clinical experiences. Students with both skills laboratory and primary health care experiences had outstanding performance in clinical reasoning, interpersonal communication and confidence. The need to expose the students early for their clinical experience for them to benefit from both experiences was emphasised. There was a documentation that the skills laboratory should not replace clinical learning experiences. Widyandana, Majoor and Scherpbier (2010) also conducted a study on transfer of clinical skills in a clinical laboratory to the care of real patients in a developing country context. The study findings showed that students had confidence in skills they had trained. Delays to real life experiences in hospital settings after skills laboratories contributed to students' difficulties in transferring the skills on real patients especially in

invasive procedures. They also had problems with communication with young and old patients.

On the other hand, Lund, Schultz, Maatouk, Krautter, Molterner, Werner, Weyrich, Junger and Nikendei (2012) conducted a randomized controlled trial on the effectiveness of intravenous carnulation skills laboratory training and its transfer into clinical practice. The aim was to compare the effectiveness of skills laboratory training and bedside training on medical students at the University of Heidelberg in Germany. The results showed that both groups had good communication skills with their patients. However, a significant difference occurred on the time taken to conduct the procedure of cannulation, accuracy and professional conduct. The students trained in the skills laboratory performed the procedure faster, accurately and were more professional than those who had bedside training. They were able to conduct the procedure successfully during their first attempt while those who had bedside training had second or third attempts supporting the use of the skills laboratory prior to clinical experience.

A quasi-experiment took place by Lewis and Ciak (2011) on the impact of simulation on nursing students at St Margaret Nursing College in Pennsylvania to investigate the impact of simulation laboratory experiences on critical thinking, students' satisfaction, self-confidence and cognitive learning. Significant differences on the responses on satisfaction and self-confidence occurred. Furthermore, there was significance change in cognitive knowledge increase in the students' learning. There was no significant difference in critical thinking despite the use clinical judgment, the nursing process and appropriate nursing interventions. This is similar to the present study in which the effectiveness of a Formative Assessment Framework in the skills laboratories was tested. Significant differences emerged from most of the clinical procedures except two during the formative assessment framework.

A study by Grant and Davis (2007) in Canada on simulation on medical laboratory science took place to identify foundations for an evidence-based simulation laboratory. Positive results showed that simulation learning enhance quality-learning environment and facilitates internalization of knowledge, skills and attitudes. In addition, it provided good opportunities for assessing students and enhanced uniformity in learning experiences and addressed the problem of human shortages.

A study by Maginnis and Croxon (2010) in Australia aimed at identifying the link between what nursing students learn in simulated clinical laboratory sessions and what they experience during their clinical placements. The results indicated a range of 90% to

100% of the respondents having improved performance in wound assessment, pain assessment, aseptic technique, patient movement including most of the basic nursing care procedures. Students had problems in the assessment of the neurovascular system, Glasgow coma scale and withdrawal assessment tools in patients with substance abuse. Not all students were able to conduct these procedures appropriately. About 30-60% had problems in report writing and giving handover of patient care. On a different perspective, Strand, Naden and Slettebo (2009) conducted a study to gain knowledge about how students become competent in the skills laboratory at a medium sized University in Norway. The laboratory provided a conducive environment for trial and error during the practice sessions, student learnt through interactive teamwork. Teachers' guidance and probing questions facilitated students' learning. These findings are informative on how learning can be improved through guidance, effective communication and stimulation of critical thinking.

Apart from the above study findings, the skills laboratory has shown to have a positive impact on self-directed learningin institutions of higher learning (Keetsemang, Mugarurwa, Shahidi, Maputhege, Chipps and Brysiewicz, 2008). Students had more time in the skills laboratory and the equipment was of reasonable quality for them to gain the clinical skills. Some students expressed dissatisfaction with the quantity of the equipment and trained personnel for quality supervision in the laboratory. This entails that supervision of students requires adequate and well prepared nurse educators to be available to supervise students despite the environment being none threatening.

Furthermore, Godson, Wilson and Goodman (2007) conducted a study to determine whether learning occurring in the clinical skills laboratories can be counted as practical hours or should remain as theory hours. Specifically, the objective was to conduct an evaluation on how competent and confident the students were when they returned to the placement area after the skills laboratory experience. A positive clinical performance response was recognized in that students felt competent and confident to practice in the clinical placements.

In summary, the above study findings have highlighted the advantages of using the skills laboratory. Despite some challenges during their use, simulation offers learning opportunities for successful transfer of theory into practice. Students gain confidence and competencies for different nursing procedures that are taught in simulation laboratories.

2.10 MOTIVATION STRATEGIES DURING SIMULATION LEARNING

Although the skills laboratory is said to have a positive influence on students' clinical knowledge, skills and attitudes creativity to motivate students' continued use of the skills laboratory is required (Carton, 2012, Montes, Castro and Riveros, 2009). These authors state that students have low motivation in the use of the skills laboratory and some students use it to only meet the course requirements and pass the courses.

This observation prompted Montes, Castro and Riveros to conduct a study to motivate students' use of the skills laboratory at the School of Electrical and Mechanical Engineering in Colombia. A qualitative assessment showed that the traditional method did not promote students' autonomy and limited creativity. A new approach was introduced composed of Vee diagrams where students formulated a central question and describe all the concepts. The new method promoted practise making learning sessions more enjoyable, interesting, creative and motivating. Absenteeism for practical sessions reduced significantly. Similarly, setting of performance goals improved student motivation in a study conducted by Stefanidis, Acker and Greener (2010) among students doing general surgery in North Carolina. Improvement in attendance increased from 57% to 97%. There was also improvement in proficiency and motivation to use the skills laboratory. Though the study had some limitations, the findings support the results of a study by Montes,et al. (2009) where setting goals promoted students' attendance in the use of the skills laboratory.

Still on motivation, Jerez, Bueno, Molina, Urda and Franco (2010) at University of Malaga in Spain conducted a study among engineering students on the use of a concept map design to improve the motivation of the students. Novak (2010) defines concept mapping as a graphical two-way dimensional display of connected concepts that are linked together by verbs, propositions or phrases. Significant differences were observed in the students' class attendance, performance and motivation to learn the subject. The failure rate of 50% in 2003 dropped to 26% in 2008, performance of A grades rose to 12% from 4%, B grades from 10% to 30%. The study proposes that it is important to monitor students' learning motivation to maintain their desire for learning.

Kaufman (2003) conducted case studies on the application of educational theories in practice. The findings showed that there are seven guiding principles that provide helpful insight into shaping the practical skills for better patient care and improved outcomes. Some of the principles were that a learner has to be an active contributor to the education process and that learning should be closely related to understanding and solving of real life problems, students' current knowledge and experience be applied to

new learning situations. The principles also state that learners be given opportunities to use self-directed learning, to practice, feedback and an opportunity to reflect on their practice. These findings are worth testing in the quest to improve practical clinical performance in students.

From the studies above, findings show, that faculty face challenges of making clinical teaching and effective learning. There is always need to find innovative ways in the skills laboratory to motivate and actively engage students in learning. These experiences have the capacity to facilitate the acquisition of lifelong and relevant competences for excellent performance and inter-profession collaboration upon completion of the nursing program.

2.11 STUDENT CLINICAL PERFORMANCE EVALUATION

In nursing education, the philosophical beliefs of evaluation and assessment of the institution's curriculum and faculty are influential in evaluation of its programs and learning experiences of students. Often evaluation and assessment are in use synonymously. However, assessment refers to processes that provide information about students learning with the purpose of understanding and improving teaching and learning (Kirkpatrick and DeWit, 2012, Bourke and Ihrke, 2012). On the other hand, students' evaluation is commonly associated with summative value judgments and quality of performance. Bourke and Ihrke (2012) posit that the beliefs underpinning the curriculum and faculty determines how and when evaluation has to take place. In addition, it has an influence on what methods to use and the interpretation of results. However, nursing faculty are the ones invested with the responsibility of evaluation of their own teaching practices, student learning, courses, curriculum, program and objectives. Gaberson and Oermann (2007) recommend two phases when conducting student clinical evaluation:

i. Observing students' performance and compiling all data about the learning experiences.
ii. Based on the observations and data, determine if the students clinical competences have been achieved.

Gaberson and Oermann (2007) furthermore documented that clinical evaluation can be norm-referenced or criterion-referenced. In norm-referenced evaluation, there is comparison of student performance with the performance of the rest of the students to show that they are either above or below average. In contrast to the norm-referenced

evaluation, in a criterion-referenced evaluation, there is a comparison of the clinical performance of each student to a predetermined Criterion.

Currently, a number of evaluation strategies exist and the adoption of a strategy is based on institutions' philosophical stance of the curriculum (Gaberson and Oermann, 2007; Kirkpatrick and DeWit, 2012). The faculty's philosophy regarding accountability and responsibility for teaching and learning is vital when making decisions on strategies for evaluation. Evaluation of students can be in the classroom, simulation laboratories and the clinical sites to evaluate knowledge, cognitive, affective skills and students' competences (Gaberson and Oermann, 2007). Kirkpatrick and DeWit (2012) and Gaberson and Oermann (2007) further assert that each evaluation strategy has its own challenges. Therefore, faculty need the following factors to prevent the pitfalls:

- The purpose of the evaluation has to be clearly delineated
- The setting should be properly considered
- The strategy for evaluation chosen should be realistic and congruent with the purpose.
- Determine the procedure and protocol on how the competences will be measured
- The validity and reliability of the strategy should be well established
- The overall effectiveness of the process should be tested prior to implementation
- The means for giving feedback to the students has to be well established

At the college, the OSCE is the method of evaluation for all the undergraduate nursing students. Thus, a few studies applicable to the study follow:

2.11.1 Use of the Objective Structured Clinical Evaluation Strategy

In a study by Brosnan, Evans, Brosnan and Brown (2006), the process of OSCE was conducted in a new bachelor's degree in general and psychiatric nursing registration program offered at the institute of Technology in South West of Ireland. The aim was to evaluate the process and outcomes of OSCE. The findings on OSCE were meaningful and fair, students felt they were more prepared and confident for clinical placements. On the other hand the process was stressful and required considerable preparation by the students and the academic staff. The mature students claimed that they needed more practice as part of preparation even though they achieved higher scores during this assessment.

In another study by Oranye, Ahmad, Ahmad and Abu Bakar (2012), the findings after going through the OSCE were that 14% of the nurses had level four competences and 12% failed the examination despite having 10 years' experience in nursing. These were findings from a study conducted in an Open University in Malaysia among practising

diploma nursing students enrolled in a distance learning program to upgrade to a degree level. These findings revealed the need for nursing practice, continuous performance monitoring and improvement of practicing nurses and health professionals regardless of the years of experience.

Furthermore, Jeffers, Simmons, Tabak, Mcilroy, Lee, Roukema and Skidmore (2007) conducted a study to assess multiple physician competencies in postgraduate training at University of Toronto. Trained standardized patients and standardized health professionals completed the rating scales on verbal and non-verbal expression, empathy and coherence in addition to the overall global rating. The results revealed significant correlations between examiner medical expert scores and standardized patients and health professionals overall global scores. Interstation alpha was 0.80 for checklists scores and 0.88 for examiners overall global rating. The CanMEDS median interstation rating was 0.72 with a range of 0.72-0.90). The second year trainees' scores for each competency were significantly higher than those in first year trainees ($p< 0.05$). Thus OSCE proved to be a reliable and valid method of assessing multiple physician competencies simultaneously.

McClimens, Ibbotson, Kenyon, Mclean and Soltani (2012) conducted a study on confidence and performance in the objective structured clinical examination among midwifery students at Sheffield Hallam University. The objectives were to compare self-reported confidence levels within and between year 1 and 3 students, compare the changes after OSCE and examine associations between the reported confidence levels pre and posttest OSCE scores. The results showed significant increases in mean confidence levels from before and after OSCE for both first and third year students: 1.25 to 1.19; 0.87 to 0.73 respectively. It was also revealed that there was no significant correlation between confidence levels before undertaking the OSCE and the final OSCE test scores.

In a study by Hawker, Walker, Barrington and Andrianopoulos (2010), the OSCE was conducted both as a formative and summative assessment prior to clinical allocation of undergraduate dietetic nursing students. OSCE was developed to test preclinical skills during the third year of a 4-year dietetic degree. A strong relationship was observed for individual student scores at the OSCE and the score achieved at the end of clinical placement (beta = 0.66; 95% confidence interval = 0.46-0.86; $P < 0.0001$). A third-year preclinical dietetic OSCE was found to be a valuable method of formative assessment for assisting dietetic students with the preparation for their first clinical placement. It aided the early identification of those students who are likely to do less well on their first

clinical placement. Feedback on the areas that student needed more attention and more practice was given. Thus, OSCE in this case functioned as a formative assessment to inform the lecturers what areas needed improvement and more emphasis to improve clinical competences.

Raheel and Naheem (2013), at King Saud University College of Medicine in Saudi Arabia conducted a study on the effects OSCE on students' learning. The purpose of the study was to determine on fourth year undergraduate medical students' perception about OSCE assessment. The results indicated that OSCE provided practical and useful experience, 66% indicated that it had a positive impact on learning, 65% indicated that it is a standardized exam and 56% that the exam should be often in undergraduate assessment. In addition, the students felt that the examination was fair and allowed students to compensate for deficiency in some areas and the scores were a true reflection of students' clinical competences. However, some students found it to be stressful (48%) and not easy (40%). Thus, stress and the examination not being easy were attributed to students experience being the first exposure and that a mock OSCE would help students to overcome these challenges.

Contrary to the above study findings, were the study results from a study conducted by Small, Pretorius, Walters, Ackerman and Tshifugula (2013) at the School of Nursing and Public Health at the University of Namibia. The findings showed that students perceived OSCE being unrealistic especially by third year students. Students in first and third years reported that they had different levels of stress but the overall perception indicated that OSCE was well organized and that it helps students to perform equally well in the clinical area. Thus, the lecturers struggled to make the OSCE stress free and allocate enough time.

The studies on how the OSCE affect students learning and evaluation have shown positive effects on learning and evaluation. Formative and mock OSCEs prepare the students for the examination. They relieve the students from stress and make the examinations easier because they become familiar with the experiences. Previous work experience does not guarantee passing of the examinations. These findings are an encouragement to our college. It is possible to adopt formative or mock OSCEs at the college to improve the OSCE evaluation process at the college.

2.12 **CONCLUSION**

In this chapter, a review of the relevant literature is presented. The chapter highlighted the state of nursing education from what it was and where it is today. Many changes have occurred in nursing education to improve teaching and learning of the students. Furthermore, the reviewed literature has highlighted the challenges being faced in various clinical practice sites due to staff shortages, resource constraints and changes in technology just to mention a few. In addition, lessons from research studies to improve and motivate students' clinical learning for the better were highlighted. The review has also shown that there is paucity of studies from the developing world perspective, which resulted in only few studies documented in this thesis.

CHAPTER THREE

RESEARCH DESIGN AND METHODS

3.1 INTRODUCTION

This chapter outlines the study design and methodology that guided the process of inquiry and implementation of the study. The study was in two phases incorporating both qualitative and quantitative methods to collect and analyse the data. The description of methods are separate. The chapter also contains a brief description of the process followed to develop, validate and implement the Formative Assessment Framework (FAF) in the skills laboratories. Ethical principles and issues of reliability and validity presented further on in this chapter.

3.2 RESEARCH DESIGN

A mixed methods design was the method of choice to collect and analyse the data (Creswell and Clark, 2011). Specifically, the adoption of a sequential design was useful for the study, starting with qualitative approaches in phase one followed with quantitative approaches in phase two. Mixing of the methods occurred through the development of the Formative Assessment Framework from phase one data and the literature reviewed (Figure 3.1). Thus, the FAF was the point of interface between qualitative and quantitative methods of inquiry (Creswell and Clark, 2011). The design was helpful in this research because it provided an understanding of how clinical teaching, learning and the OSCE evaluation strategy in use for the summative evaluation of undergraduate nursing students occurs at the college. The effectiveness or impact of the program was determined in terms of the strengths and challenges qualitatively, which led to the development of a Formative Assessment Framework upon the determination of teaching, learning and evaluation gaps (McMillan and Schumacher, 2007; Ritchie, Lewis, Nicholls, Ormston, 2014). The design further aided in modification decisions and suggestions on clinical teaching, learning and evaluation strategies for undergraduate nursing students. Thus, adopting the framework, the nurse graduate would be fully equipped with the right competencies at the end of the program and be able to work independently with minimal support in various health institutions even in situations where shortage is rampant.

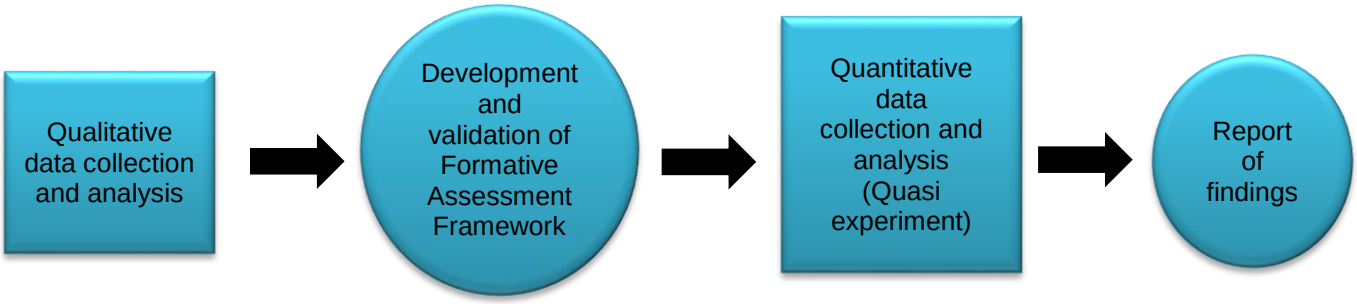

Figure 3.1: Schematic Diagram of Mixed Methods

3.3 METHODS IN PHASE 1

This refers to the population, study settings, sampling techniques and sample size, pilot study, data collection process, analysis of the data, measures of trustworthiness and ethical principles followed prior to the conduct of the study (Polit and Beck, 2012). It also includes a synopsis of the development and validation of the formative assessment framework. The detailed process is in chapter four.

The specific objectives in this phase were to:

- explore and describe the students' and educators' perspectives of clinical teaching and learning in college-based skills laboratories
- explore how the current mode of assessment namely the OSCE, is experienced by nurse educators and students.
- extrapolate from these perspectives, the factors and issues that affect students' clinical teaching, learning and the OSCE in the skills laboratories
- develop and validate a Formative Assessment Framework (FAF) for the assessment of clinical teaching and learning in the skills laboratories

3.3.1 Population

The populations of interest were the:

- Nurse Educators (N=30)
- Undergraduate Nursing and Midwifery Students (Year 1 to Year 4; N=891)

3.3.1.1 Inclusion criteria

All the nurse educators and clinical supervisors seconded by the Malawi government to support clinical teaching at the Kamuzu College of Nursing were included in the study. As indicated in the definition section, the term nurse educator encompasses the two cadres of clinical nurse educators responsible for clinical teaching of the undergraduate

nursing and midwifery students at the college. Only nurse educators with more than six months of theoretical teaching, clinical teaching and OSCE experience were included.

With regard to students, the undergraduate students with clinical teaching and learning experiences for two or more semesters in the college-based skills laboratories were included. Furthermore, they must have had at least two sessions of the OSCE experience in the skills laboratories.

3.3.1.2 **Exclusion criteria**

On the part of students, there was exclusion of all the students once employed as enrolled nurses and midwives before enrolment at Kamuzu College of Nursing. In addition, students repeating a year of study were also not included. The excluded students had existing knowledge and skills, which could confound the study results. First year students did not meet the inclusion criterion because at the time of data collection, year one students had just joined the college due to some delays in the opening school calendar and therefore did not participate in the study.

3.3.2 **Sampling and Sample Size**

Non-probability, purposive sampling technique was used to select the participants for the in-depth (n=6) and focus group interviews (n=45). Considering that there is no fixed sample size in qualitative research studies, the guiding principle for data quantity and quality based on generation of key issues in clinical teaching, learning and OSCE experiences (Polit and Beck, 2012). Sampling for representativeness for the nurse educators was by recruiting nurse educators from the three nursing departments at the college, namely Community and Mental Health, Medical-Surgical Nursing and Maternal and Child Health Nursing Departments. Recruitment of two nurse educators were from each department. The educators had varied characteristics in terms of gender, qualifications, position and teaching experience (Table 3.1). On the other hand, maintenance of students' representativeness was by recruiting second, third and fourth year students from the students' population stratified as junior and senior students (Table 3.2). In addition, both male and female students participated in the study. The tables below (Tables 3.1 and 3.2) show the characteristics of the nurse educators and undergraduate students who participated in the in-depth interview and focus group interviews. In both groups, saturation levels were determined when no new data emerged from the interviews.

Table 3.1: Nurse Educator Characteristics

Department	Gender	Qualifications	Position	Teaching Experience (Months)
Maternal and Child Health	Female	Masters in Nursing	Lecturer	36
Maternal and Child Health	Female	Bachelor's Degree in Nursing and Midwifery	Clinical Instructor	19
Community and Mental Health	Female	Masters in Nursing	Lecturer	48
Community and Mental Health	Male	Bachelor's Degree in Community and Mental Health	Clinical Instructor	19
Medical-Surgical Nursing	Female	Masters in Nursing Management	Lecturer	144
Medical-Surgical Nursing	Male	Bachelor's Degree in Nursing	Clinical Instructor	19

Table 3.2: Undergraduate Student Characteristics

Focus Group	Year of Study	Number of Participants (n=45)	Gender
1	3 and 4	6	Males
2	2	8	Females
3	3 and 4	7	Males and Females
4	2	6	Males
5	3 and 4	6	Females
6	2	6	Females
7	2	6	Males

3.3.3 Study Settings

The in-depth and focus group interviews occurred at the two campuses of Kamuzu College of Nursing. The study carrel in the Library was the venue for the nurse educators while an office was the venue for the focus groups at the Lilongwe campus. In Blantyre, the office opposite to the campus health clinic was the venue for both staff and students' interviews. These venues were for convenience purposes and were neutral environments. However, using the old office for the student's interviews was the only

option because of its location within the students' residential area with minimal noise levels. It was appropriate for recording data during the interviews.

3.3.4 Pilot Study

Data collection used a semi-structured interview guide to collect data from both the students and the nurse educators (Appendix L, Appendix J). This was appropriate because it elicited deeper insights, feelings, attitudes and perspectives about teaching, learning and the OSCE experiences from the nurse educators' and students' perspectives (Burns and Groves, 2007; Research Bunker, 2010). Prior to data collection, piloting took place to test the interview guide using the 2013 cohort of final year students. Two focus group sessions provided an opportunity to refine, adjust the questions and testing of the recording device (Brink, 2008). There were minor amendments to the interview guide and the data collected were not part of the main study.

3.3.5 Data Collection Process

Data collection in this phase occurred from January to March 2014. Collection of data from nurse educators was through in-depth interviews and focus groups with the undergraduate students. Through these interviews, there were in-depth exploration of the teaching, learning and the OSCE experiences of nurse educators and students. These provided greater insights into teaching, learning and OSCE experiences at the college. Talib (2013) and Liddle (2014), from a quality control perspective suggest that it is important to know where you are, where you want to be and how to get there if quality improvement in teaching, learning and evaluation strategies is to occur. The data were analysed thematically and synthesized with the literature reviewed on deliberate practice and formative assessment. The nurse educators and students' experiences made a significant contribution towards continuous and sustainable quality improvement and performance (Talib, 2013). Thus, qualitative data, together with the literature reviewed contributed to the process of development and validation of a Formative Assessment Framework (Fig. 3.1). After the synchronization and synthesis of the data, a Formative Assessment Framework was developed.

3.3.5.1 In-depth interviews

Six in-depth interviews were conducted with the nurse educators (n=6) comprising both the lecturers and clinical instructors responsible for clinical teaching in the skills laboratory at the college and clinical sites. Four were from the main campus and two from the sub campus. The researcher conducted the recruitment process through the heads of departments. The participants received the information sheets and consent

forms for informed decisions (Appendices E and T). Participation was took place after signing the consent forms.

3.3.5.2 **In-depth Interview setting and preparation**

The interviews were in one of the designated study carrels for members of staff on study leave situated in the college library for the participants based in the main campus. For those based in the sub-campus of the college, the interviews were in an office situated near the campus clinic. The chosen venues were appropriate because they provided privacy, adequate space for recording and no interruptions during the interview process (Polit and Beck, 2012). The bookings for each session were done approximately three weeks before the actual day of the interview and were done verbally, followed by emails and telephone calls to serve as reminders as the dates for the interview approached. Follow-up reminders and confirmations were necessary.

3.3.5.3 **Interview session**

A semi-structured interview guide facilitated the process of interviews and each participant responded to the same main questions (Appendix J). The opening question elicited information on experiences of teaching and learning at the college. In addition, the nurse educators shared there OSCE experiences. The interview session progressed based on how the participants responded to the questions. Probing questions followed where clarity was necessary. There were no interruptions experienced during the interviews. The time taken for the actual interview session ranged from thirty to fifty minutes. In order to have wealth detail and meaningful data, field note taking took place during and after the interview session. All the interviews were in English because this is the language of teaching for all nurse educators in the college.

3.3.5.4 **Focus group interviews**

The senior and junior students participated in seven focus group sessions. Three sessions took place at the Lilongwe campus and four sessions were at the Blantyre campus. The students got the information sheet and the researcher obtained consent from each participant prior to the onset of the discussion (Appendices F and T).

3.3.5.5 **Focus group Interview setting and preparation**

The focus group interviews took place in one of the old offices of staff at Lilongwe campus. At the Blantyre campus, the venue was an office opposite the campus health

clinic. These venues were convenient for students because they are located within the students building for hostels and were conducive for recording. In addition, the chosen venues were appropriate because they provided privacy, adequate space for recording and no interruptions during the interview process. The researcher recruited the participants with knowledge and experiences in clinical teaching, learning and the OSCE in the skills laboratories purposefully with support from the class representatives and the head of department for the Medical-Surgical department. Contact numbers were collected from each participant for easy follow-up. The bookings and recruitment were verbal, followed with telephone calls to serve as reminders as the dates for the interviews were approaching. To cover for eventualities, fourteen students (n=14) were recruited approximately two weeks before the actual day of the interview. Despite the 14 students recruited, the actual number of students that turned up and participated in the focus groups ranged from 6 to 8 per group. On the day before the interview session, a telephone call confirmed the time, date and venue for the interview. On the actual day of the interview, a telephone call was also made early in the morning, as a reminder and for confirmation about the time and venue through the group representatives. The interviews took place during weekends and within the week when students' were on day offs, to prevent interruptions in their learning program.

3.3.5.6 **Focus group interview session**

A semi-structured interview guide facilitated the sessions and all the seven groups responded to the same questions (Appendix L). The interview questions focused on teaching, learning and OSCE perspectives, factors and issues affecting their learning and areas that need modification to improve the quality of clinical teaching and learning. English was the language because it is the teaching language at Kamuzu College of Nursing. Field notes continued even after the sessions. There were no interruptions experienced during the interviews.

3.3.6 **Thematic Data Analysis**

Data from the in-depth and focus group interviews were analysed thematically. The analysis commenced at the onset of data collection process and proceeded even after the end of data collection period. In qualitative studies, data analysis commences simultaneously with data collection because the search for themes and concepts begins immediately the data collection commences (Polit and Beck, 2012). The thematic analysis followed the steps by Braun and Clarke (2006) (Table 3.3).

Familiarisation with the data involved listening to the recordings, transcribing and reading the transcripts in order to make sense of the data. All the data were transcribed

verbatim (Appendix K and Appendix M). Verification of the transcripts ensured that the transcriptions were accurate and that they reflected the recorded data.

Generating initial codes started with importing the data transcriptions into the MAXQDA software. Thus, then coding of the narratives took place for retrieval and display of the specified codes. The software was very useful in organising, managing and coding the data. In addition, the MAXQDA software was also useful in examining relationships to identify the themes and sub-themes from the data (VERBI Software, 2013). The process of thematic analysis continued by reading each transcription carefully. Repeated listening of the recordings helped to understand fully the meanings of the narratives and to get the emotive aspect of the data. It was vital at this stage to read and listen repeatedly to have the depth and breadth of the content. An audit trail of the transcribed data took place by a colleague with expertise in listening and analysing law cases with nine years' experience completing his PhD at the University of Witwatersrand, School of Law. The rationale for the audit trail was to ensure the validity of the data transcripts.

The next step involved colour coding of all meaningful data using the computer software, followed by collating and coding of the data set that had common features in their meanings, in line with the study objectives. Saving of the generated codes were in different columns with the relevant excerpts. Each transcript was first analysed vertically followed by horizontal analysis of all the transcripts covering all the entire data set, to address what Spradley (1979) calls the similarity and contrast principle. The similarity principle guided the search of information with similar content, symbols or meanings while the contrast principle guided the researcher to find how content or symbols differed from each other to identify distinctive emerging themes (Spradley cited in Polit and Beck, 2012). The co-coder verified the generated codes to evaluate and enhance reliability of the process in relation to the data transcripts (Polit and Beck, 2012).

Searching for the themes took place by collating gathered codes into potential themes. Relationships between codes and themes led to the identification process taking into consideration the other themes, which were not fitting into the main themes. A theme was such when it had meaning and was responding to the research questions and objectives of the study. Although the steps appear linear, identifying key themes, iteration was necessary to refine the themes and abandon others that were not fitting and meaningful to the study

Reviewing and refining the themes continued together with a co-coder for validity check. Maintenance of validity of the themes and sub-themes was through a constant referral back to the original data recorder, transcripts in the MAXQDA software document system and field notes. Specific to the analysis of focus group data, there are controversial issues on focus group data analysis in terms of whether the unit of analysis

is the group or individual participants. In this study, both the group and individual participants' data were useful as advocated by Jamieson and Williams (2003). At the group level, the analysis considered both the interactional and sequential analysis considering the issues of conformity and 'group thinking' (Jamieson and Williams, 2003) while at individual level, responses were analysed in response to group context. In both cases, the relevance to the study objectives was the major guiding principle for data analysis *(*Jamieson and Williams, 2003; Polit and Beck, 2012). Although, returning to the participants for verification of the themes is required, the researcher was not able to go back to the participants. Due to the nature of the study and some eventualities, which led to the students' going home unexpectedly, time became the limiting factor. It was not possible to verify the themes with the participants (Jamieson and Williams, 2003; Polit and Beck, 2012). Instead, the co-coder conducted an audit trail of the transcripts against the themes for affirmation of accurate data interpretation.

Defining and naming of the themes occurred throughout the analysis and deductive reasoning facilitated the reduction of teaching, learning and OSCE data. Definition and examination of each theme in relation to the overall story occurred to generate clear definitions and names for each theme. In total, 11 themes and 30 sub-themes finally emerged from the nurse educators and the undergraduate nursing and midwifery students.

The produced report is in **c**hapter four. In addition, the analysed data informed the process of formative assessment framework development.

Table 3.3: A Step By Step Thematic Analysis Process (Braun and Clarke, 2006)

Step	**Description of the process**
Familiarising with data	This involved listening to the recordings, transcribing and reading the transcripts in order to make sense of the data
Generating initial codes	Data entry were through the MAXQDA software. Furthermore, it involved underlining, colour coding and making links of interesting features of the data across the entire data set and collating relevant data to each code.
Searching for the themes	In this step, the collating codes gathered into potential themes according to the relevance of the data. Relationships between codes and themes led to the identification process taking into consideration the other themes, which were not fitting into the main themes.

Reviewing and refining the themes	This involved checking the themes in relation to the coded extracts through the entire data set. A thematic map of analysis entailed reading all the coded extracts for each theme and identifying a coherent pattern, reworking a theme and creating new themes throughout the entire data set.
Defining and naming the themes	This involved ongoing refining of each specific theme in relation to the overall story the analysis tells and generating clear definitions and names for each theme
Production of a report	This involved the final opportunity for analysis by selecting the compelling extract examples and final analysis of selected extracts. It also involved relating back to the research questions and objectives and finally presenting the findings of the data analysis in the appropriate chapters in the research report.

3.3.7 Summary of the Development and Validation of the Formative Assessment Framework

The formative assessment framework developed from the concepts of formative assessment and deliberate practice with input from the qualitative data findings from phase one of the study. The process of development used the four stages advocated by Humphrey's development of a new model of curriculum (Quinn, 2001). The stages consist of planning, development, validation and implementation. During the planning phase, the process involved the scrutiny of the analysed data from phase one to identify the teaching, learning and evaluation gaps. It also involved reviewing of the literature on the concepts of curriculum, OSCE, deliberate practice and formative assessment to inform the development phase. From these data sources, the adoption of the major characteristics led to the development of the formative assessment framework. The characteristics included clinical demonstrations, individual return demonstrations, immediate assessment, individual feedback, repeated demonstration, deliberate practice and reassessment. Thereafter the FAF transformed into a questionnaire for validation using the Delphi technique (Polit and Beck, 2012). Polit and Beck (2012) defines Delphi technique as a systematic communication method used to gather opinions from a panel of experts on a problem of interest without face-to-face contact.

In the study, a panel of experts (=10) were purposively selected to respond to three rounds of questionnaires (Appendix N). The inclusion criteria were current knowledge

and experiences of clinical teaching, the OSCE evaluation method from two countries: Malawi and South Africa. The experts were from the University of Witwatersrand (n=5), Kamuzu College of Nursing (n=3), Ministry of Health, Malawi (n=1) and an expert in Nursing Education from the Nurses and Midwives Council of Malawi (n=1), a regulatory body for nursing education in Malawi. The characteristics of the FAF informed the development process of the questionnaire, sent later through emails to the experts independently to ensure anonymity. A four point Likert scale rating on relevance from one to four (1=not relevant, 2=somewhat relevant, 3=relevant and 4=very relevant) was used on the questionnaires (Powell and Runner, 2009). Although this technique was time consuming, the experts responded to each round of questionnaire without formal meeting and influence on opinions from others. All the members were on an equal standing. The researcher sent information letters and informed consent (Appendix Q, Appendix R) together with the questionnaire. All the experts accepted to participate in the study and the experts responded to the questionnaires sent to them. In total, the experts responded to two rounds and the analysis showed an 80 % consensus (n=8).Upon reaching a consensus of 80%, the researcher finalized the framework and it was considered fit for implementation (Polit and Beck, 2012). Polit and Becker (2012) recommend a range of 51% to 70% expert final consensus and in this study, a minimum of 80% determined the final consensus. Thereafter, the implementation of FAF took place in phase 2 of the study. Chapter 5 contains a detailed process of FAF development as suggested by Creswell and Clark (2011).

3.4 METHODS IN PHASE 2

In phase two, a quasi-experiment testing the effect of Formative Assessment Framework on students' teaching and learning in the college-based skills laboratories at the two campuses of the college took place. The subjects were the junior and senior students. The total number of weeks for the intervention ranged from 5-6 weeks for all the groups. However, the intervention group received special clinical teaching and learning using the formative assessment framework in the skills laboratory for a period of 3-4 weeks in the months of April, June and July in 2015 and 2016. Pre-testing occurred at the end of the second week while post-testing took place during the final week in both the experimental and control groups. The focus in phase two was to measure the effect of the FAF as a new framework, in use for the first time in this setting.

The specific objectives were:

- To implement the validated Formative Assessment Framework (FAF) for the assessment of clinical teaching and learning among students in experimental and control groups; and
- To evaluate the effect of FAF by determining and comparing students' competence in selected general nursing and midwifery skills:
  - between experimental and control groups of students and
  - within groups

3.4.1 **Population and Sample Size**

The populations of interest were the:

- Nurse Educators (N=30)
- Undergraduate Nursing and Midwifery Students (Year 2 and Year 3 : N=500)
  Note: Year four students did not participate in the experiment because their clinical placement was far from the collage at the time of the intervention.
- Nursing, Community and Midwifery Procedures (N=36)

3.4.1.1 **Nurse education educators**

A recruitment of 12 nurse educators (lecturers and clinical instructors) to participate in the teaching, learning sessions and assessment of the students took place. Six were at Lilongwe campus and six were at Blantyre campus. The clinical instructors received an orientation to the intervention and the skills training in three hours to familiarise them with the check lists used for the different procedures. The nurse educators received one-hour orientation of the study intervention because they were familiar with the checklist already. The Because the nurse educators at Blantyre campus participated in the pre-testing and post-testing of the students in the control group only, they only had an orientation of one hour to the study separately.

3.4.1.2 **Undergraduate nursing and midwifery students**

A total number of 261 undergraduate students participated in the study. The stratification of the students were into two groups, senior and junior groups. Random assignment to either the experimental or control groups was done using a computer software by the clinical coordinator. The experimental groups were at Kamuzu Central Hospital in Lilongwe while the control groups were at Queen Elizabeth Central hospital in Blantyre. The sample sizes required for each of the experimental and control groups were pre-determined at a 95% confidence level (confidence interval =0.05), 160 for junior students and 101 for senior students. Thus, the sample sizes for the experimental groups were 84 (junior students) and 61(senior students). The sample sizes for the

control groups were 76 (junior students and 40 (senior students). The hospital policies influenced the number of students for these allocations to prevent students' congestion.

Prior to the intervention, junior students had completed all the modules in year one and some modules in year two. In addition, they had already completed clinical practice module one (12 weeks) for clinical learning experiences of acute medical-surgical conditions. They were ready for clinical teaching and learning experiences in various clinical sites for the chronic medical-surgical conditions, community and mental health clinical experiences. Below is the summary of the nursing and community modules in year two prior to the onset of the study intervention:

- Acute and chronic medical-surgical nursing
- Community and mental health nursing
- Human immunodeficiency virus and acquired immune deficiency syndrome module
- Clinical practice module one in medical-surgical nursing

Similarly, the senior students had completed all the theoretical and clinical modules in year one and two. They were now completing modules in year three. At the onset of the intervention, the students were ready for the reproductive health clinical practice, midwifery practice and community Health practice 3. Below is the summary of the nursing, midwifery and community modules:

- Paediatric nursing module
- Reproductive Health Nursing
- Community Health Nursing Modules
- Low Risk Midwifery Module
- Paediatric Practice Module Three

3.4.1.3 **Nursing, community and midwifery procedures**

Random selection of the nursing, community and midwifery procedures took place using the fish-bowl technique from the prescribed procedures by the institutions' curriculum. A total number of 18 procedures were useful for experiment. Eight procedures were for the junior students and ten for the senior students (Table 3.5).

Table 3.4: Nursing Procedures for the Junior and Senior Groups

Junior group	Senior group
Colostomy Care	Assessment of a Pregnant Woman
Commencing Intravenous Insulin	Second Stage of Labour and Delivery

Suctioning the Airway	Management of third stage of labour
Blood Transfusion	Subsequent examination newborn
Female Catheterisation	Breast Assessment
Insertion of a Naso-gastric tube	Contraception Implant insertion
Health education of a patient with congestive cardiac failure	Contraception Implant removal
Wound dressing	Emergency assessment of a sick child
	Repair of an episiotomy
	Speculum examination

3.4.2 **Instruments for Pre-test and Post-test**

Structured clinical skills performance checklists (Appendices N for junior students and O for senior students) routinely used in the program were assembled for use pre-test and post-test. Checklists were available in the corresponding learning modules and could be accessible to students through the curriculum management systems, a repository for students' electronic resources. Sixteen checklists were adapted for use by the researcher in collaboration with the departmental nurse educators. The researcher developed two family planning checklists validated by the nurse educators. The Malawi national practice guidelines for family planning helped in the development of the new checklists

3.4.3 **Study Settings**

The quasi experiment took place in all the three skills laboratories at the two campuses normally used for clinical teaching and learning. The learning objective was to improve learning using the formative assessment framework. As already highlighted in chapter one, the skills laboratories have basic equipment for the different classes of students. Additional teaching resources because of the increased number of teaching weeks were mobilised.

3.4.4 **Data Collection Process**

Both the experimental and control groups from the two stratums had two weeks of their normal regular teaching and learning experiences. Pre-testing of the students on the selected nursing, community and midwifery skills took place at the end of the second week. Thereafter, students from the experimental groups had clinical teaching and learning at Kamuzu Central hospital from 07:30 to 12-midday. In the afternoon, they had practise sessions with the nurse educators in the skills laboratories for3 hours and 30 minutes using the formative assessment framework for 3-4 weeks. The students were in

4-6 groups and each group had one nurse educator. On average, the educator student ratio was 1:12.

For each procedure, the educators conducted a demonstration to the allocated group followed with observation of return demonstrations from each individual student. Thereafter, students had a feedback session, proceeded with deliberate practise. After observing each student, there was a conduct of a re-demonstration by the educator to address the students' weak areas and allow them to practise again. Students with appropriate competences checked off from the procedures and proceeded into learning a new skill. In summary, students observed a minimum of two demonstrations on each procedure before and after practise sessions, had minimum of two supervised return demonstrations, given feedback by the educators and peer and allowed to practise on their own in pairs until checked off. During the final week, students were able to practise more on the skills they practised with difficulties. Post-testing took place in the final week. Figure 3.2 is a diagrammatic representation of the quasi experiment.

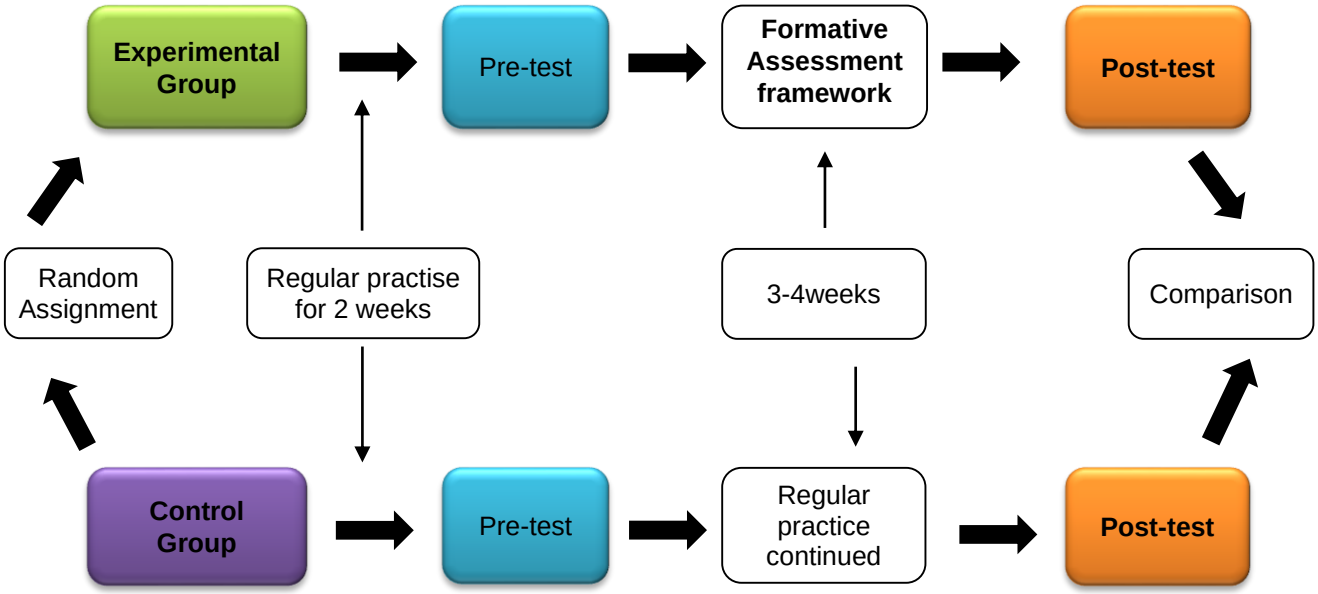

Figure 3.2: Diagrammatic Representation of the Quasi Experiment

After the pre-testing, students in the control groups continued normal regular clinical learning experiences at Queen Elizabeth Central Hospital. Thus, students had clinical supervision by the allocated lecturers and hospital staff. Skills laboratory teaching and learning was at the lecturer's discretion where possible.

To minimize cross-pollination, the study was at the two campuses of the college, Lilongwe and Blantyre campus. The same nurse educators who participated in the assessment of the students during the pre-testing were the same ones who participated during the post- testing assessment of the students for each group. The students had the same baseline characteristics in terms of age, academic qualifications and preparation to ensure equivalence of the experimental and control groups

3.4.5 **Quantitative Data analysis**

The first step was to check the checklists for missing information and scrutiny for wrong values. Coding of data for measurement purposes followed by data entry through Microsoft Excel 2010 (Microsoft Corporation, Seattle, USA) was the next step. Thereafter, data imported into STATA (STATA Corporation, College Station, Texas, USA) software were further cleaned up to obtain a complete picture of the data set. Calculation of the final assessment grades for each participant from the pre-test and post-test results took place. Frequencies of descriptive variables related to the data sample are summarised. Both parametric and non-parametric tests were useful. For normally distributed data, testing such as student t-test were useful in assessing mean differences between the pre-tests and the post-tests. Similarly, for skewed data tests, the Wilcoxon Sign-Ranked statistical tests of analysis tested the results. The mean score differences were compared for statistically significant differences in student learning. The level of significance was set at 0.05 with a confidence level of 95 %. All variables were significant at a p-value of less than the level of significance set (Burns and Grove, 2007). The pre-test and post-test scores results are presented and discussed in chapter six.

3.5 **ISSUES OF RIGOUR**

The issues of qualitative quality control in the study used the general criterion model by Lincoln and Guba (cited by Polit and Beck, 2012). The researcher adopted the following five strategies: credibility, authenticity, applicability, consistency and confirmability. Polit and Beck (2012) suggests that credibility involves two aspects: conducting the study in a way that enhances confidence in the truth of the data and the related interpretations. As such to ensure credibility the researcher observed, adopted and followed the process of

qualitative research, methods of enquiry and data analysis. During data collection, the researcher also established relationship with the participants to build trust in them to elicit the right information from their personal perspectives. Data were recorded to capture all the relevant data and transcribed verbatim was conducted to maintain the meanings thereof. Filed notes during in-depth and focus group discussions, transcript auditing by an independent member and working together with the co-coder to ensure accuracy after the data transcription and analysis process. In order to maintain authenticity, the participants' excerpts are present in the presentation and discussion of the findings to convey the feelings of lived experiences of the participants.

Applicability refers to the transferability or fit of the research to other settings (Polit and Beck, 2012). The researcher intends to generalise the findings of the study to nursing colleges with similar conditions. As such, the description of both qualitative and quantitative methods enable the potential users to evaluate the applicability of the study findings to other settings with similar conditions. In terms of **consistency**, it is the dependability of the research (Polit and Beck, 2012) and in the study; a clear description of the research process maintained its consistency. Prior to data collection, pretesting of the instruments took place in the initial focus groups to test the instruments. Based on the findings from the trial run of the instruments, proper amendments of the semi-structured interview guide occurred prior to the actual conduct of the research. The findings provided clues about the success of the instrument.

Confirmability is the freedom of the researcher from bias in the research procedure and results. The aim is to ensure that all the findings are from the participants and not the researcher (Polit and Beck, 2012). As indicated earlier, transcribed verbatim and auditing of the recorded data took place by independent member. A reflection of supporting excerpts from the individual participants is present in the presentation and discussion of findings. The researcher used the co-coder to verify the codes, themes and the transcripts. In order to reduce bias and maintain the truthful value of the research, there was taking of field notes and recording of data. The data will be under lock and cupboard in the office for a minimum of five years. Retrieval of the data for verification may be required at any time by the relevant authorities.

Content Validity: Validation of the FAF followed the Delphi technique process prior to implementation in phase two. Ten education experts from South Africa and Malawi conducted the exercise without face-to-face interaction for two rounds. A consensus agreement of 100% was determined prior to implementation.

Reliability: The reliability of the checklists was determined through the test-retest stability reliability to measure the degree of consistency and as a measure of the amount of random error (Burns and Grove, 2007; Nieswiadomy, 2008). Inter- rater reliability was determined between two raters and it ranged from 0.78 to 0.88 after the use of the checklists established during the FAF intervention. The participants' assessment scores between two raters remained almost the same and the checklists were determined to have high test-retest reliability (Nieswiadomy, 2008).

3.6 ETHICAL CONSIDERATIONS

The ethical principles advocated by Burns and Grove (2007) were followed which include the right to self-determination, privacy, anonymity and confidentiality, protection from discomfort and harm and the right to informed consent. The following authorities granted permission for the conduct of the research:

- University of the Witwatersrand Human Research Ethics Committee (HREC) (Appendix A, M130527).
- University of the Witwatersrand Assessors Approval (Appendix B).
- The College of Medicine Research Ethics Committee (COMREC) (Appendix C, P.07/13/1417)
- The Principal of Kamuzu College of Nursing, University of Malawi (Appendix D).

Right to Self Determination based on the ethical principle of respect for persons. In this study, the participants received information about the study purpose and participation was on voluntary basis. The participants had freedom to withdraw from the study regardless of the fact that he or she initially agreed to participate (Burns and Grove, 2007).

Privacy: People have freedom to determine the extent and general circumstances to shared or withhold information from others (Burns and Grove, 2007). In this study, the participants in the focus groups received information that it is not easy to maintain strict privacy in a group. All participants' views were important and there was no judgment on contributions made by the individual participants. They were discouraged to divulge information from the discussions. At the end of the focus groups, the entered data were stored in a computer accessible only with a password. The raw data from the checklists and field notes have been stored in a lockable cupboard.

Anonymity and Confidentiality: The participants used pseudo names during the focus group and in-depth interviews to ensure anonymity and confidentiality (Burns and Grove, 2007). Information to participants assured them that data collected would not be accessible or disclosed to other people except the researcher, the supervisors and the research team. In addition, they were informed that the findings would be made available to them, relevant organizations, institutions and be published in local and international journals. However, personal information would be confidential.

Protection from Discomfort and Harm: The participants had protection from physical discomfort or psychological harm during their participation and implementation of the experiment.

The Right to Information: Both the students and the nurse educators had a full explanation of the purpose of the study and each participant received an information sheet (Appendices E and F).

The Right to Informed Consent: The participants willing to participate in the study had a written consent form for them to sign (Appendices G, H and I). Participants with signed and counter signed consent forms participated in the focus groups.

3.7 CONCLUSION

In this chapter, the research design and methods followed in the study have been described. The study in two phases. A sequential mixed method design was useful. In phase 1, qualitative methods were followed to collect the data, which were analysed thematically. Thereafter, a formative assessment was developed and validated prior to the study intervention. In phase 2, quantitative methods were used to collect the data through a quasi-experiment. The experimental and control groups were pre-tested during the second week and post-tested during the final week of the study intervention. Quantitative data were analysed using quantitative statistical packages and the report is in chapters four and six.

CHAPTER FOUR

RESULTS AND DISCUSSION: PHASE 1

4.1 INTRODUCTION

Teaching, learning and evaluation perspectives of both nurse educators are present in this chapter. Six in-depth interviews with nurse educators and seven focus group interviews with students took place at the Kamuzu College of Nursing. The findings comprise nurse educators' perspectives of clinical teaching (part A) and OSCE perspectives (part B). Parts D and C presents learning and OSCE perspectives for students. The discussion and the presentation of findings were concurrently done, and supported with the relevant literature and verbatim excerpts (Sandelowski and Barroso, 2002; Henning, van Rensburg and Smit, 2004; Cresswell and Plano Clark, 2011). The symbol 'P' represents participants' verbatim excerpts from the data transcripts. The development and validation of the Formative Assessment Framework is presented in chapter five although it is part of phase one.

4.2 PART A: NURSE EDUCATORS PERSPECTIVES ON CLINICAL SKILLS LABORATORY TEACHING

In-depth interviews were conducted with six nurse educators (n=6) to obtain data in respect of their perspectives of clinical teaching, learning and evaluation (OSCE) at the college. A six-step thematic analysis process by Braun and Clarke (2006) took place to analyse the data.

Below are the characteristics of the nurse educators followed by the themes and sub-themes that emerged from the analysis of the qualitative data.

4.2.1 Demographic Characteristics of Nurse Educators

The age of the participants ranged from 30 to 62 years of age with a mean age of 44 years. Three nurse educators (n=3) had a master's degree either in medical–surgical nursing or maternal and child health nursing. Three were clinical instructors (n=3), had a bachelor's degree in nursing and midwifery and were seconded by the government of Malawi to work at the college for a period of three years. Nurse educators' years of experience in clinical teaching in the college-based skills laboratory ranged from one and half years to 12 years of experience (m= 5.6 years). Five participants (n=5) attended their initial nursing education training in general nursing and midwifery in

Malawi while one had training in Zimbabwe. The lecturers received an award of a diploma in general nursing and a certificate in midwifery during their initial training.

4.2.2 Themes and Sub-Themes

At first, five themes and twelve sub-themes came from the data. However, upon further reviewing, refining and naming of themes, three themes and nine sub-themes finally emerged (Table 4.1).

Table 4.1: Themes and Sub-Themes

Theme	Sub-theme
Nurse educators teaching experiences	▪ Opportunity for Demonstrations and Return Demonstrations ▪ Clinical Teaching is Stressful ▪ Variation in Skills Laboratory Usage
Factors affecting skills laboratory teaching	▪ Intrinsic and Extrinsic Motivators ▪ Organisational Issues ▪ Resources
Coping and improvisation strategies	▪ Stretching Resources ▪ Optimising Learning space ▪ Time Constraints

4.2.2.1 **Theme one:** Nurse educators teaching experiences

Teaching in higher education, in general, is quite demanding and even worse in institutions of higher learning for nurse education because of its practical demands (Quinn and Hughes, 2007). Throughout the entire nursing education program, the educators facilitate, guide, assist and demonstrate the art and science for application in multiple nursing practice settings (Bruce, Klopper and Mellish, 2011). Quinn and Hughes (2007) further state that nurse educators have both positive and negative experiences during their career in teaching for the practice of nursing. The nurse educators had the same experience during teaching in the college-based skills laboratories at the Kamuzu College of Nursing. It was an opportunity for demonstrations and return demonstrations. On the other hand, clinical teaching is also a stressful experience and there are variations in students' use of the skills laboratory. Sub-themes under this theme were opportunity for demonstrations and return demonstrations, clinical teaching is stressful and variations in the students' use of the skills laboratory. The presentation and discussion begins with how the nurse educators embrace the experiences of demonstration and return demonstrations.

Sub-Theme: Opportunity for Demonstrations and Return Demonstrations

Despite advanced technology and simulation, clinical demonstration is an essential strategy for teaching clinical skills and so too is students' return the demonstration under supervised practise (Quin and Hughes, 2007; Bruce et al., 2011). Nurse educators expressed that they are able to conduct clinical demonstrations and allow students to do return demonstrations in the college simulation laboratories. Being able to use the ideal equipment facilitates the teaching process because it exposes the students to the real equipment, which in many practice settings in Malawian hospitals may not be available. It is a critical supportive environment because students are eager to learn through observations and practice sessions supported by their teachers. These were some of the views:

"….I would like to say that the skills lab has been very useful in terms of teaching the students… the use of the lab gives the students an opportunity to observe the demonstrations…."(P4).

"…it makes the teaching a reality rather than just teaching things which are not seen and you know the students are so excited when they see something from whatever you are saying because they are able to apply whatever they have learnt with whatever they've seen , so it has been quite motivating…"(P1).

Primarily, skills laboratories are developed for the purpose of clinical teaching and learning due to the changes in the health care and nurse education system globally (Houghton, Casy, Shaw and Murphy, 2012; Meyer, Marzen-Groller, Myers, Busenhart, Waugh and Stegenga, 2014; Landeen, Pierazzo, Akhtar-Danesh, Baxter, Eijk and Evers, 2015). The central activity of nurse educators in the skills laboratory is to conduct demonstrations and allow students to have hands on of the observed skills or procedures prior to the world of reality with clients and patients (Gaberson and Oernmann, 2007; Wellard and Hegegn, 2010). Their role is not that of a supervisor but providing learning opportunities for transfer of knowledge into practical experiences. However, in other well developed countries, skills laboratories are also used for continuing professional development of qualified staff from practicing agencies (Carton, 2012),which is not the case at Kamuzu College of Nursing.

Apart from being, an environment that provides an opportunity for skill demonstration and return demonstration, teaching in the skills laboratory well organised compared to

the old tradition of teaching where the teaching is in bits and pieces. This was what one educator had to say:

"…when we were doing our nursing school we used to have somewhere where we used to do the procedures but it never used to become like a laboratory or so things were done in beats and pieces but the coming of an organized skills lab has made teaching and of course learning easy…"(P1)
"…I think the skills lab has been very useful in that area that does provide an opportunity for the students to practice as well unlike on the real client where you are not allowed to do the same procedure on the same client…"(P2)

Others also document the benefits of demonstrations. Demonstrations give students the privilege to learn from the expertise of the faculty and they allow students to role-play the skills (Burgen and Gamroth, 2007; Nilsson, Pennbrant, Pilhammar and Wenestam, 2010; Houghton, Casey, Shaw, and Murphy, 2012). In addition, in a study conducted by Landeen, Pierazzo, Akhtar-Danesh, Baxter, Eijk and Evers (2015) in Canada, faculty expressed that simulation facilitates teamwork and communication skills among themselves as well as the students. Furthermore, the training and support of faculty during simulation teaching improves faculty's awareness and acceptance of simulation teaching, not expressed at the college.

In addition, role-playing by the students and demonstrations by the educators becomes an opportunity for the educators to pause and clarify other important points in the procedure (Comer, 2005; Nilson, Pennbrant, Pilhammar and Wenestam, 2010). Using these strategies, the clinical teacher demonstrates how to act, communicate and perceive a problem in a simulated environment. On the other hand, return demonstrations help students feel at ease to learn, rehearse and with the given feedback to improve skill practice (Gaberson and Oermann, 2007; Ahmed, 2008). Active participation of students help them to be more efficient (Jeffreys, 2005; Morgan, 2006). As such, it is important for the demonstration environment to mimic the real-life situations to show the way things happen in the nursing profession (Bruce et al., 2011). Allowing them to participate in return demonstrations enhances their critical thinking and psychomotor skills.

In summary, the sub-theme above captures the experiences of the nurse educators that clinical teaching in the skills laboratory provides an opportunity for demonstrations and return demonstrations. It is an opportunity for the nurse educators to role-play the skills and give a chance for the students to have a feel of the real equipment, which may not

be available in the practice settings. Although, simulation-teaching views are more positive, clinical teaching in the skills laboratory is not easy as discussed in the next sub-theme.

Sub-Theme: Clinical Teaching is Stressful

Teaching the practice of nursing involves skill acquisition, critical thinking and it requires commitment in order to teach effectively (Bruce et al., 2011). The focus is to ensure that students have enough time and real life practice experiences for a proper foundation of professional practice (Burgen and Gamroth, 2005). Nurse educators require enough time for demonstrations, practice sessions, giving feedback and repeating the demonstrations, which in many cases contributes to stress (Gaberson and Oermann, 2007). It creates even more stress in faculty members who are also involved in research, publications and other institutional responsibilities. Nurse educators at the college expressed that clinical teaching is also stressful for them because of the large student numbers, reduced number of hours for skills laboratory experience, material and human resource constraints and it is double work to demonstrate and observe students during return demonstrations.

"…. it is very tough to manage that because the students are too many a sometimes we are having a ratio of 1 teacher to more than 25 -30 students per session so it's difficult to have them to perform return demonstrations …."(P4)

"….it has not been easy to use the skills lab for the lab sessions….with the number of students we have it is difficult to observe the students do the return demonstrations"(P3)

Nurse educators experience exhaustion and they lack the energy to observe each individual student conduct return demonstrations. In addition, the limited resources compound the problem of student numbers. Furthermore, clinical teaching has been stressful because the skills laboratories do not have full time nurse educators to complement the work of clinical teaching. The same nurse educators are the ones who also do clinical teaching in the different practice settings. Lack of full time nurse educators in the skills laboratories; make some nurse educators prioritize theory content than the clinical simulation teaching in the simulation laboratories. The nurse educators have divided attention because they are also responsible for other student groups in the clinical sites.

"….you become exhausted supervising each and every student and for you then to do the return demonstrations you find that it requires a lot of time…."(P1)

"….at the moment it is still us who also have to go to the clinical area to teach other students as well because we have different groups of students having clinical practical sessions who also require our attention…."(P6)

In line with findings on faculty challenges in simulation teaching, was a study by Akhtar-Danesh, Baxter, Valaitis, Stanyon and Sproul (2009) in Canada. The aim of the study was to identify the views of faculty about simulation teaching in nursing colleges and universities. The faculty expressed that it was time intensive and there was no clinical teaching time allocated in the theoretical schedule. In another study, the skills laboratory was used more to meet the challenges of too much content in a nursing program at Ohio University (Jones, Staib and Fusner, 2009). The study took place in response to faculty's dissatisfaction on students' performance of clinical skills. The faculty, therefore, developed a multifaceted teaching approach. The skills laboratory became the teaching space where discussions, demonstration and practice occurred. They bought new equipment and the results showed a significant improvement on students' confidence and expertise. The individual students had enough time to rotate in the different stations to practise the scheduled skills.

In relation to increased student numbers, a randomized controlled trial by Dubrowskil and MacRae (2006) took place at the University of Toronto, Canada. The purpose of the study was to evaluate the student -teacher ratio during simulation teaching of wound suturing. The results showed that 1: 4 was an appropriate teacher student ratio for undergraduate medical students for to optimal clinical learning. Since the focus was on suturing skills, the researchers acknowledged that this ratio might not be applicable in all clinical skills. However, it still gives insight into the implications of the teacher ratio of 1:25 at the college. With a ratio of 1:25, one would assume that there is students' learning compromise in one way or another. No wonder then, that despite the KCN's nurse educators' passion for clinical teaching in the skills laboratory, some preferred using other clinical settings such as the hospital other than the skills laboratory to avoid the pressure and stress. This could be one of the possible factors contributing to the nurse educators' apathy towards clinical teaching in the laboratory.

With regards to the issue of recommended time spent in the skills laboratory, mixed views exist.Gaberson and Oermann (2007) comment that nurse educators' plan for clinical teaching should reflect on the context where the teaching activities will take place. However, the amount of time students spend in the skills laboratory remains a challenge because the length of time spent on clinical learning activities is no guarantee on the quality of learning that takes place in the students (Gaberson and Oermann,

2007). Teaching experiences in the skills laboratory should engage activities that promote e learning and practise of the skills before the evaluation of performance.

In summary, the sub-theme on clinical teaching being stressful has discussed that nurse educators find it stressful to conduct several rounds of demonstrations to manage the increased student numbers, to supervise each individual student during return demonstrations. It also becomes stressful because the same nurse educators are responsible for clinical teaching in other clinical sites. However, considering improving the clinical teacher-student ratios might improve the current situation at the college for effective clinical teaching.

Sub-Theme: Variation in Skills Laboratory Usage

Still on the theme of clinical teaching experiences, nurse educators shared the experiences on simulation laboratory use for the junior and senior students. Their views were that there is variation in skills laboratory use among the students.

In general, the nurse educators expressed that students' attendance in the skills laboratory is very good when the clinical teaching activities are scheduled. However, the experiences of the nurse educators indicate that there is variation in the use of the skills laboratory among the students on use of their own time for laboratory sessions. The junior students, in year 1 and 2 use the skills laboratory more than students do in year 3 and 4. An observation took place that the 4th year students, doing midwifery use the skills laboratory more than students doing a bridging program did.

"….In terms of student participation my observation has been mmm like the 1st year and the 2nd year are the ones who come in their large numbers…. but as they go to 3rd or 4th year, they of course they do come but not as frequent as they were doing in the early years…."(P4)

"Usually the students are willing to practise in the lab though there is a difference between the generic 4th year students with the upgrading midwifery group…." (P2)

From the nurse educators' perspective, junior students use the skills laboratory more than the senior students do because they are just beginning the nursing program and are therefore interested to learn because everything is new to them. In addition, there was a suggestion that maybe the senior students feel that they already know most of the skills and therefore do not require further practise in the skills laboratory. Further suggestions indicated that the other reason could be the fact that the 3rd and 4th year

students gain their other clinical learning experiences in the district hospitals away from the college.

"…. in 1st or 2nd year, you are interested to learn the skill may be before you go to the real clinical area unlike somebody who is may be in 3rd and 4th years…" (P4)

"….when you reach 3rd and 4th years, most of the clinical allocations are done in the district hospitals … so I think that as well might also give an impression that the 1st/2nd years are using the skills lab more often than the 3 and 4th years…."(P4)

Unfortunately, there is paucity of findings in relation to guidelines used in determining the skills laboratory use according to the different levels of study. However, Rogers, McConnell, Rooyl, Ellem, and Lombard (2014) conducted a randomised controlled trial simulation study in New Zealand among senior medical students who were ready to practise as junior doctors. The results showed that there was improved prescribing skills and knowledge acquisition, reasoning and resuscitation skills from simulation teaching. Challenges related with underutilization of simulation laboratory use existed among medical students in North Caroline (Stefanidis, Acker and Greener, 2010). Therefore, setting of performance goals improved students' attendance in the skills laboratory. Students developed training goals for each task within specified laboratory sessions after demonstrations by the educators. The results showed that attendance of students improved from 57% to 97%. In another study, the use of Vee Mapping improved students' attendance in the skills laboratories, in Colombia (Lehman, Carter and Kahle, 2006; Montes, Castro and Riveros, 2009). In these studies, the findings revealed that the new method made clinical teaching experience more enjoyable, creative and motivating. Students' competence improved and absenteeism for practical sessions reduced significantly. Such motivation strategies can be worth trying at the college to motivate students' use of the skills laboratory.

Due to the challenges in the practice sites, the participants suggested that it would be better for the students to practise more in the skills laboratory. The teaching experiences are not always appropriate because of increased student numbers, clinical staff shortage and in adequate resources. Students are prone to shortcuts during their learning experiences.

"….no matter how better the clinical area is, it is better for them to practise in the skills lab because the experiences are not enough because of the numbers we have right

now so it's high time that we the clinical instructors have to be keen to use the skills lab for our students to gain the confidence…."(P1)

…. in Malawi most of the hospitals have been affected with the severe brain drain and its taking long to fill the clinical area, to fill it with skilled people so you find that students when they are sent there they copy a lot of shortcuts with the shortage that is out there…."(P5)

As already highlighted, the advantages of simulation teaching have been supported by a number of authors (Nilsson, Pennbrant, Pilhammar and Wenestam, 2010; Houghton, Casey, Shaw and Murphy, 2012; Landeen et al.., 2015). It is a safe learning environment which promotes deep learning, communication and decision making skills. It is possible to teach students and allow multiple return demonstrations on the manikins than on real patients. In addition, medical students expressed positive learning experiences in a study conducted at University of Central Florida College of Medicine (Gorman, Castiglioni, Hernandez, Asmar, Cendan and Harris, 2015). The students' expressed that the faculty's use of high-fidelity manikins for teaching promote critical thinking, facilitates foundational science knowledge transfer and promotes thinking about treating the patient as a whole and not treating individual parts. Furthermore, Hayden and Alexander (2014), in their study results indicated that using trained simulation faculty results in quality simulated learning experiences for students. Students acquire educational behavioural outcomes for best practices in the clinical sites at the end of the program.

Finally, the sub-theme on variations in using the skills laboratory have highlighted nurse educators' views on how the different groups of students use the skills laboratory. There is variation in the usage of simulation laboratories according to the level of study and subjects. There is good attendance when opportunities for clinical teaching are organised by the nurse educators among the 1st and 2nd year students. It is reported that there is underutilization of the skills laboratory among the 3rd and 4th students because of clinical allocations in the district hospitals, having no full time skilled staff and senior students' views of feeling 'too qualified' for skills laboratory use. However, students suggested utilising the skills laboratory often than the district hospitals.

In summary, the theme on clinical teaching experiences has highlighted the nurse educators' perspectives of clinical teaching and learning in the skills laboratory. Demonstrations and return demonstrations are the practical realities of clinical teaching that enrich the clinical teaching experiences. Some nurse educators find it stressful to

conduct demonstrations and observe the return demonstrations. Increased student numbers make supervised return demonstrations difficult and students go for clinical practice sessions without having supervised return demonstrations. The junior students used the skills laboratory more often to practise the medical and surgical nursing skills than senior students who gain their learning experiences more often in the clinical sites away from the college.

4.2.2.2 **Theme two: Factors affecting skills laboratory teaching**

In the skills laboratory, the role of the teacher is to plan and provide appropriate clinical teaching activities to facilitate student learning (Gaberson and Oemann, 2007). The major purpose is to provide clinical learning opportunities in an environment, which is safe and non-threatening. In addition, the learning experiences should promote critical thinking and decision making in the students. However, the success depends on a number of factors existing in the different institutions (Gaberson and Oemann, 2007). Additionally, the physical laboratories are resource intensive in terms of acquiring and maintain equipment and staff. At the college, passion, students' remarks, organizational issues and resources and equipment, were some of the factors that affect the nurse educators' clinical teaching experiences positively or negatively. Thus, the factors are into three sub-theme groupings of individual passion and students' remarks, organizational issues and resources and equipment.

<u>Sub-Theme: Intrinsic and Extrinsic Motivators</u>

Nurse educators own passion for clinical teaching highlighted as something that motivates them in clinical teaching despite the constraints during the clinical teaching skills laboratory sessions. On the other hand, positive remarks from the students motivated the nurse educators towards clinical teaching sessions in the skills laboratory. The students' excitement during demonstrations and the students' verbal comments that they are satisfied and learn a lot in the skills laboratory encourage and promote the nurse educators' desire for clinical teaching.

"….we have got passion to still go through the skills lab despite those constraints, so our passion is really driving us to continue despite those constraints…." (P6)

"….we also get a chance to have the feedback from the learners themselves, they say that they are satisfied and feel they are learning a lot in the skills laboratory despite the constraints, so we feel there is an impact…."(P6)

In studies conducted among medical lecturers, altruism, intellectual satisfaction, personal skills, opportunity to interact and truth seeking were the main motivating factors among medical teaching staff (Dahlstrom, Dorai-Raj, McGill, Owen, Tymms, Ashley and Watson, 2005; Cook, 2009). Cook (2009) in his study on medical teachers working on part-time, clinical teachers were greatly motivated with the opportunity to interact with students and their colleagues during clinical teaching experiences. Clinical teachers' motivation for clinical teaching was not about money. These findings therefore show that teachers are unique individuals and have diverse motivating factors that trigger their desire for clinical teaching. Passion, intellectual satisfaction, interaction, and not money provide motivation despite clinical teaching being a stressful experience.

The skills laboratory provides a good environment to correct the students when they make mistakes. The mistakes made become learning opportunities for the students because there is no harm or injury to life.

"….it is motivating because it is private and you can maintain confidentiality if you want to correct the students and also because the students are willing to learn…."(P5)
"….when they make mistakes in the lab you know that the problem is not so serious."(P4)

In support of the above findings Godson, Wilson, Goodman (2007); Lasater (2007) and Lewis and Ciak (2011), identified that clinical teaching in simulation laboratories provides an opportunity for learning when students make mistakes, reflect and learn from those mistakes. The clinical teacher in turn corrects and gives them feedback, which in the end allows repeating the procedure to perfect the skills. On the issue of privacy and confidentiality, Beitz and Wieland (2005) in their study on the analysis of teaching effectiveness of clinical nursing faculty, reaming out students in front of others and patients was identified as one of the faculties' clinical teaching behaviours that hinder clinical teaching effectiveness among students.

In summary, nurse educators' motivation come from individual passion and the students' remarks of satisfaction during the teaching sessions. Positive comments from the students' participation in the skills laboratory encourage the educators to use the skills laboratories. The skills laboratories provide a good environment for correcting students' mistakes during practice sessions.

Sub-Theme: Organizational Issues

At the college, the organizational issues include teaching schedules, rules governing the skills laboratory, quality and quantity of staff and the size of the skills laboratories. Nurse educators reported access to the skills laboratory was limited because the skills laboratory is strictly guarded. In addition, the skills laboratories regular opening hours of 07:30 to 17:00 limit its accessibility to students as many of them are either in class or at the practice sites. Participants reported that the two hours designated for the laboratory sessions were inadequate considering the high student numbers.

"….the students will only have time to use the skills laboratory either after 5 o'clock or may be during the weekend which unfortunately the lab is closed…."(P3)

Commenting on the issue of regulations, which limit effective usage of the skills laboratory, Svejda, Goldberg, Belden, Potempa and Calarcos (2012) in their paper suggest that nursing institutions should strive to create learning opportunities that enable students to achieve the leaning objectives. In addition, it is important to increase clinical hours for students to gain competence and be confident to provide care. The clinical skills laboratory ease the problem. These findings suggest that students can still use the skills laboratory during the practicum or nurse educators can use other teaching strategies applicable to the setting. They suggested enough space for teaching in the skills laboratory.

Nurse educators also reported incidences of inappropriate use of the skills laboratories for content that were purely theoretical. Additionally, participants expressed a concern on the skills laboratories staffing situation.

"….most of the times theoretical schedules do not give an opportunity for the students to use the skills lab during working days…." (P1)

At the time of data collection, there was one assistant member of staff regularly assigned to work in the skills laboratories at the main campus. The participants appreciated the efforts of recruiting a qualified lecturer that were in progress at that time but they felt that three more lecturers for each skills laboratory would be realistic. Having three lecturers would allow extension of regular laboratory opening period by five hours and to the weekends.

"….it would be better may be to recruit 3 nurse educators so that they will be changing their rosters because we want them to be operating like the library from Monday to Friday 7.30am to 10 pm…." (P6)

In a study by King, (cited in Taplay, Jack, Baxter, Eva and Martin, 2014), it was found that adopting the process of simulation laboratory in undergraduate nursing curricula in terms of time, personnel and financial support are very essential for effective clinical teaching sessions. Therefore, nursing institutions should not underestimate the substantial amount of time requirements and facilitate successful integration of the simulation teaching strategy. Thus, there is great need for a major shift in planning, organizing and implementing clinical teaching at the organization and individual faculty level for its success. The institutional educational philosophy of clinical teaching should give meaning and direction to clinical teaching and practice (Gaberson and Oermann, 2007). As such, the fundamental beliefs and assumptions on the value of clinical education should serve as a guide to actions that have a profound impact on clinical teaching at the college.

Sub-Theme: Resources

The availability of material resources whether in big or small quantities make a difference in clinical teaching in many developing countries because of the magnitude of resource constraints in many clinical settings (Kruk, Wladis, Mbembati, Ndao-Brumbay et al., 2010).The skills laboratory under study has a good number of resources such as family planning equipment and midwifery manikins. As such, the students practice using resources that are not available in the clinical sites making teaching a reality.

"….the students have had an opportunity to have an exposure to some of the resources that are rare in the clinical area and are able to see the equipment, they are able to handle it in using all the senses it's making them to remember…." (P6)

Although the study focus was on teaching resources in the skills laboratories, the participants expressed the need for portable resources for on-site clinical teaching especially when students are far from the college-based simulation laboratories. Having more resources of this nature can be of more benefit for the students during allocations that are far from the college. Ultimately, these learning experiences benefit patient care in the practice sites (Godson, Wilson and Goodman, 2007).

"….specifically we are lacking up-dated resources for example high fidelity teaching models which can simulate much closer clinical situations we are lacking that one we only have 2 adult and a smaller one, so it is really a constraint against 100 students…."(P6)

"*Actually the models we are using these days you can take some and make a laboratory at the practical site for students to use them"*(*P1*)

Koretsky, Kelly, and Gummer (2011) in their study showed that resources and equipment constraints remain a challenge in many institutions of high learning. It makes educators fail to achieve the intended learning outcomes. In addition, Haraldseid, Friberg and Aase (2015), conducted an explorative study in Norway. The purpose was to establish students' understanding of the clinical skills laboratory-learning environment at the college. Although the views are from the perspective of students, they complained that lack of equipment, the need to reuse equipment and some old and outdated equipment made learning difficult. Resource and equipment constraints interfered with the students' acquisition of clinical skills, which was also the case at the college. Thus, at the college under study, nurse educators made suggestions to purchase up-dated high fidelity teaching models to complement what the college already has.

In line with the need for high or medium fidelity manikins, Lapkin and Levett-jones (2011), using medium fidelity manikins was more cost effective than the use of high fidelity manikins. In another study, the use of low fidelity manikins made significant difference among advanced practice nursing students at the University of Illinois at Chicago (Tiffen and Corbridge, 2009). Significant differences in students' confidence in the assessment of heart and lung sounds existed. As such, it appears that it would be cost effective for the college to consider the purchase of both low and medium fidelity manikins in order to match with the student numbers. Furthermore, having low or medium level of fidelity is educationally useful considering the advantages of simulation in nursing education (McCallum, 2006; Jeffries, 2008; Tiffen and Corbridge, 2009, Ricketts, 2011). It promotes active participation, provides instant feedback and a safe and non-threatening learning environment during repeated demonstrations.

Furthermore, nurse educators also expressed that the government purchasing policy and lack of institution commitment contribute to the resource mobilization challenges. Despite these challenges, some participants acknowledged the college's efforts to overcome resource constraints.

"….for the past four years we have been using this system ….where you have to buy according to the buying vote allocated by the government votes which is taking time....buying is very difficult whereby we are not able to have whatever we want"(P5)

"I think the college is trying but may be it can also do more to make sure that the resources are current and are readily available"(P6)

"….already we have developed a proposal as a department and we are planning to submit it to the Norwegian Church Aide and other developmental partners so that they assist us, our budget is really having a smaller limit…."(P3)

In a comparative study conducted by Wellard and Heggen (2010) in the skills laboratories, the Norwegian skills laboratories had more current resources and equipment than the skills laboratories in Australia. This shows that the availability of resources vary from one institution to another. Lee, Lee, Wong, Tsang and Li (2010) commented that the establishment of a skills laboratory requires on-going faculty and institutional support and financial commitment for successful clinical teaching experiences. It is not possible to shun the responsibility of financing the skills laboratory if an institution is required to produce a competent nurse graduate fit for the ever-changing health care system.

Finally, although resources seem to be appropriate, there is still need to purchase more and new resources. Therefore, there suggestion for more commitment to resource mobilisation. In additional, there was a suggestion for portable resources for on-site simulation clinical teaching for the senior students.

In summary, the theme highlighted factors affecting clinical teaching experiences. The presentation and discussion has highlighted how individual passion and students' remarks, organizational issues and resources affect the teaching experiences. Nurse educators have the passion for clinical teaching despite the increased student numbers; some rules are good for control and security purposes. In addition, the availability of resources make the teaching environment better than the clinical site-learning environment. There were suggestions to recruit permanent staff, adjust the time for opening the skills laboratories and purchase of more resources.

4.2.2.3 **Theme three: Coping and improvisation strategies**

In this theme, there is a presentation of the views of the nurse educators in terms of the measures being for effective clinical teaching in the skills laboratory. In addition, the views on what how to improve the current teaching experiences have also been presented under each sub-theme. The presentation and discussion is centered on the following sub-themes: stretching resources, coping with large numbers and coping with time constraints

Sub-Theme: Stretching Resources

Resource constraints have the capacity to compromise clinical teaching and learning. Therefore, in this sub-theme, there are opinions of how nurse educators make the most of human and electronic resources for effective clinical teaching. Below were the views of the nurse educators:

"….actually what we have done now to have more staff we've hired the mature students (postgraduates), they assist us to assess each and every student to make sure that each one has done the procedure and has done it correctly…."(P1)

"…there have been these curriculum management system for electronic resources (CMS) where we had to upload them on CMS… which can just be a complementary yaaa" (P1)

Stretching resources means inviting members of staff from other departments, hiring the mature or postgraduate students to assist in clinical teaching and the use of electronic resources were the most appropriate means to reduce lecture to student ratio during clinical. The use of senior students in third or fourth year to teach first year students was also supported in studies conducted at medical schools (Dubrowskil and MacRae, 2006; Godson et al., 2007; Weyrich, Schrauth, Kraus, Habermehl, Netzhammer, Zipfel, Junger, Riessen and Nikendel, 2008). A ratio of 1:4 tutor/tutees was beneficial for effective feedback and was helpful for further improvements. Peer teaching in the skills laboratory was feasible for undergraduate clinical skills training with sufficient supervision.

Sub-Theme: Optimising Learning Space

The nurse educators expressed their views on how they cope with these challenges of space and student numbers. Furthermore, there were suggestion on how the teaching experiences can improve for the better.

"….*The other issue is space, the space is not adequate like in 1 cubicle you can only admit may be a maximum of 6 to 7 students which means that it will also be tiresome on the one doing a demonstration to be talking of the same issues now and again…."(P4*)

"….to accommodate them we don't use the skills laboratory area only, we also use some areas, some free classes, lecture theatres in smaller numbers…." (P6)

Dividing students in smaller groups in simulation laboratories was beneficial in a study by McNiesh (2015) conducted at one of the universities in Western United States. In the study, pairing of students with each other occurred, with one student taking the role of an in-charge and the other, a student role. This student pairing mimicked the pairing that takes place in the clinical sites where a student with a nurse occurs. The results showed that pairing with a fellow student contributed to the development of clinical reasoning skills and collaboration with each other, different from pairing with a nurse.

Due to space limitations, there were suggestions to enlarge or build new skills laboratories to accommodate them during presentations or video demonstrations of some procedures

"….we also need a skills lab where issues like presentations can be made,…..where you can have group presentations, power point presentations and when it comes to the real practising they can now go into the cubicles…."(P3)

Similar to the above findings were suggestions for the establishment of a skills laboratory at the University of Hong Kong towards centre (Lee et al., 2010). The institution's goal was to have a simulation laboratory with the ability to prepare undergraduate nursing students with integrated, critical thinking and decision-making skills suitable for patient care needs in the health care system. Nurse educators made suggestions to construct a center with four units to accommodate their teaching load and needs. On the issue of electronic resources, Lee, Chae, Kim, Lee, Min and Park (2016) conducted a study to identify the effects of a mobile-based video clip on learning motivation, fundamental nursing competency and class satisfaction at a nursing college in South Korea. Pre and post testing of the students on urinary catheterization took place. The results indicated that the intervention group showed significantly higher levels of learning motivation and class satisfaction than the control group. Results on fundamentals of nursing competencies, the intervention group was more confident in practicing catheterization than their counter parts. Similarly, Jang and Kim (2014)

conducted a study at 34 Korean Medical Schools to investigate the effects of e learning to clinical education. Online OSCE videos were effective for students' clinical learning and preparation for OSCE. Furthermore, the students reported lack of integration into the curriculum and lack of interaction as issues to improve upon by the faculty.

In summary, nurse educators have expressed their views on student numbers and space. It is difficult to conduct the demonstrations and return demonstrations during practice sessions. To optimise learning space, students are in smaller groups and different venues for effective clinical teaching. There were suggestions to enlarge or build new skills laboratory with cubicles for each individual department.

Sub-Theme: Time Constraints

Due to limited number of hours for skills laboratory teaching, nurse educators do not have adequate time for clinical teaching sessions. However, they still find time for make-up sessions such as withdrawing the students from the practice sites.

"….also when you fail to have the demonstrations on that day then we usually find some other time for the students to come and finish the sessions…." (P6)

"…. I think time has to be taken into consideration slotting some hours in the timetable both for theory and clinical for utilisation in the skills lab for the students to practise and use the lab…." (P4)

Withdrawing students from the clinical sites was effective in a study by Jones, et al. (2009). Nurse Educators' withdrew students from the clinical practicum for extra sessions in the skills laboratory.

In summary, theme three has highlighted the nurse educators' coping and improvisation strategies for effective teaching in the skills laboratory. Stretching the resources by hiring postgraduate students, dividing the students into smaller groups and using other learning spaces to reduce educator: student ratio are some of the mechanisms that are used. Students are withdrawn from the practicum for skills practice in the skills laboratory. There were suggestions to expand the size of the skills laboratory to improve the clinical teaching experiences.

4.2.2.5 Conclusions drawn from nurse educators' clinical teaching perspectives

The above section has presented the findings and discussion of the nurse educators' clinical teaching experiences at Kamuzu College of Nursing. The findings were presented and discussed under three themes in nine sub-themes. The themes were clinical teaching experiences, factors affecting clinical teaching and coping and improvisation strategies. The following were the concluding statements:

- Demonstrations and return demonstrations are the practical realities of clinical teaching that enrich the clinical teaching experiences. Nurse educators have a passion to conduct the sessions. However, increased teacher to student ratios make it difficult for them to observe individual return demonstrations and practise sessions for every student.

- Availability of clinical teaching resources enables the educators to demonstrate the appropriate resources for each procedure different from the short cuts done in the practice sites due to shortage. Although the resources are available, there was a suggestion for the college's commitment to mobilise new and updated resources to match the student numbers.

- Improvisation strategies like using other venues for demonstrations, inviting members of staff from other departments and hiring the mature or postgraduate students to assist in clinical teaching have been used to cope with the challenges of staff shortages and limited space.

- Some organizational challenges on staffing and policies have negatively affected clinical learning. For example, the availability of unskilled laboratory attendant and the opening skills laboratory from 07:30to 17:00 from Monday to Friday limit students' use of the skills laboratories after 17:00 and on weekends. Thus, suggestions to recruit at least three qualified nurse midwives to operate in shifts and it would be possible to open the skills laboratories just like the college libraries operate.

Considering the fact that simulation laboratories are not only for clinical teaching, the study also sought to embrace how OSCE, the method of evaluation for the undergraduate students in the skills laboratory is experienced. Thus, the next section presents and discusses the findings from the views of the educators.

4.3 PART B: NURSE EDUCATORS' PERSPECTIVES OF THE OSCE

In nursing education philosophy, demonstrating competence entails being able to perform the roles of professional nursing in various practice settings (Suzie, 2012). At the college, the OSCE is part of summative assessment, at the end of each semester to evaluate junior and senior undergraduate nursing students in the skills laboratories. The grade from the OSCE comprises 70% of the end of semester clinical grade from all the clinical students' assessments. Thirty percent is from the clinical projects and assignments that students take during the clinical practice sessions in various clinical practical sites.

The OSCE examines students' performance based on principles of objectivity and standardisation (Khan, Ramachandran, Gaunt and Pushkar, 2013; Nulty, Mitchel, Jeffrey, Henderson, Goves, 2011; Rushforth, 2007; Brosnan, Evans, Brosnan and Brown, 2006; Harden, Stevenson, Downie, Wilson, 1975). The evaluation process also ensures the validity and reliability of the students' performance under the same simulated environment. During the OSCE, assessment of the junior students is on skills from the fundamental of nursing, community nursing, medical, and surgical nursing experiences. The senior students on gynecological, community and midwifery skills. The assessment planning and implementation is by the nurse educators and clinical instructors from the two campuses of the college. The members of staff from the tertiary hospitals and postgraduate students assist during this examination. Their involvement is on the premise that they are also involved during the clinical teaching of the students both in the skills laboratory and practice centers. However, in this study, only the nurse educators were involved in the in-depth interviews for the purposes of the study. Therefore, the discussion of findings focuses on the OSCE experiences from the perspective of nurse educators at the Kamuzu College of Nursing. The following were the emergent themes and sub-themes.

4.3.1 Themes and Sub-Themes

The steps and process of thematic analysis documented in Braun and Clarke (2006) were useful in the analysis of the data from the in-depth interviews. After the process of refining themes and sub-themes, three themes and nine sub-themes emerged from the data, as summarized in Table 4.2.

Table 4.2: OSCE Themes and Sub-Themes

Themes	Sub-Themes
1. PREPARATION	▪ Student Orientation ▪ Adherence to Educational Principles ▪ Setting with Clinical Resemblance
2. MAKING SENSE OF THE EXPERIENCE	▪ Impact on Students Competence ▪ Timing of Procedures and the OSCE schedule ▪ Weighting of the Examination
3. PERFORMANCE FEEDBACK	▪ It is Quite Beneficial ▪ A Source of Emotional Discomfort

4.3.1.1 **Theme one: Preparation**

At the college, the OSCE consists of multiple examination stations to give the examinees enough experiences for them to demonstrate clinical competence within specified period (Harden, et al., 1975). Students are evaluated on performance through checklists to assess their clinical cognitive, psychomotor and affective skills (Jay, 2005; Brosnanet al., 2006; Cazzel and Howe, 2012; Khanet al., 2013). The literature states that the validity of the OSCE relies on a number of factors such as the scenario, checklist, assessor objectivity, a simulated environment and a number of stations (Rushforth, 2007; Nulty, et al. 2011, Khanet al., 2013). Therefore, careful preparation and organisation is integral to the OSCE. From the perspectives of the nurse educators', preparation views were under three sub-themes: student orientation, adherence to educational principles and setting with clinical resemblance. Research findings and participant excerpts support the discussion.

<u>Sub-Theme: Student Orientation</u>

The nurse educators discussed the fact that the preparation of students for OSCE begins at the beginning of each semester during the college orientation process at the beginning of each semester. Thereafter, preparation continues through clinical demonstrations in the skills laboratory and the practical site in their respective classes.

"….students are taught/informed at the beginning of the semester that they will do an OSCE at the end of the semester so the students have an idea about it before hand so that when we are doing the OSCE they are not surprised…."(P5)

….the students have…. demonstrations on the various procedures that are examinable both in the clinical area as well as the laboratory so what is going to be examined summatively is something that is familiar and relevant…."(P3)

In relation to preparation of students for the OSCE, Small, Pretorius, Walters, Ackerman and Tshifugula (2013) conducted a study at the University of Namibia on perceptions of the OSCE as a method of evaluation. From the findings, 65% of the students felt sufficient preparation occurs during briefing about the OSCE. Thus, there was a suggestion for students' briefing sessions to include an information package for the OSCE purpose and its scope.

The participants also commented on the advantages of preparing and orienting the students at the clinical practical sites and the skills laboratory. The privilege of using the skills laboratory gives the students an idea about the OSCE. They are ready and are not afraid of the examination.

"….these students, we ask them to come to the skills laboratory and … we are with them in the clinical area, students are ready, they are not afraid to come and do the OSCE, they are prepared…." (P6)

Similar to the findings on students orientation and preparation, Brannick (2013) in his study identified that adequacy of student preparation reduces anxiety during OSCE. Students have reduced fear about the examination. Contrary to the same findings, the results from Small et al. (2013) and Selim, Ramadan, El-Gueneidy, Gaafer (2011) reported that students' still experienced stress despite adequate preparation by the educators for the examination. Stress also existed among medical students and student midwives in studies conducted by Raheel and Naeem (2013) and Jay (2007).
Commenting on students' preparation, Nultyet al., (2011) in their study in Australia, the use of the marking criteria and notes regarding the OSCE was favoured among the students during the preparatory phase. On the other hand, the findings revealed that 88% of the students reported nervousness to be the worst aspect of the OSCE despite the thorough preparation. In the study, it is not easy to remove stress from the examination process during the OSCE process. Students reported that when taught that the focus of the OSCE is for them to practise and learn to develop masterly, there was a positive effect on anxiety than the focus to demonstrate perfection.

In the studies above, there was a proposal on proper students' orientation and preparation for the OSCE. There was a suggestion that adequate preparation should

encampus informing students the purpose, objectives, the scope of the OSCE, giving them the marking guide, an OSCE guide book and having an OSCE assessment during the clinical teaching sessions in the skills laboratory (Raheel and Naeem, 2013; Small et al., 2013; Nulty et al., 2011; Selimet al., 2011 and Jay, 2007). At one of the Universities in Egypt, the entire preparation for OSCE during their first experience took four moments and it involved review of station content, students' booklets, simulated patients scenarios and checklists (Selimet al., 2011).

Commenting further from the nurse educators perspectives on the adequacy of student preparation, participants acknowledged that student preparation for the OSCE is not adequate. Therefore suggests something like a rehearsal were proposed.

"….what I have seen in students that are doing OSCE for the first time they are not prepared adequately so I would suggest that they should be oriented on what OSCE is all about…. it should not only be summative but also formative…."(P2)

"…. so far it is only done as a summative assessment but now if we were using OSCE as formative evaluation or assessment, things could have been different and we would be able to tell the students the areas they have not been competent and give them time to practice before the final OSCE evaluation…."(P1)

Using the OSCE, as a formative assessment tool has support from its origin by other recent researchers. Khan et al. (2013) commented that the OSCE is useful as both an evaluation and feedback tool to improve students' performance in medical schools in the United Kingdom. Furthermore, using the OSCE in formative assessment enables the clinical educators to orient and provide immediate feedback to the students to improve performance prior to the year-end summative OSCE evaluation. Nultyet al. (2011) commented that the ways of assessing students are the single most important part of the curriculum, which determines what and how students learn. As such, having the OSCE as part of the assessment engages students into on-going development of competence through supervised demonstrations and feedback during the clinical teaching sessions. Thus, at the college, this has been the missing a component ever since the OSCE has been in use. Therefore, it is worth adopting it because of its added advantages as a feedback and preparatory session prior to the end of semester OSCE evaluation among others.

In summary, the sub-theme of student orientation has pointed out that the students receive information about the OSCE at the beginning of the semester. In addition,

demonstrations in the clinical sites and the skills laboratory become part of the preparation process for OSCE. However, there is still need to improve the way the students are prepared because some students fail to do the procedures well when done during the first time. As such, there were suggestions to conduct the OSCE as part of formative assessment.

Sub-Theme: Adherence to Educational Principles

Different researchers suggest that the major underlying principles of OSCE are objectivity and structure (Khan et al., 2013; Small et al., 2013; Zayyan 2011, Rushforth 2007, Harden et al., 1975).Upon questioning participants about the structure of OSCE at the college, the educators expressed that the OSCE has an assessment criterion and that two assessors are present on each station.

"….it (OSCE) has an assessment criteria or grading system so you observe the students and also the way it is structured we allocate two assessors per student for evaluation."(P4)

"….at the moment we have asked the hospitals members of staff to assist us during OSCE but the problem have been with the college in giving them money…" (P6)

In connection with assessment criteria, Khan et al. (2013) assert that the objectivity of the OSCE depends upon a standardized scoring rubric. It ensures that examiners mark candidates against the same criteria and therefore improves consistency of scoring between the candidates and the assessors. Khan et al. (2013) further, identified the challenges of additional costs in relation to the OSCE and Selim et al. (2012) and Rushforth (2007) define cost during the OSCE process in terms of the faculty time, staffing and extra costs incurred prior to, during and after the examination. Though the OSCE is an expensive and time-consuming method of evaluation in many studies, its educational benefits outweigh its running costs. Therefore, it is imperative for educators to ensure that there is an effecting planning on the use of the OSCE at the institution to ensure the maximum achievement of the intended results. Commenting on computing the total scores during OSCE, Harden et al. (1975) documented that it is relatively simple to compute the total marks of the students from all the stations the candidate has gone through when the marking strategy is determined in advance,

The participants further commented on the wide differences observed during the scoring of the students between two assessors. Currently, there is no planned preparation of the educators to orient them on the conduct of OSCE. Likewise, the clinical nurse

practitioners who come to assist during the OSCE evaluation time do not have proper orientation. Both are oriented on the day of the examination. As such, the participants made some suggestions to improve the preparation of the assessors' for the OSCE because of the discrepancies observed in students' grades.

"I think one of the areas for improvement ….before the OSCE there has to be an orientation to the members of staff, because it's difficult to find the reason for such differences …."(P3)

"….it's ideal during OSCE to have two evaluators per procedure but sometimes there are very wide differences …. yet they are using the same very tool, so it really becomes difficult to say it is objective…" (P4)

The use of two or more assessors is widely advocated in the literature as one of the measures to ensure the reliability of the OSCE (Khan et al., 2013; Smallet al., 2013; Zayyan, 2011; Rushforth, 2007; Rennie and Main, 2006). In these studies, the accuracy of the judgments by the examiners is a key aspect of reliability. Accuracy is therefore tested experimentally using the inter rater reliability in selected stations for comparison. At the college, discrepancies exist during OSCE but there was no evidence on whether this part was tested. As such, the inter rater reliability of the assessors was assessed in the quasi-experimental phase of the study during its second phase and it ranged from 0.78 to 0.88, meaning that the judgments of the assessors were reliable.
There was a suggestion to orient faculty and assessors more because students complained about the attitude of assessors during the assessment. Students have reported that some members of staff are hostile and harsh during the examination process.

"…. *faculty members should be trained, to be oriented on how to conduct an OSCE session because ….comments from the students are that some of the faculty were…. hostile, were not smiling…. were very harsh…." (P3)*

The findings on staff orientation indicate that the current way of staff preparation for the OSCE might not be adequate. Zayyan (2011), in her study conducted in Nigeria, commented that the examiners during the OSCE must be experienced and prepared to dispense personal preferences in the interest of objectivity is maintained by the use of the preset criteria during the evaluation process. Since the nursing curriculum has a teaching component because of the requirement to teach patients, students and colleagues, the literature suggests that a component of OSCE orientation should be part

of the curriculum (Godson et al., 2007; Rennie, 2006). There was a suggestion that OSCE orientation should be part of the orientation program for all newly qualified nurse educators at the college. There should be reinforcement in the curriculum of all the postgraduate students during their two years program at the college because they often recruit them for teaching in nurse education institutions in Malawi. Thus, a component of the OSCE imbedded in the testing and measurement course would be appropriate for all the postgraduate programs.

Despite the fact that there is team working between campuses during OSCE, it was still obvious that new staff be recruited for this examination to be a success.

"….OSCE assessment like in our department most of the times we do it together with the Med-Surgical depart ……and it (OSCE scenarios) consists of knowledge and application questions, comprehension…."(P1)

"….I feel with big numbers of lecturers to do the OSCE is always much better because if there are few lecturers they tend to hate OSCE, they don't want to do it because they feel so exhausted….."(P5)

With regard to the adherence to educational principles, participants expressed that the scenarios for student evaluation come from conditions that are common in the hospitals and they are composed of knowledge, application and comprehension questions. Departments work together as a team to combine the force during the examination. The scenario questions go through evaluation through vetting prior to the administration of the examinations.

"….once we have the questions as a department we look at the questions (vetting process) and then choose the ones that we feel are necessary for them to do…."(P5)

Vetting of the examination ensures the content validity of the examination (Nulty et al., 2011; Rushforth, 2007). This is a forum for the reviewers' judgment to ensure that the curriculum and learning outcomes are tested. Harden et al. (1975) considered the increased preparation requirement for the OSCE to be a one of the disadvantages of using the OSCE and recommends a combined effort prior to the evaluation day for it to be successful.

Despite the vetting process of the scenarios, some educators pointed out that some scenarios lack clarity and that sometimes students assessments are not from the right content.

"….some procedures (Scenarios) have not been clear to the students, so students have not been able to do the right procedures."

"….some scenarios are not ideal, not clear for students and for us to capture what we want it's difficult…." (P2)

Therefore, there was a recommendation for proper structuring of the scenarios.

"…. the structuring of questions/scenarios should be appropriate because it does not only affect the students' skills but also the life of the students" (P3)

In relation to the above, Rushforth (2007) suggests that prior to the use of the OSCE; a trial run should take place for reliability and validity purposes. It is also possible to control the complexity of the OSCE and define more clearly what skills, attitudes, problem-solving abilities and factual knowledge for assessment (Godson, et al., 2007; Rennie, 2006). Sandilands, Gotzmann, Roy, Zumbo and De Champlain (2014) also suggest the involvement of nursing education and clinical nursing experts in the development of the OSCE scenarios for significance validity evidence. Therefore, it is possible to refine the scenarios, and involve nursing education and clinical nursing experts at the college for significant validity evidence.

In summary, the sub-theme of adherence to educational principles of the OSCE took place. Having assessment criteria, two assessors and vetting process of the scenarios are the means of ensuring objectivity and standardization. There is need for adequate training; preparation and orientation of the assessors to manage some challenges with regard to objectivity.

Sub-Theme: Setting with Clinical Resemblance

In this sub-theme, the views of the nurse educators on how the environment for the examination is prepared to ensure the success of the examination is present. The findings reveal that the simulation environment is close to the real setting and that resources are mobilized well in advance. The students' examinations are on the common conditions in Malawian hospitals. The following were their views:

"….the environment of the OSCE is as much close to the real set up of the clinical environment as much as possible so that we don't confuse the students…."(P1)

"….the students are examined on the theory they have had and what they have practiced in the ward…." (P6)

"….usually we ask them common conditions that affect Malawi because that is what they are going to meet in the hospitals…." (P6)

Setting with clinical resemblance is integral to the OSCE. The literature advocates that during the OSCE each student has to demonstrate the specific skills and behaviours in a simulated work environment (Selim et al., 2012; Mitchell, Henderson, Groves, Dalton, Nulty, 2009; Brosnan et al., 2006). Gormley, Sterling, Menary and McKeown (2012) documented that enhancing realism in simulated OSCE environment triggers authentic conscious responses and implicit reactions that candidates themselves may not be aware. The simulated environment provides room for faculty to observe the candidates interaction with the simulated environment (Sandilands et al., 2014; Gormley et al., 2012). Furthermore, it is vital to minimize the differences between the simulated and real situations in terms of the auditory, visual and tactile cues during the OSCE. The supervisor's knowledge, skills, encouragement in the use of a problem solving approach and critical reflection of the practical session enhance learning (Kadri, Mahomed, Elzubair, Magzoub, Mutairi, Roberts and Vleuten, 2011).

Although, procurement of resources for the OSCE takes place in advance, the participants indicated that the resources are not adequate. Use of improvisation ensures that the setting for the examination mimic clinical resemblance. As such, there was a suggestion to procure new resources for use during OSCE.

"….On the resources, people give notice well in advance to notify the relevant office so that relevant items are procured on time…."(P6)

"….one of the challenges during OSCE is of equipment, you find that most of the times we don't have enough resources so we improvise, may be in our budgets we need to buy the real equipment so that students are exposed with the ideal equipment"(P4)

In a study conducted by Rennie and Main (2006) among midwifery students at Robert Gordon University, Aberdeen, equipment used during the OSCE stations was unrealistic

and there were suggestions to use equipment and resources that are familiar to the students.

In summary, the sub-theme of setting with clinical resemblance show that the setting is close to the clinical environment and those resources are mobilised well in advance prior to the day of the examination. However, there was a need for additional resources during OSCE. There was also a suggestion to train patient simulators to complement the use of manikins during the examination.

In conclusion, the discussion of the findings on the theme of preparation and orientation has taken place under the sub-themes: student preparation, adherence to educational principles and setting with clinical resemblance. Students are oriented about OSCE at the beginning of each semester and demonstrations become part of the preparation. Using grading criteria, two assessors per station and vetting of scenarios are the principles used to maintain objectivity and standardization. However, there is need for adequate resources and for examiners to be prepared to overcome the challenges of resources and staff attitude during OSCE.

4.3.1.2 **Theme two: Making sense of the experience**

From the educators' perspectives, the OSCE keeps the students on track since they know that they will have to demonstrate the procedures in an examination one day. It exposes each student to the same assessment environment such as same scenario, time, and same equipment just to mention a few. Therefore, the sub-themes, impact on students' competence, timing of procedures and weighting of the examination show how educators view and experience the OSCE examination.

Sub-Theme: Impact on Students' Competence

In this sub-theme, the views of nurse educators express how the OSCE affects students' competence. The concept of competence remains an area of debate in nursing education. However, one of the reviews equates competence to the ability to perform nursing tasks and integrate cognitive, affective and psychomotor skills effectively during the delivery of nursing care (EdCaN, 2008). The definition of the term 'competence' has been controversial in nursing and other related fields. However, competence in this study refers to the potential ability and capability of a student to achieve the key up-to standard professional tasks in the different levels of academic progression characterising the nursing profession (Schroeter, 2008; Kouwenhoven, 2009; Carton, 2012). At the college, the OSCE has the capacity to measure students' competence because it gives a true reflection of students' performance in the clinical

sites. As such, the educators observed that the students who perform well during the practice sessions have good performance during the OSCE as well. On the other hand, it was also reported that only very few students fail among those who do well during the practice sessions.

"….it's very good, actually like in our students in midwifery you keep the students on track because they know that at the end of the day they need to demonstrate how procedures are done so it instills some responsibility for them to know how procedures are done…."(P1)

"*I think in terms of competences, it really gives a true reflection of what they have been doing in the clinical area because most of the scenarios are derived from the procedures they have been doing in the clinical area so they are able to perform them competently during OSCE"(P3)*

Then nurse educators expressed that an improvement is seen when students go back to the ward especially when the students are given the feedback after the OSCE.
I think that it improves their competence as well….the last time we had a question on management of a patient during the puerperium period about immediate post-operative management, I saw that there was an improvement in competence because the students had a week to continue in the clinical area …."(P2)

"….the students are really improving competence….students who/that were not really performing well on their dexterity they have really improved after demonstration and even during the OSCE…." (P6)

Zieber, Barton, Konkin, Awosonga and Caine (2014) assert that a number of factors such as students' comfort, confidence and self-efficacy influences competence. As such, multiple observations in a variety of contexts are implicit to determine nursing student competence and the OSCE has proved to have such capacity (Bruce et al., 2011; Zieber et al., 2014). Although assessing clinical competence in students is difficult, it is important to note that in professional nursing, assessment of competence involves both the behavioural and interpretive aspects (Bruce et al., 2011). Thus, observing the students in clinical practice when delivering nursing care is useful in assessing a range of competencies.

In summary, the findings on this sub-theme reveal that students' competence improves during the OSCE. Students perform better when they go back to the practice sessions.

However, it is difficult to determine the actual improvements in student competence in some departments because OSCE comes at the end of a semester or at the completion of a program. Thus, the suggestion to use the OSCE formatively will also help in determining the impact of the OSCE on students' competence.

Sub-Theme: Timing of Procedures and the OSCE Schedule

In this sub-theme, timing of procedures and time to conduct the OSCE forms part of the challenges experienced. Nurse educators reported that sometimes students fail to complete the procedures but sometimes they finish the procedures earlier than the time allocated. In addition, the time scheduled for this examination in some departments makes it difficult for them to evaluate the impact of the OSCE on clinical performance. A suggestion to use the OSCE as formative assessment to manage the challenges above.

"….some procedures will require more time than others maybe I should give an example to say you have asked somebody to check Vital Signs and you have also asked someone may be to do wound dressing, these two procedures will require different amounts of time but during OSCE you allocate the same amount of time so that is also a challenge"(P2)

"….during the formative assessments we need to time how the student is completing the procedure so that time should be used as same time she will be using at the final examination the OSCE out of the same students not a teacher…."(P6)

Although check-offs are conducted, not all departments conduct them, hence the suggestion to use the OSCE as formative assessment can be used in all departments.

"Check offs are helping quite a lot because each and every student is observed and actually what we have done now to have more staff, we have hired the mature students /postgraduates, they assist us to assess each and every student to make sure that each one has done the procedure and has done it correctly"(P1)

Using the OSCE as a formative assessment, Gums, Kleppinger and Urick (2014), reported that individualised formative assessments in the skills laboratory improved performance of the OSCE at the end of the semester. During these assessments, students were given 10 minutes to conduct a counseling session and identify any prescription issues based on a standardised scenario in the presence of a pharmacist. Thereafter, individual feedback was given for effective learning experiences. In astudy by Chrisnall, Vince, Hall and Tribe (2015) at Kings College among medical students, the

use of formative OSCEs prior to the summative examination showed 92.5% predictive value for passing the summative OSCE. Students felt that it prepares them for the summative examination. However, it was suggested that students require proper communication on the role and purpose of the formative OSCE.

Finally, in this sub-theme, the views of the educators on the timing of the procedures and OSCE schedule has been presented and discussed. It was expressed that formative assessment OSCEs can have a positive impact on time allocation for each procedure and OSCE schedules. During the formative assessments time determination can be done by observing the students time taken to conduct the procedures.

Sub-theme: Weighting of the Examination

Despite the positive impact on students' competence, it was felt that the OSCE should not have more weighting on the overall aggregate of the students' scores. More weighting should be on the clinical evaluation of the students.

"….it shouldn't be weighted more, we should weigh more the clinical area assessment than the OSCES that we do, so it should be done as a complementary evaluation…."(P1)

Upon further probing to find the rationale for the above opinion in relation to standardization and objectivity, there was no proper explanation about it. At Jimma University, results on OSCE showed that the examination offers the best learning opportunity (73.8%) compared to other assessment strategies Shitu and Girma (2008). As such, students suggested that the OSCE should be given more weighting than the other strategies.

In conclusion, the theme of making sense of the experience has highlighted how the OSCE is considered as a good model of assessment at the college. Assessing the students under the same environment makes the objectivity and standardisation a reality. It is easier for the nurse educators to mobilise the human resources and it saves time. It is also good model of assessment because it has an impact on students' competence. The OSCE acts as a true measure of student competence in that there is correlation in student competence during the OSCE and their competence during clinical practice. Improvement is noted in student competence when they go back for clinical practice. However, in some departments it is not easy to determine whether there is an improvement in the competences because OSCE is conducted when students existing the program. Thus, there is no time for proper follow up of the students. As such, using

the OSCE formatively will also help the nurse educators determine how the OSCE affects competence.

4.3.1.3 **Theme three: Performance feedback**

Feedback is considered vital in medical and nursing education for the students to improve in clinical skills (Green and Taylor, 2013). It is documented that giving feedback is a critical and valuable skill for educators to incorporate into the daily clinical practice (Gigante, Dell and Sharkey, 2011). At the college, the participants' views feedback to students after the OSCE were that it is quite beneficial and a source of emotional discomfort as well. The following section presents the discussion of findings under each sub-theme starting with the sub-theme: It's quite beneficial.

Sub-theme: It is Quite Beneficial

At the college, students are given group feedback due to the increased number of students. In addition, group feedback is used because the OSCE is conducted during the final week of the semester. The feedback is beneficial to the students because it is given immediately when the OSCE is completed. The students are able to reflect on the areas that need improvement.

"….the students benefit from the feedback especially on the OSCE in that it is given immediately when we finish… whilst their minds are still fresh they know where to improve…."(P2)

"…. to some it has been quite beneficial because now they look back and reflect on their performance…."(P1)

Timely feedback was also appreciated by the few students who were offered the feedback immediately while those who were not given feedback complained for not given the feedback immediately (Shitu and Girma, 2008). The lack of scheduled individual feedback was considered a major setback during this study. It was therefore suggested that a well scheduled feedback session should be incorporated after the OSCE.

Upon further probing on how the feedback is given, the participants stated that students are praised for doing well and are corrected in the areas not done well.

"….what actually happens is that after the OSCE we give feedback to the students on how they have performed, praise them for the good part they have done and correct them on those parts they did not do well…."(P5)

Madhavanprabhakaran, Shukri, Hayuduni and Narayanan, (2013) conducted a study on nursing students' perception of an effective clinical instructor at the University of Sultan Qaboos. They found that the best clinical teachers were those with the ability to provide feedback, were clinically competent and those with good interpersonal skills. It was further concluded that the attributes of effective clinical teachers are closely linked to them being good role models.

Although the students benefit from the general feedback, the participants expressed the need for individual feedback. It is perceived that the individual feedback would benefit the students more than the general feedback especially those with poor performance. Therefore suggestions to involve the management to increase the time for OSCE were made.

"….if you just say it in general they may not be able to benefit from the specific shortfalls that they have to work on and improve…."(P2)

"…. they would also benefit especially those that have scored lowly on OSCE to have one to one feedback and then you can plan how those students can be able to have remedial demonstrations on the failed procedures…."(P3)

In a study conducted at the University of Birmingham, students were satisfied with the feedback from the overall skill performance and the specific station-based skills (Gigante et al., 2011). At the moment, the current practice for students who score low is to give them two weeks of clinical practice in the clinical practice sites supervised by clinical registered nurse/midwives.

"…. *for those that have not done extremely well we give them two weeks for them to go to the clinical area and you know try to improve on the areas that they did not do well…."(P3)*

Effective feedback entails specific, timely and objective feedback based on observed behavior on student performance to reinforce appropriate behavior and competence in clinical learning (Green and Taylor, 2013; Giganteet al., 2011). It is further commented that when deferred for too long, the student tends to forget the context or may not be

able to practise and demonstrate improvement. Deferring feedback for too long does not fulfil the purpose of the OSCE feedback to improve performance.

In summary, feedback is beneficial from the nurse educators' perspective because it is given while the minds of the students are fresh. Thus, it helps the students to reflect on the areas that require improvement. Suggestions for individual feedback have been made on students with poor performance.

Sub-Theme: A Source of Emotional Discomfort

Although feedback is beneficial to the students, the participants also commented that feedback has caused emotional discomfort in some students. They become frustrated and some develop negative attitude towards the examination.

"….but there has been others who have been frustrated and they have even thought that the exams were biased and it has caused a lot of emotional problems to the students…."(P1)

"….*some panic and develop negative attitudes towards the practical exams…. "(P6)*

Contrary to the above findings, reports of anxiety came from both the examiners and the students at the beginning of the process and not necessarily during the feedback session (Frantz, Rowe, Hess, Rhoda, Sauls and Wegner, 2013). Staff felt pressured when giving the instructions to the students within the specified time while students felt the time allocated did not allow them to perform to their best abilities.

Some participants also felt that the wide mark variation in the grading and scoring of the students' also affect the students negatively. It appears that the element of subjectivity in some assessors still exists at the college during OSCE despite the use of a checklist.

"….some assessors say as far as this student is concerned s/he cannot score highly ….so someone is receiving/ gets 70% and on the other hand someone is receiving a 40 % ….. so when it comes to the giving of the feedback now it also affects the students…."(P3)

The challenges of mark variations have also been reported in other study findings. Parsons, Hawkins, Hercinger, Todd, Manz and Fand (2012) conducted a study on improving scoring consistence of a simulation instrument at Creighton University in America. At the University, there were some concerns in relation to lack of training of

faculty on how to use the instruments, which resulted into inconsistent evaluation of students' performance. This resulted in variation in percentage agreement among evaluators. An intervention to train the faculty was administered. Pre and post-testing of the intervention results were determined. The results revealed that major improvements on agreement between two raters, which ranged from 68.8% to 100% were noted different from the 27.7% which achieved high level of agreement prior to the intervention. As such, there were suggestions to have formal training on understanding the instrument and consensus on student performance rating to lessen subjectivity and variation of scoring agreement.

Finally, the sub-theme "it is a source of emotional discomfort" has highlighted that feedback in some cases cause emotional discomfort. It causes students to develop negative attitude towards the examination. Variation in student scoring contributes to negative emotional experiences in those with low grades. The literature suggests training of the faculty on how to use the instruments during evaluation of students' clinical performance to reduce subjectivity.

In summary, the theme of student's performance feedback has presented findings on how individual feedback would benefit and improve student's performance. It is beneficial to the students because students are informed about their strengths and weak areas for improvement. Suggestions to adopt individual feedback on students with poor performance have been made. Variation of scoring agreement is also considered one aspect to work on to reduce subjectivity. Faculty training on use of the instruments has been advocated to reduce subjectivity and variation on scoring agreement between two raters. The literature, further comments that feedback which is timely, specific and objective has a positive impact on students' competence.

4.3.1.4 **Conclusions drawn from nurse educators' perspectives of the OSCE**

- Students' preparation and orientation for the OSCE takes place at the beginning of each semester while the nurse educators are prepared on the same day of the OSCE. Because the preparation and orientation is not adequate for both, suggestions to conduct OSCE as formative assessment have been made prior to the summative OSCE

- Educational principles are reinforced using two assessors per station, vetting the scenarios and following the assessment criteria when grading the students.

- The availability of resources and equipment mimic the clinical learning environment in the practice sites. Thus, resources and equipment mobilization prior to the OSCE should include adequate material resources and recruitment of staff to participate during OSCE from the practise sites.

- The resources are not adequate. As such, there was a suggestion to procure additional resources for the skills laboratory. Well trained patient simulators the future OSCEs

- The OSCE is a good method of assessment because students' examination of students is within the same environment such as the scenario, equipment and time limits and it has the capacity to measure student competence. The students who perform well during the practice sessions have good performance during the OSCE as well.

- It becomes difficult for nurse educators to assess students' competence improvement because the OSCE occurs when students are completing the program, as a summative evaluation. There was a suggestion introduce the OSCE as part of formative assessment has the capacity to improve the time allocation for individual procedures and scheduling of OSCE challenges.

- Feedback is beneficial because students have fresh minds at that time. Thus, it helps the students to reflect on the areas that require improvement even though in some it has caused emotional discomfort. Although group feedback was beneficial, there was a suggestion to give individual feedback to students with poor performance.

To have a comprehensive evaluation of the teaching, learning and the OSCE, the researcher sought the students' perspectives in the focus groups. As such, the next section presents and discusses the views of the undergraduate nursing and midwifery students at the same college.

4.4 PART C: STUDENTS PERSPECTIVES OF CLINICAL SKILLS LABORATORY LEARNING

From the seven focus group interviews, data were thematically analysed as already described in the methodology section. Part C presents the results and discussion of the findings from the students' perspectives of clinical learning.

4.4.1 Demographic Characteristics of Undergraduate Nursing and Midwifery Students

Three groups comprised senior students (n=19) and four groups comprised junior students (n=26). In total, 45 students participated in the focus groups. All except one focus group was homogenous in gender orientation to promote free expression. The age ranges of the participants in all the groups were from 21 to 28 years of age and the mean age was 23.The years of learning experience in the college-based skills laboratory ranged from one and half years to three and half years.

4.4.2 Themes and Sub-Themes

Clinical learning is recognised as the acquisition of knowledge, skills and values in clinical learning settings or environments that simulate clinical practice (Wellard and Heggen, 2010; Bruce et al., 2011). In nursing education, skills laboratories were developed and are advocated to promote effective clinical learning among nursing students. It is an established pedagogy for the learner to acquire essential clinical knowledge, skills and appropriate attitudes in an environment closely representing reality (Bland, Tapping and Wood, 2010; Houghton, et al., 2011). A number of authors also suggest that simulation learning becomes effective when it has been well integrated in the curriculum (McGaghie, Siddall, Mazmanian, Myers, 2009; Lee, Lee, Wong, Tsang and Li (2010); Motola, Devine, Chung, Sullivan and Issenberg, 2013; Nordquist and Sundberg, 2015; Schaumberg, 2015). In these literature sources, it is stated that simulation allows training in a controlled environment, equips the learners with cognitive, psychomotor and affective skills, provide a safe and non-threatening environment and that feedback during the learning sessions is very critical to the learners among other advantages.

Below are the findings on clinical teaching and learning experiences in the skills laboratory from the students' perspectives, grouped into three themes and ten sub-themes (Table 4.3).

Table 4.3: Themes and Sub-Themes

Theme	Sub-Theme
1. POSITIVE LEARNING PERSPECTIVES	▪ Opportunity to prepare for practise ▪ Gaining competence and confidence ▪ Psychological and communication preparation
2. NATURE OF PRACTISE SESSIONS	▪ Demonstrations and return demonstration ▪ Balancing theory and skills learning ▪ Nurse educator skill variation
3. FACTORS AFFECTING SKILLS LABORATORY LEARNING	▪ Variation in resource availability ▪ Shrinking space ▪ More students, more haste ▪ Opening and closing times

4.4.2.1 **Theme one: Positive learning perspectives**

This theme expresses the benefits of clinical teaching and learning from the students' perspectives. The positive learning experiences have been presented and discussed in the sub-themes: opportunity to learn to practice, environment to gain competence and build confidence and environment for psychological preparation and development of communication skills. The discussion is supported by the relevant literature.

Sub-theme: Opportunity to prepare for practise

In this sub-theme, the students expressed appreciation for the clinical learning sessions in the skills laboratory. They expressed that the learning sessions prepare them for practice prior to clinical placement. It is time to be introduced to the practicality of the theory covered in class. In addition, the students felt that the initial experiences in the skills laboratories helped them in the transitioning process to learning in the clinical practice sites. The learning experiences also prepare them for practical examinations.

"… the skills lab practices are good because they make us ready to conduct the procedures in the clinical areas/site for example naso-gastric tube session, you cannotjust do on a real patient, you need to practise first in the skills lab so that when you go and do it on a real patient, the procedure is perfect …" (G6S3)

"*… in the skills lab, from the theory we are able to transfer the theory into action, it's like an overview of what is going to happen in the ward so it's like we get prepared for that…" (G5S3)*

Skills laboratory learning experiences being good preparation for students prior to clinical practice placement has been documented by other researchers (Ansary, Ara, Talukder, Alam, Amin and Rahman, 2011; Houghton et al., 2012; Foronda, Siwei and Bauman, 2013; Aggar and Dawson, 2014; Saaranen, Vaajoki, Kellomaki, Hyvarinen, 2015; Weatherspoon, Phillips and Wyatt, 2015). In these studies, students appreciate the ability to grasp the concepts and be able to transfer theory into clinical learning experiences. The learners also expressed that the simulation learning experiences stimulate, encourage and facilitate their learning. Furthermore, in a study by Houghton et al. (2012), many students agreed that the clinical skills laboratory environment was similar to the hospital environment and helped the students to prepare for practise. Learning in the simulation laboratory was helpful because students were able to learn patient caring at the University of Wisconsin-Eau Claire College of Nursing (Boellaard, Brandt, Johnson andZorn, 2014). However, in one of the studies, it was also documented that students had difficulties in applying the lessons from the skills laboratory due to late exposure of the students to the clinical sites (Dornan, Mangolis, Scherpbier, Spencer and Ypinazar, 2006). It was therefore, suggested that students should have immediate exposure to the practice sites. At the college, students are allocated to various practice sites after five or six weeks of theory. And none of the students mentioned any challenges related to late exposure to the practice sites from the focus groups. Rather they expressed that clinical learning in the skills laboratories is good for them and that it would be difficult for them to prepare for practise without the skills laboratory learning experiences.

*"…nursing without the skills lab is not on, firstly the skills lab helps us to learn properly for example when we are in the wards our clients are real human beings while in the skills lab we practice on the dolls so that learning through those dolls gives us a picture of what we will face in the ward" (G5S6**).***

"…nursing its some-how different from other professions so just coming from other theory like may be in class going straight to the ward is somehow very difficult" (G5S4)

In a Swedish study, conducted by Ewertsson, Allvin, Holmstr€on and Blomberg (2015), students also expressed that learning without the skills laboratory does not work. The need to practise and acquire the knowledge and skills in simulation laboratories was a priority. The students further commented that simulation experience helps them to make proper clinical judgment. Additionally, it was said that practise and examinations in the skills laboratories help them develop a questioning attitude. Likewise, the students in this study stated that learning in the skills laboratories gives them a picture of what to

find in the wards and gives them an idea of what to expect in real human beings. And to the students in this study, clinical judgment was also linked to the aspect of improvisation.

"What is good about the skills is that you are able to have a feel of what the clinical area is all about it …, at least it gives a you a picture of the ward so that when you meet that kind of situation you are able to say I will do it this way and that way according to how you were taught and what tips you were given, and after practicing on the dolls you are able to have a picture that if a doll does this at least a human being will respond this way so that when you are now practicing on a real human being you are able to note the differences and therefore it gives a better experience"(G6S5)

"…because you have an idea of what kind of resources that you need for each and every type of procedure, when you go to the hospital… you are able to improvise something that is similar to something that will help you conduct that procedure in the similar manner because you have an idea that in the skills lab I had these things and when I do like this it will do the work, as a real resource will do…" (G6S5)

Reinforcing realism in skills laboratory learning was said to be the ultimate goal to help students immerse themselves in real life situations (Ricketts, 2011; Gormley, Sterling, Menary and McKeown, 2012; McNamara, 2014). In these studies, it is further commented that the skills laboratory replicates real life scenarios for students to explore and develop critical thinking, problem solving and practical skills. The students find the replicated learning experiences more appropriate for their learning. In many Malawian hospitals, just like many other developing countries, resource constraints are a reality and improvising with something that is similar adds value in reducing the risks of sub-standard patient care.

Apart from learning to practice, the participants also expressed that the learning environment in the skills laboratory facilitates gaining of competencies and also builds their confidence.

Sub-Theme: Gaining competence and confidence

In this sub-theme, the participants expressed that the practice sessions help them gain confidence**.** It was expressed that it is better to gain confidence and competence in the skills laboratory first other than on real human beings. It was stated that the environment equips them with baseline competences.

"It's really nice to go through the laboratory before we work with normal/real people… the skills lab provides us with the baseline competences. You have to start with mastering the theory before going to the clinical and on the other hand it also builds confidence because you first learn to work with the dolls and if you fail you encourage yourself to say it's just a doll and when you go to the real person you are confident enough to do the procedure" (G5S1).

"it also helps us to be confident enough because when you practice a lot in the skills you become competent in whatever you do that means you will not be doing harm to the patient you will be doing it the way it has to be done" (G2S2).

In line with the above findings, other researchers have documented that clinical learning experiences in the skills laboratory increases confidence as well as competence among the students (Harder, 2010; Lewis and Ciak, 2011; McNamara, 2014). The opportunity for hands on practise makes everything else make sense and provides concrete experience in the students. Furthermore, in a study by Dehmer, Amos, Farrel, Meyer, Neuton and Meyers (2013), it was suggested that there is need to maintain confidence and competence gained in the skills laboratories when the students are placed in the practical sites. However, among medical students, it was noted that confidence and competence diminished among the fourth year students because of limited exposure to the practical experiences in the practice sites and limited learning experiences in clinical sites. It was therefore, suggested that the educators' need for a more structured system to ensure that appropriate clinical experiences are planned to maintain the confidence and competence gained even in clinical sites.

Apart from building confidence, students also expressed that practise in the skills laboratory reduces nervousness and anxiety.

"… there is also no nervousness when you first practice in the skills lab, the nervousness is gone and when you go to practice in the ward on a patient, it's like you already know how to do the procedure and there is no nervousness(G6S8)

"…it was good to practice in the skills lab because it tends to reduce some anxiety when you are in the skills lab…" (G3S4)

Similar to the findings on anxiety, were the results of studies conducted at the University of Nebraska Medical Center and Auburn University America (Gore, Hunt, Parker and Raines, 2011; Megel, Black, Clark, Carstens, Jenkins, Promes, Snelling, Zander,

Bremer and Goodman, 2012). In both studies, anxiety scores of students who had preclinical simulation were significantly lower than anxiety scores in students who did not have preclinical simulation learning experience. Different from the study findings above, were the findings of Nielsen and Harder (2013). Students were anxious in the skills laboratory due to the learning styles used such as being observed and video recorded. The students were not comfortable with the awareness of being video recorded. It was therefore, suggested that appropriate learning strategies should be used to reduce anxiety and fear in the students. The issues of anxiety were also discussed at Rush University (2012). Students suggested that clinical learning experiences should always aim at assisting the students to overcome feelings of nervousness or feelings of being overwhelmed and build their lack of confidence among others.

In addition, a study Levett-Jones, Pitt, Courtney-Pratt, Harbrow and Rossiter (2015) among first year students' fears and nervousness increased when the first clinical experience allocations were out. Among others, students' fears and anxiety were related to feelings of in adequate clinical preparation, fear of failure and fear of unknown. It was then concluded that even though students use the skills laboratory prior to clinical exposure, an element of fear and anxiety still exists in the first years which educators should always be aware of. It is said that it is important to be cautious because fear, anxiety and nervousness makes it difficult for the students to achieve the clinical learning objectives and expectations during the clinical placement (Katz, Tufford, Bogo and Regehr, 2014; Levett-Joneset al., 2015).

Commenting further on the factors that facilitate gaining competence and confidence, was the availability of nurse educators in the skills laboratory. It was acknowledged that their presence in the skills laboratory becomes an opportunity for feedback and to be corrected of their mistakes, an opportunity that is rare in the practice sites.

"The other beneficial thing about the skills lab is that there is student supervision by our lecturers because when doing procedures, they are there watching other than in the hospital…when you make a mistake the lecturer is there to correct you other than in the clinical area because sometimes you cannot have your teacher by your side or a nurse in-charge…" (G6S3)

"the skills lab also gives us the chance to make mistakes that you can't make them on human beings so I think it is good that we have to practice in the skills lab before we go into the wards" (G2S4)

In a study by Ewertsson et al. (2015), students indicated that they require teacher-led learning experiences for accurate demonstrations. It was further expressed that they ought to be present in the clinical sites as well because clinical mentors consider clinical teaching burdensome (Svejda, Goldberg, Belden, Potempa and Calarcos, 2012). It was expressed that it takes a lot of their time to teach the students. Thus, the need for nurse educators' availability in the clinical sites was supported. Commenting on the staff shortage in the practice sites, MacIntyre, Murray, Tell and Karshmer (2009) in their analysis of registered nurse shortage in the United States, a projection of staff shortfall of 34000 was made by 2020. Thus, the reality of staff shortage in practice sites will continue to prevail. It is not surprising then that in many practice sites in developing countries, nurse educators responsible for the skills laboratory are the same ones who are also expected to continue clinical teaching in the clinical sites (Saarikoski, Kaila, Lambrinou, Cañaveras, Tichelaar, Tomietto and Warne, 2012; Hall-Lord, Theander and Athlin, 2013; Nielsen, Noone, Voss and Mathews, 2013). As such, adequate nurse educators for effective clinical learning are integral to successful clinical teaching both in the skills laboratory and practice sites. It ensures correct conduct of clinical skills and prevents students from mastering shortcuts (Morgan, 2006).

Sub-Theme: Psychological and communication preparation

Learning experiences in the skills laboratories has the capacity to prepare the students psychologically and develop communication skills. Putting on a uniform helps them remember the hospital environment and are reminded on how to behave differently if they are in the practice sites.

"…outside (referring to outside of the skills laboratory) we are always noisy, so cheerful but when we are in the skills lab we are taught how to conduct ourselves, how to treat patients, how to communicate with them, so that prepares us psychologically, …. we are able to say that this is how I should behave in the hospital and this is what I should do and this is what the patient is expecting from me, so it prepares us psychologically… " (G6P7)

"… being in uniform is a good thing in the laboratory because when you are in uniform and you are doing those procedures you feel like you are really working with the patient" (G2S4).

Although, the element of psychological preparation is an essential element of students' preparation prior to exposure to real life experiences with human beings, there is paucity

of research studies in this area. Katz, Tufford, Bogo and Regehr (2014) conducted a study on simulated learning environments for students in social work. Interviews with simulated clients prior to real clients' becomes a major component of students' preparation for them to gain competence. In addition, the results showed that there is need for educators to train and prepare the students affective states and the ability to regulate their emotions in a simulated environment. It was documented that students become easily emotionally regulated by intense client emotions when exposed to practice sites. It is further argued that if students are not adequately prepared psychologically for the experiences at an early stage for clinical situations, students can develop defensive mechanisms which can have an impact on their well-being and clinical performance (Grant, Kinman and Alexander, 2014). Thus, the scarcity of research findings related to the psychological preparation appears to be a component to be critically explored further in nursing's skills laboratories globally, as well as in Malawi.

In summary, the findings on the theme of positive learning perspectives, suggest that the learning experience in the skills laboratories have a positive impact on students' clinical learning. It helps them to prepare for practise prior to clinical exposure to various practice sites. The environment builds their confidence, competences and enables them to prepare emotionally for the real life experiences. Anxiety reduces as they start developing effective communication skills.

4.4.2.2 **Theme two: Nature of practise sessions**

The findings are categorized into the sub-themes: demonstrations and return demonstrations, nurse educators' skills variation and weighting of theory and practise sessions.

Sub-theme: Demonstrations and return demonstrations

Participants expressed how the practice sessions in the skills laboratories occur. To some participants, the demonstrations and return demonstrations are appropriate for the students expressed as "just okay'. And 'just okay' may mean that they are less than satisfactory. Some students expressed that the demonstrations and return demonstrations were good because they are coupled with reflection and feedback about the learning experience. However, only a few students are able to conduct return demonstrations in the presence of the nurse educators whenever practise sessions are scheduled. According to the students' observations, nurse educators expect every student to perform better in the clinical area when in actual sense not everyone had had a chance to practise in the presence of the nurse educators in the skills laboratory. In-equality in practice opportunity is illustrated in the following excerpts:

"…the teaching and learning methods are' just okay' because most of the times the lecturer will demonstrate the procedure and then allow a student to do the procedure and after that the lecturer and other students would comment on how it has been done" (G4 S4)

"the demonstrations and return demonstrations are good … the problem is that after the lecturer has demonstrated may be only two students have a chance to do the return demonstrations or sometimes even one student…." (G6S3)

"…after the clinical instructors have done a demonstration only one student is given a chance to do the return demonstration of which the rest we are just watching/observing so… when we go to the wards the same instructor will say "what are you doing now" yet in the return demonstration you were not given a chance to practice so it becomes a challenge" (G7S1)

In a study by Freeth and Fry (2005), they found that tutors' expert demonstrations were greatly valued because demonstrations have the capacity to facilitate the need for professional development of expertise and update. In addition, individual students' advocated return demonstrations because of the ability to facilitate active participation. Furthermore, return demonstrations help nurse educators to evaluate how much the students grasped. Feedback after return demonstrations improves the skill performance (Jeffreys, 2005; Morgan, 2006; Gaberson and Oemann, 2007; Ahmed, 2008). Commenting from Kolbs (1974) perspective, students'learning cycle, learning involves a four-stage cycle where every individual student moves from the concrete experience (*Feeling*) to reflective (*watching*) observation, to abstract conceptualization (*thinking*) and to active experimentation (*doing*). Individual students move in different paces through the cycle and preferences to learning approaches also differ. Thus, the college skills laboratory provides an environment for student flexibility to individual learning approaches (O'Connor, 2006). However, currently, there is learning inequality among the students because only few students have the opportunity for return demonstrations.
With regard to the nature of practise sessions, the students expressed their concerns on theory and skills laboratory learning

<u>Sub-theme: Balancing theory and skills learning</u>

Currently, at the college, the skills laboratory teaching and learning is embedded within the theoretical block which ranges from five to six weeks from the second year upward, except for the first years whose theoretical block is twelve weeks. The participants

expressed their views on the content covered in class in comparison with practice sessions in the skills laboratories. They expressed the need to balance time for theory and that adequate time should be allocated for the practice sessions in the skills laboratory.

"*…more hours are allocated to theory than practical sessions … but most of the things that we do in the theory part have a practical component so we need to have more time to practise in the lab ofcourse, the theory is also important but there is need to balance between what we are doing in theory and the practical requirement…" (G5S3**)***

*"… we usually have a long time for theory than practical which is not doing us good we are just doing more/ becoming more theoretical than being more practically oriented, this is another challenge we are facing**.** I would recommend if there was more time allocated to laboratory skills because our profession is hands on and we need to learn more of the skills than theory" (G7 S6)*

Linking the findings on weighting of theory and skills laboratory learning with the works of other researchers worldwide was not easy. There is a paucity of research findings specifying the standard weighting between theoretical and skills laboratory learning in nursing education. However, in one of the surveys conducted by Strand et al. (2009), students commented that more time ought to be set aside for practical skills. Strandet. et al. further commented that learning to practice is a very critical aspect which teachers have to embrace with serious commitment. Gaberson and Oermann (2007) alsosuggest that once a nursing education program embraces simulation focused learning, decisions to locate where the learning activities are to be placed within the timetable and the curriculum should be made. Furthermore, the curriculum plays a major role in outlining the courses, examining the key threads, content and critical areas of importance to be learned in a simulated environment. Thus, it allows proper coordination because faculty has time to plan and implement the simulation learning activities effectively. A report by MacIntyre et al. (2009), suggests that institutions reconsider the number of hours for simulation learning and clinical practice learning in light of the expected competencies. In the USA, Issenberg, McGaghie, Petrusa, Gordon and Scalese (2005) conducted a systematic review to identify and synthesise features that contribute to effective simulation in medical education. From the review, results showed that curriculum integration of simulation exercises into the students' normal schedule with clinical practice yields effective clinical learning.

Commenting further on the nature of clinical learning in the skills laboratory, mixed views were expressed on the issue of objectives for each practice session.

"*ya sometimes we are told that you will be practising this and that but sometimes we are not told. When we are told, we prepare for it like we have the objectives but when…" (G1S3)*

…we don't have the objectives because we are just taught that this time you are going to do CPR then so what we want to achieve, we just say we will achieve CPR but specifically, we should have the objectives to say at the end of this procedure, you should achieve this and this and that if you miss this, you are wrong" (G7S5)

Issenberg et al. (2005) and Norquist and Sundberg (2015), from their systematic reviews, reported that learners are likely to learn effectively when learning outcomes are clearly defined according to their level of training. Learning outcomes help to clarify how simulation learning compliments clinical education and patient care (Norquist and Sundberg, 2015). Commenting further on learning outcomes, Eisold, Poenicke, Pf€altzer, Muller (2015) conducted a study in the intensive care unit, as one of the centers of medical education in Germany. In this study, defining the goals and objectives of a course to guide students learning was considered one of the six- steps approach towards effective simulation learning. Similarly, O'Connor (2006) is of the view that simulation learning ought to consider the five characteristics of simulation templates namely objectives, fidelity, complexity, cues and debriefing with guided reflection. Students are therefore to be given a list of skills to review prior to the practice session. In this way students come to the skills laboratory prepared for the different skills and educators are helped identify and mobilise the relevant equipment and resources that are required for students to meet their objectives.

In addition to the issue of objectives, the participants commented that learning in the skills laboratory is reduced even more when progressing to the other years. Again the students expressed the need for every student to practice in the skills laboratory first before clinical exposure.

"…as we have moved from first year to second then to third year we do have very little chances to go to the skills lab just because we do spend most of the time in the classes during theory block and after that we are sent to the clinical ward where we go without prior practicing in the skills lab and we do things which we have never practiced

before… it would be better to have time to practice in the skills lab before we go to the clinical area" (G4S4)

"…having gone to different hospitals in Malawi from the south to central region,… it's better for each and every student to have exposure to all the procedures in the skills lab as a must, because what happens in the clinical area/clinical practice is not ideal because while in the clinical area we are sometimes taught by Nurse Midwife Technicians so we learn from the skills they know and not what is ideal, so each and every student should be a must to practice in the skills lab and try to master everything in the skills lab" (G3S2)

In line with the above study findings, are the results of a study conducted at the College of Medicine at King Saudi University in Arabia (Abdulghani, Al-Drees, Khalil, Ahmad, Ponnamperum and Amin, 2015). From the study, students expressed that basic skills such as catheter insertion, suturing and others, are best practiced in the skills laboratory and that tutors are very helpful. Similarly, Das, Townsend and Hasan (2002) reported that senior students and interns in their first postgraduate year expressed that prior training in the skills laboratory was helpful to them. Likewise, the senior students enrolled in a women's health nursing program at the University of North Florida reported that they had confidence and satisfaction in the maternity wards after their experience in the skills laboratory (Wagner, Bear and Sander, 2009).

Sub-Theme: Nurse educator skill variation

Students expressed that there are some clinical teaching skill differences among the nurse educators themselves and also with those in the clinical placement sites despite the availability of procedure manuals in the skills laboratory. Normally, students are divided into smaller working groups with one or more nurse educator allocated for each group during practice sessions. It is in these groups that students report discrepancies in the performance of a procedure and during clinical placement. As such, it confuses the students because they have different versions of doing the same procedure. Differences also exist between what is learned in the skills laboratory and the practice sites.

"But one thing that I have also noticed from our lecturers since 1st year is that there are times when a lecturer teaches some procedure different from another but the same procedure, and it has been difficult among us students because we have different versions of the same procedure, some students say our lecturer told us this and another

group will also our lecturer has told us this so it becomes contradicting and confusing to us as students "(G5P5)

"…sometimes when we go to the ward they (referring to the Hospital staff) tell us something different while the lecturers tell us also something different so sometimes it brings some kind of confusion (it confuses the students when they go for clinical experience) in us, at least they should utilize those nurses and matrons in the ward" (G2S3)

Similar findings were also identified in a study conducted in Sweden where differences were noted by the students when in the clinical sites but not in the skills laboratory (Haraldseid et al., 2015). The majority of the students expressed that there were discrepancies among members of staff in the college and those in the clinical area on how to perform some procedures. Those differences contributed to lack of confidence in the students when in the practice sites. The students also reported that these discrepancies make it difficult for clinical learning. Therefore, suggestions were made that standard best practices be instituted for both the school and the clinical practice sites. As such, accurate demonstrations in the skills laboratory must be advocated to help the students learn the ideal way.

At the college, students also suggested the involvement of clinical staff especially when developing the teaching guidelines to iron out the differences.

"…at least they should involve those guys in the hospital, the matron, the sisters in-charge they should at least meet up with the sisters and the matron as they should come up with one checklist as in this procedure is done in this way, this is how do we do it in the hospital, then the sisters and the matrons should be able to explain that this is the way it is done and thereafter come up with one thing (guidelines) so that we should not be confused (G7S3).

Staff involvement has also been proved as a medium for sharing and promoting in the use of evidence based practice among the clinical staff members (Wilson, Ice, Nakashima, Co, Morse, Philip and Vuong, 2015; Tacia, Biskupski, Pheley, Lehto, 2015). It is documented that it promotes global improvement of clinical care (Elyssa, Plath, Webb, 2015). Furthermore, other researchers have commented that involving the clinical staff by the nursing education institutions reduces the evidence of practice gaps in the practice settings (Camden, Rivard, Pollock and Missiuna, 2015). As such,

strengthening team work within and with clinical staff is greatly recommended because of its benefits both to the students and also the patients.

In summary, students expressed that they benefit from demonstrations and return demonstrations in simulation laboratories. The environment in the skills laboratory is more conducive to learning than what the clinical practice site offers. Although the return demonstrations have a positive influence on students' learning, there are inequalities in return demonstrations. In addition, time allocated for skills laboratories experiences is not adequate and sometimes there is skill variation among members of staff and also variation with the clinical staff. Thus, suggestions to increase the time on skills laboratory learning has been supported because the learning environment is better than in the practice sites.

Finally, the next theme presented and discussed is 'factors that affect the nature of clinical teaching and learning' at the college.

4.4.2.3 Theme three: Factors affecting skills laboratory learning

The participants highlighted a number of factors that affect learning positively and negatively in the skills laboratories. The factors were grouped into four sub-themes: resources, infrastructure, and student versus educator ratios and skills laboratory operational hours. Suggestions to improve on negative factors in order to facilitate effective clinical learning have also been presented.

Sub-Theme: Variation in resource availability

The issue of resources has a double connotation because it affects learning both positively and negatively. Positively, the resources available in the college laboratory are much better than those in the practice sites. These resources, including the procedure manuals, facilitate appropriate learning processes.

"…in the skills lab there are some resources which when we go to the hospital are not available so when we are in the skills we learn something which is real during our practical sessions using the available resources unlike when we go to the hospital where the resources are not adequate (G3S6)

"I think also the skills laboratory also helps in such a way that when you are doing the procedures we do have the procedure manuals in which we refer to when doing the

procedures other than in when you go for the clinical where you just do the procedures so when we go to the hospital we are able to practice what is needed (G6S6)

Negatively, the students expressed that the resources are not adequate and that there is need for the college management to mobilise more resources and equipment to improve their learning experiences.

"…*yes we do have resources in the lab but I don't think they are enough so I think there is need to have all the resources that are required for the different procedures because in the clinical area the resources are not there and in the clinical area there is a lot of improvising so I think in the skills lab we need to have ideal (G4S3)*

"…in the other skills lab we do have some outdated old resources but we are in a current era with some new things coming so maybe management should also take that into account (G4S1)

These findings are not uncommon. A study by Haraldseid et al. (2015), in a Norwegian clinical skills laboratory, students felt that some resources were old, reused and not available. This often led to students' frustration and dissatisfaction. O'Connor (2006) commenting on the same issue said that it is important to know what resources are available prior to practice arrangements for necessary adaptations. It is also recommended that faculty be committed for regular purchase of adequate and updated resources and equipment (Gaberson and Oermann, 2007). Furthermore, O'Connor (2006) is of the view that the breadth and depth of equipment and supplies in the college skills laboratory often reflects the faculty's commitment to simulation learning. Lee, Lee, Wong, Tsang and Li (2010) shared their experiences on the establishment of an integrated skills training center for undergraduate nursing education in Hong Kong. From their experiences, an adequate budget for resources and equipment should be determined apart from the normal running costs of the institution and designated space should meet the institutions requirements.

<u>Sub-Theme: Shrinking space</u>

Suggestions to increase the size of the college skills laboratories have been made. Currently, the students' intake has more than doubled. Although, the college has three skills laboratories, the students still complain of overcrowding due to the limited space in the skills laboratories.

"… *in the past they were of course enrolling few students but now it's like they have increased number of students enrolled and there is overcrowding in the skills lab so it becomes a challenge let's say you are trying to see a demonstration it becomes a challenge so we need a bigger skills lab to accommodate the students (G2S2)*

"…if they expand the facility, it would accommodate a large number of students and if it accommodates a large number of students, time will not be a problem, students can go in and practice in large numbers (G3S3)

Although, there is a wide variation in the space for simulation learning worldwide, ideally, it is recommended that the college laboratories should be designed to simulate the practice settings with equipment, resources and partitions similar to the clinical settings (O'Connor, 2006; Gaberson and Oermann, 2007). However, at the college under study, only one skills laboratory resembles the hospital pattern and plans are already underway to renovate and build tailor made infrastructure for effective simulation teaching and learning activities at both campuses. With regards to cost and expenses, Lee et al. (2010), suggest that establishing a simulation center is costly. As such, external donor support must be solicited to fund the infrastructure. Harden (2015) furthermore commented that when considering cost of the simulation learning expenses, it is important to consider the cost with regards to the overall duration of the entire training program and that comparison should be made between the money spent on simulation learning activities and the cost benefit ratio for the different elements of the education program.

Sub-Theme: More students, more haste

Students increased intake has not only impacted the demand for more space but also the time for conducting clinical demonstrations. Nurse educators increase their speed during the clinical demonstrations in trying to catch up with the numbers. Students expressed that effective learning does not take place which contributes to limited or no practice at all and it negates the purpose of the skills laboratories.

"…they (nurse educators) do things in a hurry to finish the whole group of 200 hundred something on a day, in the afternoon, it's difficult to be honest… to manage and finish a group of two hundred something so when you go into the lab, 30 minutes each group you don't have even the time to practise you switch to the other groups without doing the return demonstrations" (G2S1)

"…we are almost 220 and we only have 3 instructors which is making learning difficult because it means instructors having 20 students per session of which we cannot learn, If the clinical instructor/nurse educators have 10 students per session, then learning would have been better" (G7S2)

Students felt that increasing students' number should not derail opportunities to learn in the skills laboratories. Rather, nurse educators should devise mechanisms to still ensure that students have a chance to practise in the skills laboratory while waiting to recruit more nurse educators. Employing full time members of staff was suggested. In addition, it was also suggested that promoting individual return demonstration would also facilitate individual feedback on the students.

***"…** it would be better if the lab had more members of staff working full time so that they could give each other shifts in order to attend o the students whenever the students want to have access after 6pm, then there will be somebody attending to them" (G3S3)*

"…it would good for the management to also consider the number of lecturers for them to be able to increase the number of sessions in the lab" (G4S2)

***"**Supervisors should make the effort to teach us one to one and not always in groups. Given individual feedback will help us, it is very beneficial…" (G1S6*)

Acton, Chipman, Lunden and Schmitz (2015), in their study on simulation at the University of Minnesota, documented that simulation developed to teach psychomotor skills require active faculty involvement and low learner to faculty ratios to ensure sufficient practice with effective feedback. It was identified that the total number of hours spent on simulation increased from 2006 to 2013. It was suggested that faculty should be creative to sustain and manage the workforce successfully and that appropriate measures to prevent faculty burnout should be put in place.

<u>Sub-Theme: Opening and closing times</u>

The current way of operating the skills laboratories negatively impacted clinical learning because it is accessible between 07:30and 17:00 at the Lilongwe campus and there is one full time un qualified member of staff. The students do not have the freedom to use the skills laboratory when the need arises.

"I don't think the skills lab works to the best interest of the students because you don't have time to practise in the lab so most of the times you are asked to do individual

return demonstrations after just being taught in class… we don't have enough time for the return demonstrations…" (G3S4)

"…the skills lab is open at 07:30and closes at 17:00 which is the same time that we are in class so we don't have much time to practise during our free time" (G3S6)

Contrary to the findings above, were results by Ewertsson et al. (2015), at one of the Swedish Universities where students had unlimited access to the skills laboratory. Students had repeated experiences of learning using both low and high fidelity simulation and the students appreciated the privilege of repeated practice. Students had enough hours to do it again and again to reach perfection. However, it is not well documented on how the skills laboratory is operated to accommodate the students' needs. In this case, the limited time spent in the skill laboratory denies them the opportunity to deepen their knowledge, understanding and application of their skills in the clinical site (Ewertsson et al., 2015).

To overcome this challenge, students suggested that the skills laboratory should be opened at a convenient time from 16:00 and over weekends as well. These times will give them a chance to access the skills laboratory to practise.

" *it would also be good for the skills lab to be opened just like the library, on Saturday in the morning and Sunday in the afternoon because if someone needs more practise on the procedure and may be during the week she doesn't have time so she can do those procedures over the weekend"(G3S6)*

" …the skills lab must not be open only the time when the lecturer is about to demonstrate but there should be flexibility so that when students want to go on their own to practise without a lecturer …"(G6S3)

In a study by Hoogenes et al. (2015), on student-led learning in Canada, one group had time to practise on their own while the other group of students did not have time to practise on their own. The findings indicated that students who had a chance of practising on their own felt that they had control over their learning and were more actively involved than a group which had no chance to practise on their own. It fostered more motivation and positive attitudes than the other group. Hoogenes et al. (2015) further commented that active learning improves motivation and engagement in the process of learning. Repeated practice was greatly appreciated. However, it is suggested that educators be cautious about when to leave the students on their own

because all students require expert demonstrations at the onset of their clinical learning. Thus, nurse educators are further encouraged to explore the ways to maximise the skills laboratory use to meet students' needs.

4.4.2.4 Conclusions drawn from the students' perspectives on clinical learning

In conclusion, the students' perspectives of clinical teaching and learning have been presented and discussed. The students have expressed that the simulation laboratories provide better learning experiences than the clinical sites.

- The skills laboratory learning environment enables students to transform nursing theory to practice. Demonstrations and return demonstrations facilitate smooth transformation of theory into practice. In addition, students develop communication skills, professional behaviour and discipline.

- Resources and equipment facilitate learning opportunity without fears of inflicting pain and discomfort. Repetitive practise is acceptable on the same manikins. However, resources and equipment are not adequate for the current student numbers and some are outdated.

- Although nurse educators have no time to observe return-demonstration for every student and to give feedback, the presence of the educators in the skills laboratory is much preferred because they are scarce in the practice sites.

- There is no consistence in objectives and learning guides given for each session in the skills laboratory and some skill variation is experienced during the clinical practise sessions.

- The skills laboratory operational hours do not meet students' clinical learning needs and therefore suggestions to open the skills laboratories during hours accessible to them for practise can add value to their clinical learning.

- High student: teacher ratios influence the lecturer to conduct the demonstrations in a hasty manner

4.5 PART D: STUDENTS' PERSPECTIVES OF THE OSCE

This section presents the students' perspectives of the OSCE, a strategy used to evaluate clinical learning in the skills laboratories. The questions (Appendix L) focused on how OSCE is experienced by the students. One theme emerged from the data which was termed 'nature of the OSCE perspectives'. Two sub-themes were identified from the theme: good method but experienced with challenges and feedback preference.

Table 4.4: Students' OSCE Theme and Sub-Themes

Theme	Sub-Themes
1. NATURE OF THE OSCE PERSPECTIVES	▪ Good Method but Experienced with Challenges ▪ Feedback Preference

4.5.1 Theme One: Nature of the OSCE Perspectives

Both the junior and senior students indicated that the assessment method is appropriate for students' evaluation. However, it was felt that the OSCE experience is affected with a number of issues such as spending more time in the clinical sites, resource constraints, learning guides and the type of feedback given to the students just to mention a few. As such, the sub-themes were grouped into two: good method but experienced with challenges and feedback Preference

Sub-Theme: Good method but experienced with challenges

Students expressed that the OSCE strategy is a good method of students' evaluation. It enables the lecturers to evaluate the students' clinical learning outcomes. However, spending more time in the clinical sites seems not to adequately prepare them for the examination. The clinical sites as already expressed earlier on, subjects them to improvisation and shortcuts.

"OSCE assessment is good to us as students because we are able to do/ the lecturers are able to assess us on what we have been doing/learning in the ward is…." (G6S6)

"*… It's a good method of evaluating the students but there is a big challenge … what we learn there (referring to clinical sites) is not what we are assessed on during OSCE …"*(G3S2)

The OSCE being a good method of student evaluation has been supported by other researchers (Nulty et al., 2011; Liddel, 2014; Muldoon, Biesty, Smith, 2014; Harden, 2015). In these studies, it is documented that the OSCE is one of the applicable, reliable and valuable strategies to assess clinical skills and the related competencies.

Additionally, a large number of students can be tested simultaneously within a short period of time. Furthermore, the OSCE facilitates and encourages deeper learning (Liddel, 2014). It enables the learner to experience more meaningful learning through reflection. Similarly, Branch (2014) in his study in the United Kingdom, students performed well on all the OSCE stations and they considered it a valuable practical experience to be adopted for second year students' evaluation in the pharmacology and therapeutics module. Different from the study findings above, were the results of a study conducted by Muldoon, Biesty and Smith (2014), at the University of Dublin. Their findings showed that midwifery students' attitudes towards the OSCE were neutral and some were not sure whether the OSCE strategy is appropriate for assessing clinical competence. Thus, a follow up study was recommended to explore further the reasons behind these results.

Similarly, Phillips, Zuckerman, Straus and Egol (2013), conducted a study in New York to evaluate the impact of clinical site environment on students examination during OSCE. Although the study was not conducted from an undergraduate program, the candidates enrolled for the orthopaedic surgical residents training program reported that the clinical practice prepared them adequately for the OSCEs. The OSCE environment was similar to the practice setting.

Commenting further on the challenges, students' made an observation that although the OSCE is conducted in the skills laboratory, their learning experiences occur more in the clinical sites. It becomes difficult for the students to perform the procedures in the correct manner. They fail to identify the correct resources for the appropriate procedures. Their performance outcome gets affected as well during the OSCE.

"…we do OSCE in the skills laboratory but we spend much time in the ward …"(G5S4)

"…we do improvise so many things so when it comes to OSCE we are given things/resources that are ideal/needed for the procedures but which we were not exposed in the ward… and those things/resources are like new and you take things that are not for that station/scenario so you find that in the end you have failed"(G3S2)

A study by Munkhondya, Msiska, Chilemba and Majamanda (2014) at the college understudy, it was acknowledged that students indeed spend more time in the practice sites with minimal time in the skills laboratory. Educators sometimes make arrangements for skills laboratory clinical practise when OSCEs are approaching.

However, not all students benefit from this arrangement and suggestions for uniformity were made.

"what we were doing in Lilongwe… like when most of the students don't know how to do those procedures they could come in between the clinical areas/when we are in the clinical areas they could come and grab some few students to teach them the same procedures, the other time, the next day they would come again, like that so I think that could be an idea that can be brought about to them" (G2S1)

The use of simulation is supported when clinical settings do not provide quality clinical learning opportunities (Gaberson and Oermann, 2007). Gaberson and Oermann (2007) continues to comment that other health care settings may indeed not be appropriate for clinical learning due to resource constraints or patients may not be available. However, research has also shown that the use of what is known as practices of concern from the narrative pedagogy might inform nursing education institutions on new ways of clinical learning (Ironside, 2015). In this concept, multiple perspectives of the clinical challenges from the students and teachers are shared and explored. Together, they reflect and interpret their challenging clinical experiences to discover new possibilities of teaching, learning and evaluation. Thus, the experiences of the students can be turned into positive clinical learning opportunities.

The students also expressed a concern on the learning guide and the checklists that are used during OSCE. At the college, students are provided with modules with checklists in it, for the different nursing skills required for the practice modules. In this case, it appears that the modules do not have all the checklists for the different nursing procedures from what was said:

I also think that we should be given the checklist before the OSCE because sometimes we experience differences with the teachers, like one teacher will say we do it this way and the same procedure the other teacher will do it different so when you are in OSCE you just do what you have got from one teacher while the other supervisor in the cubicle may mark you wrong so you may miss the other things and do them wrongly" (G1S4)

"I think the lecturers who want to assess us on what we have done well I think they should provide really provide a standard checklist so that when we are in the clinical area, we should practice on what the college wants us to learn and then rating us at the end will be fair…" G3 S6)

Commenting from the perspectives of OSCE best practice guidelines, it is the responsibility of the nurse educators to judge students using a marking guide that enhances both rigor and reliability of the assessment (Nultyet al., 2011 and Mitchell et al., 2015). It is documented that it is an excellent approach to use standardized clinical evaluation forms. Additionally, it is recommended that each student should have a copy of the evaluation tool at the beginning of the clinical experience and be reviewed by the nurse educators relating with specific examples of behaviour outcomes that would result in a passing or failing rating (O'Connor, 2007).

Apart from the checklists challenges, students felt that the attitude of the nurse educators during the conduct of the examination and their un-availability in the clinical sites affects their performance as well.

"*Sometimes the supervisors(referring to assessors) in the cubicles are unfriendly which makes the one doing the procedure to be under pressure because you just think that maybe I have already failed, 'why are they acting like this?' "* (G1 S3)

*"…there are some assessors that are difficult, 'umapezeka kuti watopadi' (sometimes you get tired during the examination) and they start laughing, so when they start smiling and laughing they continue to disturb you" (G7P5**)***

As commented earlier on, the nurse educators' availability in the clinical sites becomes an added advantage because it promotes sharing and use of evidence based practice with the clinical staff members (Wilson, Ice, Nakashima, Co, Morse, Philip and Vuong, 2015; Tacia, Biskupski, Pheley, Lehto, 2015). It is further commented that proper orientation of the examiners on how stressful the OSCE is, has contributed to improved examiners attitude (Shaban, Khater and Akhu-Zaheya, 2012; Liddle, 2014; Haraldseid et al., 2015). In addition, understanding the different causes of stress in students' examination is also one aspect that examiners should be made aware of. For example, in a study by Delavar, Salmalian, Faramarz, Pasha, Bakhtiari, Nikour, Ledari (2013), the main cause of stress among students was the examination itself. It was reported that students did not have adequate sleep the night preceding the examination day. Likewise, Muldoon, et al. (2014), found that 82 % of the students were nervousness, had stress and anxiety associated with the examination procedure itself. In another study, stress existed because the students were afraid their teachers would not conduct a fair evaluation on them (Shaban, Khater and Akhu-Zaheya, 2012). Still more, in another study by Shaban, Khater and Akhu-zaheya (2015) at the University of Jordan, findings on causes of stress were the assignment work-load and the clinical environment itself.

These findings suggest that some form of stress will always exist as has been the case in all examinations. As such, the colleges should plan to work out mechanisms that would alleviate unnecessary stress in the students. However, other study findings found that adequate orientation for both faculty and students and increased contact with studentshas played a vital role in improving faculty attitude and relationship with students (Shaban, Khater and Akhu-Zaheya, 2012; Liddle, 2014; Haraldseid et al., 2015).

Suggestions to improve the students' experiences with the OSCE from the students' perspectives were made.

"It would be also good to have adequate time in the skills lab for the procedures that we will be assessed on in the skills lab….." (G4S5)

"… the important thing is for the teachers to see how we are performing in the clinical sites… and I think we should have the mini OSCE before and after the clinical practice for preparation of the final OSCE" (G3S1)

Originally, the OSCEs were developed not only for clinical summative evaluation purposes but to also facilitate clinical learning (Liddel, 2014; Chisnall, Vince, Hall and Tribe, 2015). However, many nursing and other health related education institutions have used the OSCE for summative clinical evaluation of the students (Nulty et al.., 2011; Mitchell, et al.., 2015). The necessity of introducing formative evaluation in the skills laboratory is greatly supported (Gaberson and Oermann, 2007; Chisnall, Vince, Hall and Tribe, 2015). It is documented that conducting the OSCE in a formative way helps the students' familiarise with the procedure, equipment as well as the skills (Alinier, 2003; Liddel, 2014; Chisnall, Vince, Hall and Tribe, 2015). The formative experience helps students to build confidence, competence and to become more skillful professionals. Most importantly, the students have time to ask and seek guidance from the nurse educators. There is continuous feedback to and from the teacher to the students to improve learning. Eventually, the competences developed during this period become the basis for the final evaluation of the students (Gaberson and Oermann, 2007; Pinchok and Brandt, 2009).

Students passed OSCEs with 100% and their grades were better than those obtained during their first year after using formative assessment OSCE at the University of Hertfordshire, in the UK in a study conducted by Kirton and Kravitz (2011). At the college, formative OSCE's are conducted in year one and summative OSCEs in the

preceding years. Townsend, McIlvenny, Miller and Dunn (2001) at the United Arab Emirates University, conducted another study among medical students. The results showed improvement in the mean scores in different stations in the post-test OSCE.

Students also made suggestions that time for the scenarios should be properly determined for the different stations.

"*… they should also consider time for the assessment because most of the times like when you go or when you are having an OSCE you are given different procedures like may be the procedure of catheterization, and may be the next cubicle the other one is given a procedure like let's say intramuscular injection, now these two procedures may be given the same time, now for a student to go through these procedures you find that during catheterization the student is failing to complete the procedure because the time is too short..." (G3P4)*

"…the time keeper should be someone who is always consistent with the time because sometimes when they say, start the real time, everyone is starting and when they say stop it should the exact 6 minutes some seconds remaining then they say that you should stop, it's not on because when they say that we haven't finished the procedure on your remarks it is not good" *(G2S1)*

Time constraints during OSCE contributed to stress in a study by Selima, Ramadan, El-Gueneidy and Gaafer (2011) because students failed to finish the scenarios in some stations. As such, it contributed to students' loss of interest inthe use of OSCE for evaluation. And students' overall evaluation of the OSCE did not support its use.

Other studies have recommended that integrating best practice guidelines in the OSCE has positive contribution towards students' preparation for clinical practice (Nulty et al.., 2011; Mitchell, et al.., 2015). Two studies were conducted in Australia on the use of best practice guidelines (BPGs). The findings showed that the guidelines enhanced student confidence during clinical practice. Then a follow-up study was conducted to evaluate the feasibility and utility of using best practice guidelines in tertiary education settings with undergraduate and postgraduate nursing and midwifery students (Mitchell et al., 2015). The results showed that the BPGs were feasible to implement in both under and postgraduate nursing programs. The OSCEs were considered realistic, valuable and were perceived to be true to life. The students expressed that there was effective integration of professional skills and behaviours for good for clinical practice.

Sub-Theme: Feedback preference

Students expressed that the giving of general feedback to the students at the college was not to the best of their interest. There was a suggestion for Individual feedback for individuals to know their strong and weak areas.

"…the type of feedback that we are given is not the one that meets students' special needs /it does not benefit students individually…" (G3S2)

"feedback should indeed be given personally/individually (they all acknowledged with humming), it should be given to an individual, to the student that Mr so so, I think, on this part you did well but on this part you were supposed to do it this way, I think you should have more practice in this one, because that feedback can be of more help …" (G7S2)

"…yes its good to give us general feedback but I think it can also be beneficial if they were doing it individually because sometimes we might benefit if the lecturer who was assessing that student gives the feedback to the individual…" (*G1S1*)

Giving immediate and individual feedback to the students has been difficult to many faculty due to student large numbers, institution policies, rules and regulations or staffing levels (Nulty et al., 2011; Liddel, 2014). At the same time, individualized and immediate feedback has proved effective in assessment for learning. In a feasibility study conducted byLin, Clinciu, Swartz, Wu, Lien, Chan, Lee and Li (2013) at the University of Taipei, the feedback was helpful to the examiners. The examiners had real time feedback and were able to identify students learning deficiencies. Teaching staff were able to see student deficiencies during the OSCE implementation. This feedback therefore gave clues on how they would set up better learning environments for future improvement. In a study by Rush et al. (2014), immediate feedback was possible in an OSCA and not in the normal OSCEs at one of the United Kingdom Universities. During the OSCA, students received written feedback immediately after completing the seven stations. Students were not in favour of previous OSCEs because students were not having immediate feedback. Thus, students liked the OSCA because students knew the areas they did well and areas that need improvement. In addition, Liddle (2014) commented that feedback should aim at identifying areas for improvement, recognising well performing and motivated students as well as underperforming students.

At the college, the intentions of OSCE are to facilitate learning and to assess whether the students clinical performance have improved for the better in terms of knowledge, practice and attitudes (Munkhodya et al., 2014). Despite the challenges associated with

feedback, immediate feedback improves learning because students are aware of the specific areas that need improvement. Using the OSCE as part of formative assessments has the capacity to improve clinical teaching and learning of students in simulation laboratories.

4.5.2 Conclusions Drawn from the Students' Perspectives of the OSCE

In conclusion, the 'nature of OSCE perspectives' theme has highlighted the students' perspectives of the OSCE experience. Students like the OSCE method though a number of challenges exist. Thus, the following are the concluding statements:

- Negative experiences of the OSCE exist because of spending more time in the clinical sites where short cuts are common, in appropriate staff attitude, in adequate time allocation for the scenarios and differences in clinical practise, which confuses them. Introducing the OSCE as part of formative assessment is essential to improve teaching, learning and preparation for the summative evaluation.

- The group feedback, currently practised at the college does not address individual students' needs because the aim of feedback is to identify areas for improvement, recognition of the well performing students and motivation. There q suggestion for Individual feedback to meet the students learning needs.

4.6 SUMMARY ON THE SIMILARITIES AND DIFFERENCES BETWEEN THE NURSE EDUCATORS AND STUDENT VIEWS

SIMILAR VIEWS ON TEACHING AND LEARNING

Summary of the similar views of the students and educators on teaching and learning.

Both students and educators:

- Had positive views on the use of the skills laboratories. They all said that demonstrations and return demonstrations facilitate learning but increased student ratios does not allow individual practise.
- Expressed that resources in the skills laboratories are better than resources in the practice sites. They all suggested the purchase of adequate updated resources.
- Mentioned that the opening of the skills laboratories does not benefit the students fully and suggested the opening of the skills laboratories like the library. They all suggested increasing the qualified staff in the skills laboratories.
- There is no balance in the weighting of theory, skills laboratory learning and the OSCE weighting on students' clinical evaluation because students spend more

time in the clinical sites when 70% of the final clinical grade comes from the OSCE in the skills laboratories.

Different Views on teaching and learning

From the analysed data, there were no different views per se rather students and educators had different observations in some aspects of teaching and learning.

For example students expressed that there is no consistence in objectives and learning guides for each session in the skills laboratory and some skill variation is experienced during the clinical practise sessions.

SIMILAR VIEWS ON THE OSCE METHOD

Student did not comment much on the OSCE experiences. However, both students and nurse educators consider the method appropriate for students' evaluation. The students and lecturers expressed that students have more time in the clinical sites than the skills laboratory resulting students not having a chance to practise for the final preparation of the OSCE

Lack of students practice and clinical formative assessment in the skills laboratories prior to OSCE examinations results into suing shortcuts during the OSCE examinations.

The individual feedback preferred over the group feedback currently in practice.

DIFFERENT VIEWS ABOUT THE OSCE

- The experience of OSCE is experienced with challenges because of spending more time in the clinical sites where short cuts are common, in appropriate staff attitude, in adequate time allocation for the scenarios and differences in clinical practise, which confuses them. On the other hand, the educators expressed that the increased students' numbers, time the OSCE is scheduled and in adequate resources affect OSCE negatively.

- Educators viewed the feedback positively that it is given while the students memories of the OSCE were fresh but students viewed it as not meeting their individual needs.

- Nurse educators find it difficult to assess the improvement in student competence in some departments because OSCE is done when students are completing the program and at the end of the semester as a summative evaluation.

4.7 SUMMARY

In summary, this chapter has shown the clinical teaching, learning and the OSCE perspectives of both the nurse educators and students. Demonstrations and return demonstrations contribute effectively to students' clinical learning. The practise sessions, presence of the nurse educators, availability of resources and equipment make clinical learning environment more conducive to learning than the practice sites. The environment enables the students to transfer theory into practise, develop communication skills, professional behavior and discipline. However, students have limited practise sessions, which largely, affect clinical teaching and learning negatively. In terms of the OSCE, the method is good because the environment resembles the clinical environment; it is appropriate for large student numbers and ensures standardization of the examinations. However, the preparation for the OSCE is not adequate. Although the students, examination takes place in the skills laboratory, students spend more time in the other practise sites where shortages of staff and resources are common. One of the suggestions among others is to introduce the OSCE as part of formative assessment, which culminated into the development of a formative assessment framework to address most of the teaching, learning and OSCE challenges.

CHAPTER FIVE

THE FORMATIVE ASSESSMENT FRAMEWORK

5.1 INTRODUCTION

The Formative Assessment Framework developed from the concepts of formative assessment and deliberate practice. The findings from the qualitative data from phase 1 and the literature reviewed on the formative and deliberate practice concepts supported the process. The chapter presents the stages of development, validation and implementation of the Formative Assessment Framework.

5.2 PROCESS OF FAF DEVELOPMENT

The concepts of Formative Assessment and Deliberate Practice have been critical to the development of this framework. The adoption of four stages of developing a new curriculum model were from Humphrey's curriculum model (Quinn, 2001). The stages are planning, development, validation and implementation. However, it has to be noted that only the four stages were adopted, not the entire curriculum model. The critical review of factors and issues affecting clinical teaching, learning and evaluation (OSCE) from the qualitative data (Creswell and Clark, 2011) supports the development process. The researcher acknowledges that the concepts of formative assessment and deliberate practice have not been widely researched in nursing education. Thus, there is a paucity of research information from the nursing education perspective.

5.2.1 Planning Stage

This stage involved reviewing the literature on formative assessment, deliberate practice and research involving these concepts. The planning stage also involved analysing the data from in-depth and focus group interviews in phase 1. From these data sets, the factors and issues affecting clinical teaching, learning and OSCE method of evaluation were extrapolated, analysed and summarised and they led to the development of a formative assessment framework (Table 5.1). These factors highlighted the major issues that have both positive and negative impact on clinical teaching, learning and evaluation strategy. However, the framework has taken into consideration the issues that negatively affect the students' clinical teaching, learning and evaluation because the aim is to improve the quality of teaching, learning and evaluation of students.

5.2.1.1 Review of formative assessment and deliberate practice concepts

The concepts of formative assessment and deliberate practice are forms of teaching and learning assessments that have been operational in general education, music and sports to improve teaching and learning performance. The concepts are in use in general education and sports, rarely in nursing education, particularly regarding the skills laboratory.

Formative Assessment

The concept of formative assessment has its roots from the monograph of the American Educational Research Association from the works of Scriven (Andrade and Cozek, 2010). Scriven (1967) was the first author to introduce formative assessment in the practice of program evaluation. It aimed at assessing the effectiveness of a school program and the curriculum. Bloom, Hastings and Madaus (1981) were some of the earliest researchers of formative classroom assessment (Bloom, 1971; Pinchok and Brandt, 2009). They conducted a study to incorporate the use of feedback from unit assessments in which **feedback processes** directed students' learning. Students have exposure to unit assessments and feedback with **follow up instruction** and learning activities. Thereafter, students go through formative assessments until the completion of a unit. The results showed evidence of academic gains and improved learning attributes such as confidence and attitudes. Since then, many people have written about this concept but defining this concept has been problematic. Some authors have defined it by its characteristics and others by its use.

Formative assessment is a planned process: for instructional adjustments, based on students' performance feedback; gathering student learning evidence followed with instruction modification; for gathering evidence, using a set of tools to monitor students' learning progress and give feedback (Black and William, 2005; Popham, 2008; Dunn and Mulvenon, 2009; Heritage, Kim, Vendlinski and Herman, 2009; Pinchok and Brandt, 2009; Cauley and McMillan, 2010). From these definitions, formative assessment is a process where various tools and strategies used in classroom or clinical teaching and learning experiences to determine the evidence on what the students know, identify teaching and learning gaps and plan for future improvement at a given point in time. Upon further review of the works of the above authors, the following features of formative assessment have been outstanding: The deduction of the statement were as follows: it:

- is a process of several components
- used for the benefit of both the teachers and students
- takes place during instruction

- provides feedback to both the teachers and students which can be ongoing as instruction progresses or at the end of each unit
- provides instructional and learning adjustments

Although, there is a paucity of research in the use of formative assessment in nursing education, from the researcher's experience as a nurse educator, formative assessment has already been in use in theoretical and clinical teaching and learning. During theory, the educators embed formative assessments in the lesson plan in order to assess if students are internalising the theory during each presentation. It is also commonly used in mid-term assessments as part of continuous assessment which is considered as low-level formative assessment (Cauley and McMillan, 2010). In the clinical sites, case presentations are the common formative assessments used at the Malawian college. These types of formative assessments have helped the nurse educators to a certain extent readjust the method of instruction to improve learning (Pinchok and Brandt, 2009; Peterson, 2008).

A review of research studies on formative assessment has shown that the focus of research has been on individual characteristics presented earlier to prove their effectiveness in classroom formative assessment.

Mayya (2010) conducted a study with faculty members to explore the extent of the practices of formative assessment in health sciences education in a classroom setting at the South India University. The use of test questions was one of the common formative assessment practices by the teachers. The results indicated that 56 % conducted tests at the end of each unit, 82% gave individual feedback after marking the test papers and 80% used discussion of previous papers. Another study by Wassia, Hamed, Al-Wassia, Alafari and Jamjoom (2015), wanted to investigate the challenges of faculty and undergraduate medical students in implementing formative assessment for learning at King Abdulaziz University. The results showed that the mean score in terms of understanding the concept of formative assessment was the same between faculty and students. Balancing work and academic pressure for faculty and balancing study load, training and mental anxiety in students were the challenges that scored highly in relation to the challenges experienced when using formative assessment. Thus, there was a suggestion to endorse the formative assessment as a framework of assessment for learning in all educational systems through the government, accreditation bodies, policy makers and institutions. The suggestion aimed at orientating and making the concept familiar to the faculty and students in all levels of education systems for easy buy-in by the time students join higher institutions of learning.

These findings offer valuable suggestions on how feedback and tests facilitate effective student learning worth testing their use to improve learning.

In line with the use of OSCE as formative assessment, Chrisnall, Vince, Hall and Tribe's (2015) study among medical students in the United Kingdom the OSCE contributed positively to the summative OSCE's. The results showed a positive predictive value of 92.5% on students passing the summative OSCE and a negative predictive value of 21.5% for failing summative OSCE. Results of students' perception indicated that the majority of the students found formative OSCE, a valuable experience for the preparation of OSCE and that it helps in reducing examination anxiety. Similarly, Rush, Ooms, Maran and Firth (2014), at the Kingston University, conducted a survey to measure students' engagement with the objective structured clinical assessment (OSCA), its value, impact and its sustainability from the students' perspectives because the previous summative OSCEs were disliked by the students. In this study, they branded the OSCE with an OSCA prior to the final summative OSCE evaluation. During the OSCA, students have three hours to complete seven stations with 30 minutes briefing prior to the onset. The results showed that students valued the written feedback they received during the OSCA and immediate feedback had a positive impact on their reflective skills and understanding of their learning. The students also reported that the OSCA experience prepared them for future practice apart from the preparation for the summative OSCE.

These few studies have shown that formative assessment is one of the powerful means of enhancing students' teaching, learning and evaluation. The students learn from ongoing assessment when given quality feedback to adjust learning instruction.

Deliberate Practice

The concept of deliberate practice has been in use mostly in the domains of sports, music and chess. The main purpose of its use was to **improve performance** through **repeated tasks** with **support from trainers and coaches** (Ericsson, 2008). Ericsson (2008) as the founder, documented that expert performance during deliberate practice is achieved through **active engagement, immediate feedback**, and **having time for repeated practise** of the activity to refine the expected behavior. Based on their earlier research on skill acquisition, Ericsson, Kramper and Tesh-Romer (1993) identified a set of conditions, which had significant effect on performance such as setting a **well-defined goal** for a given task, **the motivation to improve**, receiving feedback and the opportunity to **repeat the task** and **refine it**. The review of the concept of deliberate practice is concurrent with the works of Patricia Benners theoretical model of "Novice to

Expert" from the work of Hubert and Drefus Model of skill acquisition (Kaminski, 2010). In Patricia Benners' model, every undergraduate student passes through each of the five levels of proficiency: novice, advanced beginner, competent, proficient and expert level, in each level of academic progression in the program. The learner fluctuates between the levels of novice and proficient. This is because the leaner still remains dependent in each level of academic growth due to new knowledge, skills and appropriate attitudes and set of competences attained at that level. For example, in year one, a student nurse is a novice because the nursing profession is completely a new field and the student may have very little knowledge on the fundamentals of nursing. By the time the student reaches second, third or fourth year, new concepts at an advanced level are introduced, building on the fundamental knowledge, skills and attitudes learned from adult nursing, pediatric nursing, midwifery nursing and many more. The learner becomes proficient in the fundamentals of nursing knowledge, skills and attitudes and yet still remains a novice in the new concepts introduced at the next level. As such, there is anticipation of deliberate practice and willingness to engage progressively to a higher level of proficiency through the teachers and learners' devotions up to the end of the program (Kaminski, 2010; Mcgathie, 2008). The learners need guidance, supervision, practise and feedback at each level of academic progression. Further reflection was on existing knowledge through studies on the concept of deliberate practice.

McGathie (2008) conducted a study on deliberate practice with medical students at one of the Universities in the United States of America. In this study, the results showed some important characteristics that aid the learner move successfully from one level to the other when using the concept of deliberate practice. The characteristics included students' high motivation, good concentration, having well defined objectives on what to achieve, exposure to appropriate level of difficulty, focused and repetitive practice, measurement and feedback. In addition, the results showed that the learner must be willing to monitor their learning experiences and be willing to engage in deliberate practice. McGaghie (2008) furthermore, commented that the use of deliberate practice in education interventions promotes long lasting skills and knowledge attainment. Similarly, Barr (2013) in his paper, furthermore, expressed that practice and feedback in deliberate practice is not merely work, play or simple repetition of a task. Rather, the practice is intentional, aiming at improving performance, designed for the current skill level coupled with immediate feedback and repetition. Another study was among medical students at Maastricht University in Netherlands (Duvivier, Dalen, Muijtjens, Moulaert, Vleutenand Scherpbier, 2011). The purpose was to examine the role of deliberate practice in the acquisition of clinical skills. The findings revealed that students showed more changed

behavior in planning and organization of their work. There was also a positive relationship on OSCE performance between year one and year three students in terms of planning and attention span. The results contributed positively to the final assessment of the students in their different levels of academic progression. Similarly, Wiel, Bossche, Janssen and Jossberger (2010) conducted a study on medical physicians on internship, working in internal medicine in Netherlands. The study purpose was to examine whether deliberate practice influenced learning or learning was self-regulated. The findings suggested that work place learning occurred mostly through patient care rather than motivated by competence improvement goals. Thus, practical experience guided learning and not deliberate effort. Although similar experiences on patient care exist, it is not possible to have repeated practise on the same client or patient.

In relation to the use of deliberate practice in nursing education, Liou, Chang, Tsai and Cheng (2013) conducted a study at Chang Gung University in Taiwan. The objectives were to measure the effects on deliberate practice on technical skill practices in the nursing program and examine the effects before the clinical practicum on students' clinical competence. The results showed significant differences on the students' ethical professional behavior, core nursing skills and procedures, developing nursing care plans and performing advanced nursing procedures. Because of the repetitive practises, Liou, Chang, Tsai and Cheng (2013) and Barr (2013) warn that adopting deliberate practice be done with caution. Practicing can be intense without careful schedules and planning. It can result into burnout and long term mental and physical fatigue in the learner. There should be a monitoring system to prevent burn out and mental breakdown in the learners and the educators upon adoption of simulation.

Finally, in the review of Motola, Devine, Chung, Sullivan and Barry (2013) a guide on educational principles for effective simulation learning, deliberate practice was recognised as one of the topics central to simulation efficacy. In their analysis of several concepts, deliberate practice was an important concept to guide simulation as a science of training. Effective deliberate practice results from multiple simulation experiences revolving around a focused domain.

In conclusion, lessons from these few studies suggest that formative assessment and deliberate practice in clinical teaching and learning can yield significant results in student competence. Feedback and supervised practice sessions are among the driving forces to effective clinical teaching and assessment. It is from this premise that formative

assessment and deliberate practice concepts were appropriate to the development of a formative assessment framework.

5.2.1.2 Factors affecting clinical teaching, learning and evaluation from phase 1

Extrapolation of the factors affecting undergraduate nursing students' teaching, learning and evaluation experiences through deductive reasoning took place. Table 5.1 presents the concluding statements results from the extrapolation process. The findings show how demonstrations, return demonstrations, practise sessions, feedback, resources, increased student numbers and the OSCE assessment in the skills laboratories affects clinical teaching, learning and evaluation positively and negatively. The findings show that the nurse educators have passion for clinical teaching. The students benefit from the demonstrations and return demonstrations in the skills laboratory. During theoretical block, limited time is available for skills laboratory learning experiences. The students spend more time in the clinical practice settings than the skills laboratory where 70% of the end of semester clinical grade contribution comes from through the OSCE. The students have more hours that are clinical in the various practice sites than the skills laboratories. Spending more time in the clinical sites exposes the students to more shortcuts than the appropriate learning experiences. Some of these experiences have conversely affected their performance during the summative OSCE as well as their clinical competences. Upon analysis of the factors that conversely affect clinical teaching, learning and evaluation in the skills laboratories, developing a formative assessment framework was appropriate to bridge these gaps to improve teaching, learning and evaluation of the students at the college.

5.2.2 Development Stage

In this phase, the adoption of some characteristics from the formative assessment and deliberate practice concepts took place for inclusion in the Formative Assessment Framework (Figure 5.1) to bridge the gaps in clinical teaching, learning and assessment in the skills laboratory. The factors that affect clinical teaching, learning and assessment negatively have been influential because they indicate the areas requiring improvement. The framework aimed at determining what students know, what their skills gaps were, what feedback needs to be provided and what learning activities are required to improve clinical teaching, learning and assessment (Reamer, 2012). Therefore, the major characteristics isolated from the syncronisation of the data and the literature reviewed were the following: Demonstration, supervised practice, return demonstration, assessment, deliberate practice and immediate feedback (Ericsson, 2008; Pinchok and Brandt, 2009; Koh, 2010). Figure 5.1 is a diagrammatic representation of the Formative Assessment Framework

Table 5.1: Factors Affecting Clinical Teaching, Learning and Evaluation (OSCE) from Phase 1

Nurse educators' perspectives – conclusion statements	Students perspectives –conclusion statements	Key Issues for consideration in the framework from the two columns
1. Demonstrations and return demonstrations are the practical realities of clinical teaching that enrich the clinical teaching experiences but increased teacher to student ratios make it difficult for them to observe individual return demonstrations and practise sessions for every students	14. The skills laboratory environment is a place to transform nursing theory to practice. Demonstrations and return demonstrations facilitate smooth transformation of theory into practice	Return Demonstrations Statements: 1, 2, 4,5,16, 17
2. Students are eager to learn and practise in the skills laboratory	15. Skills laboratory environment is a place of learning professional behaviour and discipline	Disproportional return demonstrations 6, 18, 20, 25
3. Educator passion and positive remarks from the students become the driving force despite the constraints in the skills laboratory	16. Resources and equipment available facilitate learning opportunity without fears of inflicting pain and discomfort. Repetitive practise is acceptable on the same manikins	Lack of individual Feedback 6, 18, 20
4. Students benefit from exposure to the ideal resources and equipment that are rare in the clinical area. New and updated resources and equipment proportional to students numbers are a	17. The presence of the educators in the skills laboratory is much preferred because they are scarce in the practice sites	Limited skills laboratory learning experiences/lack of formative assessment 7, 8, 13, 19, 20, 23, 27,

Nurse educators' perspectives – conclusion statements	Students perspectives –conclusion statements	Key Issues for consideration in the framework from the two columns
necessity		
5. Improvisation such as use of other classroom spaces for demonstration, using mature students to help in teaching are the vehicles that facilitate effective teaching and learning	18. Nurse educators have no time to observe return-demonstration for every student and to give feedback. Only two students per group might have a chance to practise	Student educator ratio 6, 31,24
6. The high teacher student ratio contributes to hasty demonstrations to finish the demonstrations quickly and no time for supervised practise of individual students.	19. Resources and equipment are not adequate for the current student numbers and some are outdated	Objectives and Learning guides not always available 20
7. The OSCE environment resembles the clinical environment. However, there is need to purchase more resources	20. There is no consistence in objectives and learning guides given for each session in the skills laboratory	More time in the clinical sites than in the skills laboratory 11, 21,26
8. Some institutional policies affecting the skills laboratories have a negative impact on students' learning such as opening the laboratories from 7: 30 am to 5 pm from Monday to Friday because	21. The skills laboratory operational hours not meeting students' clinical learning needs	Conduct, Timing and preparation for OSCE challenges 9, 10,11, 12, 27

Nurse educators' perspectives – conclusion statements	Students perspectives –conclusion statements	Key Issues for consideration in the framework from the two columns
during those time are either in classes or clinical sites		
9. In preparation for OSCE**,** students are informed at the beginning of the semester that they will do an OSCE at the end of the semester and clinical learning occurs more in the clinical sites	22. The inappropriate student teacher ratio influences the lecturer to conduct the demonstrations in a hasty manner	Resources and equipment availability 4, 13, 15, 21, 26, 29
10. The OSCE has been conducted for summative evaluation only but there is need to use the OSCE as part of formative evaluation or assessment of students	23. The OSCE is a good method of evaluation for the students but they experience it with challenges	Skill variation among lecturers 12, 25
11. Some faculty members attitudes during OSCE affect students' conduct of the procedures and mark allocation negatively	24. More time is spent in the clinical sites where short cuts are common and students do not have a chance to prepare for the OSCE after being in the clinical sites for a while	
12. Timing of the procedures and time to conduct OSCE has affected students' performance during OSCE and it is difficult to monitor the impact of the feedback given to the students. Individual feedback has more positive effects than group	25. Skill variation among lecturers and between lecturers and clinical nurse practitioners become a source of confusion	

Nurse educators' perspectives – conclusion statements	Students perspectives –conclusion statements	Key Issues for consideration in the framework from the two columns
feedback		
13. Skills laboratories teaching space is limited for presentations and videos	26. The sizes of the skills laboratories are not proportional to the students population	

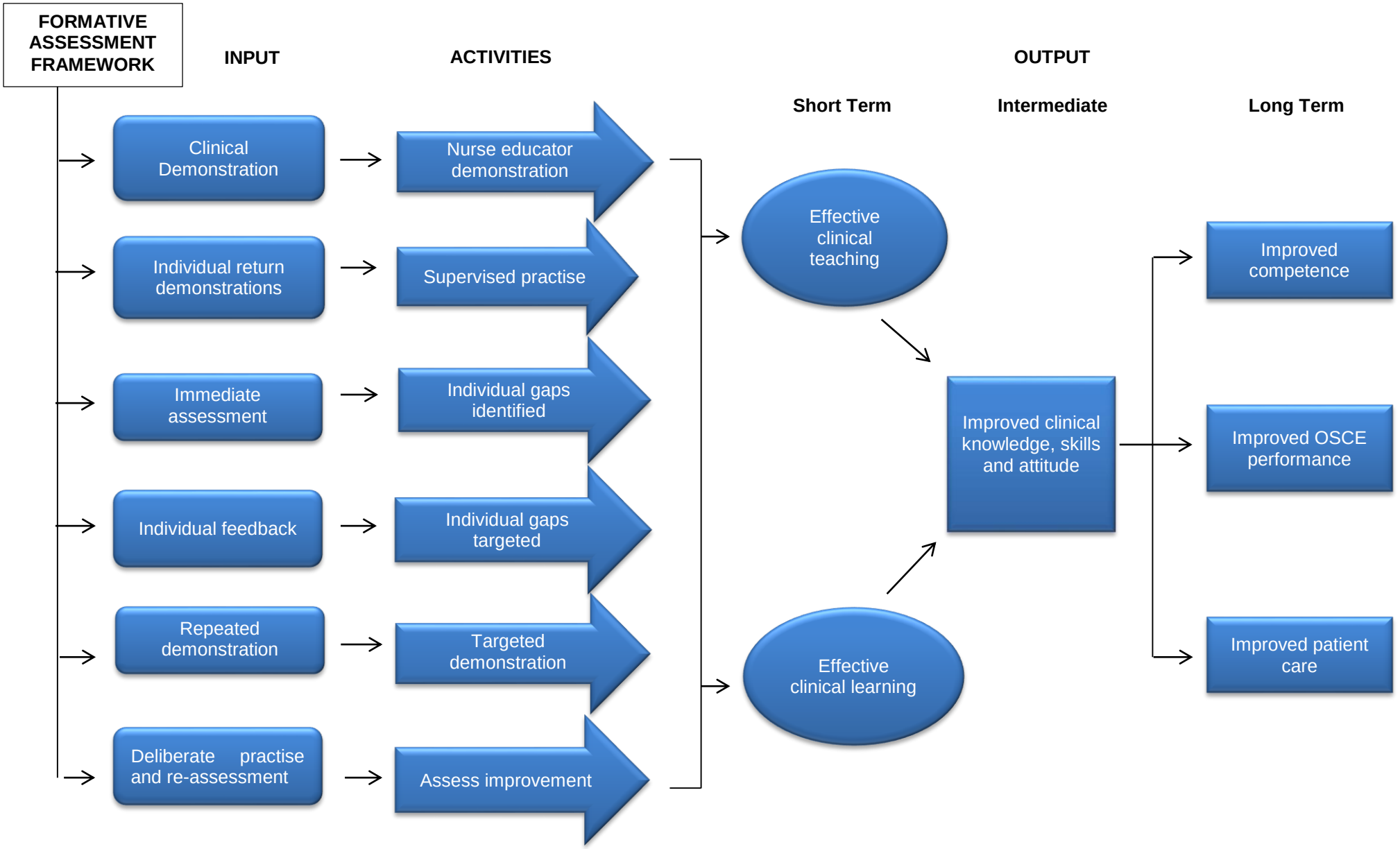

Figure 5.1: Diagrammatic Representation of the Formative Assessment Framework

5.2.2.1 **Operation of the formative assessment framework**

In this framework, teaching is conceptualised as a deliberate and purposeful activity to enhance students teaching, learning and assessment (Quinn and Hughes, 2007). During, clinical teaching, learning and assessment in FAF, nurse educators transmit clinical knowledge, skills, appropriate attitudes and values to the learners. Students demonstrate the skills, assessed, and given immediate feedback and another chance to repeat and practise based on their learning needs. The major concepts of FAF comprise demonstration, return demonstration, assessment, immediate feedback, supervised practice and repeated demonstration and return demonstration. It is a process where there is input from the educators, students and peers and their individual related activities. The outcomes depicted as short term, intermediate and long-term outputs in the diagram become the products of the framework.

Input entails the demonstrations before and after the students' practice sessions. It also refers to the return demonstration, immediate assessment and the individual feedback from self-reflection, peers and the educator. On the part of the educators, clinical demonstration is integral to clinical teaching as well as observing individual students return demonstrations (Quin and Hughes, 2007; Wellard and Hegegn, 2010; Bruce et al., 2011). Further, the input phase enables the clinical teacher to demonstrate how to act, communicate and perceive a problem in a simulated environment (Nilson, Pennbrant, Pilhammar and Wenestam, 2010). Return demonstrations help students show case what has been practically learnt and be able to improve from the feedback given by the educators, fellow students and even from self-reflection (Gaberson and Oemann, 2007; Ahmed, 2008).

Activities refer to the specific roles played by nurse educators and students during each practise session. In FAF, the nurse educator is required to conduct a minimum of two demonstrations before and after each session per group. The targeted demonstration becomes the final demonstration from the nurse educator to the group to make corrections from the common clinical deficiencies noted from the supervised practises. Thereafter, the nurse educator takes time to observe the individual demonstration termed supervised practise where individual gaps informs the nurse educator during the targeted demonstration. The repeated practise continues with or without the presence of the nurse educators to help the learner to refine the skills by targeting the communicated gaps. Finally, the students are given a chance to practise based on the areas feedback from the educator and peers.

Outputs refer to the performance outcomes resulting from teaching, learning, assessment and feedback from FAF. Using the Formative Assessment Framework automatically engages the nurse educator and the students actively. Demonstrations, observing return demonstrations, assessment and giving feedback will improve clinical teaching and students learning. Proved effectiveness in both teaching and learning has the capacity to improve clinical knowledge, attitude and skills (Ericsson, 2008; Pinchok and Brandt, 2009; Koh, 2010; Wellard and Hegegn, 2010; Bruce et al., 2011). Students' clinical competencies, improved OSCE performance and improved patient care will be the output based on students' performance outcomes.

In FAF, continuous assessment and immediate feedback help both the nurse educator and the student to modify teaching strategies and learning needs based on the identified weaknesses.

5.2.3 Validation Phase

The FAF validation process followed the Delphi technique. This technique generated a range of alternative opinions and correlate judgements on Formative Assessment Framework from expert's views without their face-to-face contact (Hsu, 2007). Validation was conducted by clinical nursing education experts (N=10) from Kamuzu College of Nursing (n=3), Ministry of Health, Malawi (n=1), Nurses and Midwives Council of Malawi (n=1) and the University of Witwatersrand (n=5). The inclusion criteria for expert selection were current knowledge and experiences in clinical teaching and the use of OSCE method in simulation laboratories. The experts purposively selected, responded to two rounds of questionnaires (Appendix N). A 4 point Likert scale was used to rate the relevance of the items on the questionnaire formulated from the FAF. The rating scale ranged from one to four (1=not relevant, 2=somewhat relevant, 3=relevant and 4=very relevant) on the checklist (Powell and Runner, 2009; Robins, 2010).

5.2.3.1 Delphi: round one

The checklists were sent to the experts (n=10) via the email individually by the researcher to ensure anonymity from each other. All the ten experts selected responded to the first round of the checklists. After the first round, data from each questionnaire was analysed, summarised and the summaries of the expert views were used to formulate a new questionnaire. The comments varied, some wanted clarification on some terms used and others made suggestions for consideration. The comments informed the newly developed questionnaire which was sent to each expert for round two responses.

5.2.3.2 **Delphi: round two**

Eight experts (n=8) responded to the second round questionnaires and two (n=2) experts did not rate the checklists. They commented via the email that the questionnaire was fine. Analysing the questionnaire, the experts ticked only the third and fourth columns where rating was three and four. The results showed 80% response rate in terms of the number of experts who responded with ratings of relevant and very relevant columns. However, there was 100% consensus because all the experts showed that the FAF was appropriate for clinical teaching, learning and assessment of students. The researcher finalized the framework and it was considered fit for implementation (Polit and Beck, 2012). Polit and Becker (2012) recommend a range of 51% to 70% expert final consensus to reach consensus and in this study, final consensus agreement was determined based on percentage from the number of responses. Therefore, the response rate of 80% (n=8) was in accordance with the initial plan, where a minimum of 70% (n=7) was to be considered an appropriate percentage for reaching rating consensus agreement.

5.2.4 **Implementation Stage**

The intervention commenced after the validation process. Students in the experimental group were withdrawn from Kamuzu Central Hospital for clinical teaching, learning and assessment in the skills laboratories every afternoon from 1pm to 4:30 pm. Eighteen procedures (junior students n=8, senior students n=10) were selected through the fish-bowl technique for the students to have additional practice in the skills laboratories for three to four weeks. Students were into six groups and allocated to one nurse educator per group. On average, there was one nurse educator against twelve students. Using the FAF (Figure 5.1), for each procedure, the educators conducted a demonstration to the allocated group followed with observation of return demonstrations from each individual student. Thereafter, students' given feedback proceeded with deliberate practice. After observing each student, a conduct of a re-demonstration took place to address the students' weak areas and give them chance to practise again. Thereafter, students checked off, proceeded into learning a new skill. In summary, students observed a minimum of two demonstrations on each procedure before and after practice sessions, had minimum of two supervised return demonstrations, given feedback by the educators and peer and allowed to practise on their own in pairs until checked off.

5.2.4.1 **Implementation Outcome**

The results from both the junior and senior students showed that the use of the FAF had a statistically significant effect on students' performance and competence except in two procedures. Comparing the mean score differences for the two procedures, mean score differences in the experimental groups were higher than the mean score differences in the control groups. A detailed report of the findings from the quasi-experiment is in the next chapter.

5.2.5 **Conclusion**

In conclusion, the Formative Assessment Framework was developed from the concepts of formative assessment, deliberate practice and from input into the factors and issues that affect clinical teaching, learning and the OSCE from the nurse educators' and students' perspectives. It is a process of incorporating assessment clinical teaching, learning and assessment tools and activities in simulation learning to determine evidence on what students know, identify teaching and learning gaps to improve clinical teaching, learning and assessment. Thus, analysing the results reported in chapter six, the FAF has the capacity to improve teaching and learning of undergraduate nursing and midwifery students. In consequence, it has the capacity to influence students' positive preparation for the summative evaluation (OSCE) and patient care.

CHAPTER SIX

RESULTS AND DISCUSSION: PHASE 2

6.1 INTRODUCTION

The main purpose of this phase was to evaluate the impact of a Formative Assessment Framework on students' clinical learning in the skills laboratories. The specific objective was to evaluate the impact of Formative Assessment Framework by determining and comparing competence in selected general nursing and midwifery skills between experimental and control groups and within these groups. This chapter contains a summary of the analytical processes followed with the results presented in two parts: junior and senior students' results.

Collection of data in the skills laboratories took over a period of five to six weeks in 2015 and 2016 using the structured checklists routinely used during the Objective Structured Clinical Examination at the college (Chapter 3). Checking of missing data took place. Thereafter, the coded data were entered into excel sheet, and exported into STATA software version 13. Descriptive statistics provided the simple summaries from the sample while inferential statistics guided the conclusions from the analysis of the pretest scores and posttest scores from both groups. There was final assessments grades calculation from each participant from the pre-test and post-test results. The results comprise the summaries of the number of observations made, mean scores, the standard deviation. In addition, mean test score differences between the experimental and control groups were obtained to compare the results before and after the intervention. The level of significance was set at 0.05 with a confidence level of 95%. Test scores were significant at a p-value of less than 0.05. The normally distributed data used the t-test while skewed data used the Wilcoxon sign ranked statistical tests and Wilcoxon sum rank test. Because the students in the control groups had normal clinical teaching, the night shift contributed to some students (n=17) withdrawing either during the pre-test or post-test assessments.

6.2 RESULTS

6.2.1 Junior Students

The mean age for the junior students was 24 years for both the experimental and control groups. In terms of gender, the experimental group had 24% males and the control had 26 % males. This shows that the groups were almost similar in age and gender. The control group had slightly more males than the experimental group. The results

comprise the test scores between the experimental and control and within the groups. Testing of the junior students were on eight procedures namely:

- Blood transfusion
- Female catheterisation
- Colostomy care
- Health education
- Insulin intravenous injection
- Naso-gastric tube insertion
- Suctioning the airway
- Wound dressing

6.2.1.1 Comparison between experimental and control groups

This section presents the results for six procedures. Tables 6.1 to 6.4 illustrate the results of the paired t-test between the experimental and control groups, which had normally distributed data. Results from students' performance scores of blood transfusion, naso-gastric tube insertion, health education and wound dressing show that there was significant difference between the experimental and control groups with p-values of <0.05. The standard deviations for blood transfusion, naso-gastric insertion and health education were very narrow while the standard deviation for the procedure of wound dressing was wide. The results for the four procedures are statistically significant. This shows that the use of the FAF in the skills laboratory improved students' clinical performance and competence in the four procedures than what students experienced in the control groups.

Table 6.1: Blood Transfusion: Between-Group Comparison of Junior Students (n=42)

Variable	Group	Obs	Mean	Std dev	95% Conf. interv		P value
Blood Transfusion	Control	17	1.29	1.99	0.26960	2.31863	0.0000
	Experimental	25	5.8	2.64575	4.70788	6.89211	
	Combined	42	3.97	3.26465	2.95885	4.99352	
	diff		4.50	-6.03445	-2.97731		

Table 6.2: Nasogastric tube insertion: Between-group comparison of junior students (n=42)

Variable	Group	Obs	Mean	Std Dev	95% Conf. Interv	P Value
Naso-gastric Tube Insertion	Control	18	3.66	3.06786	2.14105 5.19227	0.0012
	Experimental	24	6.75	2.64164	5.63453 7.86546	
	Combined	42	5.42	3.19407	4.43322 6.42391	
	diff		3.08	-4.86714	-1.29952	

Table 6.3: Health Education: Between-Group Comparison of Junior Students (n=42)

Variable	Group	Obs	Mean	Std Dev	95% Conf. Interv	P Value
Health Education	Control	17	5.05	4.43664	2.77771 7.33993	0.0000
	Experimental	25	11.48	4.17452	9.75684 13.20316	
	Combined	42	8.88	5.29704	7.23027 10.53163	
	diff		6.42	-9.14129	-3.70105	

Table 6.4: Wound Dressing: Between-Group Comparison of Junior Students (n=42)

Variable	Group	Obs	Mean	Std dev	95% Conf. interv	P value
Wound Dressing	Control	17	-.38	2.06194	-1.41427 .636494	0.0000
	Experimental	25	8.56	3.36749	7.1699689.95003	
	Combined	42	4.81	5.30613	3.18096 6.44694	
	diff		8.94	7.13944	10.75833	

Tables 6.5 and 6.6 comprise the results between the experimental and control groups, which had normally distributed data. The results for female catheterisation and suctioning procedure show that there was minor difference between the mean scores. Although there are differences between the two scores, statistically the differences are not significant. Thus, there was slight improvement in the use of FAF. The standard deviation was also minimal in both groups. Therefore, the results are not statistically significant.

Table 6.5: Female Catheterisation: Between-Group Comparison of Junior Students (n=42)

Variable	Group	Obs	Mean	Std dev	95% Conf. interv	P value
Female Catheterisation	Control	17	5.16	4.78047	2.78939 7.54394	0.1008
	Experimental	25	7.36	3.78461	5.79778 8.92221	
	Combined	42	6.44	4.31664	5.11339 7.77032	
	Diff		2.19	-.44494	4.83161	

Table 6.6: Suctioning the Airway: Between-Group Comparison of Junior Students (n=42)

Variable	Group	Obs	Mean	Std dev	95% Conf. interv	P value
Suctioning the Airway	Control	16	7.25	2.29492	6.02712 8.47287	0.5634
	Experimental	26	7.80	3.37068	6.44624 9.16914	
	Combined	42	7.59	2.988266	6.664029 8.52644	
	diff		-.55	-2.49236	1.37697	

6.2.1.2 **Comparison within groups (t-test)**

Table 6.7 contains the summary results within the experimental and control groups in terms of mean scores, mean differences, p-values and the confidence intervals.

Within the experimental groups, results show that there were significant differences between the pretest and posttest mean scores for the procedures of blood transfusion, catherisation, health education, naso-gastric tube insertion, suctioning the airway and wound dressing with a p-value of less than 0.05.

Within group comparison of the control group, results show that there were differences between the pretest and posttest mean scores for blood transfusion (p=0.0165), female catheterization (p=0.0003), health education (Congestive Cardiac Failure, p=0.0002), suctioning the airway (p=0.0000) and nasogastric tube insertion (p=0.0001) which were also statistically significant. When compared in terms of the effect sizes between the experimental and control groups of these five procedures, the effect sizes in the experimental groups were higher.

However, the differences between the pretest and posttest mean scores for wound dressing (p=0.4347) were not statistically significant.

Table 6.7: Within-Group Comparison of Junior Students' Skill Performance (n= 160)

Variable	Group	Mean Scores (pre-testing)	Mean Scores (Post-testing)	Mean Difference	P Value	CI
Blood Transfusion	Experimental	12.96	18.76	5.8	0.0000	4.70, 6.69
		14.41	15.70	1.2	0.0165	.26, 2.31
Catheter Care	Experimental	19.24	26.6	7.36	0.0000	5.79, 8.92
	Control	15.77	20.94	5.16	0.0003	2.78, 7.54
Health Education (CCF)	Experimental	14.24	25.72	11.48	0.0000	9.75, 13.20
	Control	15.64	20.70	5.05	0.0002	2.77, 7.33
Nasogastric Tube Insertion	Experimental	13.87	20.62	6.75	0.0000	5.63, 7.86
	Control	13.22	16.88	3.66	0.0001	2.14, 5.19
Suctioning the Airway	Experimental	12.65	20.46	7.80	0.0000	6.44, 9.16
	Control	9.31	16.56	7.25	0.0000	6.02, 8.47
Wound Dressing	Experimental	14.56	23.12	8.56	0.0000	7.16, 9.95
	Control	17.5	17.11	-.38	0.4347	-1.41, 0.63

6.2.1.3 Comparison between experimental and control group tests (Wilcoxon sum rank)

Table 6.8 illustrates the results from the Wilcoxon sum rank test for the procedures of colostomy care and insulin after comparing the results between the experimental and control groups. The results show the differences between the pretests in the experimental and control groups and the posttests thereof. The results comprise the number of observations, the sum rank, estimated and the p-value.

Student performance in administering an insulin injection shows that there was no statistical significant difference (0.0114) between the control and experimental groups before the intervention. However, after the intervention, there was statistically significant difference (0.0067) between the control and experimental groups in the posttest scores. The use of FAF in the skills laboratory made a statistically significant difference in students' clinical performance in the administration of insulin after the intervention.

On the other hand, results for colostomy care before and after the intervention were statistically significant (0.0000, 0.0000). The experimental group performance scores were significantly different even before the use of the FAF.

Table 6.8: Insulin Injection and Colostomy Care: Between-Group Comparison of Junior Students (n=100, 97)

Variable	group	Observation	Rank Sum	Expected	Prob>|z|
Insulin injection	**Pre-Test**				0.0114
	0=control	49	2955	2572.5	
	1=experimental	55	2505	2887.5	
	Combined	104	5460	5460	
	Post-Test				0.0067
	0=control	49	2091	2474.5	
	1=experimental	51	2959	2575.5	
	Combined	100	5050	5050	
Colostomy care	**Pre-Test**				0.0000
	0=control	50	3502.5	2525	
	1=experimental	50	1547.5	2525	
	Combined	100	5050	5050	
	Post-Test				0.0000
	0=control	47	3188	2303	
	1=experimental	50	1565	2450	
	Combined	97	4753	4753	

6.2.1.4 **Comparison within groups (Wilcoxon sign rank test)**

Tables 6.9 show the comparison between the pre-test and post-test score results within each group.

Results from insulin injection procedure show that there are no differences between the pre-test and post-test median scores in the control group, p-value >0.05, (0.6865). The results are not statistically significant. On other hand the results are statistically significant in the experimental group with a p-value of <0.05 (0.0000). This means that the use of the FAF assessment had significant effects after the intervention. The FAF effect is statistically significant.

In the case of colostomy care performance, the results show that there was no significant difference before and after the intervention in the control group p-value of >0.05 (0.2726). In the experimental group, the results show that there was also no difference before and after the intervention.

Table 6.9: Insulin Injection and Colostomy Care: W**ithin Group Comparison of Junior Students (n=100, 97)**

0=Control 1=Experimental

Variable	Group	Sign	Observation	Rank sum	Expected	Prob>|z|
Insulin Injection	0	**Positive**	22	619.5	579.5	0.6865
		Negative	16	539.5	579.5	
		Zero	11	66	66	
		All	49	1225	1225	
	1	**Positive**	32	1095.5	630	0.0000
		Negative	8	164.5	630	
		Zero	11	66	66	
		All	51	1326	1326	
Colostomy Care	0	**Positive**	16	434	536.5	0.2726
		Negative	21	639	536.5	
		Zero	10	55	55	
		All	47	1128	1128	
	1	**Positive**	0	0	0	.
		Negative	0	0	0	
		Zero	50	0	0	
		All	50	1275	1275	

6.2.1.5 **Linking the results to formative assessment framework**

The mean score differences, p-values and their related confidence intervals of the experimental groups show that there were significant differences in the students' clinical performance scores in seven procedures, namely, blood transfusion, female catheterisation, health education (Congestive Cardiac Failure), insulin intravenous injection, naso-gastric tube insertion, suctioning the airway and wound dressing. These results suggest that students' practical performance and competence improved with the use of the formative assessment framework. The formative assessment framework had therefore a significant impact on students' clinical performance and clinical competence in these skills.

However, there was no significant effect on colostomy care. The students' mean scores remained the same. This could mean that students had enough clinical experiences during the two weeks of normal practice in the clinical sites prior to the intervention and that their practise in the skills did not contribute to any significant change in their clinical performance (Hamilton, 2006; Polit and Beck, 2012). Although the students given

feedback on their weak areas during the practice sessions, prioritised to practise the skills they had more difficulties in and that could be the possible reason for marginal difference in the skill of colostomy care.

6.2.2 **Senior Students**

The mean age for the senior students was 25 years for both the experimental and control groups. In terms of gender, the experimental group comprised 18% males and the control had 28 % males. The control group therefore comprised 10 % more males than the experimental group.

The testing of senior students were on ten procedures namely:

- Physical examination of a pregnant woman
- Triage process at the under-five clinic
- Contraception Implant insertion
- Contraception Implant removal
- Breast examination
- Episiotomy repair
- Second stage management of labour delivery
- The management of the third stage of labour
- Subsequent examination of the new born
- Speculum examination procedure.

6.2.2.1 **Comparison between experimental and control groups (t-tests)**

Tables 6.10 to 6.15 comprise the results of paired t-tests for all the normally distributed clinical performance data from senior students. Results contain the number of observations, mean, mean differences, standard deviation, the confidence intervals and the p-values for six procedures, namely physical examination, the triage process, implant insertion, implant removal, episiotomy and speculum examination.

Results from all these six procedures show that there were significant differences between the mean scores in the experimental and control groups. The p-values were <0.05. The results are statistically significant. This shows that the use of the FAF in the performance of these procedures had statistically significant effects than the clinical learning experiences for the students' in the control groups.

The standard deviations were wide except in the procedure of triage and episiotomy repair between the two groups.

Table 6.10: Physical Examination: Between-Group Comparison of Senior Students (n=30)

Variable	Group	Obs	Mean	Std dev	95% Conf. Interv	P-value
Physical Examination	Control	10	.6	8.909421	-5.773416 6.973416	0.0000
	Experimental	20	27.8	10.7243	22.78087 32.81913	
	Combined	30	18.73	16.43364	12.59691 24.86975	
	diff		27.2	19.12668	35.27332	

Table 6.11: Triage Process: Between-Group Comparison of Senior Students (n=30)

Variable	Group	Obs	Mean	Std dev	95% Conf. Interv	P-value
Triage Process	Control	10	2.2	3.938415	-.6173724 5.017372	0.0007
	Experimental	20	7.7	3.628832	6.001654 9.398346	
	Combined	30	5.866667	4.516127	4.180317 7.553016	
	diff		5.5	8.460083	2.539917	

Table 6.12: Contraception Implant Insertion: Between-Group Comparison of Senior Students (n=30)

Variable	Group	Obs	Mean	Std dev	95% Conf. Interv	P-value
Contraception Implant Insertion	Control	10	2.7	2.790858	.7035405 4.69646	0.0000
	Experimental	20	25.75	6.042612	22.92197 28.57803	
	Combined	30	18.06667	12.18516	13.51665 22.61668	
	diff		23.05	27.19369	18.90631	

Table 6.13: Contraception Implant Removal: Between-Group Comparison of Senior Students (n=30)

Variable	Group	Obs	Mean	Std dev	95% Conf. Interv	P-value
	Control	10	2.8	4.491968	-.41336 6.01336	0.0000
	Experimental	20	13.35	4.27077	11.35122 15.34878	
	Combined	30	9.833333	6.61807	7.36210 12.30456	
	diff		10.55	13.99557	7.10442	

Table 6.14: Episiotomy Repair: Between-Group Comparison of Senior Students (n=30)

Variable	Group	Obs	Mean	Std dev	95% Conf. Interv	P-value
Episiotomy Repair	Control	10	0.6	4.97102	-2.95605 4.15605	0.0000
	Experimental	20	10.8	4.7195	8.59120 13.00879	
	Combined	30	7.4	6.79553	4.86250 9.93749	
	Diff		10.2	6.39052	14.00947	

Table 6.15: Speculum Examination: Between-Group Comparison of Senior Students (n=30

Variable	Group	Obs	Mean	Std dev	95% Conf. Interv	P-value
Speculum Examination	Control	10	1.6	3.92145	1.20523 4.40523	0.0000
	Experimental	20	18.05	5.67983	15.39176 20.70824	
	Combined	30	12.56	9.38701	9.06149 16.07184	
	Diff		16.45	20.55964	12.34036	

The results in Tables 6.16 and 6.17 illustrate that there were differences in the mean scores in third stage management and subsequent care of the newborn between the control and experimental groups. However, these differences are not statistically significant with p-values of >0.05 (0.2517, 0.1228). This means that the use of FAF did not have a statistically significant effect on students' performance. The standard deviations in both groups were small.

Table 6.16: Management of Third Stage of Labour: Between-Group Comparison of Senior Students

Variable	Group	Obs	Mean	Std dev	95% Conf. Interv	P-value
Management of Third Stage of Labour	Control	8	2.75	4.43202	-.95526 6.45526	0.2517
	Experimental	31	6.74	9.35937	3.30889 10.17498	
	Combined	39	5.92	8.68569	3.1075 8.73865	
	diff		3.99	2.95459	10.93847	

Table 6.17: Subsequent Examination of the Newborn: Between-Group Comparison of Senior Students

Variable	Group	Obs	Mean	Std dev	95% Conf. Interv	P-value
Subsequent examination of the Newborn	Control	8	10.12	4.015595	6.76787 13.48212	0.1228
	Experimental	31	6.22	6.636815	3.79140 8.66020	
	Combined	39	7.02	6.347346	4.96806 9.08321	
	Diff		3.89	1.103517	8.90190	

6.2.2.2 **Comparison within groups (t-tests)**

Table 6.18presents the summary results within the experimental and control groups in terms of mean scores, mean differences, p-values and the confidence intervals.

The results within the experimental groups, show that the mean score differences before and after the intervention in the experimental groups were statistically significant for the eight procedures: physical examination of a pregnant woman, the triage process, contraception implant insertion, contraception implant removal, episiotomy repair, management of third stage of labour, speculum examination and subsequent examination of a new-born.

Likewise, results from the control groups also show that there were significant differences in the pretest and posttest scores during the normal clinical learning experiences for the procedures of contraception implant insertion and subsequent care of the new born. When compared in terms of the mean differences of the same procedures in the experimental groups, there were higher mean differences in the experimental groups than in the control groups.

However, there were no statistically significant mean score differences in five procedures: physical examination of a pregnant woman, the triage process, contraception implant removal, episiotomy repair, third stage management and speculum examination procedures.

Table 6.18: Comparison within Groups (n=101)

Variable	Group	Mean Scores (Pre-Testing)	Mean Scores (Post-Testing)	Mean difference	P-value	CI
Physical Examination	Experimental	12.25	40.05	27.80	0.0000	22.78, 32.81
	Control	19.1	19.7	0.60	0.8361	-5.77, 6.97
Triage	Experimental	11.8	19.5	7.70	0.0000	6.00, 9.39
	Control	12.1	14.3	2.20	0.1111	-.61, 5.0
Contraception Implant Insertion	Experimental	18.35	44.1	25.75	0.0000	22.92, 28.57
	Control	27.60	30.3	2.70	0.0136	0.70, 4.69
Contraception Implant Removal	Experimental	24.45	37.8	13.35	0.0000	11.35, 15.34
	Control	23.5	26.3	2.80	0.0802	-.41, 6.0
Episiotomy Repair	Experimental	8.25	19. 05	10.80	0.0000	8.59, 13.00
	Control	9.3	9.9	0.60	0.7116	-2.95, 4.15
Management of Third Stage of Labour	Experimental	19.93	26.67	6.74	0.0004	3.30, 10.17
	Control	14.37	17.12	2.75	0.1227	-.95, 6.45
Speculum Examination	Experimental	10.9	28.95	18.05	0.0000	15.39, 20.70
	Control	11.8	13.4	1.60	0.2291	-1.20, 4.40
Subsequent examination of the New-born	Experimental	23.64	29.87	6.24	0.0000	3.79, 8.66
	Control	15.75	25.87	10.17	0.0002	

6.2.2.3 **Comparison within groups (Wilcoxon sign rank test)**

Table 6.19 illustrates the results from the Wilcoxon sum rank test for the procedures of breast examination and second stage of labour.

The results from the breast examination show that there were differences between the pretests and post-tests in the experimental and control groups, p-values were <0.05 (0.0015, 0.0002). Thus, the results are statistically significant. Both the normal clinical learning experiences prior to the intervention and the use of the FAF made a significant impact on students' clinical performance and competence in the experimental group.

The pretest results for the second stage show that there was statistically significant difference between the experimental and control groups prior to the intervention. The p-values was also <0.05 (0.0061). However, after the intervention, the results for the post-tests show that there were no significant differences between the control and experimental group, p-value >0.05(0.0171). The results are therefore not statistically significant.

Table 6.19: Breast Examination and Second Stage of Labour: Within Group Comparison for Senior Students (n=55, 39)

Variable	Group	Observation	Rank Sum	Expected		Prob>|z|
Breast Examination	**Pre-Test**					
	0=control	13	204.5	364		0.0015
	1=experimental	42	1335.5	1176		
	Combined	55	1540	1540		
	Post-Test					
	0=control	8	55	160		0.0002
	1=experimental	31	725	620		
	Combined	39	780	780		
Second Stage of labour	**Pre-Test**					
	0=control	13	227	364		0.0061
	1=experimental	42	1313	1176		
	Combined	55	1540	1540		
	Post-Test					
	0=control	8	92	160		0.0171
	1=experimental	31	688	620		
	Combined	39	780	780		

6.2.2.4 **Comparison within Groups (Wilcoxon sign ranked test)**

Table 6.20 illustrates the results from the Wilcoxon sign rank test for the procedures of breast examination and second stage of labour. Results show the differences within the

experimental and control groups in the pretests and post-tests scores. The results comprise the sign, number of observations, estimated and the p-value.

The results for the breast examination show that there was no statistical significant difference before and after the normal learning experiences for the control group, p-value >0.05 (0.0636). On the other hand, results from the experimental group show that there was statistical difference after the use of the FAF, p-value <0.05(0.0001). The results were statistically significant.

The results for the second stage management of labour show that there were no differences in both the experimental and control groups before and after the intervention, p-values were>0.05 (0. 9433, 0.7450). The results were not statistically significant.

Table 6.20: Breast Examination and Second Stage: Comparison within Groups (n=31)

0=Control 1=Experimental

Variable	Group	Sign	Observation	Rank Sum	Expected	Prob>|z|
Breast Examination	0	Positive	5	29.5	16.5	0.0636
		Negative	1	3.5	16.5	
		Zero	2	3	3	
		All	8	8	36	
	1	Positive	22	437.5	237.5	0.0001
		Negative	3	37.5	237.5	
		Zero	6	21	21	
		All	31	496	496	
Second Stage	0	Positive	4	18	17.5	0.9433
		Negative	3	17	17.5	
		Zero	1	1	1	
		All	8	36	36	
	1	Positive	14	257	240.5	0.7450
		Negative	12	224	240.5	
		Zero	5	15	15	
		All	31	496	496	

6.2.2.5 Linking the results to formative assessment framework

The results from the senior students clinical performance scores indicate that there were significant differences in all the procedures assessed from the senior students with a p-

value of <0, 05, except in the performance of the second stage of labour where the p-value was >0, 05 (0.7450) before and after the intervention (Polit and Beck, 2012). Thus, the Formative Assessment Framework had a significant impact on students' clinical performance and competences in all the procedures except on the second stage of labour. Although the results show that there were no significant impact on the performance of second stage of labour, in a formative assessment framework, these results are informative and valuable. Failure to perform well in the conduct of the second stage of labour might mean that students needed more time to practise the skill than the time given during this intervention (Ericsson, 2008). Therefore, changing the teaching strategy and increasing the number of practice sessions with targeted demonstration could eventually make a difference in the performance scores of second stage of labour.

6.3 DISCUSSION

Results from the junior students show that the use of the FAF had significant clinical impact on students' performance and competence in the seven procedures except one procedure. There was also significant impact on the senior students' clinical performance and competence for the nine procedures except one. However, the normal clinical learning experiences for the control groups had also a significant impact on few procedures for both the senior and junior groups. When compared between the two groups for the same procedures, mean differences in the experimental groups were higher than the mean differences in the control groups. Thus, the overall results show that the students benefited more from the formative assessment framework, yielding significant differences of p-values of<0, 05 in most procedures (Polit and Beck, 2012). The demonstration, return demonstration, individual and peer feedback, supervised practise and re-demonstration had an impact on students' clinical learning. The experimental groups performed better than the control groups**.**

In a systematic review of 14 articles conducted by McGaghie, Issenberg, Cohen, Barsuk, Wayne, (2012), similar results occurred. Students had deliberate practise on cardiac life support, laparoscopic procedures, central venous catheterization, cardiac auscultation and thoracentesis, cholecystectomy and suturing live tissues.They identified results of significant effect (95% confidence interval, 0.65–0.76; P< .001). Focused repetitive practise, informative feedback, monitoring and error correction were some of the elements that contributed to improved performance in the study. Similarly, in a randomised controlled trial, there were significant differences in students with two weeks simulation in prescribing skills (P <0.01) and on knowledge acquisition, reasoning and resuscitation skills (P <0.01) then those who did not (Rogers, McConnell, Rooy,

Ellen and Lombard, 2014). It was further documented that supervised deliberate practise of selected nursing skills is one of the effective tools in simulation that exposes students to non-hazardous clinical practise sessions (Glasgow, Dunphy and Mainous, 2010).In these studies, additional simulation practise, error correction and feedback contributed to significant improvement in students' skill acquisition and retention as well as patient care.

In relation to the impact of an innovative education curriculum within undergraduate education in UK, Edwards, Anstey, Kelly and Hopkins (2015) found that a new model of teaching improved the knowledge, attitude and confidence of students in the delivery of care in cancer patients. The intervention group had three and half days of training while the control had two days. The assumption was that if undergraduate nursing students get more information on cancer patient care then they would better prepare to help, support and care for cancer patients and their families. This analogy can also be applied in the present study in saying that preparing the students with the '*know how*' would prepare the students for clinical performance in the formative assessment framework.

Similar to the findings where the students' clinical performance did not change after an intervention were the results of a study by Pugh, Touche, Murto and Wood (2016) in Canada. In the study, they used formative assessments to train Internal Medicine residents' clinical skills. The results showed that students' communication skills did not change after training for a period of four years. Additionally, do further studies to identify why there were no improvements in communication.

6.4 CONCLUSION

The use of the formative assessment framework in the experimental (intervention) groups for senior and junior students showed significant impact on their clinical learning in the skills laboratory. In particular, the use of a formative assessment framework had a significant impact on senior students' performance in physical examination of a pregnant woman, the triage process, contraception implant insertion, contraception implant removal, breast examination, episiotomy repair, management of third stage of labour and subsequent examination of the new-born and speculum examination procedure. However, there was no significant impact observed in the performance of second stage management of labour delivery procedure. There was also significant impact on the junior students' performance in the procedures of blood transfusion, female catheterisation, health education, insulin injection, naso-gastric tube insertion, suctioning the airway and wound dressing except for colostomy care. The overall conclusion was that the integration of a FAF into clinical learning in the skills laboratories has the

capacity to improve students' skill performance and competence. Improvements resulting from the usage of the FAF can help students in the preparation for the summative OSCE in the skills laboratories and ultimately, their clinical competence for better patient care**.**

CHAPTER SEVEN

MAIN FINDINGS, IMPLICATIONS AND CONCLUSION

7.1 INTRODUCTION

This chapter provides a summary of the main findings, recommendations and limitations of the study. The presentation starts with a summary of the main findings from the quantitative and qualitative results, followed with the implications of the findings, limitations of the study and finally the conclusion.

7.2 MAIN FINDINGS

7.2.1 Qualitative Findings

The presented results from the in-depth and focus group discussions are into two categories namely, clinical teaching and learning perspectives and OSCE perspectives.

7.2.1.1 Clinical teaching and learning perspectives

- The skills laboratory environment provides better teaching and learning experiences through demonstrations and return demonstrations. However, there is inequality in students opportunities for individual return demonstrations, feedback and practise sessions.

- Students benefit from the use of the appropriate resources, which are not available in many clinical sites where short cuts are a common occurrence. There is need for additional resources to match with the student numbers. Furthermore, there is an advocate for portable resources for onsite skills laboratory usage when students are far from the college skills laboratories.

- The presence of the nurse educators makes learning more effective and different from clinical sites where nurse educators are rarely available. Shortages of both human and material resources affect the students negatively.

- Improvisation strategies such as use of other classroom spaces for clinical demonstrations and mature students to cater for increased student numbers facilitate effective clinical teaching and learning. Construction or renovation of the skills laboratories with adequate space will increase the space for practise sessions and allow use of video-recorded learning resources.

- Some institutional policies such as opening the library from 7:30 to 5 pm do not promote maximum utilization of the skills laboratories by the students. The skills laboratories should operate as the library operates with at-least 3 qualified nurse midwives to work in shifts.

7.3.1.2 **The OSCE perspectives**

- The OSCE method was considered an appropriate strategy for evaluating students because it helps them to make sense of the clinical experience

- It has the capacity to measure student competence because there is correlation between students' performance in the clinical sites and during their performance of the OSCE. The students who perform well during the practise sessions have good performance during the OSCE as well.

- There is preparation of students for the OSCE at the beginning of each semester during the orientation process and occasionally in the skills laboratory. The use of formative assessment and formative OSCE's proves to be effective in students' learning and preparation for the examinations. Because students spend most of their time in the practice sites where shortcuts are a common way of teaching and learning in the practice settings, the formative assessment would act like a reminder for the students on the ideally performance of procedures which might have been forgotten due to the short cuts.

- There is preference of individual feedback during OSCE over group feedback considering the benefits thereof. It was suggested that feedback should speak to the individual students in terms of what the student is capable of doing, not capable and be informed of the opportunities for support to facilitate improvement

7.3.2 **Quantitative**

Specifically, there is the presentation of the main findings on the effect of the Formative Assessment Framework used during the intervention on junior and senior students. During the intervention, both the junior and senior students observed a minimum of two demonstrations by the nurse educators, conducted two return demonstrations in the presence of the nurse educator, received feedback from the nurse educators and peers and had time for deliberate practise sessions in pairs based on the weak areas they had received feedback.

7.3.2.1 **Performance of junior students**

There was assessment of students before and after the intervention on eight procedures from the prescribed fundamental and medical-surgical nursing procedures namely: blood transfusion, female catheterisation, health education, insulin intravenous injection, naso-gastric tube insertion, suctioning the airway and wound dressing and colostomy care. The results in the experimental group showed that there were statistically significant differences with a p-value of less than 0.05 in the pre and posttest scores in the performance in the following procedures:

- Blood transfusion (d5.8, p value 0.0000).
- Female Catheterization (d7.36, p value 0.0000)
- Health education (Congestive cardiac failure patient) (d 11.48, p value,0.0000)
- Insulin Intravenous injection (d1.58, p value 0.0000)
- Naso-Gastric Tube Insertion (d6.75, p value 0.0000)
- Suctioning the airway (d7.80, p value 0.0000)
- Wound Dressing(d8.56, p value 0.0000)

These result show that using the formative assessment framework improved student clinical performance after the intervention.

Students' performance in colostomy care did not change before and after the intervention, which indicate that the FAF had no effect on their performance.

The results also show that in the control groups there were significant mean score differences between the pretest and posttest mean scores in the following procedures:

- Blood transfusion (d1.29, p value 0.0165)
- Female catheterization (d5.16, p value 0.0003)
- Health education (congestive cardiac failure)(d5.05, p value 0.0002)
- Suctioning the airway (d7.25, p value 0.0000)
- Naso-gastric tube insertion (d 3.66, p value 0.0001).

The mean differences were higher in the experimental than the control groups except in the procedure of suctioning which was the same.

7.3.2.2 **Performance of senior students**

The assessment of senior students before and after the formative assessment intervention took place. They were tested on ten gynaecological, community and midwifery procedures namely physical examination of a pregnant woman, triage process, implant insertion, implant removal, breast examination, episiotomy repair, second stage management of labour delivery, third stage management of labour, subsequent care of the new born and speculum examination procedure. Similarly,

statistically significant differences were obtained from the pre-test and post-test scores from the experimental group during:

- Physical Examination of a Pregnant Woman (d27.8, p value =0.0000)
- Triage Process at the under-five clinic (d7.7, p value =0.0000)
- Contraception Implant Insertion (d25.75, p value =0.0000)
- Contraception Implant Removal (d13.35, p value =0.0000)
- Breast Examination (d3.12, p value =0.0001)
- Episiotomy Repair (d10.80, p value= 0.0000)
- Management of Third Stage of Labour (d6.74, p value =0.0004)
- Subsequent Examination of the New-Born (d6.24, p value =0.0000)
- Speculum Examination Procedure (d18.05, p value =0.0000)

There was no significant difference on the performance of the second stage management of labour and delivery procedure (p-value =0.7450))

On the other hand, results from the **control groups** also show that there were significant mean score differences in the pretest and posttest scores before and after the normal clinical learning experiences for the procedures of:

- Contraception implant insertion (d2.7, p value= 0.0136)
- breast examination (d1.37, p value= 0.0452)
- subsequent examination of the new born (d10.17, p value=0.0002)

When compared in terms of the mean differences with the same two procedures in the experimental group, mean differences in the experimental groups were higher than the mean scores in the control groups.

However, there were no significant differences in physical examination of a pregnant woman, the triage process at the under-five clinic, contraception implant removal, episiotomy repair, second stage management of labour and delivery, management of the third stage of labour and speculum examination procedures.

Overall, the results show that the formative assessment framework had statistically significant impact on students' clinical performance.

7.4 IMPLICATIONS OF THE STUDY FINDINGS

7.4.1 Nursing Education

- Nursing education institution in a context similar to KCN could consider using the formative assessment framework in their skills laboratories for teaching and learning

- Reinforcing resource capacity of the skills laboratories including personnel numbers with expertise and updated equipment. The suggestion for portable resources for on-site skills laboratories far from the college skills laboratories be addressed

- Institutional policies to suit the needs of the students in accordance with curriculum objectives such as opening the skills library to coincide with the library opening times

- Nursing education institutions to have skills laboratories with space that match with the students' numbers. In addition, the space should allow video learning experiences with specifications that match the institution's needs, philosophy and curriculum.

- Although it was not part of teaching in the skills laboratories, there was a suggestion for the introduction of a one-year mentor-mentee program for the undergraduate nursing students graduating from the college joining the nursing profession.

7.4.2 Research

- Need to investigate the possibility of using a modified FAF among practicing nurses to improve competences
- Conduct research to assess the costing of FAF guided skills laboratory teaching and learning.
- Need to test the different competences of nurses who graduate after going through the FAF guided education.
- Need for study that takes into consideration the study limitations

7.5 LIMITATIONS

The following are the limitations of the study:

- The literature recommends that after focus group analysis, the researcher has to go back to the participants for verification of the themes (Jamieson and Williams, 2003; Polit and Beck, 2012). However, the researcher was not able to return to the participants. Students sent home unexpectedly at a time of data collection made it impossible and time became the limiting factor. Instead, the co-coder conducted an

audit trail of the transcripts against the themes for affirmation of accurate data interpretation and coding.

- Ideally, it is a requirement to use the same examiners for both the control and experimental groups (Polit and Beck, 2012). This was not possible because the two campuses are five hours apart and it was not possible to use the same examiners. Rather the same examiners were used for the pre-test and post-test for each group.

- Resources in the skills laboratories play a vital role in teaching of the students. Resources were supposed to be included in the framework (input) and were not included because the focus in the framework was the process of teaching and learning. In addition, it was not possible to use all the factors that are prohibitive such as opening the skills laboratory from 5 pm-10 pm during the experiment.

7.6 CONCLUSION

The study employed a mixed methods design to evaluate skills laboratories teaching and learning at Kamuzu College of Nursing, University of Malawi to come up with a framework to improve teaching and learning in the first phase. The second phase of the study was to test the effect of the Formative Assessment Framework on students teaching and learning through a quasi-experiment in the skills laboratory. In the first phase, both the nurse educators and students appreciated the values of the skills laboratories in building nursing skills competence. However, there were also some challenges that nurse educators and students found to be frustrating the teaching and learning positive outcomes. A synthesis of the challenges and literature review led to the development, implementation and testing of the Formative Assessment Framework to determine its ability to improve teaching and learning in the skills laboratories. Results from the second phase showed that the use of the formative framework assessment framework yielded statistically significant effects on students' teaching and learning in the skills laboratory. Statistically significant mean differences existed from the experimental groups. Thus, clinical performance and competence improved for the better in the experimental groups than in the control groups. Thus, adopting its use contributes to improvement in teaching and learning in the skills laboratories. Thus, the findings in this thesis show that the FAF has the capacity to influence quality teaching, learning and assessment/ evaluation. Improvements because of FAF can help students' better preparation for the summative OSCE in the skills laboratories and ultimately, their clinical competence for better patient care**.**

REFERENCES

Acton, R.D., Chipman, J.G., Lunden, M. et al. (2015). Unanticipated Teaching Demands Rise with Simulation Training: Strategies for Managing Faculty Workload. Journal of Surgical Education, 72(3), 522-529.

Aggar, C. and Dawson, S. (2014). Evaluation of Student Nurses' Perception of Preparedness for Oral Medication Administration in Clinical Practice: A Collaborative Study. Nurse Education Today, 34(6), 899-903.

Aggarwal, R., Mytton, O., Derbrew, M., et al. (2010). Training and Simulation for Patient Safety. International Journal of Healthcare Improvement, 19(2), i34-i43.

Ahmed, A.M. (2008). Role of clinical skills centers in maintaining and promoting clinical teaching. Sudanese Journal of Public Health, 3(2), 97-103.

Akhtar-Danesh, N., Baxter, P., Valaitis, R., et al. (2009). Simulated Experiences: Nursing Students Share their Perspectives. Nurse Education Today, 29(8), 859-866.

Anderson, J.K. and Nelson, K. (2015). Patterns of Communication in High Fidelity Simulation, Journal of Nursing Education, 54(1), 22-27.

Ansary, J.A., Ara, I., Talukder, H.K., et al. (2011). Views of Students Regarding Effective Clinical Teaching and Learning in Dental Education. Bangladesh Journal of Medical Education, 2(1), 1-5.

Armstrong, S.J. and Rispel, L.C. (2015). Transforming Nursing in South Africa, Social Accountability and Nursing Education in South Africa. Global Health Action, 8, 5-13.

Bagnasco, A., Pagnucci, N., Tolotti, A., et al. (2014). The Role of Simulation in Developing Communication and Gestural Skills in Medical Students. BioMedCental Journal of Medical Education, 14, 106.

Barr, C. (2012). Deliberate Practice: What It Is and Why You Need It. Accessed from www.expertenough.com on 04/04/2012.

Bastable, S.B. (2006). Nurses as Educators: Principles of Teaching and Learning for Nursing Practice, 2nd Edition. Jones and Bartlett Publishers Ltd, UK.

Berragan, L. (2011). Simulation: An Effective Pedagogical Approach for Nursing. Journal of Nursing Education Today, 31, 660-663.

Billings, D.M. and Halstead, J.A. (2012). Teaching in Nursing: A guide for Faculty, 4th Edition. 3251 Riverport Lane, USA.

Boellaard, M.R., Brandt, C.L., Johnson, N.L., et al. (2014). Practicing for Practice: Accelerated Second Baccalaureate Degree Nursing (ABSN) Students Evaluate Simulations. Nursing Education Perspectives, 35(4), 257-258.

Boland, D. (2012). 'Developing Curriculum; Frameworks, Outcomes and Competencies' in D.M. Billings and J.A. Halstead, Teaching in Nursing: A Guide for Faculty, 4th Edition, pp.138-139. Riverport Lane, USA.

Budgen, C. and Gamroth, L. (2007). An Overview of Practice Education Models. Nurse Education Today, 28(3), 273-283.

Burns, N. and Grove, K.S. (2007). Understanding Nursing Research: Building an Evidenced-Based Practice, 4th Edition. China.

Burruss, N. and Popkess, A. (2012) Billings, D.M. and Halstead, J.A. (2012).Teaching in Nursing: A guide for Faculty. 4th Edition, 3251 Riverport Lane, USA

Burgen, C. and Gamroth, L. (2007). An Overview of Practice Education Models. Nurse Education Today, 28(3), 273-283.

Blanche, M.T., Durrheim, K. and Painter, D. (2007). Research in Practice: Applied Methods for the Social Sciences. 2nd Edition, University of Cape Town Press, South Africa.

Brannick, M.T. (2013). Metacognition, OSCE performance anxiety and OSCE performance. Medical Education, 47: 538-546, John Wiley and Sons Ltd.

Brosnan, M., Evans, W., Brosnan, E., et al. (2006), Implementing Objective Structured Clinical Skills Evaluation (OSCE) in Nurse Registration Programs in a Centre an Ireland, A Utilization Focused Evaluation. Nurse Education Today, 26(2), 115-122.

Bruce, J.C., Klopper, H.C. and Mellish, J.M. (2011). Teaching and Learning the Practice of Nursing. 5th Edition. Heinemann Publishers Ltd, Cape Town.

Carton, K.H. (2012). The Learning Resource Centerin D.M. Billingsand J.A. Halstead, Teaching in Nursing: A guide for Faculty. 4th Edition, pp. 335-339. Riverport Lane, USA.

Chisnall, B., Vince, T., Hall, S.K., et al. (2015). Evaluation of Outcomes of a Formative Objective Structured Clinical Examination for Second-Year UK Medical Students. International Journal of Medical Education, 6, 76-83.

Comer, S.K. (2005). Patients Care Simulations: Role Playing to Enhance Clinical Understanding. Journal of Nursing Education Perspectives, 26(6), 357-36.

Corbetta, P. (2003). Social Research Theory, Methods and Techniques. London: SAGE Publications.

Creswell, J. W., and Plano, C. V. L. (2011). Designing and conducting mixed methods research. 6th Edition. Los Angeles: SAGE Publications.

Creswell, J. (2009). Research Design: Qualitative, Quantitative and Mixed Methods Approaches. 3rd Edition, Sage publications, London.

Dahlstrom, J., Dorai-Raj, A., McGill, D., et al. (2005). What Motivates Senior Clinicians to Teach Medical Students? BioMedCental Medical Education, 5(27), 1-10.

Das, M., Townsend, A., and Hassan, M.Y. (2002).The Views of Senior Students and Young Doctors of Their Training in a Skills Laboratory. Medical Education, 32(2), 143-149.

Dehmer, J.J., Amos, K.D., Farrel, T.M., et al. (2013). Competence and Confidence with Basic Procedural Skills: The Experience and Opinions of Fourth-Year Medical Students at a Single Institution, Academy Medicine. Journal of the Association of American Medical Colleges, 88(5), 682-687.

De Vos, A.S., Strydom, H., Fouche, C.B. et al. (2006). Research at the Grassroots for the Social Sciences and Human Service Professions. 3rd Edition, Van Schaik Publishers, Pretoria, South Africa.

Delavar, M.A., Salmalian, H., Faramarz, M., et al. (2013). Using the Objective Structured Clinical Examinations Undergraduate Midwifery Students. Journal of Medicine and Life, 6(1), 76-79.

Dillard, N. and Siktberg, L. (2012). 'Curriculum Development: An Overview' in D.M. Billings and J.A. Halstead, Teaching in Nursing: A Guide for Faculty. 4th Edition, pp. 76-88, Riverport Lane, USA.

Dornan, T., Mangolis, A.S.,Scherpbier, A., et al. (2006). How Can Experience in Clinical and Community Settings Contribute to Early Medical Education: A BEME Systematic Review. Medical Teacher, 28(1), 3-18.

Dubrowski, A. and MacRae, H. (2006). Randomised, Controlled Study Investigating the Optimal Instructor: Student Ratios for Teaching Suturing Skills. Medical Education, 40(1), 59-63.

Dunn, K.E. and Mulvenon, S.W (2009). A Critical Review of Research on Formative Assessments, The Limited Scientific Evidence of the Impact of Formative Assessments in Education. Practical Assessment Research and Evaluation,14(7), 1-11.

Eisold, C., Poenicke,C., Pfaltzer, A., et al. (2015). Simulation in the Intensive Care Setting. Best Practice and Research Clinical Anaesthesiology, 29(1), 51-60.

Ericsson, K.A. and Lehmanna, A.C. (1996). Expert and Exceptional Performance: Evidence of Maximal Adaptation to Task Constraints in Ericsson K.A. (2015), Acquisition and Maintenance of Medical Expertise: A Perspective from the Expert-Performance, Approach with Deliberate Practice. Academic Medicine, 90(11), 1471-1486.

Emerson, R.J. (2007). Nursing Education in the Clinical Setting, Mosby Inc, United States of America.

Ericsson, K.A. (2008). The Influence of Experience and Deliberate Practice on the Development of Superior Expert Performance cited in Wiel, M.W.J., Bossche, P., Jansen, S. et al. (2010). Exploring deliberate practice in medicine: How do Physicians learn in the Work Place? Advances in Health Science Education Theory Practice, 16(1), 81-95.

Ericsson, K.A. (2015). Acquisition and maintenance of medical expertise: a perspective from the expert-performance approach with deliberate practice, Academic Medicine, Journal of the Association of American Medical Colleges, 90(11),1471-1486.

Eta, V.E.A., Atanga, M.B., Atashili, J., et al. (2011). Nurses and Challenges Faced as Clinical Educators: A Survey of A Group of Nurses in Cameroon. Pan African Medical Journal, 8 (1), 1-8.

Ewertsson, M, Allvin, R., Holmstr€om, I.K., et al. (2015) Walking the Bridge: Nursing Students Learning in Clinical Skills Laboratories. Nurse Education in Practice, 15 (4), 277-283.

Foster, H., Ooms, A., Marks-Maran, D. (2014). Nursing Students' Expectations and Experiences of Mentorship. Nurse Education Today, 35(1), 18-24.

Frantz, J.M., Rowe, M., Hess, D.A., et al. (2013). Student and Staff Perceptions and Experiences of the Introduction of Objective Structured Practical Examination: A Pilot Study. African Journal of Health Professionals Education, 5(2), 72-74.

Fraser, M.W. and Galinksy, M.J. (2010). Steps in Intervention Research: Designing and Developing Social Programs. Research on Social Work Practice, 20(5), 459-466.

Freeth, D. and Fry, H. (2005). Nursing Students' and Tutors' Perceptions of Learning and Teaching in a Clinical Skills Centre. Nurse Education Today, 25(4), 272-82.

Gaberson, K.B. and Oermann, M.H. (2007). Clinical Teaching Strategies in Nursing, 2nd Edition. Springer Publishing Company, LLC, New York, USA.

Gigante, J., Dell, M. and Sharkey, A. (2011). Getting Beyond "Good Job": How to Give Effective Feedback. Journal of the American Academy of Pediatrics, 127(2), 204-207.

Godson, N.R., Wilson, A. and Goodman, M. (2007).Evaluating Student Nurse Learning in the Clinical Skills Laboratory. British Journal of Nursing, 16(15), 942-945.

Gore, T., Hunt, C.W., Parker, F.P., and Raines, K.H. (2011). The effects of simulated clinical experiences on anxiety: Nursing students' perspectives. Clinical Simulation in Nursing, 7(5), e175-e180.

Gorman, A.L., Castiglioni, C., Hernandez, A., et al. (2015). Using Preclinical High-Fidelity Medical Simulations to Integrate Pharmacology and Physiology with Clinical Sciences, Medical Science Educator, 25(4), 521-532.

Gormley, G., Sterling, M., Menary, A. et al. (2012). Keeping it Real! Enhancing Realism in Standardized Patient OSCE Stations. The Clinical Teacher, 9, 382-386.

Gums,T.H., Kleppinger, E.L. and Urick, B.Y. (2014). Instructional Design and Assessment: Outcomes of Individualized Formative Assessments in a Pharmacy Skills Laboratory. American Journal of Pharmaceutical Education, 78(9), 166.

Journal of Pharmaceutical Education, 78(9), 166.

Hamilton, L.C. (2006). Statistics with STATA, Updated for Version 9. University of New Hampshire, Thomson, Australia.

Haraldseid, C., Friberg, F. and Aase, K. (2015). Nursing Students' Perceptions of Factors Influencing Learning Environment in a Clinical Skills Laboratory: A Qualitative Study. Nurse Education Today, 35, 1-6.

Harden, M. (2015). Misconceptions and the Use of the OSCE. Medical Teacher, 37(7): 608-610.

Harden, R.M., Stevenson, M., Downie,W.W., et al. (1975).Assessment of Clinical Competence Using Objective Structured Examination. British Medical Journal, 1(5955), 447-451.

Harder, N. (2010). Use of Simulation in Teaching and Learning in Health Sciences: A Systematic Review. Journal of Nursing Education, 49(1), 23-28.

Harris, K.R., Eccles, D.W., Ward, P. et al. (2013). A Theoretical Framework for Simulation in Nursing: Answering Schiavenato's Call. Journal of Nursing Education, 52(1), 6-16.

Hashimoto, D.A., Sirimanna, P., Gomez, E.D., et al. (2014). Deliberate Practice Enhances Quality of Laparoscopic Surgical Performance in a Randomised Controlled Trial: From Arrested Development to Expert Performance. Journal of Surgical Education, 29(11), 3154-3164.

Hawker, J.A., Walker, K.Z., Barrington, V., et al. (2010). Measuring the Success of an Objective Structured Clinical Examination for Dietetic Students. Journal of Human Nutrition and Dietetics, 23(3), 212-216.

Henning, E., Van Rensburg, W. and Smit, B. (2004). Finding Your Way in Qualitative Research. Pretoria: Van Schaik.

Henning, E., Rensburg, W. and Smit, B. (2009). Finding Your Way in Qualitative Research. 6th Edition, Van Shaik Publishers, Paarl, South Africa.

Houghton, C.E., Casey, D., Shaw, D., et al. (2012). Staff and Students' Perceptions and Experiences of Teaching and Assessment in Clinical Skills Laboratory: Interview Findings from a Multiple Case Study. Nurse Education Today, 32, e29-e34.

Hoffman, H., Mofolo, I., Salima, C., et al. (2012). Utilization of Family Members to Provide Hospital Care in Malawi, the Role of Hospital Guardians. Malawi Medical Journal, 24(4), 74-78.

Hsu, L., Chang, W. and Hsieh, S. (2015). The Effects of Scenario-Based Simulation Course Training on Nurses' Communication Competence and Self-Efficacy: A Randomized Controlled Trial. Journal of Professional Nursing, 31(1), 37-49.

Ironside, P. (2015). Narrative Pedagogy: Transforming Nursing Education through 15 Years of Research in Nursing Education. Nursing Education Perspectives, 36(2): 83-88.

Issenberg, S.B., Mcgaghie, W.C., Petrusa, E.R., Gordon D.L. and Scalese, R.J. (2005). Features and Uses of High-Fidelity Medical Simulations that Lead to Effective Learning: A BEME Systematic Review. Medical Teacher, 27(1), 10-28.

Jamieson, L. and Williams, L.M. (2003) Focus Group Methodology: Explanatory Notes for the Novice Nurse Researcher. Contemporary Nurse, 14(3), 271-280.

Jamshidi, L. (2012). The Challenges of Clinical Teaching in Nursing Skills and Lifelong Learning from the Standpoint of Nursing Students and Educators. Journal of Social and Behavioral Sciences, 46, 3335-3338.

Jay, A. (2007). Students' Perceptions of the OSCE, A Valid Assessment Tool. British Journal of Midwifery, 15(1), 32-37.

Jeffers, A., Simmons, B., Tabak, D., et al. (2007). Using The Objective Structured Clinical Examination (OSCE) to Assess Multiple Physician Competencies in Postgraduate Training. Medical Teacher, 29(2-3), 183-191.

Jeffries, P.R. (2005).A Framework for Designing, Implementing, and Evaluating Simulations used as Teaching Strategies in Nursing.Nursing Education Perspectives, 26(2), 96-103.

Jeffries, P.R. (2008). Getting in S.T.E.P. with Simulations, Simulations Take Educator Preparation. Nursing Education Perspectives, 29(2), 70-73.

Jerez, J.M., Bueno, D., Molina, I., et al. (2010). Improving Motivation in Learning Programming Skills for Engineering Students. International Journal of Engineering Education, 28(1), 202-208.

Jones, S.J., Staib, S.A. and Fusner, S. (2009). Students' Perceptions of Clinical Teaching and Learning Strategies: A Pakistani Perspective. Nurse Education Today, 32(1), 85-90.

Jhurree, V. (2005). Technology Integration in Education in Developing Countries: Guidelines to Policy Makers. International Education Journal, 6(4), 467-483.

Junger, J., Schafer,S., Roth,C., et al. (2005). The Effects of Clinical Skills Training on Objective Structured Clinical Examination. Medical Education, 39(10),1015-1020.

Joyce, K.M., Byrne, D., O'Connor, P., et al. (2015). An Evaluation of the Use of Deliberate Practice and Simulation to Train Interns in Requesting Blood Products. Journal of Simulation Health Care, 10(2), 92-97.

Kadri, H.M.F., Moamary, H.S., Magzoub, M.E., et al. (2011). Exploring Factors Affecting Undergraduate Medical Students' Study Strategies in the Clinical Years: A Qualitative Study. Advanced in Health Science Education, 16(5), 553-567.

Kamuzu College of Nursing Curriculum (2006), Lilongwe, Malawi, Unpublished.

Kaufman, D.M. (2003). Applying Educational Theory in Practice. Clinical Review, 326, 213-216.

Keating, S.B. (2006). Curriculum Development and Evaluation in Nursing.Lippincott Williams and Wilkin, Wolters Kluver Company, Philadelphia.

Keetsemang, S., Mugarurwa, J., Shahidi, T., et al. (2008). Student Evaluation of a Clinical Self-Study Laboratory. Nurse Education in Practice, 8, 359-367.

King in Taplay, K., Jack, S.M., Baxter, P., et al. (2015). The Process of Adopting and Incorporating Simulation into Undergraduate Nursing Curricula: A Grounded Theory Study. Journal of Professional Nursing, 31(1):26-36.

Killam, L.A. and Carter, L.M. (2010). Challenges to the Student Nurse on Clinical Placement in the Rural Setting: A Review of the Literature. The International Electronic Journal of Rural and Remote Health Research, Education, Practice and Policy, 10, 1523.

King, C.J., Moseley, S., Hindenlang, B., et al. (2008). Limited use of the Human Patient Simulator by Nurse Faculty: An Intervention Program Designed to Increase use, International of Nursing education Scholarship, 5(12), 1-16.

Kirkpatrick, J.M. and DeWitt, D.A. (2012). 'Strategies for Assessing and Evaluating Learning Outcomes' in Billings, D.M. and Halstead, J.A. Teaching in Nursing: A guide for Faculty. 4th Edition, pp. 441-456. 3251 Riverport Lane, USA.

Kouwenhoven, W. (2009). Competence-Based Curriculum Development in Higher Education: A Globalised Concept. Technology, Education and Development, 1-22. Accessed from www.cdn.intechopen.com on 12/06/2012.

Koretsky, M., Kelly, C. and Gummer, E. (2011). Student Perceptions of Learning in the Laboratory: Comparison of Industrially Situated Virtual Laboratories to Capstone Physical Laboratories. Research Journal for Engineering Education, 100(3), 540-573.

Khan, K.Z., Ramachandran, S., Gaunt, K., et al. (2013). The Objective Structured Clinical Examination (OSCE): AMEE Guide No. 81. Part II: Organisation and Administration. Medical Teacher, 35(9), e1447-1463.

Kuljis, J., Paul, R.J. and Stergioulas, L.K. (2007). Can Health Care Benefit from Modeling and Simulation Methods in the Same Way as Business and Manufacturing has. Proceedings of the 2007 Winter Simulation Conference, Department of Information Systems and Computing, London, 1449-1453.

Klopper, H.C. and Uys, L.R. (2013). Nursing and Nursing Education in Africa: A Country by Country Review. Sigma Theta Tau International, Indianapolis, USA.

Kruk, M.E., Wladis, A., Mbembati, N., et al. (2010). Human Resource and Funding Constraints for Essential Surgery in District Hospitals in Africa: A Retrospective Cross-Sectional Survey. PLOS Medical Journa

Lameris, A.L., Hoenderop, J.G.J., Bindels, R.J.M. et al. (2015). The Impact of Formative Testing on Study Behaviour and Study Performance of Biomedical Students: A Smartphone Application Intervention Study. BioMedCental Journal of Medical Education, 15, 72.

Lane, C. and Rollnick, S. (2007). The Use of Simulated Patients and Role-Play in Communication Skills Training: A Review of the Literature to August 2005. Patient Education and Counselling, 67(1-2),13-20.

Landeen, J., Pierazzo, J., Akhtar-Danesh, N., et al. (2015). Exploring Student and Faculty Perceptions of Clinical Simulation: A Q-Sort Study. Journal of Nursing Education, 54(9), 485-491.

Lapkin, S., and Levett-Jones, T. (2011).A Cost-Utility Analysis of Medium versus High Fidelity Human Patient Simulation Manikins in Nursing Education. Journal of Clinical Nursing, 20(23-24), 3543-3552.

Lateef, F. (2010) Simulation-Based Learning; Just Like the Real Thing. Journal of Emergency Trauma and Shock, 3(4), 348-352.

Lee, L.Y.K., Lee, J.K.L., Wong, K.F., et al. (2010). The Establishment of an Integrated Skills Training Centre for Undergraduate Nursing Education. International Nursing Review, 57(3), 359-364.

Lee, N.J., Chae, S.M., Kim, H., et al.(2016). Mobile-Based Video Learning Outcomes in Clinical Nursing Skill Education: A Randomised Controlled Trial. Computers Informatics Nursing, 34(1), 8-16.

Lehman, J.D., Carter, C. and Kahle, J.B. (1985). Concept Mapping and Achievement. Journal of Research in Science Teaching, 22(7), 663-673.

Lewis, D.Y. and Ciak, A.D. (2007).The Impact of a Simulation Lab Experience for Nursing Students. Nursing Education Perspectives, 32(4), 256-258.

Liou, S.R., Chang, C.H., Tsai, H.M. and Cheng, C.Y. (2013). The Effects of Deliberate Practice Program on Nursing Students' Perception of Clinical Competence. Nurse Education Today, 33 (4) 358-363.

Lin, C.W., Clinciu, D.L, Swart, M., et al. (2013). An Integrative OSCE Methodology for Enhancing the Traditional OSCE Program at Taipei Medical University Hospital: A Feasibility Study. International Nursing Review, 57, 359-364.

Lund, F., Schultz, J. H., Maatouk, I., et al. (2012). Effectiveness of IV Cannulation Skills Laboratory Training and Its Transfer into Clinical Practice: Randomized, Controlled Trial. Journal of Pros One, 7(3), e32831.

Lynn, M.R. (1986). Determination and Quantification of Content Validity. Nursing Research, 35(6), 382-385.

Madhavanprabhakaran, G.K., Shukri, R.K., Hayuduni, J. et al. (2013). Undergraduate Nursing Students' Perception of Effective Clinical Instructor: Oman, International. Journal of Nursing Science, 3(2), 38-44.

Maginnis, C. and Croxon, L. (2010). Transfer of Learning to the Nursing Clinical Practice Setting, International Electronic. Journal of Rural and Remote Health Research. Education Practice and Policy, 10, 1-7.

Malawi National Training Operational Plan (2011). Accessed from www.hivandsrh.org on 04/06/2012.

Marcus, H., Vakharia, V., Kirkman, M.A., et al. (2012). Practice Makes Perfect, the Role of Simulation-Based Deliberate Practice and Script-Based Mental Rehearsal in the Acquisition and Maintenance of Operative Neurosurgical Skills. Journal of Neurosurgery, 72(S1), A124-A130.

Megel, M.E., Black, J., Clark, L., et al. (2012). Effect of High-Fidelity Simulation on Pediatric Nursing Students' Anxiety. Clinical Simulation in Nursing, 8(9), e419-e428.

Meyer, M., Marzen-Groller, K., Myers, S. et al. (2014). Simulation as a Learning Experience: Perceptions of New RNs. Clinical Simulation in Nursing, 10(8), 384-394.

Miles, L.W., Mabey, L., Legget, S., et al. (2014). Teaching Communication and Therapeutic Relationship Skills to Baccalaureate Nursing Students: A Peer Mentorship Simulation Approach. Journal of Psychosocial Nursing and Mental Health Services, 52(10), 34-41.

McCallum, J. (2006). The Debate in Favour of Using Simulation Education in Pre-Registration Adult Nursing. Nurse Education Today, 27(8), 825-831.

McClimens, A., Ibbotson, R., Kenyon, C., et al. (2012). Confidence and Performance in Objective Structured Clinical Examination. British Journal of Midwifery, 20(10), 746-751.

McGaghie, W.C., Siddall, V.J., Mazmanian, P.E., et al. (2009). Lessons for Continuing Medical Education From Simulation Research in Undergraduate and Graduate Medical Education Effectiveness of Continuing Medical Education. Chest Journal, 135(3), 62S-68S.

Mclafferty, I. (2004). Methodological Issues in Nursing Research: Focus Group Interviews as Data Collecting Strategy. Journal of Advanced Nursing, 48(2), 187-194.

Mitchell, M.L., Henderson, A., Jeffrey, C.A., et al. (2015). Application of Best Practice Guidelines for OSCES-An Australian Evaluation of their Feasibility and Value. Nursing Education Today, 35(5), 700-705.

Montes, A.J.S., Castro,H.A.B. and Riveros, J.A.H. (2009). How to Motivate Students to Work in the Laboratory: A New Approach for an Electrical Machines Laboratory. IEE Transactions on Education, 53(3), 490-496.

Morgan, R. (2006). Using Clinical Skills Laboratories to Promote Theory-Practice Integration During First Practice Placement: An Irish Perspective. Journal of Clinical Nursing, 15(2), 155-161.

Moya, L. (2007). Pass the Budget or We Perish, Nurses Urge Parliament, Malawi News May 26-June 01. Accessed from www.nej.sagepub.com on 09/08/2012.

Mogobe, K.D., Bruce, J.C., Meyer, S. (2009). Collaboration in Higher Education for Nursing and Midwifery in Africa (Chenma). Africa Journal of Nursing and Midwifery, 11(1), 5-15.

Mohajeri, S.B. (2006), Heideggerian Approach to the Technology of Environmental Design. In: Hamid R. Arabnia and Ray R. Hashemi, ed., 'IKE' , CSREA Press, pp.323-329.

Muldoon, K., Biesty, L. and Smith, V. (2014). 'I Found the OSCE very Stressful': Student Midwives' Attitudes towards an Objective Structured Clinical Examination (OSCE). Nurse Education Today, 34(3), 468-473.

Msiska, G., Smith, P. and Fawcett, T. (2014). Exposing Emotional Labour Experienced by Nursing Students During Their Clinical Learning Experience: A Malawian Perspective. International Journal of Africa Nursing Sciences, 1, 43-50.

Naing, L., Winn, T. and Rusli, B.N. (2006). Practical Issues in Calculating the Sample Size for Prevalence Studies. Archives of Orofacial Sciences, 1, 9-14.

Nehring, W.M. (2008). U.S. Boards of Nursing and the use of High-Fidelity Patient Simulators in Nursing Education. Journal of Professional Nursing, 24, 109-117.

Nielsen, B. and Harder, N. (2013). Causes of Student Anxiety during Simulation: What the Literature Says. Clinical Simulation in Nursing, 9(11), e507-e512.

Nieswiadomy, R.M. (2008). Foundations of Nursing Research. 5th Edition, Pearson Education, New Jersey, Canada.

Nicol, M. and Glen, S. (1999). Clinical Skills in Nursing: The Return of the Practical Room? 1st Edition, Macmillan Press Ltd. London.

Nilson, M.S., Pennbrant, S., Pilhammar, E., et al. (2010). Pedagogical Strategies used in Clinical Medical Education: An Observational Study. BioMedCentral Journal of Medical Education, 10(9), 1-10.

Nulty, D.D., Mitchell, M.L., Jeffrey, C.A., et al. (2011). Best Practice Guidelines for Use of OSCEs: Maximising Value for Student Learning. Nurse Education Today, 31, 145-151.

Nurses and Midwives Council Validation Board (2005). Lilongwe. Malawi. Accessed from www.ncbi.nlm.nih.gov on 20/07/2015.

Nurses and Midwives Council of Malawi (2011). Accessed from www.nmcm.org.mw on 4/09/2014.

O'Connor, A.B. (2006). Clinical Instruction and Evaluation: A Teaching Resource. 2nd Edition, Jones and Barlett Publishers, USA.

O'Neill, G. (2010). Program Design, Overview of Curriculum Models. UCD Teaching and Learning Resources Scholarly Article.

Olson, D., Davis, N.L., Milazi, R., et al. (2013). Development of A Severity of Illness Scoring System (Inpatient Triage, Assessment And Treatment) for Resource-Constrained Hospitals in Developing Countries. Tropical Medicine and International Health, 18(7), 871-878.

Oranye, N.O., Ahmad, C., Ahmad, N. et al. (2012). Assessing Nursing Clinical Skills Competence through Objective Structured Clinical Examination (OSCE) for Open Distance Learning Students in Open University Malaysia. Contemporary Nurse, 41(2), 233-241.

Parahoo, K. (1997). Nursing Research: Principles, Process and Issues. 1st Edition, Macmillan Press Ltd, Hampshire.

Parsons, M.E., Hawkins, K.S., Hercinger, M., et al. (2012). Improvement in Scoring Consistency for the Creighton Simulation Evaluation Instrument. Clinical Simulation in Nursing, 8(6): e233-e238.

Penman, J. and Oliver, M. (2004). Meeting the Challenges of Assessing Clinical Placement Venues in a Bachelor of Nursing Program. Journal of University Teaching and Learning Practice, 1(2), 60-73.

Peterson, S. (2008). The Teaching Doctor: Illuminating Evidence Based Ideas for Effective Teaching, Office of Health Sciences Education, Queen's University, pp1-7. Accessed from www.meds.queensu.ca on 04/04/2013.

Pinchok, N. and Brandt, W.C. (2009). Connecting Formative Assessment Research to Practice: An Introductory Guide for Educators, pp1-24. Accessed from www.learningpt.org on 13/05/2013.

Polit, D.F. and Beck, C.T. (2012). Nursing Research: Generating and Assessing Evidence for Nursing Practice, 9th Edition. Lippincott Williams and Wilkins, Philadelphia.

Polit, D.F. and Beck, C.T. (2004). Nursing Research: Principles and Methods. 7th Edition, Lippincott Williams and Wilkins, Philadelphia.

Potgieter, E. (1992). Professional Nursing Education 1890-1991. 1st Edition, JL Van Shaik (Pty) Ltd, Pretoria.

Powell, E.T. and Runner, M. (2009). Collecting Evaluation Data: End of Session Questionnaires, Program Development and Evaluation. Accessed from www.uwex.edu on 6/12/ 2012.

Pugh, D., Touchie, C., Humphrey-Murto, S. (2016). The OSCE Progress Test-Measuring Clinical Skill Development over Residency Training. Medical Teacher, 38(2), 168-173.

Phillips, D. Zuckerman, J.D. Straus, E.J., et al. (2013). Objective Structured Clinical Examinations: A Guide to Development and Implementation in Orthopaedic Residency. Journal of the American Academy of Orthopaedic Surgeons, 21(10), 592-600.

Quinn, F.M. (2001). Principles and Practice of Nurse Education. 4th Edition, Stanley Thorne Publishers Ltd, China.

Quinn, F.M. and Hughes, S.J. (2007). Principles and Practice of Nurse Education. 5th Edition, Nelson Thornes Publishers Ltd, China.

Raheem, H. and Naheem, N. (2013). Assessing the Objective Structured Clinical Examination: Saudi Family Medicine Undergraduate Medical Students' Perceptions of The Tool. Journal of Pak Medical Association, 63(10), 1281-1284.

Reamer, F.G. (2012). The Cultivation of Ethics Expertise: The Impact of Deliberate Practice. Accessed from www.socialworktoday.com on 02/05/2013.

Ricketts, J. (2011). Research Review: Reading Comprehension in Developmental Disorders of Language and Communication. Journal of Child Psychology and Psychiatry, 52(11), 1111-1123.

Ritchie, J., Lewis, J. Nicholls, C.M., et al. (2014). Qualitative Research Practice: A Guide for Social Science Students and Researchers, SAGE Publications Ltd, New Delhi.

Robertson, B. (2006). An Obstetric Simulation Experience in an Undergraduate Nursing Curriculum. Nurse Educator, 31(2), 74-78.

Rogers, G.D., McConnell, H.W., Rooyl, N.J., et al. (2014). A Randomised Controlled Trial of Extended Immersion in Multi-Method Continuing Simulation to Prepare Senior Medical Students for Practice as Junior Doctors. BioMedCentral Journal of Medical Education, 14, 90.

Rush, S., Ooms, A., Maran, D. and Firth, T. (2014). Students' Perceptions of Practice Assessment in the Skills Laboratory: An Evaluation Study of OSCAs with Immediate Feedback. Nurse Education in Practice, 14, 627-634.

Rushforth, H.E. (2007). Objective Structured Clinical Examination (OSCE): Review of Literature and Implications for Nursing Education. Nurse Education Today, 27(5), 481-490

Russell, J., Hall, A., Boyce, A.J. (2005). On Hydrothermal Convection Systems and the Emergence of Life. Economic Geology Bulletin of the Society of Economic Geologists, 100(3), 419-438.

Saaranen, T., Vaajoki, A., Kellomaki, M., et al. (2014). The Simulation Method in Learning Interpersonal Communication Competence-Experiences of Masters' Degree Students of Health Sciences. Nurse Education Today, 35, e8-e13.

Salyers, V.L. (2007). Teaching Psychomotor Skills to Beginning Nursing Students Using a Web-Enhanced Approach: A Quasi-Experimental Study. International Journal of Nursing Education Scholarship, 4(1): 1-14.

Sandelowski, M. and Barroso, J. (2002). Finding the Findings in Qualitative Studies. Journal of Nursing Scholarship, 34 (3) 213-219. Sigma Theta Tau International

Sandilands, D.D., Gotzmann,A., Roy, M., Zumbo, B.D. and De Champlain, A. (2014). Weighting checklist items and station components on a large-scale OSCE: Is it Worth the Effort? Medical Teacher, 36(7), 585-590.

Sellew, G. and Nuesse, C.J. (1946). A History of Nursing, C.V. Mosby, St. Louis, USA.

Selim, A.A., Ramadan, F.H., El-Gueneidy, M.M. et al. (2012). Using Objective Structured Clinical Examination (OSCE), In: Undergraduate Psychiatric Nursing Education: Is it Reliable and Valid? Nurse Education Today, 32(3), 283-288.

Seymer, L.R. (1960). Florence Nightingale's Nurses: The Nightingale Training School 1860-1960. 2nd Edition, Pitman Medical Publishing Co. Ltd. London.

Seymer, L.R. (1956). A General History of Nursing. 1st Edition, Faber and Faber Ltd, London.

Scheckel, M. (2009). Nursing Education: Past, Present, Future in G. Roux and J. Halstead (Eds.), Issues and Trends in Nursing, pp.27-55. Sudbury, Massachusetts: Jones and Bartlett.

Schupback, J.E. (2012). Strategies for Clinical Teaching, Live Seminar on Strategies for Clinical Teaching, Audiology Clinical Education. Accessed from www.audiologyonline.com on 16/08/2012.

Schroeter, K. (2008). Competence Literature Review, Competence and Credentialing Institute, 1-22. Accessed from www.ccinstitute.org on 20/10/2012.

Sharif, F. and Masoumi, S. (2005). A Qualitative Study of Nursing Student Experiences of Clinical Practice. BioMedCentral Journal of Nursing, 46, 1-7.

Shenton, A.K. (2004). Strategies for Ensuring Trustworthiness in Qualitative Research Projects. Journal of Education for Information, 22, 63-73.

Small, L.F., Pretorius, L., Walters, A., et al. (2013). Students Perceptions Regarding the Objective Structured Clinical Evaluation as an Assessment Approach. Health SA Gesondheid, 18(1), 629.

Spradley, J. (1979). The Ethnographic interview, .New York: Holt Rinehart and Wilson cited in Stayt, L.C., Merriman, C., Ricketts, B., et al. (2015). Recognising and Managing a Deteriorating Patient: A Randomized Controlled Trial Investigating the Effectiveness of Clinical Simulation in Improving Clinical Performance in Undergraduate Nursing Students. Journal of Advanced Nursing, 71(11), 2563-2574.

Stefanidis, D., Acker, C.E. and Greener, F.L. (2010) Performance Goals on Simulators Boost Resident Motivation and Skills Laboratory Attendance. Journal of Surgical Education, 67(2), 66-70.

Strand, I., Naden, D. and Slettebo, A. (2009). Students' Learning in a Skills Laboratory. Nursing Science, 29(3), 18-22.

Stewart, I.M. (1943). The Education of Nurses: Historical Foundations and Modern Trends. 1st Edition, New York, Macmillan.

Stockhausen, L.J. (2005) Learning to Become a Nurse: Students' Reflections on their Clinical Experiences. Australian Journal of Advanced Nursing, 22(3), 8-14.

Svejda, M., Goldberg, J., Belden, M., Potempa, K. and Calarcos, M. (2012). Building the Clinical Bridge to Advance Education, Research and Practice Excellence. Nursing Research and Practice, 12, 1-10.

Stokes, L. and Kost, G. (2009). 'Teaching in the Clinical Setting', in D.M. Billings and J.A. Halstead, Teaching in Nursing: A Guide for Faculty, pp. 282-284. Elsevier Saunders, St Louis, Miss.

Tailor, P. (2002). Program Development and Evaluation, Focus Group Interviews, Quick Tip #5, University of Wisconsin, Madison, 1-5. Accessed from www.learningstore.uwex.edu on 10/07/2012.

Taplay, K., Jack, S.M., Baxter, P., et al. (2015). The Process of Adopting and Incorporating Simulation into Undergraduate Nursing Curricula: A Grounded Theory Study. Journal of Professional Nursing, 31(1), 26-36.

Taylor, C.A. and Green, K.E. (2013). OSCE Feedback: A Randomized Trial of Effectiveness, Cost-Effectiveness and Student Satisfaction. Scientific Research: Creative Education, 4(6A), 9-14.

Tiffen, J., Graf, N. and Corbridge, S. (2009). Effectiveness of a Low-Fidelity Simulation Experience in Building Confidence among Advanced Practice Nursing Graduate Students. Clinical Simulation in Nursing, 5(3), e113-e117.

Tiwaken, S.U., Caranto, L.C. and David, J.J. (2015). The Real World: Lived Experiences of Student Nurses during Clinical Practice, International Journal of Nursing Science, 5(2), 66-75.

Tomes, D. E, (1984) in S.B. Keating (2006).Curriculum Development and Evaluation in Nursing. 3rd Edition, Lippincott Williams and Wilkin, Wolters Kluver Company, Philadelphia.

Townsend, A.H., McIlvenny, S., Miller, C.J. and Dunn, E.V. (2001). The use of an Objective Structured Clinical Examination (OSCE) for Formative and Summative Assessment in a General Practice Clinical Attachment and its Relationship to Medical School Examination Performance. Medical Education, 35, 841-846.

Tuckett, A.G. (2005). Rigour in Qualitative Research: Complexities and Solutions. Nurse Researcher, 13(1), 29-42.

VERBI Software. (2013). Consult, Sozialforschung. GmbH, Berlin.

Wagner, D., Bear, M. and Sander, J. (2009). Educational Innovations: Turning Simulation into Reality: Increasing Student Competence and Confidence. Journal of Nursing Education, 48(8), 465-467.

Walsh, M., Bailey P.H. and Koren, I. (2009). Objective Structured Clinical Evaluation of Clinical Competence: An Integrative Review. Journal of Advanced Nursing, 65(8), 1584-1595.

Weatherspoon, D., Phillips, K. and Wyatt, H.T. (2015). Effect of Electronic Interactive Simulation on Senior Bachelor of Science in Nursing Students' Critical Thinking and Clinical Judgment Skills. Clinical Simulation in Nursing, 11(2), 126-133.

Wellard, S. J. and Heggen, K. (2010) Are laboratories useful fiction? A comparison of Norwegian and Australian undergraduate nursing skills laboratories. *Nursing and Health Sciences*, 12 (1), 39-44

Weyrich, P., Schrauth, M., Kraus, B., et al. (2008). Undergraduate Technical Skills Training Guided by Student Tutors-Analysis of Attitude, Tutees Acceptance and Learning Progress in an Innovative Teaching Model. BioMedCental Journal of Medical Education, 8(1), 18.

Wiel, M.W., Bossche, P., Jansen, S., et al. (2010). Exploring Deliberate Practice in Medicine: How do Physicians Learn in the Work Place. Advanced Health Science Education Theory Practice, 16(1), 81-95.Widyandana, D., Majoor, G. and Scherpbier, A. (2010). Transfer of Medical Students' Clinical Skills Learned in the Clinical Skills Laboratory to the Care of Real Patients in the Clinical Setting: The Challenges and Suggestions of Students in a Developing Country. Journal of Education for Health, 23(3), 339.

Widyandana, D., Majoor, G. and Scherpbier, A. (2012). Pre-Clinical Students Experiences in Early Clerkships After Skills Training Partly Offered in Primary Health Care Centre: A Qualitative Study From Indonesia. Journal of Biomedical Education, 12(1), 35-41.

World Health Organization Report (2006). Working Together for Health. Geneva Switzerland, 1-209. Accessed from www.who.int on 14/06/2012.

Yuan, H.B., Williams, A.B. and Fang, J.B. (2011). Knowledge Acquisition through Simulation in Nursing Education: A Systematic Review. The Sigma Theta Tau International Honor Society, Virginia Henderson Repository. Accessed from www.nursinglibrary.org on 18/07/2016.

Zayyan, M. (2011). Objective Structured Clinical Examination: The Assessment of Choice. Oman Medical Journal, 26(2), 1-3.

Zieber, E.M.P., Barton,S., Konkin, J.,et al. (2014). Competence and Competency-Based Nursing Education: Finding Our Way through the Issues. Nurse Education Today, 34(5), 676-678.

APPENDIX A

UNIVERSITY OF WITWATERSRAND ETHICS CLEARANCE

M130527

R14/49 Ms Annie N Msosa

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M130527

NAME: (Principal Investigator)	Ms Annie N Msosa
DEPARTMENT:	Department of Nursing Education CM Johannesburg Academic Hospital
PROJECT TITLE:	Evaluation Research of Undergraduate Nursing Students' Clinical Learning in Skills Laboratories in a Developing Country
DATE CONSIDERED:	31/05/2013
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Prof Judith Bruce
APPROVED BY:	Professor PE Cleaton-Jones, Chairperson, HREC (Medical)

DATE OF APPROVAL: 19/07/2013

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Secretary in Room 10004, 10th floor, Senate House, University.

I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report**.

Principal Investigator Signature Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

APPENDIX B

UNIVERSITY OF WITWATERSRAND PROTOCOL APPROVAL

UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG

Private Bag 3 Wits, 2050
Fax: 027117172119
Tel: 02711 7172076

Reference: Ms Thokozile Nhlapo
E-mail: thokozile.nhlapo@wits.ac.za

06 January 2016
Person No: 701501
PAG

Mrs AN Msosa
Kamuzu College of Nursing
Private Bag 1
Lilongwe
Malawi
0
Malawi

Dear Mrs Msosa

Doctor of Philosophy: Approval of Title

We have pleasure in advising that your proposal entitled *Evaluation of undergraduate students' clinical learning in a developing country: A formative assessment framework* has been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

APPENDIX C

UNIVERSITY OF MALAWIETHICS CLEARANCE (COMREC)



CERTIFICATE OF ETHICS APPROVAL

This is to certify that the College of Medicine Research and Ethics Committee (COMREC) has reviewed and approved a study entitled:

P.07/13/1417– Assessment of Undergraduate Nursing Students' Clinical Learning in a Developing Country: A formative Assessment Framework by Annie Msosa

On 22nd October 2013

As you proceed with the implementation of your study, we would like you to adhere to international ethical guidelines, national guidelines and all requirements by COMREC as indicated on the next page

Dr. F. Dzimjalamala - Vice-Chairperson (COMREC)

Date 23rd Oct 2013

APPENDIX D

LETTER OF PERMISSION TO KAMUZU COLLEGE OF NURSING

The Principal
Kamuzu College of Nursing
University of Malawi
Private Bag 1, Lilongwe
Malawi

Dear Dr Malata

RE: **PERMISSION TO CONDUCT A STUDY AT KAMUZU COLLEGE OF NURSING**

I am Annie Nancy Msosa (Mrs), a lecturer at Kamuzu College of Nursing (KCN) currently pursuing a Doctor of Philosophy degree (Nursing) at the University of Witwatersrand, Johannesburg, South Africa. As part of the requirement of the degree, I am expected to conduct a research study, which in this case requires an intervention. My research title is **'Evaluation of Undergraduate Nursing Students' Clinical Learning in A Developing Country: A Formative Assessment Framework'.**

Data collection will be through focus group interviews and the assessment of students' clinical learning performance using KCN's standardized skills checklists. The participants for the focus groups will comprise students in all four years of the BSN degree and the lecturers and clinical instructors responsible for teaching and learning in the skills laboratories at KCN. The study will commence only after approval has been obtained from all research ethics committees from University of Witwatersrand, KCN and the College of Medicine research ethics committee in Malawi. The participants' names will not be used and informed consent will be obtained from them. The data collected will not be accessible to other persons except the researcher, supervisor and the research team.

I hereby therefore seek your permission to conduct the study in your college. I will endeavour to abide by the rules and regulation laid down by the committees and authorities. Enclosed is a copy of the proposal, participant information and informed consent for the participants for your attention. Should you require any further information please do not hesitate to contact me as per contact details below.

Yours sincerely,

Annie Msosa (Mrs): Cell Numbers: 27723096758/265882400346: Email:
anniemsosa@kcn.unima.me / Annie.Msosa.students@wits.ac.za

Kamuzu College of Nursing
Private Bag 1, Lilongwe

24th September, 2013

University of Malawi
Kamuzu College of Nursing
2013 -09- 24
PRINCIPAL
Private Bag 1, Lilongwe

The Principal
Kamuzu College of Nursing
Private Bag 1, Lilongwe

Dear Dr Malata

RE: PERMISSION TO CONDUCT A STUDY AT KAMUZU COLLEGE OF NURSING

I, Annie Nancy Msosa (Mrs), a lecturer at Kamuzu College of Nursing (KCN) currently am pursuing a Doctor of Philosophy degree (Nursing) at the University of Witwatersrand, Johannesburg, South Africa. As part of the requirement of the degree, I am expected to conduct a research study, which in this case requires an intervention. My research title is **'Evaluation of Undergraduate Nursing Students' Clinical Learning in a Developing Country: A Formative Assessment Framework'.**

The study will be conducted in two phases. Phase one will comprise of data collection and phase two will be a quasi experiment in the skills laboratory. Data collection will be done for a period of three months from October to December, 2013. Data will be collected through focus group interviews, in-depth interviews and the assessment of students' clinical learning performance using KCN's standardized skills checklists. The participants for the focus groups will comprise students in all four years of the BSN degree and the lecturers and clinical instructors responsible for teaching and learning in the skills laboratories at KCN. The study will commence only after approval has been obtained from all Human Research Ethics Committees from University of Witwatersrand, KCN and the College of Medicine Research Ethics Committee in Malawi. The participants' names will only be used for legal purposes on some consent forms and the researcher will maintain confidentiality. Informed consent will be obtained from them. The data collected will not be accessible to other persons except the researcher, supervisor and the Kamuzu College of Nursing and University of Witwatersrand upon request.

I hereby therefore seek your permission to conduct the study in your college. I will endeavour to abide by the rules and regulation laid down by the committees and authorities. Enclosed are the copies of approval from Wits University, copies of participant information and informed consent sheets. Should you require any further information please do not hesitate to contact me as per contact details below.

Yours sincerely,
Msosa.
Annie Msosa (Mrs): Cell Numbers:+265882400346:

Email: anniemsosa@kcn.unima.me/Annie.Msosa.students@wits.ac.za/

Cc: The Vice Principal

The Dean of Faculty All Heads of Departments

Ms Msosa
Has your protocol been approved by Comrec? Approval can be granted after that
A. Malata
24/9/13
cc: RD

APPENDIX E

INFORMATION SHEET FOR EDUCATORS AND STUDENTS INTERVIEWS

EVALUATION OF UNDERGRADUATE NURSING STUDENTS' CLINICAL LEARNING IN A DEVELOPING COUNTRY: A FORMATIVE ASSESSMENT FRAMEWORK

Introduction:

Good day to you. My name is Annie Msosa, working at Kamuzu College of Nursing as a Lecturer and currently studying towards my PhD at University of the Witwatersrand, Johannesburg in South Africa. I am conducting a research study on Undergraduate Nursing Students' Clinical Learning for the purpose of developing a Formative Assessment Framework.

The study seeks to answer the following questions: how is learning perceived in the skills laboratory from your perspective, what needs to be changed or modified in the skills laboratory and how can a formative assessment framework model contribute to effective learning and utilization of the skills laboratory.

Invitation to Participate: For this study, information is required from you because of the experiences you have as an educator who is actively involved in teaching and learning in the skills laboratory of this college.

What is involved in the Study: The study involves answering a few questions. The interview will last approximately one hour and a tape recorder will be used to record all the information in order to capture all the ideas discussed.

Confidentiality: All the information will be kept confidential and you are encouraged not to use your name to ensure anonymity and confidentiality. Be assured that all the information from the field notes and tape recorder will be treated as confidential. If your real name is captured during the discussion, it will be deleted and replaced with a pseudonym during data transcription. The data will be accessible to the researcher and supervisors. The data can also be made available to other relevant authorities for purposes of verification and quality assurance such as Research Ethics Committees. The storage of data will be under lock in a cupboard for five years and be destroyed thereafter. Your participation is voluntary. Therefore, if you wish to withdraw from the interviews at any time, you are free to do so.

The results will be made available to you, the Kamuzu College of Nursing and the University of the Witwatersrand and be published in local and international research journals. The results will also be presented in different research and nursing education forums and conferences.

Contact Details of Research Supervisors: For more information about the study, contact Professors Judith Bruce and Rosemary Crouch at the University of the Witwatersrand, Johannesburg, South Africa. Professor Judith Bruce's numbers are +27 11 717 2063/4 and the numbers for Professor Rosemary Crouch are: 011 728 2852 or 082 892 2946.

Contact Details of the Researcher: If you need more information about the study from the researcher, here are the contact details: +27723096758/+265882400346.
Email Addresses: anniemsosa@kcn.unima.mw/Annie.Msosa@students.wits.ac.za

Contact Details for COMREC: For more information from the University of Malawi Human Research Ethics committee contact:COMREC Secretariat, College of Medicine, Private Bag 360, Blantyre 3, and Telephone: +265 1 989766

APPENDIX F

STUDENT INFORMATION SHEET FOR PARTICIPATION IN THE QUASI EXPERIMENT

EVALUATION OF UNDERGRADUATE NURSING STUDENTS' CLINICAL LEARNING IN A DEVELOPING COUNTRY: A FORMATIVE ASSESSMENT FRAMEWORK

Introduction:

Good day to you. My name is Annie Msosa, working at Kamuzu College of Nursing as a Lecturer and currently studying towards my PhD at University of the Witwatersrand, Johannesburg in South Africa. I am conducting a research study on Undergraduate Nursing Students' Clinical Learning for the purpose of developing a Formative Assessment Framework.

The study seeks to answer the following questions: how is learning perceived in the skills laboratory from your perspective, what needs to be changed or modified in the skills laboratory and how can a formative assessment framework model contribute to effective learning and utilization of the skills laboratory.

Invitation to Participate: For this study, you are invited to participate either in the experimental or control group because of being a student who uses the skills laboratory for learning at the Kamuzu College of Nursing.

What is involved in the Study: The study involves demonstration by the lecturers, return demonstrations, regular practice and individual feedback in the skills laboratory for a period of 4-6 weeks. Assessment of your competencies on selected nursing procedures will be conducted before and after the regular practice and feedback in skills laboratory for comparison at the end of the 6 weeks. A video recorder device will be used to record all the information in order to capture all the teaching and learning of each session.

Confidentiality: Student numbers and NOT your real names will be used for the purposes of data entry into the computer to ensure anonymity and confidentiality. Be informed that absolute confidentiality is not guaranteed in a group. However, all the information from the assessments will be treated as confidential. The data will be accessible to the researcher and supervisors. The data can be made available to other relevant authorities for purposes of verification and quality assurance such as Research Ethics Committees. The storage of data will be under lock in a cupboard for five years and be destroyed thereafter. Your participation is voluntary. Therefore, if you wish to withdraw from the interviews at any time, you are free to do so.

The results will be made available to you, the Kamuzu College of Nursing and the University of the Witwatersrand and be published in local and international research journals. The results will also be presented in different research and nursing education forums and conferences.

Ethical Implications on the control group: The control group will continue with the normal tradition of teaching and learning in the skills laboratory. At the end of the 6 weeks, both the control and experimental groups will be given feedback on the outcomes of the study. However, the results from the assessments will not be used as part of the final grades at the end of the semester.

Contact Details of Research Supervisors: For more information about the study, contact Professors Judith Bruce and Rosemary Crouch at the University of the Witwatersrand, Johannesburg, South Africa. Professor Judith Bruce's numbers are +27 11 717 2063/4 and the numbers for Professor Rosemary Crouch are: 011 728 2852 or 082 892 2946.

Contact Details of the Researcher: If you need more information about the study from the researcher, here are the contact details: +27723096758/+265882400346.

Email Addresses: anniemsosa@kcn.unima.mw/Annie.Msosa@students.wits.ac.za

Contact Details for COMREC: For more information from the University of Malawi Human Research Ethics committee contact:COMREC Secretariat, College of Medicine, Private Bag 360, Blantyre 3, and Telephone: +265 1 989766

APPENDIX G

INFORMED CONSENT FOR PARTICIPATION IN THE QUASI EXPERIMENT

I hereby confirm that I have received, read and understood the contents of the participant information document regarding the nature of this research project on the Evaluation of Undergraduate Nursing Students' Clinical Learning in a Developing Country: A Formative Assessment Framework. The study seeks to answer the following questions: how is learning perceived in the skills laboratory from both the learner and lecturer perspectives, what needs to be changed or modified in the skills laboratory and how can a formative assessment framework model contribute to effective learning and utilization of the skills laboratory. The purpose of the study is to evaluate how learning in the skills laboratory is occurring currently and determine how a formative assessment framework can contribute significantly on students' quality of learning and utility of the laboratory.

I understand the reason for my participation in the control/ experimental group for the period of 4-6 weeks.

I also understand that I am at liberty to withdraw my consent and from participation in this study at any time should I so desire

I am aware that the results of the study including personal details regarding my gender, age and practical grades will be anonymously processed into the report and that the Formative Assessment grades **will not be part of the final OSCE grade**.

I understand that the data collected during this study will not be used for any other study without my permission and approval of the Wits University Human Research Ethics Committee.
I have been given the opportunity to ask questions and of my own free will declare myself ready to participate in the study.

Note: Please **use your real names** and signatures and **NOT** pseudonyms and signatures on the consent form.

Participant

……	…..……..……..	……
Name	Signature	Date and Time

Witness

……	…..……..……..	……
Name	Signature	Date and Time

APPENDIX H

INFORMED CONSENT FOR USE OF VIDEO RECORDING DEVICE

I hereby confirm that I have received, read and understood the contents of the participant information document regarding the nature of this research project on Evaluation of Undergraduate Nursing Students' Clinical Learning in A Developing Country: A Formative Assessment Framework. The study seeks to answer the following questions: how is learning perceived in the skills laboratory from both the learner and lecturer perspectives, what needs to be changed or modified in the skills laboratory and how can a formative assessment framework model contribute to effective learning and utilization of the skills laboratory. The purpose of the study is to evaluate how learning in the skills laboratory is occurring currently and determine how a formative assessment framework can contribute significantly on students' quality of learning and utility of the laboratory.

I also understand that I am at liberty to withdraw my consent and from participation in this study at any time should I so desire.

I am aware that the researchers will be recording videos and taking field notes to ensure that all the information from the discussions has been captured and for use during the deliberate practice learning sessions.

I am aware that the results of the study including personal details regarding my gender, age and practical grades will be anonymously processed into the report.

I understand that the data collected during this study will not be used for any other study without my permission and approval of the Wits University Human Research Ethics Committee.

I have been given the opportunity to ask questions and of my own free will declare myself ready to participate in the study.

Note: Please **use real names and signatures** and **NOT** pseudonyms and signatures on the consent form.

Participant

.....	.....	.....
Name	Signature	Date and Time

Witness

.....	.....	.....
Name	Signature	Date and Time

APPENDIX I

INFORMED CONSENT FOR UTILISATION OF THE FAF ASSESSMENT GRADES FOR THE EVALUATION OF THE STUDY ONLY

I hereby confirm that I have received, read and understood the contents of the participant information document regarding the nature of this research project on Evaluation of Undergraduate Nursing Students' Clinical Learning in A Developing Country: A Formative Assessment Framework. The study seeks to answer the following questions: how is learning perceived in the skills laboratory from both the learner and lecturer perspectives, what needs to be changed or modified in the skills laboratory and how can a formative assessment framework model contribute to effective learning and utilization of the skills laboratory. The purpose of the study is to evaluate how learning in the skills laboratory is occurring currently and determine how a formative assessment framework can contribute significantly on students' quality of learning and utility of the laboratory.

I also understand that I am at liberty to withdraw my consent and from participation in this study at any time should I so desire.

I am aware that the results of the study including personal details regarding my gender, age and practical grades will be anonymously processed into the report.

I understand that the data collected during this study will not be used for any other study without my permission and approval of the Wits University Human Research Ethics Committee.

I am aware that the assessment grades for the Formative Assessment Framework will only be used for the evaluation of the study and that these grades will not be part of the final OSCE assessment grade.

I have been given the opportunity to ask questions and of my own free will declare myself ready to participate in the study.

Note: Please do not use real signatures. Rather use pseudonym signatures on the consent form.

Participant

……	…..……..……..	……..……
Name	Signature	Date and T

Witness

……	…..……..……..	……..……
Name	Signature	Date and Time

APPENDIX J

IN-DEPTH INTERVIEW QUESTIONS FOR NURSE EDUCATORS

QUESTIONS TO EXPLORE THE TEACHING PROCESS IN THE COLLEGE LABORATORY

May you share your teaching experiences in the skills laboratory during the practical sessions?

Probe: What has been motivating and demotivating to teach in the skills laboratory?

Probe: What measures have you used to ensure that all students have a chance to practise the necessary skills

Questions on factors affecting students' clinical teaching in the skills laboratory

What can you comment about

- the resources
- students participation
- time
- regulations governing laboratory use

Records from the labs have shown that students use the lab more often during their junior classes than when they are in their senior classes' .What do could be the reasons for the reduced utilization of the laboratory by the senior students?

Having used both the skills laboratory and the clinical sites, do you think there are some procedures that need more practice in the laboratory than the clinical area?

Probe: which skills need more practice in the laboratory prior to clinical practice?

Questions on OSCE assessment on students learning

What are your views in relation to:

- The structure of the assessment
- Students Practise
- Student competences
- Feedback
- Room for practice/improvement

Questions to explore on what can be done to improve the skills laboratory

What can be done to the skills laboratory to overcome the challenges?

May you share some of your experiences that can help the college to make the skills laboratory more user friendly with the resources we have.

Is there something else that has not been discussed which can make our skills laboratory user friendly to the students?

APPENDIX K

TRANSCRIBED INTERVIEW FROM IN-DEPTH INTERVIEW

QUESTIONS TO EXPLORE THE TEACHING PROCESS IN THE COLLEGE LABORATORY

R: **May you share your teaching experiences in the skills laboratory during the practical sessions**

P: Mmm, what I am saying on this question is that of course before when we were doing our nursing school we used to have somewhere where we used to do the procedures but it never used to be like a skills laboratory so things were done in beats and pieces…but the coming of an organized skills lab has made teaching and of course learning easy because before you go to the cleaning area, it's important for the students to acquire the basic skills which they cannot practice on a human being like they do with the use of models, doing different procedures in the skills lab I feel it has made the teaching and learning so easy as per question

R: **What has been motivating to teach in the skills laboratory?**

P: Mmm, what I have seen is like before, like mainly am in MCH, you would teach may be something about the pelvis, the scar and you would just see pictures. But now to see a real model, students are able to relate whatever they have learnt in theory and be able to see (Emphasis). And you know in using all the senses it is making them to remember and actually some have even said 'mmm, it's so easy in midwifery' because the models are there and it makes the teaching a reality other than just teaching things which are not seen and you know they are so excited when they see something from whatever you are saying because they are able to apply whatever they have learnt with whatever they've seen , so it has been quite motivating and the students are more excited than you just talking and it makes them to actively participate because after giving the information, they have to find out what they have learnt from the model or in the skills laboratory which is quite motivating yaaa.

R: **Probe:** W**hat has been demotivating?**

P: Mmm like the challenges that we have of course like now I would say the large numbers. The large numbers has been so demotivating because you would have one model and for you to demonstrate to each and every student it becomes cumbersome so we take it

like aaa, you will be able to see it in the ward and you don't use the skills laboratory. And you know students in the skills laboratory are more inquisitive, they ask more questions and it needs a lot of time and for you to cover the content so you tend to shun away the skills laboratory because you say I will not cover a lot because students will be asking a lot (dragged) will be like a waste of time. And being like now we have an integrated curriculum and eeh, time is a challenge ya so it really dwindles the use of the skills laboratory. But as we've said earlier on there are indeed some strategies for us to use because it's not only to be used when you are teaching theory (Voice raised) but even when students are in the clinical area, they can be withdrawn from the clinical area. Actually the models they are using these days, they can take some and make skills laboratory at the practical area then the students can use them.

R: What measures have you used to ensure that all students have a chance to practice the necessary skills

P: If we, I mean if you are so organized I feel there is a need for special staff to be in the skills laboratory where you would like after be like/ it should be like a general requirement for each and every student to pass through the skills laboratory, so you can do a general demonstration but they have to mmmmm you know students have to be motivated to learn on their own so that they can pass through there should something like a check off to make sure that no one should be going to the clinical area without first practising in the skills laboratory, the one who hasn't met that requirement, it means he has no right to go for the practical sessions, in that way you would make students use the skills laboratory more So students will use the skills laboratory more and attach a grade to it and you see how they are participating and in a way it's going to encourage them to use the lab more.

R: Probe: So far what strategies have used to handle these challenge?

P: Like right now, we like in MCH we divide them in groups, we also encourage them to work as a team but still challenges are there because some are not active, others are taking a lead while some are not willing but with proper supervision we are able to meet them/follow them and see whether they are able to do it but we are missing some of them because we see them at the clinical area it's when they will be saying say ooh I did not practise and for example just this last semester we had done check offs. Check offs are helping quite alot because each and every student, and actually what we have done now we've to hired the mature students /postgraduates, they assist us to assess each and every student to make sure that each one has done the procedure and has done it

correctly. If they don't do well they repeat and they are not taken to the clinical area before they acquire the necessary skills and even students themselves have said no it has given us some confidence because we are able at least to practise and now on a real human being we are able to do some of the basics of course we know with competence it's a process whereby they move from novice and now become competent with confidence

QUESTIONS ON FACTORS AFFECTING STUDENTS LEARNING IN THE SKILLS LABORATORY

R: Now let's talk of the factors affecting your teaching

R: What can you comment about the resources and equipment:

P: mmm that's where it's a challenge actually in MCH we need a lot of resources of course the college has taken a very big step by ordering some which were very expensive but then now there is one which we call mama Natalie, it can cry, it can breathe and it's in a bag if we were having proper budgets we would improve and now there are coming lots of resources that we can use and they are cheaper but we need to acquire a lot with the numbers. I think the resources should match with the numbers we are having but the space we don't have and even that space also hinders us because is too small and too hot and you cannot operate very well if it were a very big area where they would put the necessary resources .

R: Probe: In terms of the setting how would you want the current skills laboratory to be improved?

P: Of course at one time I was exposed to Norway ya on the same issue of using the skills laboratory, and for them it's like it imitates the real model of area of a hospital so if they could take that same model and actually I had seen students also acting as clients so they would work in turns you know like when let's say during drug administration they were actually giving the injection yaa and you know we are talking of attitudes some of them we were not picking them because we don't do them in the skills laboratory on how they counsel clients on how they behave when handling clients. So if it took the model of a real hospital it would actually work but I don't know it's quite a milestone because mmm the numbers are quite big.

R: **Probe: What about students participation**

P: The participation is quite minimal and some of the models are not ideal you find that we improvise a lot of things but any way we are also modeling how the clinical area is and the skills laboratory that's why people say the graduates of today are incompetent and these graduates are meeting a lot of challenges, supervision is not there so find that this is affected because of the resources available.

R: **Now let's talk about time for skills lab teaching**: **What is your experience like?**

P: Time is even more critical because time is not even allocated for the skills laboratory yes there could be some hours but we use them for theory because the content is much it doesn't much with the allocated time, so you find that you cut a lot on skills laboratory and also its double work for the lecturer and you find that at the end of the day if you are in the skills laboratory you are exhausted supervising each and every students and demonstrating to the students for you then to do the return demonstrations you use a lot of time

R: **Probe: What have you done for the students to still learn something?**

P: You know at KCN, there are some innovative ways, there has been the development of electronic resources going on but I don't know how far these curriculum management system for electronic resources where we had to upload some resources will help us and you find that when we used them, uploading electronic resources during teaching it saved a lot of time and you know these students these days have lab tops and when you upload for example for them to see the mechanism of labour instead of just demonstrating, students appreciate …Adding on the real thing they do but it does not replace the skills laboratory it's just a method which can complement yaaa.

R: **What is your comment on regulations governing laboratory use?**

P: mmm an example, it's like a private area and it's like a place where students would steal things and also we are afraid they will damage the manikins/ simulators and may be misplace some of the things so you find that some of the regulations are limiting the students to be more conversant so the regulations hinder the students to acquire the proper skills, oh ya sometimes you find that the keys are missing / they are not there

R: Probe: How can we overcome this challenge?

P: If we would make the skills laboratory as part of student learning and if it could have special staff in the skills laboratory may be it would make things much better and with those staff they would work in shifts and you know students are more resident here or like the library whereby off hours up to ten the skills laboratory is still open students could be able to do what they can and the fears we have will be sorted out … and if we take teach them in the lab to be responsible, then they will not be responsible it will be worse when they go into the clinical area because that responsibility is not in them. So opening the lab would also teach the students responsibility to care for the things …it would be worse if we don't instill responsibility in them when they go to the clinical area.

R: Records from the labs have shown that students use the lab more often during their junior classes than when they are in their senior classes. What do could be the reasons for the reduced utilization of the laboratory by the senior students?

P: Reasons are actually clear because when you are just a novice you are inquisitive to know a lot and you are given the models because you think they are real things when now you are exposed to the clinical area you see the real patients, of course it's different but still it's easier to practise. I will take an example of maternal physical examination in a doll it's so stiff and it doesn't give the anatomical structures so sometimes the senior students are now saying it does not give a real thing and ….it kills the whole spirit in them using the skills laboratory because they feel that not everything is real so for them they would feel to practise more on the client than on the skills laboratory. Some of the things is us lecturers who were not trained using the skills laboratory so you find the emphasis we tend to emphasise more on going to clinical area but we have to accept the current system, you know nursing is dynamic, things are now changing and we have large numbers how do we complement …….from what I would say, it would be better in the skills laboratory and they have to practice in the skills laboratory because they may not have the experiences in the clinical area because of the numbers we have right now so its high time that we the clinical instructors have to be keen to the use the skills laboratory for our students to gain the confidence. And our students like in Malawi with the severe brain drain it's taking a long time to have Adequate staff in the clinical area so you find that students when they are sent there they copy a lot of shortcuts with the shortage that is out there, students are used to a lot of shortcuts and if you compare doing the ideal in the clinical area and the skills laboratory you find that its better in the skills laboratory because it's like the best environment which students can use. So I find

that there are a lot of factors that are contributing to us for the senior students not to use the skills laboratory.

R: From your experiences both in the skills laboratory and the clinical sites, do you think there are some procedures that need more practice in the laboratory than the clinical area?

P: Like ya if I would take the midwifery part although the trends of breach are not a lot it is still important that the students should be able to do the maneuvers in the skills laboratory before. It is even better if we can assess them in the skills laboratory and not the clinical area, previously we would even have students without graduating …ya so I feel we should use the skills lab more and for them to gain the confidence they need to practise in the skills laboratory on how to do a procedure, they would know where to start from and it's just embarrassing in the clinical area when we are saying we are bringing students yet they don't know anything, the clients lose our confidence and they feel they are being used as instruments but those are human beings and it would be good to have students that have practised confidently to work with the clients yaaa

R: Probe: Apart from breech deliver what else skills need more practise in the laboratory prior to clinical practice?

P: Mmm apart from breech, resuscitation of the new born especially these days that we have the neo Natalie it can breathe, it can cry yaa we can simulate and be able to imitate real scenarios and conducting the delivery itself its quite good mmmmm going to the ward before you haven't practised delivery …it can be so over whelming than if you would let the students practise in lab first, the experience would remove the anxiety and make learning conducive yaa

QUESTIONS TO EXPLORE ON WHAT CAN BE DONE TO IMPROVE THE SKILLS LABORATORY TEACHING

R: From what has been discussed about the skills laboratory, what can we do to overcome the challenges to improve clinical teaching?

P: Ya the most important thing is the availability of the necessary resources which have to be ideal like manikins, models and even general sundries because sometimes we take it for granted that the hospitals might help us. Drugs should be real drugs not just taking

funny bottles needed to give a good picture in the students. If we had enough money, we should have had a model hospital where students could practise. I remember in the past they used to have a model ward where we could have enough skills and staff. And I hear that was the purpose of the David Livingstone memorial clinic but I don't know what went wrong for the clinic to be saving staff instead of us using that for students' clinical learning. But the clinical sites should also be strengthened to be as an ideal clinical learning environment complimenting the skills laboratory so that we can have the real ideal thing and they would learn how to manage and they would attach the students if community was coming there we allocate them at the labour ward , at the outpatient and we see the students improving. And if they have a lot of space in the skills laboratory which could have different compartments/ levels because mixing everything is making the senior students feel that the skills laboratory is for junior students because they have a lot of basic things

R: **From the experiences you had from Norway, is there something that you can share to help the college improve teaching in the skills laboratory and make it more user friendly with the resources we have.**

P: Mmm they are quite advanced and they really invest in the skills laboratory and the students are able to do drug administration, each students had an oxygen cylinder and they have to really administer the oxygen to fellow students yaa they were putting catheters while one would imitate the position of one inserting a catheter insertion and they would put urine, imitate colostomy care and they would put yoghurt in the colostomy bag and pretend as if one is caring for the stoma so it was quite an opener and it's that time where I agreed that the skills laboratory can help students learning before that I would say why not use the practical area and practise the ideal thing after all in Malawi, there are many clients that require care but you find that when students practice in the skills laboratory they gain more confidence and becomes easier to manage patients in real settings. I don't think we have, the way the financial support is now, don't think we can mimic what I saw in Norway but we can try yaaa

R: Is there something else that has not been discussed which can make the skills laboratory user friendly to the students? Silence

QUESTIONS ON OSCE ASSESSMENT ON STUDENTS LEARNING

R: You have participated in the OSCE method of assessment. What are your experiences in relation to:

- **The structure of the assessment/organization/**

  As a complimentary assessment, I find it it's very good actually in our students in midwifery you keep the students on track because they know that at the end of the day they need to demonstrate how procedures are done, so it instilling that responsibility that they have to know how procedures are done, so I feel it's a good model which we can use but it depends it should not be weighted more. We should weight more on the clinical areas than the OSCEs we do like a complementary…..

R: **Probe: how would you ensure standardization of the exam at the clinical site?**

P: It's difficult and not possible.

R: **What are your experiences in relation to the practicalities of the examination?**

P: Mmmm of course the same goes back to the large numbers if we had a pool of questions and ask may be at random they would be a good method of assessment but you find that the first group you have they are disadvantaged than the group coming tomorrow yaa you find that they would be performing better showing that there have been some tipping or just natural they have more time to practise and they get better grades than the first but sometimes it doesn't work like that it has been vice versa yaaa.

R: **Probe: You have mentioned the problem of leakage of the exam, what have you done to prevent leakage of exams.**

P: Yaa I hear in med-surge they do two or three questions a day but still you can't do it at the same time you do some in the morning and some in the afternoon may be to lock up the other group so that they don't meet but a practical thing it's in your hands we still catch those who have practiced those procedures its working quite well and we've seen that someone can be good in theory but in practical skills it's a different thing altogether, we need to do both OSCE and clinical evaluation. And some have come up to be very good midwives at the clinical area yet have not done well in theory so that's where the KCN uses a variety of assessment because it gives an opportunity to various needs of students like case studies, group work, OSCE

R: What are your experiences on how the OSCE contributes to students competences

P: As for me as an individual, I don't know the clinical area expect students to be competent a students who has just been exposed to learning I don't think we would achieve that, after they qualify they need a mentor, they need role models for them to acquire the necessary skills you know students are in a corner when they are here at school, what you are looking for is for them to pass the exams for both theory and practice and I don't know why we are combining the two for them to be competent yaa, I feel the core is the introductory part and for them to be proficient in their competences they need to practice at least for two years and you can see our fellow doctors they have internship year whereby a junior doctor is attached to a senior doctor I wish if it were us in the nursing and midwifery had that arrangement, it would improve the competences of the students. Mind you even now as I am talking, my students are the ones running Bwaila maternity wing (hospital), they don't have anybody to look up to and you see that they need a lot to make their decisions to improve whatever they learned for them to really be competent they need to observe quite a lot despite that they are qualified. So I feel that a graduate in 1st year or 2nd year needs support you can't just conclude that these are incompetent just a cohort who just qualified last year, I don't agree with the public.

R: What are your experiences in relation to the feedback during OSCE

P: Mmm to some it has been quite beneficial because now they look back and reflect and some have even said let me do it again but there have been others who have been frustrated and they have even thought that the exams were biased and it has caused a lot of emotional problems to the students and they develop negative attitudes towards practical exams because some of them feel cheated.

R: Probe: what is your comment in terms of the lecturer's attitude?

P: It's quite a lot even in midwifery and they comment to say you are there just siting and expecting the students reading the questions for the 1st time to understand immediately, and we have high expectation for them to act in an in an excellent manner. Some situations sometimes are difficult for us to capture what we want and the moment they do something which is costing life some lecturers have immediately shown a condemning attitude and not shown interest so you find that the student becomes

embarrassed and if we don't even give them individual feedback and they feel we are there to look for mistakes instead of making it a learning situation.

R: What are your experiences in relation to the OSCE feedback and opportunity for practise/improvement?

P: The challenge has been that OSCEs have come/ been conducted very late when we are concluding the program us in MCH so that it has been difficult to observe the impact, so instead what we have done as a department is that we use checkoffs to evaluate our students although for now most of the lecturers have relaxed now that the students numbers have gone up but are learning more on how we can best handle the students numbers.

R: What are your experiences in relation to the time allocation for different procedures?

P: Sometimes we have allocated more but in some procedures have not been clear so students have not been able to conduct the procedures within the time allocated and I think we need something like a rehearsal and they require a lot of skills for the examiners.

APPENDIX L

FOCUS GROUP INTERVIEW QUESTIONS FOR STUDENTS

QUESTIONS TO EXPLORE THE LEARNING ACTIVITIES IN THE LABORATORY

1. Please tell me more about your teaching and learning experiences in the skills laboratory

   Probe: What is good about being taught in the skills laboratory?
   Probe: What has been motivating to learn/ practise in the laboratory?

Questions factors affecting students learning in the skills laboratory

2. What are your experiences in relation to:

   - Accessibility
   - Timing for each procedure
   - Teaching and learning methods used
   - Resources
   - Objectives for the different procedures
   - Content versus the skills
   - Rules governing the utilisation of the laboratory

3. Having some experience in the various clinical placements and the challenges of resources in the clinical areas. Are there some suggestions as to which procedures require more practice time in the skills laboratory than in the clinical area and vice versa?

QUESTIONS TO EXPLORE ON THE MODIFICATIONS THAT CAN BE DONE IN THE SKILLS LABORATORY

4. How can we improve clinical learning in the college laboratories?

   Probe: Some of you have once used the skills laboratories during you biology and physical science laboratories during your previous educational experiences. May you share your experiences to help improving the utilization of the skills laboratory at this college?

QUESTIONS ON VIEWS ON THE OSCE ASSESSMENT METHOD

5. All of you have been exposed to this method of assessment. What are your experiences in relation to:

   - The structure of the assessment
   - Process
   - Experience
   - Feedback

   Probe: Are there suggestions on how the evaluation can be improved

APPENDIX M

TRANSCRIBED INTERVIEW FROM FOCUS GROUPS

QUESTIONS ON LEARNING EXPERIENCES IN THE SKILLS LABORATORIES

R: **Please tell me more about your teaching and learning experiences in the skills laboratory:**

SP2: I see it beneficial because when mmm it sometimes helps to remove the fear because like when you are attending a thing for the first time you have like some fear , so when you go to the skills laboratory to practise, in the ward it helps you remove the fear and it gives you the courage to do it.

SP1: Some procedures that we don't find them in the ward but we do practise in the skills lab so we do have skills without having practising them in the ward. Just like tracheostomy, we learnt tracheostomy in the lab but when we went to the ward, we were not exposed to it.

SP3: and in terms of resources, when we are practising in the skills lab, when you talk of resources, the skills lab helps you to master the ideal because when you want to practise in the ward, we just use short cuts, becausethere are no resources which you can use, we just use shortcuts than when we are practicing in the lab

R: **Probe more on what is good and motivating about being taught in the skills laboratory?**

SP3: The other beneficial thing about the skills lab is that there is student supervision by our lecturers because when doing procedures they are there watching so other than in the hospital where there are many students like may be 16 students when we are in the ward. They also help us to know the ideal equipment before we go to the clinical area. They also help us to know on the equipment to know the ideal things which are supposed to be used in some procedures. Like in the wards, there are some equipment that is not available like sterile gloves so we do improvise with disposable gloves.

R: **Probe: What are the challenges in the skills lab?**

SP4: we don't have enough time to visit our skills lab , because like in our timetables for theory, skills lab time is not adequate, most of the times the lab is open when we are in class.

SP5: just to add on the timetables, we don't have time specifically to practise so when you came out of class you find that the skills lab is closed so you don't have that chance to practise nd on the weekends the lab is not open.

SP3: one other challenge is that we are just too many and the skills lab is too small to practise. So you go there and you are in divided in groups to do the procedure and it requires every one of us to practise but only a few have a chance to practise but the rest of us we just watch/observe.

SP6: I want to add on practise, most of the times the supervisor just supervises 2 or 3 people and he says we should be doing the return demonstrations (Laughing while talking) and will you be correcting each other and then they leave us alone.

SP1: the other challenge is that the Space in the cubicles is limited to few individuals. I think if it were bigger rooms it would accommodate a large number.

R: Howcan the current situationsbe improved form successful learning

SP5: the first things I can say is that if the lab time could be extended and be part of the timetable and have Specific time for the lab, these can improve for the better

SP6: also opening the lab during the weekendcan also help because we do have enough time during the weekends so it is possible to have enough time to practise.

R: Probing more on factors affecting students learning in the skills laboratory

R: What other experiences can you share?

SP1: it is challenging even though they divide us in groups because those who benefit are those who sit close to the bed because the others don't have that chance to see.

SP6: supervisors should make the effort to teach us one to one and not always in groups. Given individual feedback will be helping us, it is very beneficial. However, many times they just observe 1 or 2 practising and leave. If there was feedback, it could have been helping us.

SP5: I think the best way is to practise in the skills lab before we go to the ward then go with us to the ward for us to observe again when they demonstrate on the real patient. They can also divide the time when we are in the clinical area more especially when you are in first year because they are full time there they can be taking smaller groups to the lab and they can be rotating especially those that are in Kamuzu Central Hospital.

R: What about your experiences onresources:

SP5: we do have the required resources, I mean the recommended ones more especially in Lilongwe than in Blantyre because the skills lab in Blantyre is very small.

SP1: and in terms of resources, skills labs have more than what is there in the ward. When practising in skills laboratory, there is a lot of resources than there are in the ward, than in the ward where there are no enough resources, we just use short cuts so the skills laboratory it helps us master the skills in the correct way. In Lilongwe there are more resources than in Blantyre because it's small /mmm we do have the recommended resources.

R: What are your experiences in terms oflearning objectives in the skills lab

SP3: ya sometimes we are told that you will be practising this and that but sometimes we are not told. When we are told, we prepare for it like we have the objectives but when…

SP1: most of the times we are not told in advance that we are going to practice such and such a procedure. You just go to the skills lab and we know it from there.

R: When you compare content with related skills, how are your experiences

SP6: it's like what we cover in class is morebut the teachers will make the arrangement for us on what to cover in the skills lab. Sometimes it is the same work we have covered but sometimes it's not.

SP4: Sometimes they just select some procedures but we do not know the criteria because we learn of some procedures in class but we don't in the skills lab.

SP3: And Sometimes we just learn all the theory in class and then at the end of the theory block when we are about to go to the clinical area that's when we go to the skills lab to practice.

R: What about your experiences on the rules governing the utilisation of the laboratory:

SP5: it is not possible for us to use the lab on full time because we only have few times to visit the lab.

SP1: there is a rule when you want to go the skills lab you have to book your names but sometimes you find that the others have booked and they are the very same people who are going there so I don't know…. (all laughing and explanation ends in suspense):

R: Probe: Is it something that is regulated by the lecturer or the students themselves

SP6: the lecturers just tells us that you should practice such a procedure, so they are the very same people, this they are practicing, next week they are practicing even though others do try but many times chance is given to the very same people and we don't know what happens (All laughs again).

R: Having some experience in the various clinical placements and the challenges of resources in the clinical areas. Are there some suggestions as to which procedures require more practice time in the skills laboratory than in the clinical area and vice versa?

SP6: Ya, like in terms of bed making, I think we learn it better when we are in the skills lab because we have like all the resources unlike in the hospital where we don't have the resources like bed sheets, so it becomes difficult to make the different types of beds but for some procedures they are better done in the hospital like taking blood specimen, ya those require hospital practise.

SP1: and there are some procedures that are good when you first practice in the skills lab than on the real person like inserting an NGT.

SP3: administering drugs it's also better done in the skills lab

SP2: also tracheostomy and colostomy care, catheterization.

R: Probe: You have mentioned procedures for the skills lab what about those that are better done in the clinical area

SP5: collecting samples like blood, even the urine, suctioning needs a demonstration a real person, tube feeding

SP1: evenadministering oxygenation

Questions to explore on the modifications that can be done in the skills laboratory
What suggestions can you make to improve learning in the college laboratory?

SP5: If possible I would recommend that they improve the skills lab and build a bigger one with cubicles that have enough space. It should be designed like you are in the clinical area.

SP3: they should also employ a lot of lecturers who will be supervising us and due to the large numbers they should divide the class where some remain in the skills lab and some go to the hospitals because the nurses and ward in-charges get annoyed with us because of the large numbers and they complain to say how would I teach the large numbers like this. For example when we went to Blantyre in the oncology ward they complained that I already have 11 students and then the others are (all laughing) …and then it was difficult to gain the experience in the ward and even at the burns unit.

SP6: the other thing is when they are setting up the timetable for us to go to the ward you find that sometimes that they allocate students to go for the experience for a week and then another student will not be able to have access to the ward so I think if they were doing it for three days(allocate 3 days per student) while others go to the skills lab and then we exchange after those 3 days.

SP2: I also feel like each and every procedure or let me say that we should practise each and every procedure in the lab before we go the clinical area like when we were in 2nd year in our practice module there was this procedure of suturing which we weren't exposed to it in the skills lab so we didn't even have the chance to suture because we didn't know how to do it. And in the clinical area they would tell you to suture a patient and we would just say no, we don't know how to suture.

R: Probe: In that case did you try to ask the lecturers to demonstrate to you?

SP2: **(continuation)** Yes, some had a demonstration but it was also hard to some because some lecturers are taken by surprise because they know that this time we are supposed to do this and we really had problems because like last semester we missed burns unit because of the timetable, others they missed orthopedic in the second semester and others oncology so in the allocations they should also put that into consideration all important areas other going to other areas while we have not been exposed to other things.

SP2: I think the supervision time should also be improved, the lecturers should be there (referring to the clinical area) all the time and most of the times the supervisors don't teach us the procedures like conducting the demonstrations, so they are there but they don't teach us how to do the procedures.

R: **Probe: Most of the recommendations that you have made are in relation to the clinical area. How can we make the skills lab user friendly to you?**

SP1: I think ....the supervisors in the skills lab should find time to supervise everyone in the lab so that when we go to the ward we don't have problems.

SP4: the advantage of supervising you in the lab is that they give you feedback but then when they come to the ward you don't have enough time to discuss some things because they are always rushing to go to …so I think we can do it better when we are still at school(referring to the skills lab) because we have all the time.

R: **Probe: Comparison of supervision in the skills lab and in the clinical area?**

SP2: I think the best supervision is in the skills lab because it is more practical than while in the clinical area most of the supervisors just say can I see your objectives and your Soapier format, they are not interested in doing the practicals, because when they are assessing your soapier it is what you have written and you(referring to the student) have just downloaded the information from the internet or from the books so I think its better they should focus on the on the practical and not just what you have written (all laughing).

SP4: I also think that each and every procedure we should be learning it first in the skills lab because we are supervised by the lecturer.

R: **Some of you have once used the skills laboratories during you biology and physical science laboratories in your previous educational experiences. From that experience, can you share some of the important experiences that can help improve the utilization of the skills laboratory at this college?**

SP5: like the secondary experience was that a lot of people were experimenting.

SP2: and then the other thing is that like at the secondary school we were having time in the time table for theory and time for practice like they would allocate two periods for the lab but here there is no specific time for you to practice.

SP6: at least we were able to get the real picture of things because we were divided in fewer groups, may be three people and sometimes when resources are there depending on the type of the procedure may be two people so were able to get the real thing.

SP6: and the teacher was always with us and correcting us when we make a mistake.

SP1: and in terms of the subjects which require experiments we were learning those subjects in the lab so that when it comes to practice it was easy to do the practice while when we were learning in class, they would us we will do that some other time.

SP3: I think if they can employ another lab assistant it would be good because the one assistant is sometimes busy but if they can be two they will be helping each other.

SP2: we should also be given feedback after practicing in the skills lab.

R: **Probe: Anything else to improve the skills lab?**

SP5: Ok like some procedures I think they look easy when we do them in the skills lab and I will give an example of ….i think it was so easy when doing it the skills lab because it's a doll and it never reacts but to do the same on a patient who has had injuries it was difficult

SP1: and some times in the procedure you are required to place the patient in lithotomy position and you do that and by the time you want to complete the procedure you find that the patient has changed position again and you have to start all over(all students talk with raised voice joining SP1).

SP6: some times when you are requested to give health education, you find that the client in the skills laboratory when you are done and asking for any question, you find that the client asks questions that are not related to the topic because s/he was sleeping

QUESTIONS ON THE OSCE ASSESSMENT METHOD EXPERIENCES

All of you have been exposed to this method of assessment. What are your experiences with this method?

SP3: ok, the positive part OSCE helps us as learners to put in practice, to recall what we have been doing in the clinical Area. But then the biggest challenge is that I meet in this method of assessment is that they give you a long …..Procedure (drugged the statement while raising the voice) and you have limited time so it's like you do everything under pressure. It makes you fail to do some things which if you were given enough time you would have done them better

SP2: ok, during OSCE they follow a certain order, so after a certain group has come out and they happen to tell others and so it becomes difficult for them because they don't have time to revise those procedures(disadvantage of leakage)

SP3: Sometimes the supervisors in the cubicles are unfriendly which makes the one doing the procedure to be under pressure because you just think that maybe I have already failed, why are they acting like this.

SP1: and also when you are doing the procedures, some supervisors may be you go and wash hands sometimes they don't follow you to check and then you continue with the procedure they say you haven't washed hands which you did and that they may tell us not to be saying anything but to just practise so when you are like giving intramuscular injection you are supposed to check the vial on the expiry date and in the end you are told that you never checked but they said that you shouldn't be saying anything so it becomes a challenge.

SP3: sometimes the other thing is that we are not exposed to the ideal things like the procedure manual, you just follow the normal things (shortcuts) which you have been doing in the ward and it makes us to fail because we do not know/ we tend to forget the ideal things.

SP4: and then the other thing is that sometimes you can read the procedure manual and how to do something like a certain procedure ideally and then you go in the OSCE you find that there are other equipment missing. So you find that some resources have already been used by the other groups and you have nothing to use…so sometimes resources are few.

R: What are your experiences in relation to the OSCE Feedback?

SP4: during the feedback they correct the mistakes which have been done and they also congratulate us for the things that we have done well.

SP5: it also helps us to know some areas/ there are some things which we do them without knowing that it's a mistake (speaker laughs) so are informed that it's a mistake and you were not supposed to do it.

SP1: okay during OSCE we go in different cubicles and we meet different lecturers so I will give an example when we were in Blantyre sometimes some lectures give you feedback and sometimes they would mark you wrong just because the one who assessed you was from Lilongwe and the ones who are assessed well are those from Blantyre and not those who are assessed with people from Lilongwe.

R: Probe: Anything else on the feedback?

SP1: May be the other thing is that yes its good to give us general feedback but I think it can also be beneficial if they were doing it individually because sometimes might benefit if the lecturer who was assessing that student gives the feedback to the individual.

SP4: one of the things that has to be changed during OSCE is that when we are in the wards we don't have the ideal things so it's like most of the times we spend time in the wards alone and then a lecturer will come and assess a few students and so we even make mistakes because we are used to the setting in the ward. May be if the lecturers come to assess us in the ward they should be doing the ideal things for us to observe for us to learn the ideal and explain the ideal things in the ward doing together on a patient so that we don't make mistakes when it comes to exams.

SP1: still on OSCE, I think to prevent leakage the first groups should be locked in a room and the we can organize ourselves…Also the lecturers conducting OSCE should have a positive attitude towards students. And also like when you are doing the procedure they shouldn't be talking to you because sometimes they just confuse you.

SP1: in addition, they should improve also on lack of resources because sometimes the resources are there.

SP4: I also think that we should be given the checklist before the OSCE because sometimes we experience differences with the teachers, like one teacher will say we do it this way and the same procedure the other teacher will do it different so when you are in OSCE you just do what you have got from one teacher while the other supervisor in the cubicle may mark you wrong so you may miss the other things and do them wrongly.

SP4: just to add up on the things to improve OSCE, in all the clinical areas we understand that there are different people but when it comes to OSCE they should not take people like giants expecting you to do procedures like putting him in recumbent position just because you cannot turn that person on your own. Of course I understand that we have such people in the clinical area but (all speak together) we do help each other.

R Probe: Are you not allowed to ask for help from the lecturers?

SP4: that depends on the supervisor.

SP6: sometimes you ask 'may you help me with this?' and the lecturers deny, they say do whatever you can manage or they say 'just do it' but then others are cheerful enough and they help and then there are some things, procedures like health education that during our practice time most of the times we have never been supervised on that or even observed a lecturer doing health education on the ward.

R: Probe: Even during your community experience?

SP1: in year one all of us were supervised but in year 3,… in community we have been supervised.

SP6: of course we are taught how to give health education but we don't know what is needed in terms of resources you just hear friends saying you needed this and that during OSCE.

SP4: during OSCE they need to place the things separately for the different procedures because they tend to confuse you when they just mix them and yet we have limited time, by the time you want to do the procedure you just hear time up because you waste a lot

of time when collecting resources than on the actual procedure (they all speak on top of their voices).

SP1: and also resources like gloves they have to be enough for everyone, like last time we were in the last group and we only found used gloves. And then if we had reused them as gloves because someone had used them it is not easy to demonstrate the skill with gloves that someone used before.

SP3: the other challenge that we meet is that they give us in that limited time water to wash out hands and then there is no provision for something for you to dry the hands so you find that it's difficult to put on the gloves because your hands are still wet so they should be putting something like a bathing towel for the drying hands.

SP1: The other challenge is on the things they do improvise in the skills lab, for example simple things like a health pass port book, and they do improvise with a plain paper so sometimes it becomes difficult to know that you have to use the plain paper.

R: Probe: Is there anything else that has not been discussed?

SP1: ya even the stuff they use for washing hands, they leave it in the centre which you are using cubicles so its like you have to be fast for you to be the first one to wash hands before your friends go there but sometimes because you are all rushing you put your hands on top of the other one (they all laugh) just because of the limited time.

SP4: during OSCE, the improvised patients are not cooperative and you may require help from the supervisors for you to be able to do the procedure.

SP2: some times in OSCE you find that in the question there is a name of a man and in the cubicle you find a woman, so you become confused. And other thing in the OSCE room like when you are doing blood transfusion you are supposed to have a lab form where you have to checking together with the lecturer likes to verify so you find that those things they don't put them on the bed side of the procedure but they combine with the resources for the other procedures but its better they put it on the bed side of the patient.

APPENDIX N

PERFORMANCE CHECKLIST

Name of Student : …….. **Generic Year 2 (BSc N andM)**

DATE :…../05/15 **Station No:** ……..

COLOSTOMY CARE CHECKLIST

No	Action	0	1	Remarks
	Preparation			
1	Greets client , introduces self and identifies the client			
2	Explains procedure: States name, purpose of procedure and obtains consent			
3	Provides privacy			
4	Washes hands			
	Procedure			
6	Puts on gloves			
7	Removes used bag gently, from top to bottom			
8	Disposes of used bag in appropriate receptacle			
9	Washes the stoma area with soap and water			
10	Inspects skin for redness/irritation			
11	Dries stoma and skin			
12	Removes backing from adhesive			
13	Centers new bag over stoma			
14	Presses bag firmly against skin to prevent leaks			
15	Applies Vaseline on the skin around the stoma			
16	Removes gloves and washes hands			
17	Leaves client comfortable			
18	Documents procedure and problems			
	Total Score			

Assessor's: Comments

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Signature……..

APPENDIX O

PERFORMANCE CHECKLIST

Name of Student : ……. **Generic Year3 (BSc N andM)**

Date : …../0…./16 **Station No**:……..

SUBSEQUENT PHYSICAL EXAMINATION OF ANTENATAL WOMAN

No	Procedure	0	1	2	3	4	Comment
1	Greet the patient and introduce self						
2	Explain the procedure to the woman						
3	Obtain an informed consent from her						
4	Provide privacy.						
5	Wash hands						
6	Assemble appropriate equipment for the procedure i. e BP machine, tape measure, linen, fetal scope, weighing scale						
7	Ask and check for danger signs (conditions needing emergency treatment) - Vaginal bleeding - Rupture of membranes - Severe headache - Fever - History of convulsions						
8	Ask the woman if she needs to empty her bladder, save and test the urine if necessary						
9	Monitor the following: - Blood pressure - Weight - Height - gait						
	Physical Examination						
10	Head:inspect hair for Colour, texture, sores, palpate for lumps Face: inspect and palpate the woman's face for oedema, tenderness of the sinuses Eyes: inspect the woman's conjunctiva for paleness and discharge Mouth: Inspect the mouth for sores, koplic spots and hygiene, tongue for pallor Ears: any discharge, pre and post auricular nodes for enlargement Neck: Palpate the neck for goiter, distended jugular veins Superficial and deep cervical, submandibular, submental, supra and infra clavicular lymph nodes						

No	Procedure	0	1	2	3	4	Comment
11	Ask the woman to uncover her body from the waist up, and have her lie comfortably on her back.						
12	Examine the chest: - Inspect the contours and skin of the breasts, noting dimpling or visible lumps, thickening, redness, lesions, sores and rashes. - Inspect nipples, noting pus or bloody discharge, cracks, fissures or other lesions, and whether nipples are inverted - Listen to the chest and heart sounds-if necessary. - Gently palpate the right and left breasts, noting tenderness and swelling or any abnormalities						
13	Ask the woman to cover her chest						
14	Examine the upper extremities: Inspect the palms for pallor, nails for crabbing, nail beds for shape and capillary refill time. Examine the hands for oedema						
15	Ask the woman to uncover her abdomen						
16	Obstetric examination: Inspect the abdomen for size, shape, fetal movements, scars, signs of pregnancy, condition of the skin, bladder Palpate liver and spleen Estimate fundal height using figure breadths and tape measure Determine fetal presentation, lie and position by doing pelvic, lateral and fundal palpation. - Fundal height - Fœtal poles/lie - Foetal presentation - Engagement of presenting part Auscultate fetal heart rate or ask about fetal movements						
17	Assess the Legs for: - Symmetry - Oedema - varicose veins - calf muscles tenderness **(**Homan's sign for deep vein thrombosis-DVT)						
18	Inspect the genitalia for sores, swellings, warts, genital ulcers, colour and smell of vaginal discharge, varicose veins, and genital mutilation.						
19	Ask about elimination pattern - Bowel movement - Urination, frequency, burning, pain						

No	Procedure	0	1	2	3	4	Comment
20	Verify if HIV testing has been done						
21	Give the feedback on the related findings						
22	Ask the woman if she has any further question or concerns						
23	Thank the patient for the co-operation						
24	Inform her the next date of appointment						
25	Document the time, date, findings, date of next visit, signature						

Assessor's: Comments

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Signature……..

APPENDIX P

DELPHI ROUND 2 QUESTIONNAIRES

This is the questionnaire which has been modified based on the comments and recommendations made from you the experts. Just a reminder, the questionnaire has a four point Likert scale rating on relevance from one to four. The following are the meanings of the rating and the instructions which you were given. However, new ideas are still welcome where applicable.

1=not relevant,
2=somewhat relevant,
3=relevant
4=very relevant

INSTRUCTIONS FOR EXPERTS

- The questionnaire is made up of 3 main items (mi: upper case). Under each main item, there are sub-items (si: lower case)
- With your judgment, rate each main item and sub-item in one of the columns marked 1, 2, 3 or 4. A description of what each number represents has been presented above.
- Please give a comment if an item has been rated 1 or 2 on how it should be revised.
- If you feel like an item is missing and has to be included, kindly list the item under comments
- The completed questionnaire should be returned to me as an attachment through my email address (anniemsosa@kcn.unima.mw/701501@students.wits.ac.za).

(The Likert scale has been developed from the work of Rob Johns, 2010)

Question Matrix	**1**	**2**	**3**	**4**
Mi 1. Nurse Educators Demonstration				
Si 1. Identification of learning tasks (skills /procedures)				
Si 2. Formulation of learning outcomes for each practice session				
Si 3. Provision of the teaching/learning instruments or guides for the targeted skills				
Si 4. Nurse educators general demonstration of the selected procedures to the students				
Si 5. Observation of individual return demonstration				
Si 6. Identification of individual student learning gaps				
Si 7. Modification and re-adjustment of teaching strategy based on				

learning gaps				
Si 8. Re-demonstration of the skills targeting the students learning gaps				
Si 9. Observation of individual students during deliberate practice				
Si 10. Check-offs for the individual students after deliberate practice after the recommended period of deliberate practice Si 11. Video recording of the demonstrations and return demonstrations (applicable where resources are available)				
Comments				
Mi 2. Students Return Demonstration				
Si 1. Familiarize with the checklist/learning guide				
Si 2. Observation of the nurse educators demonstration of selected nursing/midwifery skills				
Si 3. Return demonstration of the individual student				
Si 4.Being observed by nurse educator and peer.				
Si 5. Identification of learning gaps by self, peer and the nurse educators				
Si 6. Observation of the targeted re-demonstration by the nurse educator based on the learning gaps identified				
Si 7. Deliberate practice of the selected skills to perfect the skills performance for a designated period of time				
Si 8. Check-offs for the individual students after deliberate practice after the recommended period of deliberate practice				
Comments				
Mi 3. Feedback				
Si 1. Individual feedback based on identified learning gaps during deliberate practice by the nurse educator and peers				
Si 2. Immediate feedback from the check-offs after deliberate practice by the nurse educator Si 3. Individual feedback from the checklists ratings Si 4. Use the feedback given to perfect the skills during the deliberate practice sessions.				
Comments				

APPENDIX Q

STUDENT INFORMATION SHEET FOR VALIDATION EXPERTS

Evaluation of Undergraduate Nursing Students' Clinical Learning in a Developing Country: A Formative Assessment Framework.

Introduction

Good day to you. My name is Annie Msosa, working at Kamuzu College of Nursing as a Lecturer and currently studying towards my PhD at University of the Witwatersrand, Johannesburg in South Africa. I am conducting a research study on Undergraduate Nursing Students' Clinical Learning for the purpose of developing a Formative Assessment Framework.

The study seeks to answer the following questions: how is learning perceived in the skills laboratory from your perspective, what needs to be changed or modified in the skills laboratory and how can a formative assessment framework model contribute to effective learning and utilization of the skills laboratory.

Invitation to Participate: For this study, you are invited to participate as an expert in clinical teaching, learning and evaluation of students in order to validate the formative assessment framework to be used in the quasi experiment in the skills laboratories at Kamuzu College of Nursing.

What is involved in the Study: The study involves demonstration by the lecturers, return demonstrations, regular practise and individual feedback in the skills laboratory for a period of 4-6 weeks.

Confidentiality: Although there is no face to face contact, the information from the questionnaires will be shared with other experts for their assessment during the other rounds. The FAF will be used in teaching the students in the skills laboratories. The data can be made available to other relevant authorities for purposes of verification and quality assurance such as Research Ethics Committees. Your participation is voluntary. Therefore, if you wish to withdraw at any time, you are free to do so.

The final questionnaire will be made available to you and the study results will be at the Kamuzu College of Nursing and the University of the Witwatersrand and be published in local and international research journals. The results will also be presented in different research and nursing education forums and conferences.

Contact Details of Research Supervisors: For more information about the study, contact Professors Judith Bruce and Rosemary Crouch at the University of the Witwatersrand, Johannesburg, South Africa. Professor Judith Bruce's numbers are +27 11 717 2063/4 and the numbers for Professor Rosemary Crouch are: 011 728 2852 or 082 892 2946.

Contact Details of the Researcher: If you need more information about the study from the researcher, here are the contact details: +27723096758/+265882400346.

Email Addresses: anniemsosa@kcn.unima.mw/Annie.Msosa@students.wits.ac.za

Contact Details for COMREC: For more information from the University of Malawi Human Research Ethics committee contact:COMREC Secretariat, College of Medicine, Private Bag 360, Blantyre 3, and Telephone: +265 1 989766

APPENDIX R

INFORMED CONSENT FOR PARTICIPATION IN THE VALIDATION OF THE FORMATIVE ASSESSMENT FRAMEWORK

I hereby confirm that I have received, read and understood the contents of the participant information document regarding the nature of this research project on the Evaluation of Undergraduate Nursing Students' Clinical Learning in a Developing Country: A Formative Assessment Framework. The study seeks to answer the following questions: how is learning perceived in the skills laboratory from both the learner and lecturer perspectives, what needs to be changed or modified in the skills laboratory and how can a formative assessment framework model contribute to effective learning and utilization of the skills laboratory. The purpose of the study is to evaluate how learning in the skills laboratory is occurring currently and determine how a formative assessment framework can contribute significantly on students' quality of learning and utility of the laboratory.

I understand the reason for my participation in validation process.

I also understand that I am at liberty to withdraw my consent and from participation in this study at any time should I so desire.

I am aware that the Formative Assessment Framework will be used for the teaching and learning of students in the skills laboratories.

I understand that the data collected during this study will not be used for any other study without my permission and approval of the Wits University Human Research Ethics Committee.

I have been given the opportunity to ask questions and of my own free will declare myself ready to participate in the study.

Participant

…… …..……

Signature **Date and Time**

APPENDIX S

TURN-IT-IN REPORT

TURNITINDOC2016.docx

by Annie Msosa

FILE	ANNIE_MSOSA_701501_TURNITINDOC2016.DOCX (2.57M)		
TIME SUBMITTED	05-SEP-2016 12:32PM	WORD COUNT	73596
SUBMISSION ID	701310023	CHARACTER COUNT	403158

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ORIGINALITY REPORT

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SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	uir.unisa.ac.za Internet Source	%1
2	media.proquest.com Internet Source	<%1
3	www.science.gov Internet Source	<%1
4	onlinelibrary.wiley.com Internet Source	<%1
5	www.ncbi.nlm.nih.gov Internet Source	<%1
6	pubmed.cn Internet Source	<%1

APPENDIX T

INFORMED CONSENT FOR PARTICIPANTS (FOCUS GROUP/ IN-DEPTH INTERVIE WS)

I hereby confirm that I have received, read and understood the contents of the participant information document regarding the nature of this research project on **Evaluation of Undergraduate Nursing Students' Clinical Learning in A Developing Country: A Formative Assessment Framework.** The study seeks to answer the following questions**:** how is learning perceived in the skills laboratory from both the learner and lecturer perspectives, what needs to be changed or modified in the skills laboratory and how can a formative assessment framework model contribute to effective learning and utilization of the skills laboratory. The purpose of the study is to evaluate how learning in the skills laboratory is occurring currently and determine how a formative assessment framework can contribute significantly on students' quality of learning and utility of the laboratory.

I understand the reason for my participation in the focus group interviews.
I also understand that I am at liberty to withdraw my consent and from participation in this study at any time should I so desire
I am aware that the results of the study including personal details regarding my gender, age and the formative assessment grades will be anonymously processed into the report and that the grades will not be part of the final OSCE grade.
I understand that the data collected during this study will not be used for any other study without my permission and approval of the Wits University Human Research Ethics Committee.
I have been given the opportunity to ask questions and of my own free will declare myself ready to participate in the study.

Note: Please do not use real signatures. Rather use pseudo signatures on the consent form.

PARTICIPANT

…… …..……..

Signature Date & Time

WITNESS

…… …..……..

Signature Date & Time