

**A process evaluation of the Clinical Skills Laboratory in a private
nursing school (KZN)**

by

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(202522605)

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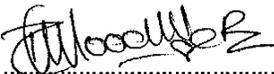
**Submitted in partial fulfilment of the requirements for the
Master's degree in Nursing Education**

Supervisor: Dr. Jennifer Chipps

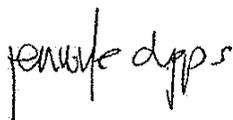
Declaration

I hereby declare that this report entitled "A process evaluation of the clinical skills laboratory in a Private Nursing School (KZN)" is my own work and effort. It is being submitted for the Master's degree in Nursing Education.

It has never been submitted anywhere for any other purpose. Where other sources of information have been used, they have been acknowledged by means of referencing.

Signature: 
Date: 8/05/2013

This study has been approved for submission by the Supervisor of this study, Jennifer Chipps.

Signature: 

Date: 8/5/2013

Research supervisor: Dr Jennifer Chipps

Dedication

I dedicate this thesis to my mother, Mrs. P Moodley, and the researchers in years to come.

Acknowledgements

This report would have not been possible without the support of many people: My mother, Mrs. P Moodley, my loving fiancé Bikash and my Supervisor, Dr. J Chipps. Thank you for the time and effort you expended on this dissertation.

All things are possible through the Lord.

Abstract

Background: The Private Nursing School was founded in 1999 in Durban when the first nursing students started the Nursing program. In 2006 there was an upgrade to the Private Nursing School when a clinical skills laboratory was introduced to enhance the students' clinical skills. The clinical skills laboratory was furnished with the equipment needed for demonstrations, role-plays and lectures to take place, and a need arose to evaluate the laboratory.

Purpose: The purpose of this study was to conduct a process evaluation to evaluate the clinical skills laboratory at the Private Nursing School with regard to the quality of equipment, satisfaction of the students and the efficiency of clinical facilitators.

Methodology: A process evaluation was conducted of the clinical laboratory, including a quantitative survey to evaluate the students' satisfaction (n=97), a quantitative audit of the quality of the equipment, a review of the utilisation of the clinical skills laboratory and semi-structured interviews with the four clinical facilitators. Students from two years were purposively selected for the study as they made the most use of the clinical skills laboratory. Survey tools were developed by the researcher. Findings from the surveys and audits were described and Chi-square test and Mann-Whitney to compare satisfaction and beliefs of the students. Information from the clinical facilitator interviews were analysed for common themes on usage and satisfaction.

Results: The students and facilitators reported overall satisfaction with the running of the clinical skills laboratory. The findings of the evaluation showed that the clinical laboratory was reaching the target groups with all students making use of the clinical skills laboratory for the purpose of viewing demonstrations, subjecting skills to assessment or practising skills. The students felt that learning did take place in the clinical skills laboratory with most of the students (94, 96.2%) reporting that knowledge was gained from demonstrations and practice. Almost two thirds of the students (59.8%) felt that the support from the clinical facilitators was beneficial to them. Some quality issues in terms of equipment were identified where damaged equipment could not be used by the support staff and facilitators stating that there was a need to improve the simulation experience for the students so that they can gain the much-needed practical and theoretical knowledge required for their stipulated course.

Conclusion: The clinical skills laboratory is functioning at a level that is satisfactory to the nursing students and the clinical facilitators. Future research should be conducted regarding the impact and outcomes of the clinical skills laboratory training on students' ability to function in the clinical setting.

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CHAPTER 1: THE STUDY

1.1 Introduction and Background to the Study

Clinical confidence and competence in the clinical setting is recognised as the core building-block of Nursing Education (Levette-Jones et al., 2006). Nursing Education programs experience a number of challenges in providing adequate clinical skills training for nurses, and the clinical skills laboratory (CSL) has become one of the most common methods employed in training to provide these skills (Moulton et al.,2006). In addition, in this era of inquiry, where problem-based learning is the central style adopted in science teaching and learning, the laboratory is especially important in providing a context for application of clinical skills for both medicine and nursing (Hofstein and Lunetta, 2003).

Teaching basic skills to medical students has become difficult according to Hao et al (2002) because of the reduced access to in patients. Most patients have shifted to an out patient management and as a result students are not being exposed to their conditions. According to Bligh (1995) clinical skills laboratories offer an exciting way to link theory and practice for both undergraduate and post graduate training. This is supported by the research done by Bligh (1995) that students are able to practice skills

in a standardized and protected environment without the distress of practising on real patients. Also models and simulators are used to keep up to date with the equipment and quality demands of the hospital.

As in the medical field, nursing requires experience in the field before employment as fully qualified nursing staff is considered, to ensure the competence of the nurses and the safety of patients. According to the South African Nursing Council's (SANC) requirements, students are required to have 1000 hours of practical experience per year while studying, through the provision of skills training as part of their nursing curricula.

As a result of nursing shortages and the demand for nursing care from critically ill patients, there is minimal time for the more experienced nurses to teach students (Lasater, 2007). Prior to the students going on to the clinical area, they often have a limited understanding of the clinical fields and the skills that are required in order to function in these areas. The clinical skills laboratory serves as an important resource to the students as they use the laboratory with the intention of gaining experience and knowledge, and they are given demonstrations of the skills needed, and given a chance to practise these skills before they enter into the clinical field. When students are found competent in a skill they are then able to perform the skills on patients in their respective clinical setting.

A Private Nursing School in KwaZulu-Natal (the “Nursing School”) introduced a clinical skills laboratory in 2006 for the students who attended the school with the aim of enhancing their clinical skills in preparation for practice and meeting SANC requirements. At the Nursing School, students are sent to the clinical areas between the theory and the Facilitated Practical Activity (FPA) blocks to obtain the required 1000 hours. A block is a 42-hour long week where students attend campus from Monday to Friday. The practical blocks are provided through a formal clinical skills laboratory (CSL) set-up. The students are facilitated by the clinical facilitators whom are involved in demonstrations and lectures to enhance the learning that takes place.

As with any new program that is implemented, it was essential that the impact and outcomes of the clinical laboratory be evaluated to identify whether the program is successful in meeting its aims. Prior to conducting an impact or outcome evaluation, it was necessary to conduct a process evaluation to assess whether the laboratory was being implemented in the way in which it was intended. Process evaluations relate to the inputs and activities of a program. For the clinical laboratory, these inputs and activities included whether the equipment in the laboratory were available, appropriate and of high quality; whether students and staff were satisfied with the laboratory, and the overall utilisation of the laboratory. To date there had been no evaluation of the clinical skills laboratory or its implementation and it was identified to conduct a process evaluation as the first step in evaluating the clinical skills laboratory.

1.2 Study Context: The clinical skills laboratory at the Private Nursing School

In the planning of an evaluation of a program, the first step is to describe the program. The clinical skills laboratory, in terms of its aims, objectives, activities and inputs. Information about the clinical skills laboratory was obtained from the records kept at the Nursing School.

1.2.1 Setting of the clinical skills laboratory at the Private Nursing School

The Private Nursing School opened its doors in 1999 in Durban. It was at this point that the Private Nursing School was accredited by the South African Nursing Council and could legally function as an educational institution. The Private Nursing School then relocated in 2006 to a new venue in Durban and include a reception area, 7 lecture rooms (60 seater x 2, 40 seater x 3 & 30 seater x 2), a simulation laboratory, a library, store-room and archive, copy/fax room, staff canteen and student canteen, open-plan offices for lecturers and clinical facilitators; and a management suite with private lockable offices.

In 2006 the Private Nursing School introduced a clinical skills laboratory as a requirement to meet the South African Nursing Council objectives for Nursing Schools.

Since the implementation of the clinical skills laboratory in 2006 the curriculum has been reviewed annually, and clinical facilitators have been employed to ensure the smooth running of the laboratory to meet the students' objectives. The skills laboratory was originally mainly used by the lecturers to perform demonstrations of clinical skills for the basic and post-basic nursing groups in the Private Nursing School. The clinical skills laboratory (CSL) was equipped with items that were needed by the students according to the budget allocated to the campus. Equipment donated by the private hospitals was put to use.

The clinical skills laboratory is situated in the Private Nursing School building on the ground floor. The Private Nursing School has two buildings which are double stories and includes eight lecture rooms excluding the clinical skills laboratory space. Bligh (1995) states that space is needed in a laboratory to provide students with models, examination couches and tables to work on. He also states that the arrangement of the laboratory should be conducive to allow students to rotate through a series of stations as they work. As per Bligh (1995) the Private Nursing Schools' clinical laboratory has a similar set up, currently, the skills laboratory has six beds, two mannequins, two televisions and a DVD player. The students are able to rotate between stations while in a session either to view a different demonstration by a clinical facilitator or to practice a skill. Skills are demonstrated to the students either by the clinical facilitator or via media. The clinical skills laboratory has a store-room where all equipment is stored. The

equipment is packed on shelves in the store-room and is marked accordingly. As the equipment is needed, it is taken out by the clinical facilitator and used for demonstration purposes or by the students to practice. Thereafter it is returned to its place.

1.2.2 The aim of the clinical skills laboratory

Berragan (2011) states that simulation provides a variety of opportunities for students to develop their clinical skills. It is an environment where: simulation, demonstration of practical skills, role plays and lectures take place to enhance students' knowledge of practical skills and to bridge the gap between theory and practise. The clinical skills laboratory is also an environment where critical thinking takes place and more so boost the students' confidence so that they are able to be safe practitioners in the clinical setting. Ogilvie et al. (2011) state that simulation prepares students for real life events. The aim of the clinical skills laboratory is an environment where students can practise skills until it is mastered, there are also clinical facilitators present to guide students and render them competent once they have been assessed on practical skills. Similarly, the aim of the laboratory was to improve the clinical competence of nursing students at the Private Nursing School through the provision of an environment for the practise and learning of clinical skills.

1.2.3 Objectives of the clinical skills laboratory

- To provide demonstrations of clinical skills for the basic and post-basic nursing groups in the Private Nursing School
- To provide an opportunity for nursing students to practise nursing clinical skills to gain competence and confidence in performing these skills
- To enhance the knowledge of students in clinical skills so that the gap between theory and practice in the clinical environment can be bridged.

1.2.4 The participants in the clinical skills laboratory

The participants in the laboratory include Pupil Enrolled Nurse (PEN) 1 students who are enrolled in their first year of a basic course to obtain a certificate, the PEN 2 students are students who are enrolled in their second year in basic nursing program that runs over a two year period to obtain a certificate and the Bridging students who are enrolled nurses registered in a nursing program studying towards a diploma in nursing. The Bridging students were excluded from the evaluation due to their low usage of the clinical laboratory.

The PEN 1 and 2 students (basic nursing students) attend practical blocks before entering the clinical area when they start the course. The program is drawn up prior to the students beginning the course, and it sets out how many practical blocks the students attend prior to entering the clinical setting. This is to ensure that the students are aware of their clinical expectations and that they gain knowledge and skill prior to entering the hospitals. The students attend an FPA clinical block for a week at a time. The first year and second year Basic nursing students (also known as PEN 1 and PEN 2 students) are allocated five FPA blocks in an academic year. The students do not use the skills laboratory when they are not in the allocated FPA block as they are either attending a theory block or are at the hospital. They may, however, book with an available clinical facilitator to either have a demonstration or an assessment of a skill. This has to be done in the students' personal time, after the theory lecture is complete, or when the student is not at work in the hospital. The clinical facilitators must be available when the students book them, as they also perform demonstrations to the students during campus time. The students are required to attend 90% of the FPAs. Each day according to their tutorial package is an 8.24 hour day at the college.

1.2.5 Activities of the clinical skills laboratory

There are three main activities conducted in the clinical skills laboratory, namely: demonstrating of clinical skills by facilitators, practising of clinical skills by students and the assessment of clinical competencies.

1.2.5.1 Demonstrations of clinical skills

One of the main activities of the clinical skills laboratory is the demonstration of clinical skills by clinical facilitators. Currently there are four clinical facilitators who conduct the demonstrations and assessments of the students. Hao et al. (2002) evaluated a group of students that had been demonstrated skills as part of their curriculum for medical students. The students were demonstrated too by the faculty and then given the opportunity to demonstrate the skill to their colleagues. A checklist was used to assess the students' performance of a skill which was marked by the faculty. As a result the research showed that students do learn clinical skills from a simulated situation. The students at the Private Nursing School undergo the same process and must be found competent in a skill before attempting to perform it on a patient. The students are placed into groups comprising 6 to 8 students and are taken down to the clinical skills laboratory where the clinical facilitator will demonstrate a skill for 30 to 45 minutes. The

four clinical facilitators normally have 24 to 32 students at a time, while the remainder of the students are allowed to practise or research the skill. The students are also given a chance to discuss the skill with other colleagues. Not all skills are demonstrated on campus due to insufficient equipment and time constraints. Skills that are not demonstrated on campus are demonstrated and assessed by the clinical facilitators in the clinical area.

1.2.5.2 Practise of clinical skills

Each student is given a basic dressing pack at the beginning of their first year which includes a pair of gloves and dressing material. The student is able to practise his/her skills using his/her personal equipment. Students are also given a mouthpiece for the purpose of cardio-pulmonary resuscitation and to ensure effective infection control.

A study done by Godson et al.(2007) showed that peer teaching impacted positively on students. The confidence of the students was built up from learning in a safe environment in the clinical skills laboratory prepared them better for their placement in the clinical setting. Similarly, peer teaching is important in the clinical laboratory as he students practise the skills while supervising each other before they are assessed for competency. This motivates peer teaching and stimulates the brain with the activity.

1.2.5.3 Assessment of clinical skills

The students are assessed according to a check-list found in their POE workbooks. Once found competent, the student is able to perform the skill in his/her respective clinical area under supervision of the Registered Nurse. If the student is not found competent then s/he is allowed a practice period, or can book the clinical facilitator for a further demonstration of the skill; thereafter the student will be re-assessed in respect of that skill once she/he feels confident to undergo re-assessment.

A POE (Portfolio of Evidence) is given to the students at the introduction of the course. This is a guideline for the student to ensure that she/he is aware of the procedures and assessments that she/he will be evaluated on. The POE has the necessary information to guide the student concerning how to perform the skill, as well as to guide the clinical facilitators who will be demonstrating the skill, so as to ensure that standardisation is maintained across the board. As part of the students' requirements for completion of their training, they need to demonstrate all the procedures found in their POE and be found competent to perform these procedures in order to be entered into a final practical examination.

1.2.6 Monitoring and evaluation of the clinical skills laboratory

Apart from keeping a record of clinical skills laboratory usage by students, no evaluation of the clinical skills laboratory has been done by the Nursing School. It was identified that there was a need to conduct a process evaluation as the first step in evaluating the clinical skills laboratory.

1.3 Problem Statement

Rhodes and Curran (2005) stated that simulation of clinical activities in a clinical laboratory setting provided students with the opportunity to enhance knowledge and facilitate skills acquisition to decrease anxiety and promote clinical judgment in a safe environment. Since the implementation of the clinical skills laboratory in 2006, no evaluation has been conducted on the skills laboratory equipment and staffing. The management team of the Private Nursing School identified the need to assess whether the clinical skills laboratory was effective, and whether it met the aims and objectives of the program to enhance knowledge and facilitate skills acquisition to decrease anxiety and promote clinical judgment in a safe environment. However, before an evaluation of the effectiveness of the clinical skills laboratory could be done, a process evaluation was needed to determine whether the clinical skills laboratory had been implemented in the way in which it was supposed to be implemented

For a clinical laboratory to function well, it needed to be implemented the way it is supposed to be implemented, i.e. well supported, resourced and managed. To determine the effectiveness of the clinical labs, any evaluation which is conducted would need to include an evaluation of the satisfaction of the support that the students receive in order to enhance their knowledge and skill in the clinical skills laboratory. This support will include both equipment and staff. Clinical facilitators are specifically important as Cookes' (1996) suggest that students find certain clinical situations difficult and challenging, and students depend on facilitators to effectively assist them through specific teaching and learning strategies. Research done by McAdams et al. (1988) supported this and indicated that students requested the availability of a facility like a clinical laboratory because they believe that it provides hands-on and visual pre-clinical experiences, though adequate equipment was essential.

It was anticipated that this evaluation should focus on the implementation inputs and processes, and should determine whether the support (equipment and staff) of the clinical skills laboratory met the demands of the students to ensure that they receive the knowledge and skill needed to become a safe practitioner in the clinical environment.

For this reason, a process evaluation research study of the clinical skills laboratory was conducted by the researcher, as part of the requirement for the completion of a Master's degree in Nursing Education. The process evaluation research study aimed to measure the satisfaction, quality of the resources, reach and usage of the clinical skills

laboratory with the overall intent to lay the foundation for a future evaluation of the effectiveness of the clinical skills laboratory. The researcher at the time was employed as a lecturer at the Private Nursing School.

1.4 Research Aim

The overall aim of this research study was to assess the implementation of the clinical skills laboratory at the Private Nursing School (KZN) by means of a scientific process evaluation in order to recommend a baseline for improvement.

The research study included four sub-phases which focused on the components of a process evaluation, namely: 1. the students' and 2. the clinical facilitators' satisfaction with the clinical laboratory in terms of resources and support to facilitate learning of clinical skills in the clinical skills laboratory, 3. the auditing of the equipment found in the clinical skills laboratory and 4. the calculation of the usage of the clinical skills laboratory.

1.5 Research Questions

1.5.1 How satisfied are students and clinical facilitators with the quality and availability of clinical equipment used in the clinical skills laboratory?

- 1.5.2 How satisfied are students and clinical facilitators with the clinical support given from clinical facilitators while using the clinical skills laboratory?
- 1.5.3 How satisfied are students and clinical facilitators that the clinical skills laboratory contributing to their learning of clinical skills and theory?
- 1.5.4 What is the quality and availability of clinical equipment in the clinical skills laboratory?
- 1.5.5 How satisfied are students and clinical facilitators with the preparation prior to the demonstration of skills to students in the clinical skills laboratory?
- 1.5.6 How often and for which procedures are the clinical laboratory currently being used?
- 1.5.7 What recommendations for improvement of the clinical laboratory can be made?

1.6 Research Objectives

- 1.6.1 To measure the first and second year basic students' satisfaction with the clinical laboratory inputs, processes and outcomes (research questions: 1.5.1, 1.5.2, 1.5.3 and 1.5.5)
- 1.6.2 To explore the clinical facilitators' satisfaction with clinical skills laboratory inputs, processes and outcomes (research questions: 1.5.1, 1.5.2, 1.5.3 and 1.5.5)

- 1.6.3 To rate the equipment used in the clinical skills laboratory to gain competence and clinical skill in terms of availability and quality (research question: 1.5.4)
- 1.6.4 To calculate the patterns of usage of the clinical skills laboratory (research question: 1.5.6)
- 1.6.5 To use the findings to develop recommendations for possible changes in the running of the clinical skills laboratory. (research question: 1.5.7)

1.7 Significance of the study

The study has three main areas of significance. Firstly, it is the intention that this evaluation will serve as a baseline for improvements in the clinical skills laboratory for future students who will be using the clinical skills laboratory. With feedback to the Private Nursing School, recommendations can be used to make changes to meet the students' requirements of the clinical skills laboratory that has not been met. The information from this evaluation will benefit the students by improving the laboratory, and hopefully ensuring that they thus become more effective in their respective clinical area. An improved skills laboratory would assist the students to develop the necessary skills that they require to become competent nurse practitioners on completing their qualifications.

Secondly, as there is limited research in the evaluation of clinical skills laboratories in South Africa, this research can be used as a baseline for future research. If the program was found to be implemented as intended, the Private Nursing School could commence a proper outcome evaluation of the Clinical Laboratory.

Thirdly, according to Polit and Beck (2004) a process evaluation can also be used to describe a program carefully so that it can be implemented in other clinical skills laboratories if it is effective.

1.8 Research Conceptual Framework

Two conceptual frameworks were used in the process of evaluating the clinical skills laboratory in the Private Nursing School: 1) the 'Program Evaluation framework' (CDC (Centres for Disease Control and Prevention) USA) to guide the evaluation process; and 2) a Process Evaluation Model developed by Hawe et al. (1990) to focus the evaluation on the components of process evaluation.

1.8.1 Program Evaluation Framework

The Program Evaluation Framework by the CDC was chosen to guide the evaluation process. The CDC evaluation working group (1999) developed this framework as a systematic way to improve and account for public actions that involve procedures that are useful, feasible, ethical and accurate. In other words, it is a tool designed to summarise and organise the essential elements and processes of a program evaluation. Wimbush and Watson (2000) state that having a clear model for outcomes helps to shape the expectations of stakeholders as to what a program can be reasonably expected to achieve over a defined time period. They state further that the Program Evaluation Framework contributes to improving the fit between research and practice.

The Program Evaluation Framework has six steps to it and is illustrated in Figure 1 below. Each step is described below followed by a description in *Italics* of how it applies to this evaluation research study.

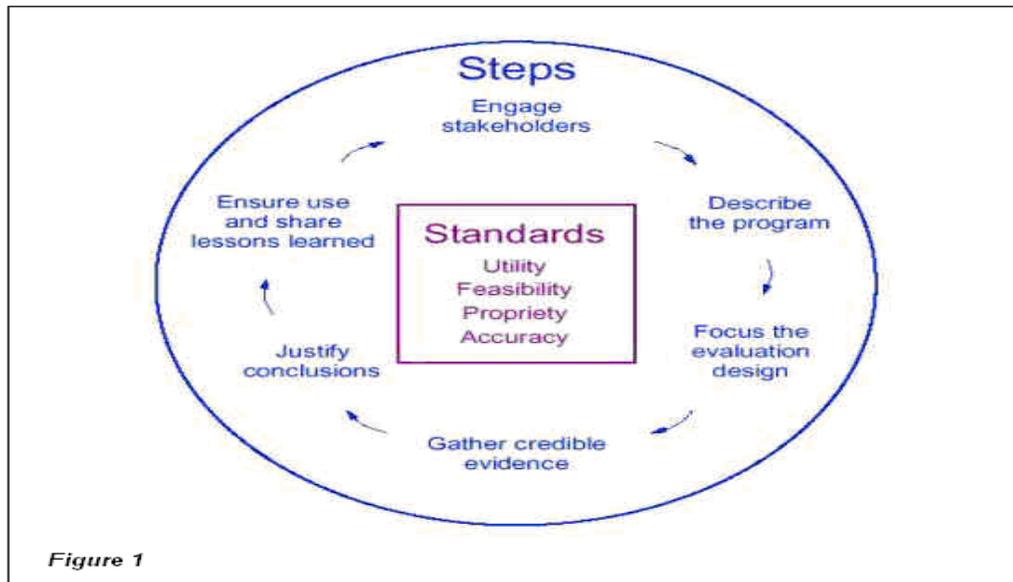


Figure 1: Program Evaluation Framework (CDC, 1999)

Step 1: Engage stakeholders

According to the Program Evaluation Framework (1999), stakeholders are the people or organisations that have an investment in what will be learned from an evaluation which is to be carried out. Therefore, the stakeholders must be involved in an enquiry so that they can execute further steps (CDC, 1999). The evaluation may be ignored if the stakeholders are not aware of its existence.

The Private Nursing School was informed about this project so that, should there be a need for further steps to be executed this could be done. Permission was received to conduct this evaluation and support was received from senior staff at the Private Nursing School. The Private Nursing School organisation/stakeholders included the

students who attended the school, the clinical facilitators who were involved in the practical aspects of the students' education and the management team. These role-players were all part of the evaluation.

Step 2: Describe the program

The description of the program is an essential component in any evaluation. If the program is not described it cannot be evaluated. In an evaluation, the effectiveness (outcomes) of the programme is evaluated against its aims; the impact of the program against its objectives, and the process evaluation against the activities, processes and resources of the program.

The clinical skills laboratory project at the Private Nursing School is described in detail in the Background Section of this Report (See 1.1)..

Step 3: Focus on the evaluation design (Research Design)

Step 3 focuses on the design to be used in the evaluation process. This step normally involves the development of the methodology of the evaluation. It takes into consideration the 'users' (specific persons who will receive the evaluation findings (CDC, 1999). In any evaluation there are three types of evaluations (Hawe et al., 1990):

1. Outcome evaluation - measures the long term effects of the program

2. Impact evaluation - measures the immediate effect of the program
3. Process evaluation – measures the activities of the program, program quality and who it reaches

For the purpose of this evaluation, a process evaluation was conducted, based on the second research conceptual model for this research, namely the Process Evaluation Model developed by Hawe et al. (1990).

Step 4: Gather credible evidence (Data Collection)

This step involves the collection of the data. At this stage the stakeholders are also included, the reason being that the data collected will be more credible if the stakeholders are included (CDC, 1999). Therefore, it will be more likely that the stakeholders will accept the evaluation's conclusions and act on its recommendations (CDC, 1999).

The data was collected from the stakeholders in this project. This section is described in the Data Collection section of the Report (See 3.5).

Step 5: Justify conclusions (Analysis and Discussion of Results)

Stakeholders must be included in this step so that the conclusions will be used with confidence (CDC, 1999). This step is where the analysis and synthesis of the data

collected takes place; the findings are interpreted and assessed and interpretation and recommendations are made.

This is described in the Data Analysis and Discussion section of the Report (See Chapter 4)

Step 6 Ensure use and share lessons learned

This is the process of communicating the findings of the evaluation to the necessary audiences in a timely, unbiased and consistent fashion. All the findings of this evaluation were fed back to the relevant stakeholders by providing a report and making a presentation of the findings.

1.8.2 Process Evaluation Model

The second research conceptual model is a Process Evaluation Model which focuses the attention on the components of a process evaluation. In order to evaluate the process components of the clinical skills laboratory, the process evaluation by Hawe et al. (1990) is to be used. Hawe et al. (1990) state that when a program is up and running, feedback on the program is essential as this will help to improve the program and develop it further.

The evaluation process ensures quality assurance, meaning that the quality of the program delivery meets the standards of good practice (Hawe et al., 1990). This ensures

that the stakeholders are kept happy, and that the program is still likely to receive funding (Hawe et al., 1990). These authors state further that continuity of evaluation is necessary in a program to evaluate whether the quality of the program has diminished in standard or whether standards are being maintained. Figure 2 illustrates the portion that process evaluation contributes to the bigger planning and evaluation cycle.

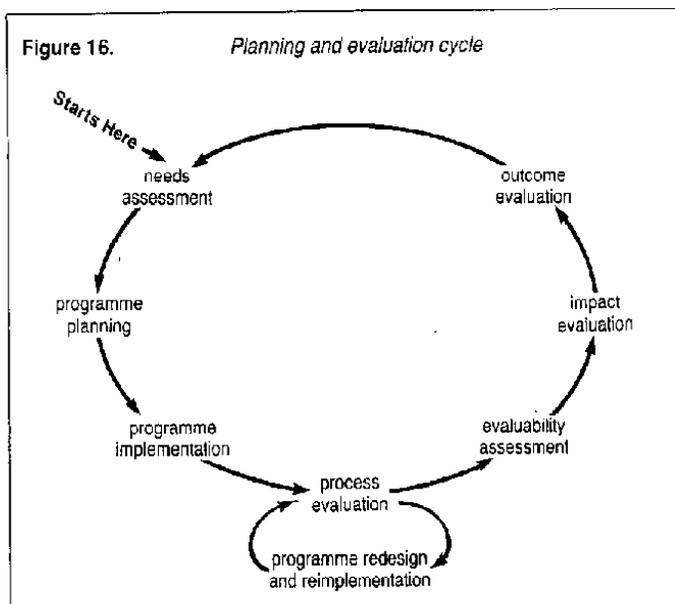


Figure 2: Process Evaluation Model in the overall evaluation process (Hawe et al., 1990)

The focus of the process evaluation according to Hawe et al. (1990) is the following:

- Is the program reaching the target group?
- Are participants satisfied with the program?

- Are all the activities of the program being implemented?
- Are the materials and components of the program of good quality?

Bearing in mind that the Private Nursing School's clinical skills laboratory has not been evaluated, the need for this evaluation, according to Hawe et al. (1990) is as follows: "Process evaluation is recommended for all new programs. When your process evaluation indicates that your program is functioning in its optimum form, you can move onto impact and outcome evaluation".

As the Nursing School's clinical skills laboratory is already up and running, the needs assessment, program planning and the implementation part of the cycle have already been conducted. The next step was the process evaluation process. This project will therefore make use of the process evaluation.

1.9 Definition of Terms

The following terms are defined, and where appropriate, an operational definition for the study is included.

Table 1: Definition of Terms

Term	Definitions
Availability	It is something that is able to be used or obtained (Oxforddictionary.com, 2013) <i>Operational Definition:</i> Listed Equipment is defined as available if the can be located in the clinical laboratory
Clinical area	<i>Operational Definition:</i> Hospital environment in which nursing students work.
Clinical laboratory	A skills laboratory where nursing students watch demonstrations of clinical procedures and can practise clinical procedures. The Lab uses simulated patients or manikins and computer-supported audiovisual systems to aid in the transfer of information from the instructors, manuals or reference material (Buchanan, 2001). <i>Operational Definition:</i> Private Nursing School Clinical Laboratory
Clinical facilitator	<i>Operational Definition:</i> A nursing staff member employed by the Private Nursing School who is responsible for demonstrating, assessing and facilitating practical activities in a skills laboratory.
Equipment	<i>Operational Definition:</i> A set of tools, devices, kit, etc., assembled for a specific purpose used in a clinical laboratory to teach clinical skills.
Impact evaluation	The evaluation measures changes in awareness, knowledge, attitudes and behaviours attributable to the communication activities. This evaluation measures long-term effects (Roper, 1993).
Portfolio of evidence (POE)	<i>Operational Definition:</i> Information gathered by Nursing students that serves as proof that the required clinical tasks have been completed.
Process evaluation	It is a process that explores the implementation, receipt and setting up of an intervention and helps in the interpretation of the outcome results. Process evaluation can help to distinguish between interventions that are inherently faulty (failure of intervention concept or theory) and those that are badly delivered (implementation failure). Data for process evaluation can be both quantitative and qualitative (Oakley et al., 2006).
Pupil Enrolled Nurse (PEN)	<i>Operational Definition:</i> A student who is in his/her first year or second year of a basic nursing training program for a certificate.
Learner/student	A person that is studying at a university or other place of higher education (Oxforddictionary.com, 2013) <i>Operational Definition:</i> One who is enrolled or who attends classes at the Private Nursing School.
Outcome evaluation	The evaluation measures changes in awareness, knowledge, attitudes and behaviours attributable to the communication activities. This evaluation measures short term effects (Roper, 1993).
Occasions of Usage	<i>Operational Definition:</i> occasions of use of clinical laboratory during the months of the review (number of students x number of days of lab usage)
Private Nursing School	<i>Operational Definition:</i> Refers to the Nursing School that students attend to be trained as nurses. It is a privately owned by an organization
Quality	Refers to a general excellence of standard or level or it is a standard of something measured against other things of similar kind

Term	Definitions
	(Oxforddictionary.com, 2013) <i>Operational Definition:</i> Quality was defined as equipment being fully functional, not broken, nor having missing components
Simulation	The act of imitating the behaviour of some situation or some process by means of something suitably analogous (especially for the purpose of study or personnel training). It can also be referred to as the reproduction of the essential features of a real life situation (Medley and Claydell, 2005).
Satisfaction	It is the fulfilment of one's wishes, expectations or needs (Oxforddictionary.com, 2013) <i>Operational Definition:</i> Satisfaction was defined as Strongly Agreeing or Agreeing with positive statements regarding the support and equipment of the Clinical Laboratory
Reliability	Is concerned with the consistency, stability and repeatability of the informant's account as well as the investigator's ability to collect and record information accurately (Polit and Beck, 2004).
Usage	It is the habitual or customary practice, especially in creating a right obligation or standard (Oxforddictionary.com, 2013). <i>Operational Definition:</i> Usage was defined as using the Clinical Laboratory for identified clinical skill related activities. These included demonstrations, practice and assessment of clinical skills.
Validity	Deals with credibility and authenticity. (Polit and Beck, 2004).

1.10 Dissertation outline

Chapter 1: The chapter presented an overview of the study, including the background and setting of the study, problem statement, purpose, research objectives, research questions, significance, conceptual framework and operational definition of concepts.

Chapter 2: This chapter presents the reviewed literature relevant to evaluation studies conducted of clinical nursing skill laboratories.

Chapter 3: This chapter presents the research methodology used to conduct the study. The study used a pragmatic paradigm with 3 quantitative studies (survey of students satisfaction, audit of equipment and review of records) and one qualitative study (interviews with 4 clinical facilitators). The chapter describes these four sub-studies and outline how the data were collected.

Chapter 4: Presents the analysis and description of the four sub studies using SPSS and Excel for the quantitative studies and manually analysis and abstracting of themes from the qualitative interviews with clinical facilitators.

Chapter 5: Presents the interpretation and discussion of the evaluation findings with recommendations based on the results of the study

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The literature focuses on the clinical skills laboratory, namely, 'What is a clinical skills laboratory?'; 'The difference between simulated practical skills and simulation'; 'The functions of a clinical skills laboratory'; 'Perceptions of the clinical skills laboratory'; 'The evaluations of clinical skills laboratories'; and 'The Importance of evaluation'.

The following search terms were used to search for relevant articles on clinical laboratory evaluations, namely: Clinical skills laboratory, evaluation of students' perceptions of the clinical skills laboratory, nursing students' experience in a clinical skills laboratory, the role of support staff in a clinical skills laboratory, simulation in the skills laboratory, equipment used in the clinical skills laboratory. The search was conducted using a number of databases, namely Medline, PubMed, OvidSP, CINAHL, Science direct, S.A. Publication, Jstor, Swetwise and Google Scholar. Articles focusing on a clinical laboratory evaluation in South Africa were retrieved for the period from 1979-2011. As the researcher could not find a high number of evaluation studies on clinical laboratories, and since they have been around for over 40 years, articles earlier than 2000 were also included where appropriate.

2.2 What is a clinical laboratory?

According to Bligh (1995), the clinical laboratory is a standardised protective environment without the distress such practise of skills may cause real patients. Prior to the students going into the clinical area they often have poor background knowledge of the clinical fields and the skills that they are required to possess in order to function in the areas. Therefore the clinical laboratory is used to bridge this gap by simulating clinical situations, demonstrations of clinical skills and lecturing in order to gain more insight on a skill. Buchanan (2001) states that although simulation laboratories may vary from campus to campus, they all mainly have simulated patients or manikins, computer-supported audiovisual systems to aid the transfer of information from the instructors, manuals or reference material to the student. Essentially, the simulation laboratory is there to aid the student in learning and performing new practical skills. Clearly these skills are developed through demonstration, simulation and role play and require equipment in order to simulate the clinical environment, therefore it is also essential that all the equipment found in the clinical skills laboratory are in functioning order so that learning can be effective.

Simulation refers to, "A technique, not a technology, to replace or amplify real experiences with guided experiences, often immerses in nature, that evoke or replicate

substantial aspects of the real world in a fully interactive fashion” (Cannon-Diehl, 2009:128); or, “Simulations are activities that mimic the reality of the clinical environment and are designed to demonstrate procedures, decision-making, and critical thinking through techniques such as role-playing and the use of devices such as interactive videos or mannequins”. Lundberg (2008) adds to this by stating that simulations can range from static mannequins to role-playing scenarios and complex high fidelity human simulators.

2.3 Difference between simulated practice of skills and simulation

Simulation can be as simple as a case study, a computerised program, or a partial trainer (such as an intravenous arm). However, it can also be more complex such as high fidelity simulation (Cannon-Diehl, 2009). Cannon–Diehl (2009) states that high fidelity simulators can produce verbal cues and respond to verbal questions from participants. Merchant (2012) adds to Cannon-Diehl’s description by stating that high fidelity simulation can be defined as learning experiences that employ highly sophisticated, interactive computer programs, which incorporate life-like models for varying clinical situations along with practitioner reactions and interventions. An example of a high fidelity model according to Leigh (2011) is a ‘patient’ exhibiting shortness of breath, increased respiration, crackles in the right lung fields that then quickly deteriorate,

exhibiting cyanosis and acute respiratory distress. Buchanan (2001) states that many schools perceive the value of virtual reality in competency testing both as part of the curriculum and for regional board examination. Jarzemsky and McGrath (2008) add to this list of benefits by stating that clinical simulation is an innovative strategy to evaluate technical and clinical reasoning skills before experiential learning. Students are encouraged to become more self-directed in their learning after simulation experiences. Ogilvie et al. (2011) state that simulation prepares students for real life events. Students often do not have prior clinical experience before entering into the clinical setting and their knowledge with regards to clinical skills is minimal. By having clinical skills simulated in the clinical skills laboratory to students it prepares them to take on the clinical tasks in the clinical setting with more knowledge and boosts their confidence.

High fidelity models are very popular amongst authors (Ogilvie,2003; Canon-Diehl, 2009; Merchant, 2012 and Lundberg, 200) as effective equipment that can be used to bridge the gap between theory and practise integration with regards to students. However high fidelity models can be very costly and as a result most clinical skills laboratories may opt to perform demonstrations to groups of students where they are able to ask questions and enquire about the theory related to those skills. Clinical facilitators are used to demonstrate skills on mannequins or make use of the equipment provided in the clinical skills laboratory to students. For example, a clinical facilitator will demonstrate administration of an intra-muscular injection on a mannequin using a needle and syringe

and maintaining an aseptic technique; or may simply demonstrate a social hand-wash where all the students observe the clinical facilitator performing an actual hand-wash at the basin. Students are given a chance to practise these skills, after the demonstrations, in groups where they can interact and observe each other perform the skills. Students are also given the opportunity to role-play and present case studies during the demonstration in order to understand the skill a bit better. Once the students have mastered the skill they are assessed by the clinical facilitators to obtain competency.

The main difference between the simulation of a high fidelity model and simulated practice is that in simulated practice of a skill, the actual models do not react to the arising situation as the high fidelity model would. Both high fidelity models and simulated practice can be very effective for teaching medical students to bridge the gap between theory and practise in the clinical setting.

2.4 Functions of the clinical skills laboratory

Nursing requires that the nurse be knowledgeable and able to perform many practical skills in order to meet the needs of the patient. Bligh (1995) states that there are links between theoretical knowledge and clinical practice which are appropriate for both post-graduate and under-graduate training students so that they are able to practise.

Before entering into the clinical setting the students will be exposed to clinical skills and the integrated theoretical knowledge to perform those skills by using simulation and simulated practise. Medley and Claydell (2005) agrees with Bligh (1995), stating that simulation technology is an exciting approach for meeting the clinical objectives of the undergraduate nursing programs. Berragan (2011) states that simulation provides a variety of opportunities for students to develop their clinical skills. It provides students with competence and confidence to function in the clinical setting.

The consistent goal across programs is to produce safe, competent and professional nurses. Hence the simulated practice of clinical skills has become increasing popular in Nursing Education (Bensfield et al., 2012). The clinical skills laboratory has been proven to be of benefit to a nursing campus as it provides an environment conducive to learning, and allows for the simulated practise and feedback to improve clinical skills.

Though simulation is not the only function of a skills laboratory, simulation is core to the use of clinical skills laboratories. Macedonia et al. (2003) state that simulation requires us to think creatively and practically about how to optimise students' education. Good (2003) raises the point that the simulation laboratory is able to teach one to recognise and treat rare, complex clinical problems. Simulation practise includes the use of role plays and case studies where students are able to think creatively and provide input into

their learning. Besides the use of simulation laboratories for students, Buchanan (2001) describes the use of simulation laboratories for hospitals, where these laboratories are used to provide orientation to new workers. It also serves as a method to test skills and practise skills before entry into the hospital according to Medley and Claydell (2005). By assessing staff before entering into the clinical setting, it opens the doors to learning gaps and clinical facilitators are used to educate staff and bridge that gap so that safe practitioners can practise in the environment.

Students are often placed in the clinical setting once they have been exposed to demonstrations and theory blocks in the Private Nursing School. Students who do not have exposure to the clinical setting have poor experience of patient encounters. Thus, Duvivier et al. (2009) state that the skills laboratory prepares the students for patient encounters while Gilley (1990) concurs, stating that the interactive nature of simulation motivates students and allows them to make mistakes without paying the price. In the clinical setting patients depend on medical practitioners that are competent and skilled to provide safe medical care to them, therefore it is essential that practical skills are practised and mastered before entering into the clinical setting especially for new nursing students that have not been exposed to the clinical setting.

Besides theoretical knowledge and skills, the student needs to relate his/her theory that has been learned to the skills that she/he puts into practice. This is to ensure that the nurse understands the importance of what she/he is doing, and that she/he performs the skill correctly. Treadwell and Grobler (2001) confirms this by stating that attitudes, knowledge and skills are interrelated and contribute to an enhanced process in learning.

2.5 Perceptions of clinical skills laboratories and learning

Skills laboratories are growing fast throughout the Nursing and Medical professions to enable students to acquire prerequisite knowledge before entering clinical placement. With the introduction of the skills laboratory comes the need for human resources as well as equipment and maintenance of the clinical skills laboratory. The clinical skills laboratory does, however, offer value to the respective place of learning. According to Lasater (2007), there are values that support learning in the simulation laboratory other than the psychomotor domain. He states that due to the fact that the variables in the clinical skills laboratory can be controlled, ethical concerns are minimised and learning can be maximised. He adds that experimentation and failure are allowed (which is an important aspect in growth and learning), self-evaluation is promoted, and through this, decision-making can be learned effectively. Keetsemang et al. (2007) expand on Treadwell and Groblers' ideas (2001) by stating that the clinical skills laboratory is used

to teach communication and interpersonal skills, psychomotor skills, to promote development of the collaborative skills required in nursing, as well as being able to help integrate theory and practice.

Treadwell and Grobler (2001) qualitative study on the interrelated learning process was conducted on students' experiences of acquiring practical skills in a clinical laboratory and the impact of these acquired skills on their clinical practice. The results demonstrate a positive effect when students progressed from the skills laboratory to clinical practice.

Packer (1994) states that, implementing a clinical laboratory provides the opportunity for professional development for faculty and preceptors; improves student learning and eliminates reality shock. This is essential, as the students feel safe in the environment that they learn in. The students will not cause harm to a real patient, and are able to make decisions about the care given to the patient without bearing the consequences. Medley and Claydell (2005) adds to Packer's viewpoint by mentioning that, besides the fact that there is no risk of harming the patient in a clinical skills laboratory, errors that are made can be corrected and discussed immediately; the situations created can be specific and unique to the patient, and teamwork and delegation can be simulated to improve the students' knowledge/learning. Doing all of the above allows the student to think about and perform tasks with the rest of his/her team thereby, according to

Medley and Claydell (2005), developing interactive critical thinking. Similarly, the students involved in a research project conducted by Ballie and Curzio (2009) displayed results that showed that they were more confident about their skills; while many of the students commented on how the experience had increased their confidence. In other words, the students believed that simulation increased their ability and confidence in their clinical placement.

However, Medley and Claydell (2005) states that a limitation to the skills laboratory is that some students find it difficult to make the transition from the learning laboratory to the real life patient setting. In addressing this, there have been huge advances in the development of real life simulators to provide the closest possible examples of real life experiences to students. Simulation, according to Schoening et al. (2006), will assist a faculty with regard to addressing an increasing student enrolment, faculty shortages and limited clinical sites.

Diamond (1979) states that simulation involves the flexible imitation of the process or outcomes for the purpose of clarifying or explaining the underlying mechanisms involved. This is the reason why simulation assists a student to be more comfortable when entering the clinical setting. Although stating that the clinical skills laboratory is very beneficial to the users, Lasaster (2007) and Good (2003) make a valid point that

simulation does have its limitations. They state that certain kinds of assessments, such as neurological observations are not possible to conduct, as there is no swelling or colour change that can be noted on the manikins. In saying that, the gap has been bridged by allocating clinical facilitators to the clinical areas to demonstrate the skills that require a 'real' patient to the students.

However, the lack of reality could lead to incomplete care as the focus is on physical rather than holistic care (Ogilvie et al., 2011). Ogilvie et al's. (2011) study was focused on students' perceptions that were exposed to the clinical skills laboratory prior to entering the clinical setting. Students felt that their exposure to the laboratory was to their advantage however because their physical skills were enhanced they needed to focus on communication skills with the patient once they returned to the clinical setting. It is with this knowledge that Ogilvie et al. (2011:58) states that, "the educator needs to be prepared; scenarios need to bridge the gap between theory and practice, and debriefing needs to take place in order to allow students insight into their own practice," so that simulation teaching will be effective.

2.6 Evaluations of clinical skills laboratories

Two articles were found which actually evaluated a clinical skills laboratory in Nursing. In these articles, the evaluation study was not conducted on all aspects of the clinical skills laboratory. For example, the study done by Keetsemang et al. (2007) evaluated the students' perception of the skills laboratory and the usage of the clinical skills laboratory and the equipment. The article below evaluated studies that were conducted on the clinical skills laboratories over a seven-year period.

Lynagh et al. (2007) took evaluation a step further by reviewing articles from 1998 to 2006 which related to the evaluation of a skills laboratory or a simulator. This was done to determine whether performance in medical skills laboratories is transferable to actual clinical performance and can be maintained over time. The outcome was that medical skills laboratories do lead to improvement in procedural skills.

2.7 Conclusion

The main conclusions from the literature review were that:

Many nursing colleges are moving towards providing a clinical skills laboratory for the purpose of bridging the gap between theory and practice. Also, having a clinical skills laboratory proves to have many advantages for both students and the academic staff namely: it boosts confidence levels of students before entering a clinical setting, it increasing the knowledge through integration of theory and practise in the clinical skills laboratory, it allows students to practise skills and be demonstrated too and encourages learning amongst peers. Demonstrations are conducted for students to observe, and they are given the chance to practise in the laboratory without the fear of actually harming a patient, while at the same time they gain confidence in themselves and experience skills prior to entering the clinical setting. Academic staff, on the other hand, is able to perform a skill or demonstrate it in a controlled setting, and are thus able to assist students on the spot without causing harm to a patient.

Students are expected to gain clinical experience in the hospital setting and hardly have time available to perform the stipulated practical requirements as they are busy with ward routines, therefore the clinical skills laboratory ensures that students are able to watch certain skills being performed and practise these skills before going into the clinical setting. Although the clinical skills laboratory is seen as a great advantage to a campus, there are limitations too like a barrier in communication skills with the students and the patients however by using high fidelity models that are costly can bridge this gap where the models actually communicate with the students.

In conclusion, the clinical skills laboratory serves as an important resource for a Nursing campus and for the students hence the running of the skills laboratory needs to be assessed to ascertain whether it benefits the students who use it. Evaluation of the clinical skills laboratory is done to garner ideas leading to recommendations to improve the laboratory so that it can have a bigger impact on the students who use it. It also ensures that the skills laboratory is running as it is intended to run. Evaluation also enables all deficits to be filtered to the managers.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Setting

This evaluation was conducted at the Private Nursing School in the eThekweni District, Durban, KwaZulu-Natal. The setting of the evaluation and the clinical skills laboratory is described in detail in section 1.2.1 in Chapter 1.

3.2 Research approach and Design

A research design refers to, “the overall plan for obtaining answers to the questions being studied” (Polit & Beck, 2004). This evaluation research design was based on a postpositivist research approach (Wahyuni, 2012). Postpositivist research is objective but interpreted in context, the research is value laden, the researcher is biased by world views and context and the research methodologies can include either quantitative or qualitative (Wahyuni, 2012).

In this study, an evaluation research design which included both quantitative and qualitative approaches was used. Hanson et al. (2005) stated that when both qualitative and quantitative designs are included in a study, researchers enrich their results in ways

that one form of data does not allow. This is especially relevant and important in evaluation studies. Polit and Beck (2004) add to this discussion by stating that an evaluative research design aims at finding out how well a specific program is running. The purpose of an Evaluation Research design is to answer practical questions, example, Should a new program be adopted or existing one discontinued? It is further broken down by these authors whom state that the “process evaluation” which is a type of evaluation research that is undertaken with the aim of improving a new or ongoing program. It is also used to describe the program carefully so that it can be used by others. More importantly it involves the collection of both qualitative and quantitative data.

The evaluation design consisted of four parallel steps which converged information about the quality of the clinical skills laboratory in a process evaluation.

- 1) Study 1: A quantitative descriptive survey design using a questionnaire to evaluate the first and second year student’s satisfaction with the learning that takes place in the clinical skills laboratory, the support and the quality of the equipment found in the clinical skills laboratory.
- 2) Study 2: Semi-structured interviews using open-ended questions to evaluate the clinical facilitators’ perceptions of the support in the laboratory and the availability and usage of the equipment.
- 3) Study 3: A quantitative audit using a check-list to rate the quality and availability of the equipment and utilisation of the laboratory.

- 4) Study 4: A quantitative audit using a spread sheet to record and calculate the number of students and occasions of use of the clinical skills laboratory.

3.3 Population and sample

Population refers to the aggregate of research subjects conforming to a set of specifications (Polit & Beck, 2004). The research population included four different research populations: all the participants that use the clinical skills laboratory (n=196), all clinical facilitators (n = 4), all the clinical skills laboratory equipment and all the clinical skills laboratory usage records.

Sample refers to a subset of a population (Polit & Beck, 2004). It more practical and less costly to collect data from a sample rather than an entire population. Details of the research sampling used is discussed below.

3.3.1 Study 1: Quantitative survey for students (population and sampling)

Quantitative research refers to the investigation of phenomena that lend themselves to precise measurement and quantification (Polit & Beck, 2004). Polit and Beck (2004) add that evidence is gathered according to a plan, using formal instruments to collect

needed information. The population used represents the users of the clinical skills laboratory and has enough power to measure phenomena. For this process evaluation, the population included all students who may use the clinical laboratory, namely Pupil Enrolled Nurse (PEN) nurses and Bridging nurses ($n = 84 + 112 = 196$).

For the purpose of this study, a purposive sample of all PEN 1 and PEN 2 students ($n = 112$) were selected to collect data from ($n = 112/196, 57\%$). The population for the descriptive quantitative survey sample therefore comprised all the PEN 1 students ($n=60$) who used the clinical skills laboratory and the PEN 2 students ($n=52$); a total of 112 students. These students who started their training in March-June 2011 were selected due to the fact that they made the most use of the clinical skills laboratory. This type of sampling is based on the researchers' decision in which the subjects that are selected purposively are judged to be typical of the population or particularly knowledgeable of the issues under study (Polit & Beck, 2004). Polit and Beck (2004) state that this type of sampling can be very advantageous and can be used in a needs assessment. It is with that intention that this type of sampling method was used.

Students that did not make use of the clinical skills laboratory throughout the year were not selected to participate in the research project, which included the third year nursing students, fourth year nursing students and post basic nursing students. There was no sample group due to the small number of students included in the research.

Participation was voluntary and not all students chose to participate in the research project.

The PEN 1 students (n=60) are students who are enrolled in their first year of a basic course to obtain a certificate. The basic nursing program runs over a two year period. Students are considered PEN 1 when they are in the first year of this program. They attend theory blocks and four practical blocks prior to entrance into the clinical areas. During the practical block the students are orientated to basic procedures, namely, social hand wash, therapeutic environment, bed-making, patient identification and safe handling of the patient. They are given time to practise these procedures and are assessed on these if there is adequate time, so that they can perform these tasks in the clinical area. This prepares the students for placement in their respective hospitals. These students are also taken to the surrounding hospitals for a day during their four week practical blocks, where they are orientated and supervised by the clinical facilitators. This gives the students a chance to view the actual setting of the hospital and relate it back to the clinical skills laboratory where demonstrations and assessments take place. It also gives the students a chance to ask questions and to participate in a feedback session to clarify all confusion.

The PEN 2 students (n=52) are students who are enrolled in their second year in basic nursing program that runs over a two year period to obtain a certificate. They attend

two theory blocks before they enter into the clinical area where tasks are demonstrated, namely, social hand wash, aseptic hand wash, administration of medication, admission of a patient and receiving of a theatre patient. The PEN 2 students are also given time to practise these tasks and are assessed on them if there is adequate time within the two weeks. Since the PEN 2 students had already gained experience in the clinical setting, more difficult skills are demonstrated to them so that they will be able to cope with what is expected of them at their level in training.

3.3.2 Study 2: Semi-Structured interviews with clinical facilitators (population and sampling)

Qualitative data refers to data from the investigation of phenomena, typically in an in-depth and holistic fashion through the collection of narrative material using a flexible research (Polit & Beck, 2004). The population is usually smaller and is purposively selected. A smaller number of participants are required for qualitative research which is subjective, meaning that it looks at human realities rather than concrete realities of subjects (Erlingsson & Brysiewicz, 2011).

According to Erlinsson and Brysiewics (2011) the participants for qualitative research are purposively sought who: have experience of the phenomena under investigation and who can answer the research question. The total population for the sub study was used which is all four clinical facilitators whom were employed by the Private Nursing School at the time to work in the clinical skills laboratory. They also had experience of working in the clinical skills laboratory and would be able answer the research question.

3.3.3 Study 3: A quantitative audit using a check-list to rate the quality and availability of the equipment (population and sampling)

All the pieces of equipment found in the clinical skills laboratory (n = 104) were included in the audit

3.3.4 Study 4: A quantitative audit using a spreadsheet to record the usage (population and sampling)

A six month period was purposively selected to evaluate the average usage of the clinical skills laboratory using records that were kept by the Private Nursing School. In

addition, only the two groups (PEN1 and PEN2) were purposively selected for this period to maintain congruency.

3.4 Data collection tools

3.4.1 Study 1: Quantitative survey questionnaire for students

According to Golafshani (2003), the quantitative researcher's methods involve the use of standardised measures so that the varying perspectives and experiences of people can be fitted into a limited number of predetermined response categories to which a number can be assigned. For this study a structured questionnaire was used to measure the students' perceptions with regards to the: satisfaction of learning that takes place in the clinical skills laboratory , the support and the quality of the equipment found in the clinical skills laboratory.

The quantitative questionnaire was developed by the researcher, based on the framework and the aims and objectives of the clinical skills laboratory and by identifying three criteria essential in a process evaluation: Inputs (resources), process (organisation) and outputs (learning). Literature was also reviewed on a similar study that was done by Keetsemang et al (2007) on satisfaction of the students of the clinical laboratory to

obtain questions to be used in the structured questionnaire. (Refer to Appendix 1 to view the Student Questionnaire used).

3.4.2 Study 2: A semi- structured interview with opened ended questions for the clinical facilitators

Semi-structured interviews was used to collect qualitative data from four clinical facilitators. Qualitative research refers to a naturalistic approach that seeks to collect qualitative data in a context-specific setting where there is no attempt by the researcher to manipulate the phenomena of interest (Golafshani, 2003). According to Golafshani (2003), the researcher is seen as the instrument when conducting qualitative research as compared to quantitative research where the credibility relies on the tool construction.

A semi-structure interview was conducted. Interviews refer to some form of verbal discourse where the participants provide the interviewer with information through verbal exchange (Law et al, 1998). An interview schedule with structured open ended questions was developed to guide the interview with the clinical facilitators. The semi-structured open-ended interview schedule was designed by the researcher, guided by the same framework, aims and objectives and Inputs (resources), process (organisation) and outputs (learning) for the clinical laboratory as for the quantitative questionnaires..

The clinical facilitators were asked structured questions in an interview session. The findings were recorded by an audio tape by the researcher. There were only four clinical facilitators that were employed by the Private Nursing School at that time and they were probed by the researcher to get as much information as possible. To ensure trustworthiness the researcher did not influence what was said by the participants as the researcher was not involved in the practical activities (in the clinical skills laboratory) (Refer to Appendix 2 to view the Interview for clinical facilitator schedule).

3.4.3 Study 3: A quantitative audit check-list for rating the equipment

A quantitative check-list was developed to audit and rate the availability and quality of each piece of equipment currently held in the clinical skills laboratory. The tool was developed by the researcher based on a similar tool used in the Private Nursing School and included all the equipment in the clinical skills laboratory. The check-list was constructed by taking the records from the stock control book and including each item in the check-list to be evaluated (Refer to Appendix 3 to view the Equipment and usage checklist used).

Two evaluators were used to rate the equipment. A briefing was given to the second evaluator with regards to specific criteria that must be used when evaluating the equipment. The second evaluator was given and explained the rating scale that was

used to rate the equipment with instruction that the equipment were to be rated as follows: 2 if the equipment is functioning or if it is in good condition, 1 if part of the equipment is functioning and 0 if the equipment is not functioning. The second evaluator was also verbally briefed on honesty and the confidentiality. The choice of participation by the second evaluator was also voluntary and was given the option to decline participation at any time.

3.4.4 Study 4: A quantitative spreadsheet to audit and calculate usage records

The usage of the skills laboratory data was collected by the researcher by recording the logs of usage of the clinical skills laboratory over a six month period in a quantitative spread sheet (Refer to Appendix 4 to view the Usage spreadsheet used).The records for the usage of the clinical skills laboratory is kept with at the Private Nursing School and can be accessed from the data base.

3.4.5 Validity and reliability of tools

Quantitative tools: Validity of the quantitative tools was tested for face and content validity. Validity refers to the degree to which the outcomes of the research can be attributed to the manipulated, independent variable rather than to uncontrolled

extraneous factors (Brink et al, 2012). Face validity refers to a tool measuring what it supposes measure (Brink, 2003). Face validity was evaluated by providing the questionnaire, check-list and usage record sheet to evaluation and clinical specialists to approve. A clinical research expert and the ethical committee were used to ensure face validity. Content validity refers to how well the instrument represents all the components of the variable to be measured (Brink, 2003). Content Validity was established by relating the tools to the evaluation framework for process evaluations (Table 2).

Reliability was established by doing a pilot study where the tools were given to fourth year students (basic program) to evaluate the tool. No changes were made as the criteria were met. These students were selected for the pilot study as they did not make use of the clinical skills laboratory throughout their academic year, but have sustained knowledge through their three years of prior training in both the clinical setting and the usage of the clinical skills laboratory. The third and fourth year nursing students did not necessarily complete their first and second year training at the Private Nursing School and therefore brought more insight to the pilot study by bringing outside experience to the questionnaire used. To ensure reliability in the checking of equipment, the equipment was examined and evaluated by both the researcher and a second colleague independent from one another. The second evaluator was also briefed.

Table 2: Table of content validity process for tool development

Objective	Tool	Model
To evaluate the first and second year basic students' satisfaction with the quality and availability of the equipment	Questionnaire for students - q7, q8 and q9	Satisfaction Quality of equipment
To evaluate the first and second year basic students' satisfaction with the support received when using the laboratory	Questionnaire for students -q3, q4, q5, q14, q15 and q16	Satisfaction Reach Program implemented
To evaluate the first and second year basic students' satisfaction with the clinical lab assisting their learning of clinical skills	Questionnaire for students - q6, q11, q12, q13, q17,q18, q19, q20, q21and q22	Satisfaction Reach Program implemented
To evaluate the support staff satisfaction with the quality and availability of clinical equipment	Interview – Clinical facilitators -q3, q4, q5	Satisfaction Quality of equipment
To evaluate the support staff satisfaction with the clinical laboratory assisting their learning of clinical skills	Interview – Clinical facilitators -q6, q7, q8, q9	Satisfaction Program implemented
To evaluate the equipment used in the clinical skills laboratory to gain competence and clinical skills in terms of: <ul style="list-style-type: none"> • Quality • Availability • Usage 	Check-list was used to rate the equipment and usage	Quality of equipment
To evaluate the usage of the clinical skills laboratory over a six month period.	Spreadsheet was used to capture the usage of clinical skills laboratory	Reach

Semi-structured open ended interview schedule: 'Trustworthiness' was maintained by the researcher which includes credibility, transferability, conformability and dependability (Polit & Beck, 2004). Polit and Beck (2004) refer to trustworthiness as evidence that is consistent and stable (dependability), the degree to which study results are derived from participants (confirmability), the extent that the research methods engenders confidence in the truth of the data (credibility) and the extent to which findings can be transferred to other settings or groups (transferability). All questions were asked to all four clinical facilitators to ensure consistency.

This research project adopted Guba's Model to maintain trustworthiness in the qualitative research. Guba's model of trustworthiness provides rigor to the research without sacrificing the relevance of the research. According to Krefting (1991) there are four criteria to Guba's model of trustworthiness which includes:

- Truth value: this establishes how confident the researcher is with the truth of the findings based on the research design. Accurate descriptions or interpretation of human experience that people would also share that experience would immediately recognize the descriptions. This was established by the researcher by actually doing the interview sessions and recoding the interview sessions by a tape recorder and writing down notes. The researcher was not part of the clinical facilitator division and did not influence the results that were collected.

- **Applicability:** it is the degree to which the findings can be applied to other contexts and settings. The researcher ensured that enough information was gathered to allow comparison to other studies.
- **Consistency:** This refers to the findings, as to whether they would be consistent if the inquiry was repeated with the same subjects. The whole experience of the subjects whether it is normal or not needs to be included in the results. The researcher conducted a pilot study to evaluate the tool and get feedback from the participants. This was also done to ensure consistency.
- **Neutrality:** This refers to the freedom from bias in the research procedure and results. Neutrality is achieved when truth value and applicability is achieved.

The researcher ensured that trustworthiness was maintained throughout the research procedure by following the above criteria.

3.5 Data collection procedure [CDC Step 4 (Gather credible evidence)]

3.5.1 Study 1: Quantitative survey of students

The students were given the questionnaires in a classroom environment and the researcher collected the questionnaires on completion. The researcher was not involved in the practical activities that the students engaged in, in the clinical skills laboratory and

thus did not influence the students' completion of the questionnaire. Refer to Appendix 1 to view the questionnaire for students.

3.5.2 Study 2: Semi-structured interviews for clinical facilitation staff

The clinical facilitators were placed in a lecture classroom in the Private Nursing School (KZN) and were asked a series of questions by the researcher using the interview schedule. The interviews were done individually by the researcher. The interviews were recorded using a tape-recorder to ensure that all information was gathered by the researcher. Refer to Appendix 2 to view the interview schedule that was used to collect the data from the clinical facilitators.

3.5.3 Study 3: Auditing equipment

The equipment was examined and evaluated by the researcher and a second colleague from the Private Nursing School. Refer to Appendix 3 to view the equipment check-list tool. The second colleague was briefed on how to evaluate the equipment prior to the evaluation by the researcher.

3.5.4 Study 4: Calculating clinical skills laboratory usage

The usage of the clinical skills laboratory data was collected by the researcher by viewing the record of usage of the skills laboratory over a six month period. Usage occasions were calculated by multiplying the number of students per contact day. Refer to Appendix 4 to view the tool used to collect the data for the clinical skills laboratory usage.

3.6 Data analysis plan [CDC Step 5 (Justify conclusions)]

The data analysis plan included four parts, namely: Analysis of student questionnaires, Analysis of the clinical facilitator structured interviews, Analysis of the equipment check-lists, and calculation of clinical skills laboratory usage.

3.6.1 Study 1: Analysis of student questionnaires

The data was collected on paper and entered into the SPSS (Statistical Package for Social Sciences) Version 19, where the data were checked, cleaned and reported. A statistician was consulted for the data analysis. As a descriptive simple survey method was used to gather the data, the data was analysed using simple descriptive statistics.

Demographics frequencies and measures of central tendencies for age, gender, years of experience and qualification were calculated and expressed as frequencies, means or illustrated as bar graphs. An ordinal scale was used in the data collection process where ratings were done on a satisfaction scale and Satisfaction variables were grouped and categorised into two categories – satisfied and not satisfied and frequencies were reported. Rating scale data were analysed as frequencies and percentages and illustrated as bar graphs once analysed. For the information collected by open ended comments , data were collated as ‘themes.’ Chi-square tests and Mann-Whitney statistical tests were conducted to compare satisfaction and beliefs between first and second year students.

3.6.2 Study 2: Semi- structured interviews using open ended questions

Semi-structured interviews were used to collect data from the clinical facilitators and the resultant qualitative data was recorded and transcribed. According to Erlingsson and Brysiewicz (2011) there are a few steps to be taken when analyzing qualitative data namely: recruiting persons to the study who can answer the research question, recording the interviews with these persons and transcribing the interview to texts. In keeping with this research that has been done all the above steps were followed in this research project. Once the data had been collected by the researcher it was analysed manually word for word and searched for themes. Manual analysis involves a thorough

review of all recorded information that the researcher has obtained during the course of data collection (Brink, 2003). Common ideas and responses were grouped together and labelled as 'themes' and reported using quotes.

6.6.3 Study 3: Equipment check-list to evaluate the quality of the equipment

Assessment of the equipment were made, and then evaluation of the equipment was done by means of a check-list and an ordinal rating scale of functionality. The ordinal data rating scale was treated as a numerical scale and a total score was derived. In addition, percentages obtained from the data gathered, were tabulated.

3.6.4 Study 4: Calculation of clinical skills laboratory usage

Data was captured in a spread sheet that reflected the number of students who used the clinical skills laboratory on a monthly basis and the number of occasions of use. Data were collected over a period of six months. In addition, the equipment used over this period was reflected on the spread sheet. The data gathered is illustrated in a bar graph.

3.7 Ethics

Permission to conduct the study was obtained from those in charge of the institutions as well as ethical clearance from the university. The following ethical principles (based on the work of Emanuel et al (2004) were applied in the study:

Obtaining the informed consent: Informed consent was obtained from the participants, including student nurses and clinical facilitators. Polit and Beck (2004) state that informed consent means that the participants have adequate information regarding the research and are capable of comprehending the information. The participants were given a full description of the research project and the role that they would play in it (Appendix 6).

Capacity: Capacity refers to the fact that the research participants must be legally and mentally competent to participate in the proposed research (Emanuel et al., 2004). The National Health Act, No. 61 OF 2003 (<http://www.acts.co.za/national-health-act-2003/> , 2012) stipulates the age requirements for the research participants. For this study, all the participants fulfilled the age requirements and were mentally capable of making informed decisions.

Disclosure: The researcher should disclose to the research participants all relevant information about the proposed study, including its purpose, potential risks, benefits and social implications. If this is impossible, the researcher must seek guidance from the ethical committee. The participants in this study were advised that the main significance of this study was to add to the body of knowledge about the use of the clinical skills laboratory and that there were no risks involved in partaking in this research study. The participants were given an informed consent document with all the details of the project included as well as the researchers contact details (Appendix 6).

Understanding: The researchers should ensure that the participants understand the disclosure. In this study, English was used as the medium of communication. The language used in the consent form was simple and easy for the participants to understand.

Voluntary nature: The consent was explained verbally to the participants. Willing participants were asked to sign the consent form after explanation of the aims of the study, how the study was to be conducted, and lastly, how the results would be used. The participants were made aware that each had the right to choose whether to participate or not. This choice did not end once the consent was signed. The participants were informed that they had the right to withdraw from the study at any stage before their questionnaires were put in the collection box, without explanation, and with no penalty. The participants were informed that withdrawal from the study would not affect their relationship with the researcher or their lecturers or the college. The

participants were assured that there were no direct benefits to be obtained from participation in the study (Appendix 6).

Security: Data security was maintained by keeping the files in a locked cupboard and once the information that was collected had been used, it will shredded and discarded after five years. The tapes were destroyed once the information had been collected.

Confidentiality: The researcher ensured confidentiality and privacy of all data that was obtained throughout the research project. Furthermore, the researcher in this study did not link a specific response or behaviour to a particular research participant.

Anonymity: All participants in this study remained anonymous; no names were used.

Honesty: The researcher was totally honest with the students and clinical facilitators in this study (Appendix 6 and 7).

Researcher: At the time of the study the researcher was employed by the Private Nursing School as a lecturer for the basic program. The researcher was not involved in the practical sessions with the students or with the clinical facilitators; therefore the researcher did not have an influence on the results that were captured. (Refer to Appendix 5 to view ethical clearance).

CHAPTER 4: DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This evaluation of the clinical skills laboratory is a process evaluation that had four small sub-studies, namely: Student evaluation (where a total of 97 PEN 1 and PEN 2 students formed the research group); clinical facilitator evaluation interviews (which included the four clinical facilitators employed by the Private Nursing School); equipment checks (evaluation of the condition and quantity of the 104 pieces of equipment found in the clinical skills laboratory) and clinical skills laboratory usage for a six month period. The findings of the evaluation are reported accordingly.

4.2 Measurement of students satisfaction

Ninety-seven students (48 PEN 1 and 49 PEN 2) of the total sample of 112 students (60 PEN 1 and 52 PEN 2 students) completed the questionnaire; a response of 86.6% (49.5% and 50.5% respectively for PEN 1 and PEN 2). The reliability of the tool was checked using Chronbach's Alpha, calculating a reasonable alpha of 0.6 (Tavakol et al., 2011).

Of the 97 PEN 1 and PEN 2 students, 90 were females (92.8%) and 7 were males (7.2%). The students' years of nursing experience ranged from no experience to 20 years' experience, with the average number of years' experience being 2.1 years (± 2.6 , median 1). The ages of the students ranged from 18 to 48 years old (mean 24.7 ± 6.3 , median 22). Of the 12 (12.4%) who had been employed in a health care facility prior to training, 10 students (10.3%) had prior nursing experience. The remaining two (2.1%) students in that group had been involved in administrative functions in the clinical area. Most of the students, (85, 87.6%) did not have prior nursing or clinical experience.

Table 3: Comparison of demographics of student groups

Demographic data	Total N=97 (100%)	PEN 1 N=48 (49.5%)	PEN 2 N=49 (50.5%)	Statistic	P Value
Gender Male Female	7 (7.2%) 90 (92.8%)	4 (8.3%) 44 (91.7%)	3 (6.1%) 46 (93.9%)	$\chi^2=.18$	P=.715
Age	Mean 24.7 ± 6.3	Mean 23.5 ± 5.4	Mean 26.0 ± 6.9	$U=2.2$	P=.029*
Prior experience in nursing to training (Years)	Mean 2.1 ± 2.6	Mean 0.86 ± 0.8	Mean 3.3 ± 3.2	$U=7.2$	P<.001*

Differences between groups were established using Fisher Exact Tests for Gender and Independent Samples Mann-Whitney U Tests for age, experience and employment years. * Significance was set at $p<.05$.

There were no significant differences between the two groups in terms of gender and current employment, though there were significant differences in age, with the PEN 2 group being, on average, 2.5 years older than the PEN 1 group ($p=.029$) and their years

of experience (PEN 2: 3.3 years compared to PEN 1 < 1 year ($p < .001$) (Table 3)). Some students opt to work in the clinical setting after they have completed their first year of study and will only apply for their second year when they are ready to do so. Unlike the first year students whom are generally younger when they start their course, hence the difference in the age.

Satisfaction was measured using three constructs: (i) perception of availability and quality of resources; (ii) perception of learning process or activities and (iii) perceptions whether learning has taken place.

4.2.1 Students' perceptions of the availability and quality of resources in the laboratory

Data on perceptions of and satisfaction with resources in the laboratory were collected using questions on human resources (clinical facilitators), equipment and the timetable for practice.

Clinical Facilitators: Over all, the use of the clinical facilitators in the laboratory was appreciated, with nearly two-thirds of the students (58, 59.8%) agreeing that organising the practical sessions so that the clinical facilitators were present was beneficial to the

students. There was a significant difference between the PEN 1 and the PEN 2 group with 37.9% of the PEN 1s compared to 62.1% of the PEN 2 students agreeing that clinical facilitator supervision was beneficial ($p=.006$). The students also felt that they gained knowledge from the demonstrations performed by facilitators, with a total of 94 (96.9%) Nursing students agreeing that knowledge was gained. This was similar in both groups with no significant difference between the PEN 1 (97.6%) and PEN 2 (95.9%) groups. In addition, the facilitators encouraged critical thinking and made students question what they were doing in the clinical skills laboratory with 65 out of 97 (67%) students agreeing with these statements. Again the experience was similar for both groups with no significant difference between the PEN 1 and PEN 2 group (68.8% for PEN 1 compared to 65.3% for PEN 2 students) (Table 4).

Table 4: Perceptions of resources in laboratory

Perceptions of the students with regards to the following in the clinical laboratory:	Total n=97	PEN 1 Students n=48	PEN 2 Students n=49	Statistics	P Value
Clinical Facilitators					
Practice sessions that were supervised by clinical facilitators were beneficial	58 (59.8%)	22 (37.9%)	36 (62.1%)	$\chi^2=7.7$	$p=.006^*$
Knowledge was gained from the demonstrations by facilitators	94 (96.9%)	47 (97.9%)	47 (95.9%)	$\chi^2=0.3$	$p=.508$
The facilitator made me question what I do in the laboratory	65 (67%)	33 (68.8%)	32 (65.3%)	$\chi^2=0.1$	$p=.830$
Equipment					
There was sufficient equipment for use	26 (26.8%)	15 (31.3%)	11 (22.4%)	$\chi^2=1.0$	$p=.328$

Perceptions of the students with regards to the following in the clinical laboratory:	Total n=97	PEN 1 Students n=48	PEN 2 Students n=49	Statistics	P Value
Quality of equipment: Equipment was in working order	42 (43.3%)	28 (58.3%)	14 (28.6%)	$\chi^2=8.7$	p=.003*
Knowledge and use of equipment increased	80 (82.5%)	41 (85.4%)	39 (79.6%)	$\chi^2=0.6$	P=.451
Organisation of practice time and content					
Enough time allocated for the practice period during the FPA periods	84 (86.6%)	43 (89.6%)	41 (83.7%)	$\chi^2=0.7$	p=.393
Can perform skill after practice time in laboratory	85 (87.6%)	44 (91.7%)	41 (83.7%)	$\chi^2=1.5$	p=.232

Differences between groups were established using the Pearson Chi-square Test. * Significance was set at p<.05.

Two students stated that there should be an increase in the number of clinical facilitators so that all students could practise at the same time. One comment stated that there should always be supervision by the clinical facilitators and that clinical facilitators need to be more patient.

Equipment: The PEN 1 and PEN 2 students reported that they made use of the equipment found in the clinical skills laboratory during the demonstration and practice sessions. However, less than one third of the participants (26 students, 26.8%) felt that there was sufficient equipment available in the clinical skills laboratory. This was similar for both the PEN 1 and PEN 2 groups, with 15 PEN 1 students (31.3%) and 11 PEN 2 students (22.4%) indicating this. The participants generally felt that the equipment found in the clinical skills laboratory was not in good working order; with only 42 nursing

students (43.3%) stating that the equipment found in the clinical skills laboratory was in working order. The two groups felt significantly differently ($p=.003$), with 58.3% of the 48 PEN 1 students agreeing to this statement as compared to 28.6% of the 49 PEN 2 students. The majority of the nursing students felt that their knowledge and use of the equipment increased after using the clinical skills laboratory. Of the 80 nursing students (82.5%) there were 41 (85.4%) PEN 1 students and 39 (79.6%) PEN 2 students who agreed that their knowledge and use of the equipment increased after using the clinical skills laboratory (Table 4).

A common theme identified by 33 (34.0%) of the 97 students was that the amount of equipment found in the clinical skills laboratory needs to be increased for the following reasons: To decrease the time spent waiting to practise because some equipment is broken and old. This would mean that more assessments could get done at the same time and would also help the lab to resemble the hospital setting so that it is more realistic.

Timetable: Considering the time allocated for use and practise in the laboratory to the students, 84 (86.6%) of the 97 participants felt that there was sufficient time available to practise in the FPA block. This was similar for both groups with 43 (89.6%) PEN 1 and 41 (83.7%) PEN 2 students agreeing with this statement. After practising in the skills laboratory, the majority of the participants felt that they could perform a skill, with 85

(87.6%) of students agreeing with this with no significant differences between the PEN 1 (44 students, 91.7%) and PEN 2 (41 students, 83.7%) students (Table 4).

4.2.2 The students' overall perceptions of the organisation of learning in the laboratory (processes)

Perceptions of the organisation of the learning processes in the Laboratory were measured using questions on two concepts: Preparation for practical block and processes to facilitate learning in the laboratory, namely the use of demonstrations, self-directed practice, supervised practice, peer practice and involvement in simulation.

Table 5: Perceptions of the organisation of the laboratory experience

Perceptions of the students with regards to the following:	Total N=97	PEN 1 Students n=48	PEN 2 Students n=49	Statistics	P Value
Preparation for the block					
Understanding of theory and practice	66 (68%)	34 (70.8%)	32 (65.3%)	$\chi^2=0.3$	P=.559
Understanding of which clinical skills are required	77 (79.4%)	43 (89.6%)	34 (69.4%)	$\chi^2=6.0$	P=.014*
Understanding of how clinical skills were performed	78 (80.4%)	43 (89.6%)	35 (71.4%)	$\chi^2=5.1$	P=.024*
Anxiety about performing new skills prior to clinical block	69 (71.1%)	37 (77.1%)	32 (65.3%)	$\chi^2=1.6$	P=.201

Perceptions of the students with regards to the following:	Total N=97	PEN 1 Students n=48	PEN 2 Students n=49	Statistics	P Value
Processes to facilitate learning					
Knowledge was gained from the demonstrations by facilitators	94 (96.9%)	47 (97.9%)	47 (95.9%)	$\chi^2=0.3$	P=.508
The facilitator made me question what I do in the laboratory	65 (67%)	33 (68.8%)	32 (65.3%)	$\chi^2=0.1$	P=.830
Unsupervised practice was beneficial	39 (40.2%)	26 (54.2%)	13 (26.5%)	$\chi^2=7.7$	P=.006*
Learning from peers during the practice sessions	88 (90.7%)	45 (93.8%)	43 (87.8%)	$\chi^2=1.1$	P=.487
Involvement in simulation makes me think critically	93 (95.9%)	47 (97.9%)	46 (93.9%)	$\chi^2=1.0$	P=.320

Differences between groups were established using the Pearson Chi-square Test. * Significance was set at $p < .05$.

Preparation for practical block: Students are required to link theory to practise in order to understand the demonstration. A total of 66 participants (68%) felt that they had an understanding of theory and practice and this was similar for both the PEN 1 (34 students, 70.8%) and PEN 2 (32 students, 65.3%). Understanding which clinical skills were required in preparation for the practical block was fairly well agreed upon by 77 of the participants (79.4%). There were significant differences between the two groups with 43 (89.6%) PEN 1 and 34 (69.4%) PEN 2 students reporting that they understood which clinical skills were expected of them ($p=.014$). Seventy-eight out of the 97 students (80.4%) felt that they had an idea of how clinical skills were performed, again showing a significant difference between the PEN 1 (43 students, 89.6%) and PEN 2 (35

students, 71.4%) group ($p=.024$). Over two-thirds of the group (69 students, 71.1%) stated that they felt anxious about performing new skills for the first time (Table 5).

Learning processes for practical block: Almost all of the students agreed that knowledge was gained from demonstrations by the facilitators. Of the 94 (96.9%) students who agreed that learning did take place in the clinical skills laboratory, the split was 47 (97.9%) PEN 1 students and 47 (95.9%) PEN 2 students. Two-thirds of the students (65, 67%) agreed that the facilitator made them question what they do thereby enforcing critical thinking and this finding was similar for both groups (33, 68.8% PEN 1 students and 32, 65.3% PEN 2 students). However, self-directed practising was questioned with only 39 (40.2%) participants agreeing that unsupervised practice was beneficial to them. There was even less agreement in the PEN 2 student group where only 13 (26.5%) agreed with this compared to 26 PEN 1 (54.2%, $p=.006$) students. Learning from peers was perceived positively, with the majority (88, 90.7%) of the students agreeing that it does take place in the laboratory. This was similar for both groups with 45 (93.8%) PEN 1 and 43 (87.8%) PEN 2 students agreeing. The students (both groups) felt strongly that their involvement in simulation made them think critically, with 93 (95.9%) out of 97 participants agreeing with this statement (Table 5).

Thirteen (13.4%) students stated that the space in the clinical skills laboratory needs to be increased so that all students can see the demonstrations. Three students also suggested having smaller groups present at demonstrations, so that everyone can view

the simulation that is being done. Four students requested more practical practice time in the clinical skills laboratory.

4.2.3 Students' perceptions of whether learning takes place in the clinical skills laboratory

Students' perceptions of their learning of practical skills were measured using statements on: knowledge, skills and critical thinking or application.

Knowledge: Almost all of the students (94 out of 97 students, 96.9%) felt strongly that knowledge was gained from demonstrations done in the clinical skills laboratory, and 90 (92.8%) of the students agreed that they had increased confidence in answering questions about patients from the knowledge that was gained in this manner (Table 6).

Skills: The students responded positively to being able to perform a skill after practise of it in the clinical skills laboratory, with 85 (87.6%) students agreeing with this. This was similar in both groups with 44 (91.7%) PEN 1 and 43 (87.8%) PEN 2 students agreeing with this statement. The students felt very strongly about their confidence levels increasing to perform new skills and to tackle new skills after the demonstration was done, and practice took place in the clinical skills laboratory. Ninety-two (94.8%) students felt that their confidence had increased in performing skills after they had

attended a practical block, with 94 (96.9%) of the students indicating that they had the confidence to tackle new skills. There was no significance noted between the response to these two questions between the PEN 1 and PEN 2 groups (Table 6).

Critical thinking and application: Students were in agreement that they developed increased confidence in the application of theory to practice as indicated by 47 (97.9%) PEN 1 and 45 (91.8%) PEN 2 students agreeing that they had developed increased confidence in the application of theory to practice, 92 (94.8%) students in total). Almost all of the students also felt that they displayed increased confidence in developing clinical skills in practice and the data showed that, of the total of 94 (97.9%) students, 48 (100%) PEN 1 and 46 (93.9%) PEN 2 students agreed with this statement. The majority of the students (95, 97.9%) also felt that they showed increased confidence to perform clinical tasks in clinical areas with 48 (100%) PEN 1 and 47 (95.9%) PEN 2 students agreeing with this statement (Table 6).

Table 6: Perceptions of learning in the clinical skills laboratory

Perceptions of the students with regards to the following:	Total N=97	PEN 1 Students n=48	PEN 2 Students n=49	Statistics	P Value
Knowledge					
Knowledge was gained from the demonstrations in the clinical laboratory	94 (96.9%)	47 (97.9%)	47 (95.9%)	$\chi^2=0.3$	P=.999
Increased confidence in answering questions about patients from knowledge	90 (92.8%)	46 (98.8%)	44 (89.8%)	$\chi^2=1.3$	P=.436

Perceptions of the students with regards to the following:	Total N=97	PEN 1 Students n=48	PEN 2 Students n=49	Statistics	P Value
gained					
Skills					
Able to perform a skill after practise in the clinical skills laboratory	85 (87.6%)	44 (91.7%)	43 (87.8%)	$\chi^2=1.4$	P=.356
Increased confidence in performing skills	92 (94.8%)	47 (97.9%)	45 (91.8%)	$\chi^2=1.8$	P=.176
Increased confidence to tackle new skills	94 (96.9%)	46 (98.8%)	48 (98%)	$\chi^2=0.4$	P=.545
Critical thinking and application					
Increased confidence in application of theory in clinical field	92 (94.8%)	47 (97.9%)	45 (91.8%)	$\chi^2=1.8$	P=.176
Increased confidence in developing clinical skills in practice	94 (96.9%)	48 (100%)	46 (93.9%)	$\chi^2=3.0$	P=.082
Increased confidence to perform clinical task in clinical area	95 (97.9%)	48 (100%)	47 (95.9%)	$\chi^2=2.0$	P=.495

Differences between groups were established using Fisher Exact Tests. * Significance was set at $p < .05$.

4.3 Clinical facilitators' evaluations

The four clinical facilitators were interviewed separately in a classroom by the researcher. The same semi-structured open-ended questions were directed to all four clinical facilitators. A tape-recording was made of each session to ensure that all information was collected by the researcher.

The population included four female clinical facilitators that were employed at the Private Nursing School. Their ages were: 33, 40, 42 to 51 years old. Their experience ranged from working as Registered Nurses from 4 years to 28 years. One staff member was working towards her degree in education and one clinical facilitator has her education qualification. One clinical facilitator had two years of prior clinical facilitation experience and the remaining three facilitators had no experience.

The following questions were asked of the four clinical facilitators:

1. Explain your role and the aim of the clinical skills laboratory.
2. Explain the role of the clinical facilitator.
3. Describe the organisation and planning for each clinical session.
4. Discuss the equipment available in the clinical skills laboratory with regard to: The amount of stock on hand in the clinical lab; all necessary equipment available to facilitate learning, and the functioning of the equipment.

4.3.1 Explain the role and aim of the clinical skills laboratory?

All four clinical facilitators stated that the main usage of the clinical skills laboratory was as follows: A venue for clinical demonstrations, a place where formal lectures were conducted and students could view the models in the clinical skills laboratory, and for role-plays. From time to time videos with regard to clinical skills are watched in the

laboratory and it also serves as a place where students can practise their skills.

Comments included:

“The main purpose of the lab is to transfer knowledge of how to perform clinical skills according to the stipulated policies.”

A clinical facilitator also shared that, *“The clinical skills laboratory’s main aim is provide students with the knowledge and skill to ensure that they can perform these tasks in the hospitals.”*

“The main aim of the laboratory is to allow students to practise in the skills laboratory without the fear of harming a real live patient and making sure they are competent in skills before entering the hospital.”

4.3.2 Explain the role of the clinical facilitator

All four clinical facilitators stated that they thought that the role of the clinical facilitators was to supervise and facilitate practical activities.

“The role of the clinical facilitator is to facilitate students in the clinical skills laboratory and in the hospitals while they are performing skills.”

It was also stated that the role of the clinical facilitator, “... is to assess students and render them either competent or incompetent. The role of a clinical facilitator is to monitor the students’ progress with regard to clinical competency and offer remediation where necessary.”

One clinical facilitator mentioned that supervising students encourages them to be more active and therefore they should experience periods of supervision when practising. It was also stated that a clinical facilitator does not have to facilitate a student every time s/he is in the clinical skills laboratory, as the student also needs to be allowed time for independent practice.

4.3.3 Explain the organisation and planning for each clinical session

Lessons plans are seen as essential tools when it comes to demonstrations and all four clinical facilitators agreed that this is a good systematic way to plan for a demonstration. Lesson plans should be developed prior to all demonstrations and lectures in the clinical skills laboratory in order to prepare for the demonstration or the lecture as can be seen from the comment below:

“Lesson plans are done prior to the demonstration, role play or lecture to ensure the readiness of the facilitator.”

Lesson plans are expected to be drawn up by the clinical facilitators prior to class as part of their job description. This also ensures that the equipment is working and available for usage as well as readiness of the clinical facilitator for the theory to be taught. All four clinical facilitators adopted this method to prepare themselves for a clinical session.

4.3.4 Discuss the equipment available in the clinical skills laboratory

A discussion was conducted on the amount of stock on hand in the clinical lab i.t.o all necessary equipment available to facilitate learning, and the functioning of the equipment. All four clinical facilitators stated that there was adequate stock in good condition that could be used for some of the demonstrations and practice sessions for the students. Over all, there was not enough stock in the clinical skills laboratory that was needed to demonstrate all skills found in the students’ work books and all of the equipment available in the skills laboratory was not in good working order.

“Parts of the dolls are broken and the beds are old and unable to function as expected.”

Another clinical facilitator stated that, *“There is no updated or modern equipment which makes it difficult to simulate a hospital setting that has all this equipment.”*

The facilitators proceeded to state that not all procedures can be simulated in the clinical skills laboratory due to there being insufficient equipment; the equipment not being in good working order and because some material has to be re-used which is not in accordance with protocol.

‘Certain demonstrations are done using wrong models and therefore there is a need for the correct equipment as this can lead to confusion.’

And another clinical facilitator stated that, *“There is too much improvising because there is a shortage of equipment.”*

4.3.5 Recommendations from Clinical Facilitators

Once the data was collected, themes were grouped together to find emerging suggestions to increase the learning in the clinical skills laboratory. The suggestions made by the clinical facilitators were that:

- I. Students who attend the practical blocks are expecting to see demonstrations that they will be able to perform in the clinical setting; therefore there is a need to improve the simulation experience for the students so that they can gain the much-needed practical and theoretical knowledge required for their stipulated course. One of the suggestions is to acquire more updated equipment in the clinical skills laboratory so that the students can experience the simulation of a hospital setting. Without this equipment it becomes difficult to explain the procedures to the students, let alone demonstrate them.

- II. Another important piece of equipment needed is updated videos of demonstrations that use the latest equipment so that the students can see how the equipment functions and the benefit to the patient. A video would also allow the students to re-watch it and practise with it. This allows slow-paced students the time to grasp the concept and work within their own time limits.

- III. Having smaller numbers of students per demonstration. The clinical skills laboratory is divided into separate work stations that can accommodate a small number of students. The reason for this is because the students stand around the bed and need to see the actual demonstration being performed. Therefore, having a smaller number of students per demonstration group would allow the students to view the simulation and ask questions within the allotted time. It would also give the clinical facilitator more time to explain the procedures to

students who are struggling to understand the concept if there was a smaller group.

- IV. Equipment for some of the procedures is available in the stock room, but some of the equipment is semi-functional, while some is not functional at all and therefore cannot be used. The clinical facilitators thus suggest buying new equipment to replace the broken stock or repairing the non-functioning and semi-functioning equipment. By so doing, demonstrations and practice sessions will become more effective and realistic as the equipment and models will function as they are expected to.

- V. The clinical skills laboratory is able to accommodate one group of students at a time; however, there are times where there are over 100 students (2 groups) in a practical block at a time, which creates noise and a cramped situation to work in. The suggestion made by the clinical facilitators was to increase the space in the clinical skills laboratory to accommodate all students who are present in the block at any time.

4.3.6 Summary of findings

The following is a summary of qualitative interview themes:

- The main aim of the clinical skills laboratory was to provide a place where demonstrations could take place, lectures could be done, role plays done by students and learning how to perform a clinical skill can take place
- The main aim of the clinical facilitator was to assess students and supervise students in both the clinical setting and the clinical skills laboratory.
- All the clinical facilitators make use of lesson plans to ensure readiness for teaching.
- There is sufficient stock of equipment found in the clinical skills laboratory and majority of the equipment was in good working order.
- There was a need for updated stock so that the demonstrations can be more life like.

4.4 Evaluation of equipment

The two check-lists were completed by the researcher and another member of staff from the Private Nursing School. There were minimal differences noted between both check-lists. A manual evaluation of the check-lists was compared by the researcher and there was 1% difference between the evaluators' marks allocated. There was only 1 out of the 104 items to which the evaluators allocated a different mark according to the condition of the equipment.

Table 7: Rating of equipment found in clinical skills laboratory

Rating of equipment	Total n= 104
Functioning	86 (82.7%)
Semi-functioning	16 (15.4%)
Not functioning	2 (1.9%)

A total of 104 items of equipment was found in the clinical skills laboratory. Of the 104 pieces of equipment, 86 (82.7%) items were in good working condition, 16 (15.4%) were semi-functioning and 2 items were not functioning (Table 7). The details of the equipment items can be seen in Table 8.

Table 8: Equipment Ratings

Equipment	Is the equipment functioning	Is the equipment in good condition	Comments
Mannequin (2)	1 Fully functioning & 1 Partially functioning	Some part of it	The limbs were not intact and the mannequin was falling apart.
Adult Resus doll (2)	Fully functioning	Yes	
Infant Resus doll (1)	Fully functioning	Yes	
Kidney model	Fully functioning	Yes	

Equipment	Is the equipment functioning	Is the equipment in good condition	Comments
Heart model	Fully functioning	Yes	
Vascular hand	Partially functioning	Some part of it	The veins were damaged but the hand was still in use.
Brain	Partially functioning	Some part of it	Missing pieces but was still semi-functional.
Spinal cord (3)	Fully functioning	Yes	
Trachea	Partially functioning	Some part of it	
Coccyx	Partially functioning	Some part of it	
Scapula	Fully functioning	Yes	
Pelvis	Fully functioning	Yes	
Stoma wound	Fully functioning	Yes	
Abdominal wound (3)	Fully functioning	Yes	
Sloughy wound (2)	Fully functioning	Yes	
Ulcer foot	Fully functioning	Yes	
Skeleton	Fully functioning	Fair condition	The skeleton had broken bones.
Male genitalia (2)	Fully functioning	Yes	
Placenta	Fully functioning	Yes	
Head section model	Fully functioning	Yes	
Pregnant women model	Fully functioning	Some part of it	
Thoracic cavity	Fully functioning	Yes	
Dynacast model (4)	Fully functioning	Yes	

Equipment	Is the equipment functioning	Is the equipment in good condition	Comments
Bed (6)	Partially functioning	Some part of it	Of the six beds that were present in the clinical skills laboratory, bed brakes on two beds did not work, the wheels of one bed were broken, and the bed lever in one was not functioning.
Partition (6)	Fully functioning	Yes	
Large table	Fully functioning	Yes	
Desk (3)	Fully functioning	Yes	
Chairs x 7	Fully functioning	Yes	
Bedside chairs x 6	Fully functioning	Yes	
Wooden trolley (3)	Partially functioning	Some part of it	The wheels of the one wooden trolley were broken and the other trolley had a broken tray. The third wooden trolley had a broken door.
Dressing trolley	Fully functioning	Yes	
Medicine cupboard	Partially functioning	Some part of it	Door of the cupboard was broken.
Drug cupboard	Fully functioning	Yes	
Bins x 2	Fully functioning	Yes	
Drip stand	Partially functioning	Some part of it	Drip-stand cannot be moved up and down as the stand

Equipment	Is the equipment functioning	Is the equipment in good condition	Comments
			was broken.
Television	Fully functioning	Yes	
Paper towel dispenser (2)	Not functioning	No	Not bolted o to the wall and the screws present on the dispenser were broken.
Storage cupboard	Fully functioning	Yes	
Trauma board	Fully functioning	Yes	
Oxygen meter flow	Fully functioning	Yes	
Oxygen cylinder	Fully functioning	Yes	
Oxygen gauge	Fully functioning	Yes	
Sharps container	Fully functioning	Yes	
Bed pan (5)	Fully functioning	Yes	
Urinal (5)	Fully functioning	Yes	
Steel jug (1)	Fully functioning	Yes	
Steel jug (2)	Fully functioning	Yes	
Large dish basin (5)	Fully functioning	Yes	
Small basin (7)	Fully functioning	Yes	
Receiver (3)	Fully functioning	Yes	
Measuring jug (3)	Fully functioning	Yes	
Gloves	Partially functioning	Some part of it	The gloves had expired and had to be re-used.
Haemolances	Fully functioning	Yes	
Dressing packs	Fully functioning	Yes	

Equipment	Is the equipment functioning	Is the equipment in good condition	Comments
Urine sticks	Fully functioning	Some part of it	Urine sticks had expired.
Thermometers	Fully functioning	Some part of it	Some of the writing on the actual thermometers was no longer clear.
Baumanometer	Fully functioning	Some part of it	The baumanometer pump was not pumping effectively.

4.4.1 Equipment functioning

The only item that was not functioning was the paper dispenser. Semi-functioning equipment that could be partially used due to the fact that part of the equipment was broken or not functioning included both mannequins, the Vascular Hand, the Brain: Skeleton, Beds, Trolleys, Medicine cupboard, Drip-stand, Gloves, Urine sticks, Thermometer, BP machine.

4.5 Usage of the clinical skills laboratory over a six month period

The clinical skills laboratory was evaluated over a six month period from June 2011 to November 2011 to view usage and the type of assessment and demonstrations that

were conducted during this period. The data was gathered using the registers of the groups that attended practical blocks during the six month period. PEN 1, PEN 2 and the Bridging 1 students were included in the count. Since Bridging 2 students and post-Basic students did not make use of the laboratory, they were not included in the count. Usage was calculated using number of students x days spent in laboratory.

4.5.1 Usage occasions

The PEN 1 students had a higher number of usage occasions (2380, 60.9%) compared to the PEN 2 (900, 23.0%) students and the Bridging course groups (630, 16.1%).(Figure 3).

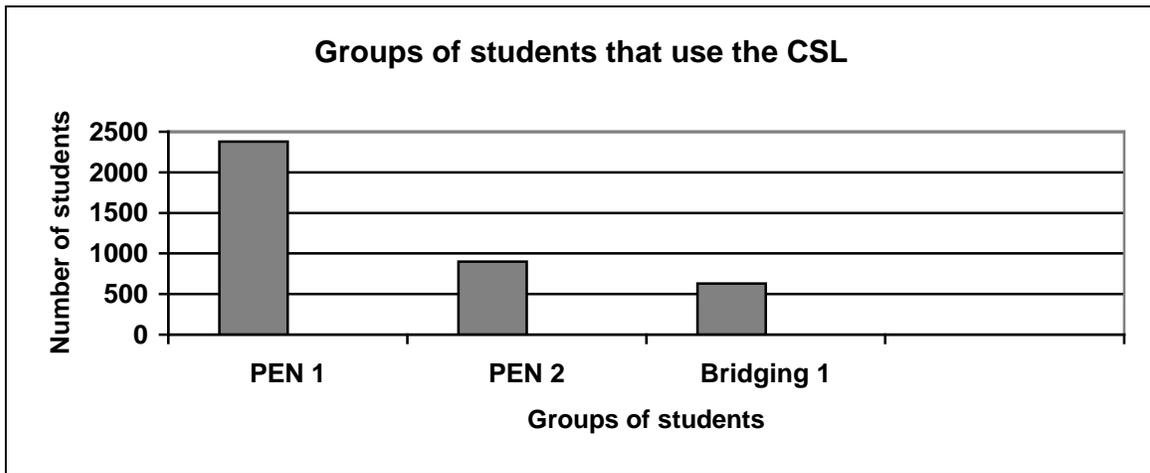


Figure 3: Students using the clinical skills laboratory

The total number of students' usage occasions in the clinical skills laboratory over the six month period was 3910 students' usage occasions with an average of 651.7 students' usage occasions per month (SD, 272.1). The average usage occasions per month for PEN 1 students was 396.7; PEN 2's average was 150 and Bridging 1 students averaged 105.

Looking at the usage trend over the six month period ran from June 2011 to November 2011 (Figure 4), a fluctuating pattern is observed. No students attended a practical block over the December period therefore it was not included in the six month period calculation. The reason why the usage of the clinical skills laboratory decreases in December is because most of the simulations have been done and the students' practical component has been completed.

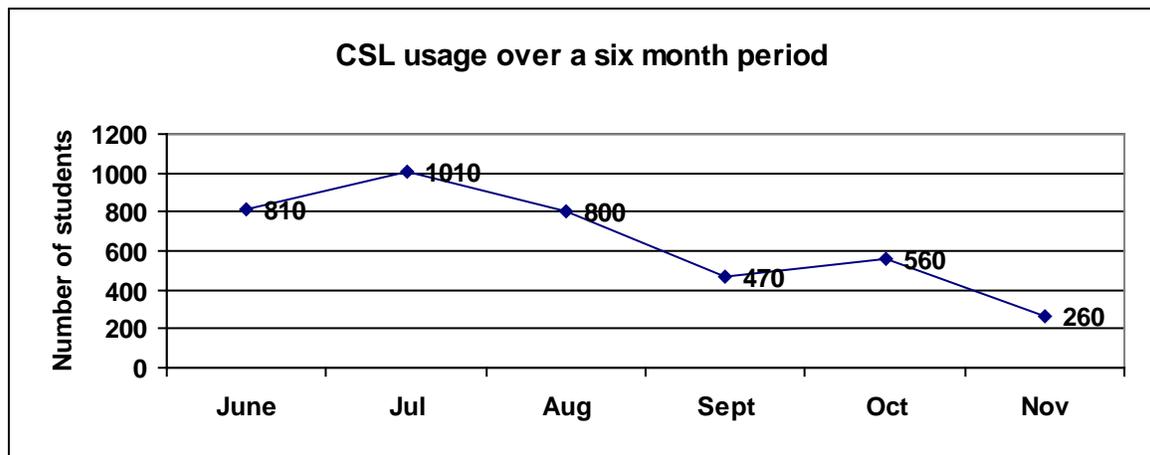


Figure 4: CSL usage over the period of June 2011 to November 2011

It can be noted that the majority of the students used the clinical skills laboratory in the month of July when there were 1010 students' usage occasions were recorded in the clinical skills laboratory.

4.5.2 Type of usage for demonstrations

The main demonstrations conducted during the six month period were as follows:

- Wound care preparation (n=6)
- Removal of clips (n=6)
- Electrocardiogram (n=2)
- Taking care of a patient with a trachyostomy, endotracheal tube suctioning (n=4)
- Changing of a TPN (n=2)
- Management of a patient with an epidural catheter (n=2)
- Emptying of a wound drainage bag (n=4)
- Glucose monitoring (n=4)
- Bed bath (n=4)
- Assisted bed bath (n=4)
- Mouth care (n=2)
- Positioning of a patient (n=4)
- Social hand wash (n=6)
- Aseptic hand wash (n=6)
- Administration of oral medication (n=4)

- Administration of intra-muscular medication (n=4)
- Administration of nasal medication (n=4)
- Administration of eye medication (n=4)
- Use of oxygen therapy (n=4)
- Post-operative care of a patient (n=6)
- Cardio-pulmonary resuscitation (n=2)
- Managing a patient with intravenous therapy (n=4)
- Discontinuing intravenous therapy (n=2)
- Removal of clips (n=2)
- Taking a venous sample (n=2)
- Catheter care (n=4)
- Insertion of peripheral line (n=4)
- Care of a cast (n=2)
- Care of a patient receiving a blood transfusion (n=2)
- Emptying of stoma bag (n=2)
- Collection of specimens (n=4)
- Spinal immobilisation (n=2)

These demonstrations used a large amount of equipment during the six months that were used and reused over this time frame. Many of these procedures require the use of the manikins and equipment from the clinical skills laboratory. Equipment that is re

used over time for practicing may become damaged and broken and this may result in the need to have new equipment ordered and purchased which leads to a cost factor for the Private Nursing School.

4.5.3 Process of usage observed

Each group attended a practical block over a week's duration where different demonstrations and simulations were performed by the clinical facilitators. There was also time allocated for the students to practise procedures, and certain procedures, for example, social hand wash and aseptic hand wash can be assessed during the week. Equipment for each simulation or procedure was allocated the day before the procedure to ensure the readiness of the clinical facilitators. The equipment that was not in full functioning order was sometimes loaned to the college by the neighbouring hospitals and was usually returned after usage.

Students were divided into groups of about six to eight students when observing the demonstrations. And, while practising, the same group would choose one of the six stations to practise at. Equipment was collected by one of the group members who later returned the equipment to one of the clinical facilitators when the students had finished practising that skill.

Students only used the clinical skills laboratory during the practical block which had been allocated to them and not simply when students were available to make use of it.

Also observed was the fact that there was a shortage of equipment for all students to use for practise at the same time. Some students thus practised a different skill and therefore used different equipment. When they were done they would exchange the equipment so that all students had an opportunity to practise the skills taught.

Broken equipment was reported to the clinical facilitators who recorded such reports to enable repairs to be carried out where possible.

Students' books were signed by the clinical facilitators to provide evidence that they had practised so that the students could be evaluated on that skill.

CHAPTER 5: DISCUSSION, RECOMMENDATIONS AND CONCLUSION

5.1 Introduction

There has been very few process evaluations of clinical laboratories published in the literature. Only one evaluation was found for South Africa, namely, Keetsemang et al. (2007) who conducted a process evaluation study of the first and third year nursing students at a university which made use of a clinical skills laboratory.

It is unclear as to whether formal evaluations of clinical skills laboratories are being conducted and not reported, or whether these evaluations are not routinely conducted. Similarly, the clinical skills laboratory in the Private Nursing School (KZN) had not previously been evaluated. A process evaluation method was therefore conducted to evaluate whether the various activities and processes had been implemented to ensure that the clinical skills laboratory could meet its goals.

The evaluation findings are discussed according to Hawe et al. (1990) framework of program, or in this situation, the clinical skills laboratory, namely:

- Is the clinical skills laboratory reaching its target group?
- Are participants satisfied with the clinical skills laboratory?
- Are the materials and components of the clinical skills laboratory of good quality?
- Are all the activities of the clinical skills laboratory being implemented?
- Is the clinical skills laboratory effective in terms of increasing knowledge, skills and confidence?

5.2 Is the clinical skills laboratory reaching its target group?

The findings of the evaluation showed that the clinical laboratory is reaching the target groups with all students making use of the clinical skills laboratory for the purpose of viewing demonstrations, subjecting skills to assessment or practising skills. The target groups for the usage of the clinical skills laboratory were both the Basic and post-Basic students enrolled in programs at the Private Nursing School; the PEN 1 and PEN 2 students who make the greatest use of the clinical skills laboratory. A set amount of time is allocated to a practical week which the students participate in.

Students felt strongly that there was sufficient time to practise during the allocated time, resulting in 87.6% of the students stating that they could perform a skill after they

had practised it in the allocated time. Similarly, a study done by Keetsemang et al. (2007) showed that students who used the clinical laboratory were satisfied with the access to the laboratory and that they felt that the number of hours allocated to the clinical skills laboratory was also satisfactory.

The evaluation also showed high usage for the one group, with 61% usage from the PEN 1 group, and only 23% usage from the PEN 2 group within the six month period. The reason for this was that the PEN 1 students generally don't have prior clinical experience and are not exposed to clinical settings, therefore requiring more time in the clinical skills laboratory to learn the basic nursing skills and to practise them before being assessed, compared to the PEN 2 students who had already gained 1000 hours experience in the clinical setting before commencement of their course.

5.3 Are participants satisfied with the clinical skills laboratory?

To evaluate the satisfaction with the processes in the clinical skills laboratory, the students were given a questionnaire to complete and the clinical facilitators were interviewed in private sessions.

Over all, the students were satisfied that learning took place in the clinical skills laboratory and that knowledge was gained by the demonstrations observed or by learning from their peers. Godson et al. (2007) reported a similar finding with students indicating that the skills laboratory was a good way to learn because its safe environment built up their confidence.

Possible reasons for the high satisfaction reported may relate to the fact that the students knew what was expected of them prior to their practical block, and also due to high levels of anxiety (71.1%) about performing skills in the clinical setting before a practical block. The clinical block allowed them to practise the procedures they had to perform in the clinical setting. This could lead to the conclusion that students were satisfied with the learning that had taken place in the clinical skills laboratory as it gave them the confidence to perform a skill in the clinical setting after it has been demonstrated to them and they have practised the skill in the clinical skills laboratory.

Satisfaction with supervision: Although students were able to practise a skill independently or in groups, clinical facilitators felt that students did need supervision, but should also be allowed to practise independently or in a group to learn from each other and reflect on their experiences. A study done by Hao et al. (2002) showed that students can learn certain clinical skills in a simulated situation as effectively as in a true

patient encounter. The students in the study were encouraged to practise skills by themselves and were given the necessary equipment (Hao et al., 2002). Students were then tested by means of a check-list, and almost all the students performed the skills to satisfaction. It was then noted by the students and the faculty members that the skills laboratory improved students' proficiency in performing these skills on patients (Hao et al., 2002).

The clinical facilitators felt, however, that supervised students were encouraged to be active, and therefore students should have periods of supervision when practising. This was supported by the students, with only 40% wanting to do self-directed learning in the laboratory, and a number of suggestions to increase the number of clinical facilitators so that students could always be supervised. These findings were similar to other studies such as the study done by Keetsemang et al. (2007) for a university clinical laboratory, which found that the students were satisfied with the level of guidance they received in the laboratory. In a study by Godson et al. (2007), mentors also identified the clinical laboratory as useful because students came better prepared to their placement, thereby reducing their workload (Godson et al., 2007). Cooke (1996) supports Godson et al's view, with research results showing that students do find certain clinical situations difficult and facilitators can greatly assist students to deal with these situations.

PEN 2 students (62%) felt more strongly about clinical facilitator supervision compared to the PEN 1 students (38%). The current process where, after a demonstration has been carried out by the clinical facilitator, s/he will then supervise the students as they practise the skill, allows the students to clarify any confusion, and gives them confirmation that the skill is being performed properly. It is possible that the reason why PEN 2 students require more supervision may be due to the more difficult procedures they have to perform, compared to the PEN 1 students who are only required to perform less complicated procedures and are therefore able to practise the basic nursing procedures with less supervision.

The main area of dissatisfaction exhibited by both facilitators and students in the study was with equipment, which is discussed below. However students were very positive about the fact that their knowledge and use of equipment had increased after using the clinical skills laboratory.

5.4 Are the materials and components of the clinical skills laboratory of good quality?

The clinical skills laboratory houses equipment for the students to use and to learn from. The equipment was made available to the students for use during practice sessions and for the facilitators to demonstrate skills.

Both the PEN 1 and PEN 2 groups of students were not satisfied with the amount of equipment found in the clinical skills laboratory, with only a quarter of them reporting satisfaction with the amount of equipment. This finding was similar to the finding by Keetsemang et al. (2007) where the students were also satisfied with the equipment found in the laboratory, but felt that there was not enough equipment for all students to practise a skill when they wanted to do so. An additional finding from the researcher's study showed that the students felt that the size of the laboratory needed to be increased so that demonstrations could be seen by all, and that there should be smaller groups during each demonstration.

There was a significant difference noted between the PEN 1 and PEN 2 group where the PEN 2 students felt strongly that the equipment was not in good working order compared to the PEN 1 students. The difference may be due to the fact that PEN 2 students have even greater exposure to the clinical setting and equipment in the respective hospitals, compared to the minimal exposure of the PEN 1 students to the clinical settings.

The students felt strongly that the equipment found in the clinical skills laboratory was not in good working order, and they also felt strongly that there was not enough equipment to practise with.

The clinical facilitators felt that the equipment found in the clinical skills laboratory was adequate for certain demonstrations to be conducted, but that all the equipment was not in good working order. The clinical facilitators felt that there was a need for more equipment so that all demonstrations could be performed in the skills laboratory. The facilitators also suggested that more updated equipment was needed so that the demonstrations could be made more realistic for the students.

The audit of the equipment confirmed the reports from the supervisors and the students, with the results indicating that there was a shortage of equipment in the clinical skills laboratory, and that there was a lot of equipment that was broken which could be fixed or should be replaced. The audit found that 83% of the equipment in the clinical skills laboratory was in good working order and could be used for demonstrations, practising and lecturing purposes. Only a few pieces of equipment were semi-functioning or non-functioning, such as the paper towel dispenser, both mannequins, the vascular hand, the brain, the skeleton, the six beds, the trolley, the

medicine cupboard, the drip-stand, the thermometers and the blood pressure machine (baumanometer).

Although good working equipment was available, there was insufficient quantity available for all students to practise during their practical block, which meant that students had to wait for the availability of the equipment to practise.

Again these findings highlight the issues for clinical teaching facilities in low resource settings where an adequate budget may not have been allocated for equipment purchases and there may not be adequate space for the students.

5.5 Are the activities of the clinical skills laboratory being implemented?

According to Olgilvie et al. (2011), for effective teaching to take place using simulation the educator needs to be prepared, and needs to bridge the gap between theory and practice and to allow for de-briefing, in order for the students to gain insight into their own practice. The study showed that the main usage of the clinical skills laboratory was for demonstrations to take place, using models from the laboratory and performing

role-plays. No reports of debriefing activities, which are mainly related to the use of simulators, were found in this study.

The study results showed that the facilitators prepared for the demonstrations by ensuring that the stations in the clinical skills laboratory were set up prior to the demonstration, to ensure that all equipment was available and in working order for the demonstration. Planning for the demonstration was observed, and the time allocation was noted as being allocated to good effect. Whei Ming Su and Marne (2010) state that it is not easy to create clinical simulations for direct learning. There is a lot of planning that goes into it and the clinical facilitators must possess knowledge for that simulation. The clinical facilitators at the Private nursing School have limited knowledge with regards to planning of for the clinical simulation as only 1 clinical facilitator had experience with facilitation compared to the remaining three facilitators that had no experience. Whei Ming Su and Marne (2010) also comment that the novice mentors (clinical facilitators) did not teach with as much effectiveness as the mentors that were experienced and had background knowledge and in the research to bridge this gap the senior mentors facilitated the novice mentors to help them gain experience and make learning more effective for the students.

The majority of the students agreed that there was sufficient time to practise a skill once the demonstration was done. A small percentage of students felt that the practice time needed to be increased. It should also be noted that the clinical facilitators view the clinical skills laboratory as a traditional demonstration room. The study done by Jeffries et al. (2002) show that being taught in a traditional lecture fashion or student centred learning style produces the same results with regards to student learning a skill in the clinical skills laboratory. However the student-centred learning group was more satisfied with the learning methodology than the tradition group.

5.6 Is the clinical skills laboratory effective in terms of increasing knowledge, skills and confidence?

The study showed that the majority of the students agreed that learning did take place in the clinical skills laboratory, and that learning took place through simulations, demonstrations and from their peers. As a result, the students felt more confident to take on new skills and perform practical activities after the simulation experience. Students felt strongly about thinking critically once they had been involved in the demonstration or simulation experience and understood what was expected of them with regard to clinical skills. This finding is similar to Godson et al. (2007) who found that the students felt that the use of the clinical skills laboratory built up their confidence.

The study also showed that students were given the chance to practise and given feedback in a non-threatening environment (clinical skills laboratory) which, in turn, increased their confidence levels in performing these skills in the clinical areas, and their motivation. These findings are supported by Bensfield et al. (2012) who indicated that the clinical skills laboratory adds benefit to a Nursing campus because it provides an environment conducive to learning and allows for the simulated practice and feedback to improve clinical skills. Lasater (2007) added to this by stating that experimentation and failure are allowed in the clinical laboratories which allows for self-evaluation therefore ensuring that decision-making is learned effectively. Similarly, according to Flowers et al. (2008), the Nursing clinical laboratory provided a safe, structured learning environment where students had the opportunity to view a demonstration and practise. This case study, which was conducted on the role of the clinical laboratory in teaching and learning family nursing skills, also revealed that students who had qualified felt confident and well prepared in Nursing practice with families, and that the key to a successful skills laboratory was the teaching faculty who were skilled.

The majority of the students (87.6%) felt strongly that their confidence levels increased after demonstrations and practising in the clinical skills laboratory. Students felt that they were able to perform skills that they had learned in the clinical skills laboratory and as equally importantly, they had the confidence to tackle new skills.

In terms of simulation activities in the clinical skills laboratory, Gilley (1990) states that the interactive nature of simulation motivates students and allows them to make mistakes without paying the price, hence the majority of the students in our study agreed that their involvement in the simulation made them think critically, and that the clinical facilitator made them question what they were doing in the clinical skills laboratory. Ballie and Curzio (2009) also found that the participants believed that simulation increased their ability and confidence in their clinical placement, however there was little difference noted between the students' confidence levels in learning through simulation during a clinical placement, or learning during practical placement without simulation.

Though no formal impact or outcome evaluations were conducted, the students reported that there was an increase in knowledge, skills and confidence after demonstrations, lectures or role-plays that were done in the clinical skills laboratory. Though the findings are based on the subjective self-reports of their perceived benefit, and the evaluation was not an objective observation of their skills, we can conclude that the clinical skills laboratory provides a perceived benefit, but this should be followed up by impact studies of observed confidence and skills.

5.7 Limitations of the study

There were two main limitations of this study, namely the quality of feedback from students and the evaluation process.

- *Quality of feedback:* Although all the students were selected from the PEN 1 and the PEN 2 March-June 2011 groups; some of the students (two) did not wish to participate and did not fill out the questionnaire and survey, and may have responded differently from those who did.
- *Evaluation process:* The researcher was also a lecturer at the Private Nursing School and an evaluator. This has the potential to create bias, as the researcher would thus be more likely to look for the positive in the campus and to leave out the negative.

5.8 Recommendations

The following recommendations are based on the reflection on the findings and a synthesis of actual recommendations made by both the students and the clinical facilitators who were involved in this research study.

- I. More equipment could be purchased for the clinical skills laboratory so that students can practise a skill at the same time at different work stations. This is not essential, as different skills can be practised using different equipment. This is also a time-saving suggestion to ensure that students enjoy maximum usage of the clinical skills laboratory during their practical block.

- II. Though the equipment found in the clinical skills laboratory was generally in good working order, and the clinical facilitators were able to use the equipment for demonstration and teaching purposes, and the students were able to practise with them; the equipment available had not been updated according to the equipment commonly used in clinical settings. It is therefore recommended that more updated equipment be purchased so that the clinical skills laboratory can simulate a hospital setting. This will also expose students to updated equipment before they enter the clinical setting, ensuring that they are aware of the equipment and know how to use it.

- III. Increase the space in the clinical skills laboratory. A suggestion was to decrease the number of students per group observing demonstrations at any one time, so that all students could view the demonstration and have a chance to ask questions at the same time.

IV. A separate station should be set up in the clinical skills laboratory so that the students who are not in their practical block can still practise skills in their personal time. Having a separate station available in the clinical skills laboratory could be beneficial to these students as they could practise skills and learn in their personal time and not only in their allocated practical block. This would also assist slow learners as they could then book extra time in the clinical skills laboratory, and could ask for assistance to catch up with the rest of the group. A register could be drawn up, and students could book the station when it is available, and ask for assistance if needed from a clinical facilitator.

5.9 Conclusion

Over all, the clinical facilitators and the students who made use of the clinical skills laboratory were satisfied with the running of the program. The support staff understood the function of the clinical skills laboratory and how to manage it so that the students gained knowledge and the necessary skills according to their course. However, strong concerns about the quality and the availability of equipment emerged, which may result from the fact that, the clinical skills laboratory, even though it is in a private institution, is set in a low resource setting where resources are always scarce.

This process evaluation of the clinical skills laboratory in the private Nursing School showed that the program was functioning at a good level; the staff and the students involved in the usage of the clinical skills laboratory were satisfied with the running of the laboratory, and that learning did take place in the clinical skills laboratory preparing students for the clinical setting. It has also proven that students feel more confident to take on new skills/tasks once they have been through the simulation process.

It is clearly indicated that, to improve on the practical side of the nursing training, the private Nursing School needs to improve on the amount of equipment that they have, but that the Nursing School is currently able to function with the equipment at hand. Once the program of the clinical skills laboratory is functioning at its optimum level, research can move on to impact and outcome evaluation which should be undertaken.

“The future of simulation in health care depends on the commitment and ingenuity of the health care simulation community to see that improved patient safety using this tool becomes a reality” (Gaba, 2004).

CHAPTER 6. REFERENCES

1. Baillie, L. and Curzio, J. 2009. Students' and facilitators' perceptions of simulation in practice learning. *Nurse Education in Practice*. 9(5): 297-306. Available from: [http://www.nurseeducationinpractice.com/article/S1471-5953\(08\)00096-6/abstract](http://www.nurseeducationinpractice.com/article/S1471-5953(08)00096-6/abstract) [2010, April].
2. Bensfield, L.A., Olech, M.J. & Horsley, T.L. 2012 Simulation for High-Stakes Evaluation in Nursing. *Nurse Educator*. 37(2): 71-74. Available from: http://journals.lww.com/nurseeducatoronline/Abstract/2012/03000/Simulation_for_High_Stakes_Evaluation_in_Nursing.14.aspx [2011, June].
3. Berragan, L., 2011. Simulation: An effective pedagogical approach for nursing? *Nurse Education Today*. 31(7): 660-663. Available from: [http://www.nurseeducationtoday.com/article/S0260-6917\(11\)00038-4/abstract](http://www.nurseeducationtoday.com/article/S0260-6917(11)00038-4/abstract) [2013, [March].
4. Bligh, J. 1995. The clinical skills unit. *Postgraduate Medical Journal*. 71:730-732. Available at: <http://pmj.bmj.com/content/71/842/730.full.pdf> [2011, January].
5. Brink, H., van der Walt, C. & van Rensberg, G. 2012. Fundamentals of research Methodology for Healthcare professionals. Third ed. Juta and Company Ltd. Capetown
6. Brink, H.I. 2003. Fundamentals of Research Methodology for health care professionals. Juta & Co. Ltd. Lansdowne
7. Buchanan, J. 2001. Use of simulation Technology in Dental Education. *Journal of Dental Education*. 65(11): 1225- 1231. Available from American Dental Education Association database: <http://www.jdentaled.org/cgi/reprint/65/11/1225.pdf> [2010, April].
8. Cannon-Diehl, M.R., 2009. Simulation in health care and Nursing: State of the Science. *Critical Care Nursing Quarterly*. 32(2): 128-136. Available from: http://journals.lww.com/ccnq/Abstract/2009/04000/Simulation_in_Healthcare_and_Nursing_State_of_the.12.aspx [2012, June].
9. Centers for Disease Control and Prevention. *Framework for Program Evaluation in Public Health*. MMWR 1999;48 (No, RR -11). Available from: <http://www.cdc.gov> [2010, September].
10. Cooke, M., 1996. Nursing students' perceptions of difficult or challenging clinical situations. *Journal of Advanced Nursing*. 24(6): 1281- 1287. Available from:

- <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2648.1996.tb01036.x/abstract> [2010, April].
11. Diamond, S., 1979. Simulation: Does the microscope lens distort? *Law and Human Behavior*. 3(1): 1-4. Springer. Available from: <http://www.springerlink.com> [2010, April].
 12. Duvivier, R., Van Dalen, J., Van Der Vleuten, C. & Scherpbier, A., 2009. Teacher perceptions of desired qualities, competencies and strategies for clinical skills teachers. *Medical Teacher*. 31(7): 634-641. Available from: http://meds.queensu.ca/ohse/assets/applied_research_example.pdf [2010, April].
 13. Emanuel, E.J., Wendler, D., Killen, J. & Grady, C., 2004. What Makes Clinical Research in Developing Countries Ethical? The Benchmarks of Ethical Research. *The Journal of Infectious Diseases*. 189: 930-937. Available from: <http://jid.oxfordjournals.org/content/189/5/930.full.pdf> [2012, October].
 14. Erlingsson, C. and Brysiewicz, P. 2011. Orientation among multiple truths: an introduction to qualitative research. *African Journal of Emergency Medicine*. 1-8. Available from: <http://www.sciencedirect.com/science/article/pii/S2211419X12000705> [April 2012].
 15. Flowers, K.A., St John, W. & Bell, J.M., 2008. The Role of the Clinical Laboratory and Learning Family Nursing Skills. *Journal of Family Nursing*. 14(2): 242-267. Available from: <http://jfn.sagepub.com/content/14/2/242.short> [2012, September].
 16. Gaba, D.M., 2004. The future vision of simulation in health care. *Qual Safe Health Care*. 13(1): i2-i10. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1765792/pdf/v013p000i2.pdf> [2012, October].
 17. Gilley, J.W., 1990. Demonstration and simulation. *Adult learning methods: A guide for effective instruction*. Malabar
 18. Godson, N.R., Wilson, A. & Goodman, M., 2007. Evaluating student nurse learning in the clinical skills laboratory. *British Journal of Nursing*. 16(15): 942-945. Available from: <http://www.internurse.com/cgi-bin/go.pl/library/abstract.html?uid=24520> [2012, September].
 19. Golafshani, N., 2003. Understanding Reliability and Validity in Qualitative research. *The Qualitative report*. 8(4): 597- 607. Available from:

- <http://peoplelearn.homestead.com/MEdHOME/QUALITATIVE/Reliab.VALIDITY.pdf> [2012, November]
20. Good, M., 2003. Patient simulation for training basic and advanced clinical skills. *Medical Education*. 37(1): 14-21. Available from: <http://faculty.ksu.edu.sa/hisham/Documents/Medical%20Education/English/Medical%20Education/195.pdf> [2010, April].
 21. Hanson, W.E., Creswell, J.W., Planoclerk, V.L. and Creswell, J.D. 2005. Mixed method Research Designs In Counselling Psychology. *Journal of Counselling Psychology*. 52(2): 224-235. available from: <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1372> [2011, November]
 22. Hao, J., Estrada, J. and Tropez-Sims, S., 2002. The Clinical Skills Laboratory: A Cost –effective Venue for Teaching Skills to Third-year Medical Students. *Academic Medicine*. 77(2): 152. Available from: http://journals.lww.com/academicmedicine/Abstract/2002/02000/The_Clinical_Skills_Laboratory_A_Cost_effective.12.aspx [2012, September].
 23. Hawe, P., Degeling, J. and Hall, J., 1990. *Evaluating Health Promotion: A health Workers Guide*. Maclennan and Petty: Sydney.
 24. Hertel, J.P. and Millis, B.J., 2002. Using Simulation to promote learning in higher education: An introduction. Sterling, VA: Stylus
 25. Hofstein, A. and Lunetta, V. N., 2004. The laboratory in science education: Foundations for the twenty-first century. *Science Education*. 88(1): 28–54. Available from: <http://gpquae.iqm.unicamp.br/gtexperimentacao.pdf> [2012, April].
 26. <http://oxforddictionaries.com/definitions/english> [2013, March]
 27. Jeffries, P.R., Rew, S. and Cramer, J. M., 2002. A COMPARISON OF Student-Centered VERSUS Traditional Methods of Teaching Basic Nursing Skills in learning Laboratory. *National League for Nursing*: 23(1): 14-19. Available from: [http://nljournal.org/doi/abs/10.1043/1536-5026\(2002\)023%3C0014%3AACOSCV%3E2.0.CO%3B2](http://nljournal.org/doi/abs/10.1043/1536-5026(2002)023%3C0014%3AACOSCV%3E2.0.CO%3B2) [2013, January].
 28. Jarzemsky, P. A. & Mcgrath, J., 2008. Look before You leap. Lessons Learned when Introducing Clinical Simulation. *Nurse Educator*. 33(2): 09-95. Available from: http://journals.lww.com/nurseeducatoronline/Abstract/2008/03000/Look_Before_You_Leap_Lessons_Learned_When.15.aspx [2012, January].
 29. Keetsemang, S., Mugarurwa, J., Shahidi, T., Maputhege, M., Chipps, C. and Brysiewicz, P., 2007. Student evaluation of a clinical self study laboratory. *Nurse*

- Education in Practice*. 8(5): 359-367. Available from:
<http://www.nurseeducationinpractice.com> [2010, April].
30. Krefting, L. 1991. Rigor in Qualitative Research: the Assessment of Trustworthiness. *The American Journal of occupational therapy*. 45(3): 214-222. Available from:
[http://portal.limkokwing.net/modulemat/rigor%20in%20qualitative%20research%20trustworthiness%20test\(1\).pdf](http://portal.limkokwing.net/modulemat/rigor%20in%20qualitative%20research%20trustworthiness%20test(1).pdf) [2013, march].
 31. Lasater, K., 2007. High Fidelity Simulation and the Development of Clinical Judgment: Students' experiences. *Journal of Nursing Education*. 46(6): 269 – 276. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/17580739> [2011, June].
 32. Law, M., Stewart, D., Letts, L., Pollock, N., Bosch, J. and Westmorland, M., 1998. Guidelines for Critical Review of Qualitative Studies. *Users guide to Medical Literature*. 2000(284): 478-482. Available from:
<http://www.musallamusf.com/resources/Qualitative-Lit-Analysis-pdf.pdf> [2013, march].
 33. Leigh, G., 2011. The Simulation Revolution: What are the implications for Nurses in Staff Development?. *Journal for Nurses in Staff development*. 27(2): 54-57. Available from:
http://journals.lww.com/jnsdonline/Abstract/2011/03000/The_Simulation_Revolution_What_Are_the.2.aspx [November, 2011].
 34. Levette-Jones, T., Frahy, K., Parsons, K. and Mitchell, A., 2006. Enhancing nursing students' clinical placement experiences: A quality improvement project. *Contemporary Nurse Journal*. 23(1): 58-71. Available from: <http://pubs.e-contentmanagement.com/doi/abs/10.5172/conu.2006.23.1.58> [2011, June].
 35. Lundberg, K.M., 2008. Promoting Self –confidence in Clinical Nursing Students. *Nurse Educator*. 33(2): 86-89. Available from:
http://journals.lww.com/nurseeducatoronline/Abstract/2008/03000/Promoting_Self_confidence_in_Clinical_Nursing.14.aspx [2011, June].
 36. Lynagh, M., Burton, R. and Sanson-Fisher. 2007. A systematic review of a medical skills laboratory: were to from here. *Medical Education*. 41: 879 -887. Available from: <http://lib.ajaums.ac.ir/booklist/689835.pdf#page=48> [2011, November].
 37. Macedonia, C., Gherman, R. and Satin, A., 2003. Simulation Laboratories for training in obstetrics and Gynecology. *Obstetrics & Gynecology*. 102(2): 388-392. Available from Lippincott Williams and Wilkins database:
http://journals.lww.com/greenjournal/Abstract/2003/08000/Simulation_Laboratories_for_Training_in_Obstetrics.30.aspx [2010, April].

38. McAdams, C., Rankin, E., Love, B. and Patton, D., 1988. Psychomotor skills laboratories as self-directed learning: a study of nursing students' perceptions. *Journal of Advanced Nursing*. 14(9): 788-796. Available from: <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2648.1989.tb01643.x/abstract> [2010, April].
39. Medley, C. and Claydell, H., 2005. Using simulation Technology for Undergraduate Nursing Education. *Journal of Nursing Education*. 44(1), 31-34. Available from: <http://scusecondlife.pbworks.com/f/Using+simulation+technology+for+undergra+d+teaching.pdf> [2011, June].
40. Merchant, D., 2012. Does High-fidelity Simulation Improve Clinical outcomes? *Journals for Nurses in Staff development*. 28(1):E1-E8. Available from: <http://ovidsp.tx.ovid.com/sp-3.8.1a/ovidweb.cgi> [2012, November]
41. Moulton, C., Dubrowski, A., MacRae, H., Graham, B., Grober, E. and Reznick, R., 2006. Teaching Surgical Skill: What kind of practice makes Perfect? *Annals of Surgery*. 244(3): 400-409. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1856544/> [2010, April].
42. Oakley, A., Strange, V., Bonell, C., Allen, E. and Stephenson, J., 2006. Process evaluation in randomized controlled trials of complex interventions. *BMJ*. 332(7538): 413-416. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1370978/> [2012, October].
43. Ogilvie, S., Cragg, B. and Foulds, B., 2011. Perceptions of Nursing Students on the Process and Outcomes of a Simulation Experience. *Nurse Educator*. 36(2):56-58. Available from Ovid database: <http://nursing.tx.ovid.com/sp-3.5.1a/ovidweb.cgi?> [2012, January].
44. Packer, J., 1994. Education for clinical practice: an alternative approach. *Journal of Nursing Education*. 33(9): 411-6. Available from PubMed database: <http://www.ncbi.nlm.nih.gov/pubmed/7853058> [2010, April].
45. Polit, D.F. and Beck, C.T., 2004. *Nursing Research. Principles and Methods*. Lippincott Williams & Wilkins. Philadelphia.
46. Rhodes, M. and Curran, C., 2005. Use of the Human Patient Simulator to teach Clinical Judgment Skills in a Baccalaueate Nursing Program. *Computers, informatics, Nursing September/October*. 23(5): 256-262. Available from Lippincott Williams & Wilkins, Inc. database: <http://journals.lww.com> [2010, April].

47. Roper, W.L., 1993. Health Communication Takes on New Dimensions at CDC. *PubHealth Reports*. 108(2): 179-183. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1403358/pdf/pubhealthrep00068-0037.pdf> [2012, October].
48. Schoening, A., Sittner, B. and Todd, M., 2006. Simulated Clinical Experience: Nursing students' Perception and the educators' role. *Nurse Educator*. 31(6): 253-258. Available from Ovid database: <http://nursing.tx.ovid.com/sp-3.5.1a/ovidweb.cgi?> [2012, January].
49. Tavakol, M. & Dennick, R., 2011. Making sense of Cronbach's alpha. *International Journal of Medical Education*. 2: 53-55. Available from: <http://www.ijme.net/archive/2/cronbachs-alpha.pdf> [2012, October]
50. The National Health Act, No. 61 OF 2003. Available from: <http://www.acts.co.za/national-health-act-2003/> [November, 2012]
51. Treadwell, I. and Grobler, S., 2001. Students perceptions on skills training in simulation. *Med Tec*. 23(5): 476-482. Available from PubMed database: <http://informaworld.com> [2010, April].
52. Van Saunders, F., 1977. *Nursing faculties' and students' perceptions of the relevance and usage of the clinical laboratory*. Available from: pocketknowledge.tc.columbia.edu/home.php/viewfile/16120 [2010, September]. Columbia University
53. Wahyuni. D., 2012. *The Research design Maze: Understanding Paradigms, Cases, Methods and methodologies*. *JAMAR*, 10(1) pp 69-80. Available from: http://scholar.google.co.za/scholar?q=the+research+design+maze%3A+understanding+paradigms%2C+cases%2C+methods+and+methodologies&hl=en&as_sdt=0%2C5 [2013, March].
54. Whei Ming Su. M.A. and Marne, J.J., 2010. Direct Teaching of Thinking Skills Using Clinical Simulation. *Nurse Educator*. 35(5) pp 197-204. Available from Ovid database: <http://nursing.tx.ovid.com/sp-3.5.1a/ovidweb.cgi?> [2011, June].
55. Wimbush, E. and Watson, J. 2000. An Evaluative Framework for Health Promotion: Theory, Quality and Effectiveness. *Evaluation*. 6(3): pp 301-321. Available from: http://www.stes-apes.med.ulg.ac.be/Documents_electroniques/EVA/EVA-GEN/ELE%20EVA-GEN%207516.pdf [2011, March].

CHAPTER 7. APPENDICES

Appendix 7.1: Questionnaire for students

Instructions: Please use a ball point pen to complete this questionnaire. Do not use fountain or felt tip pens as the ink may be visible on the other side of the paper. Please circle the appropriate answer to the question asked.

Age _____	Gender Male Female
Group Intake _____	Years experience as a nurse _____

1. Were you employed in a health care facility or in health-related work before starting this nursing program?

Yes No

Comment: _____

2. **If Yes**, did you have prior nursing skill training before you entered into the clinical setting?

Yes No N/A

Comment _____

Please rate the following questions by placing an 'x' in the appropriate box:

	Yes	No	Comment
3. I feel that the practice sessions where there was supervision by the CF were beneficial to me.			
4. I gained knowledge from the demonstration that the CF presented in the clinical lab.			
5. I was able to practise a given skill in the time allocated for the practice period during the FPA periods.			
6. I feel that I am able to perform a given skill after I have practised it in the clinical laboratory.			
With regard to the equipment:			
7. Is there sufficient equipment for you to use in the clinical lab?			
8. I feel that my knowledge and understanding of the clinical lab equipment increased after FPA blocks.			
9. I feel that the quality of the equipment found in the clinical lab is in working order.			
With regard to learning in the CSL:			
10. The CF made me question what I do in the clinical lab.			
11. I learned from my peers during the practice sessions in FPA.			
12. I feel that my involvement in simulation makes me think critically.			
Before your first FPA block:			
13. I had a good understanding of theory and practice.			
14. I felt more anxious about undertaking new skills for the first time in the clinical area.			
15. I had an understanding of the clinical skills that were required of me.			
16. I understood how to perform the practical skills that were required of me.			
After my simulation experience:			
17. I feel more confident in the application theory in the clinical fields.			
18. I feel that I am more able to develop my clinical skills in practice.			
19. I feel I am able to answer questions about patients/clients from the knowledge I gained in the clinical lab.			

	Yes	No	Comment
20. I feel more confident to tackle new skills in practice that I learned in simulation.			
21. I feel my confidence levels in performing practical skills have increased.			
22. I feel that I have the confidence to perform the clinical task in the clinical area once I have been found competent.			

23. Have you any suggestions as to how this simulation experience could be improved?

Thank you for taking the time to complete this questionnaire. Your contribution is greatly appreciated.

If you have any further questions, please contact Roxann Moodley on 0833619654

Appendix 7.2: Interview for clinical facilitators

Age _____	Gender Male Female
Qualification _____	Years experience as a nurse _____

1.Explain your role in the CSL.

2. Describe your prior training in education.

3. Do you feel that there is sufficient stock/equipment in the CSL?

4. Do you feel that the equipment in the CSL is in good working order?

5. Do you feel that the CSL in the private Nursing School provides all the necessary equipment and processes to facilitate learning and the integration of practical and theoretical elements?

6. What are your views on the lecture plans that are drawn up for each lecture/ demonstration taught?

7. What do you feel contributes to the students learning in the CSL?

8. What do you think of the role of CFs to supervise the students in the clinical laboratory?

9. What recommendations/suggestions can you offer with regard to the running of the CSL (equipment, staffing, timing, etc...) to improve the simulation experience?

Appendix 7.3: Equipment and Usage check-list

Please rate each item as follows:

2= Yes

1=Yes, only some part of it

0=No.

N/A not applicable

Equipment	Amount	Has the equipment NOT expired?	Is the equipment functioning?	Is the equipment in good condition?	How often is it used per week	Comment
Manequins	x 2					
Manequin 1						
Manequin 2						
Adult Resus dolls	x 2					
Adult Resus doll 1						
Adult Resus doll 2						
Infant Resus doll	x 1					
Kidney model	x 1					
Heart model	x 1					
Vascular hand	x 1					
Brain	x 1					
Spinal cord	x 3					
Spinal cord 1						

Spinal cord 2						
Spinal cord 3						
Trachea	x 1					
Coccyx	x 1					
Scapula	x 1					
Pelvis	x 1					
Stoma wound	x 1					
Abdominal wound	x 3					
Abdominal wound 1						
Abdominal wound 2						
Abdominal wound 3						
Sloughy wounds	x 2					
Sloughy wound 1						
Sloughy wound 2						
Ulcer foot	x 1					
Skeleton	x 1					
Male genitalia	x 2					
Male genitalia 1						
Male genitalia						

2						
Placenta	x 1					
Head section model	x 1					
Pregnant woman model	x 1					
Thoracic cavity	x 1					
Dynacast model	x 4					
Dynacast model 1						
Dynacast model 2						
Dynacast model 3						
Dynacast model 4						
Beds	x 6					
Bed 1						
Bed 2						
Bed 3						
Bed 4						
Bed 5						
Bed 6						
Partitions	x 6					
Partition 1						
Partition 2						

Partition 3						
Partition 4						
Partition 5						
Partition 6						
Large table	x 1					
Desks	x 3					
Desk 1						
Desk 2						
Desk 3						
Chairs	x 7					
Bedside chairs	x 6					
Wooden trolleys	x 2					
Wooden trolley 1						
Wooden trolley 2						
Dressing trolley	x 1					
Medicine cupboard	x 1					
Drug cupboard	x 1					
Bins	x 2					
Drip-stand	x 1					
Television	x 1					

Paper towel dispensers	x 2					
Paper towel dispenser 1						
Paper towel dispenser 2						
Storage cupboard	x 1					
Trauma board	x 1					
Oxygen meter flow	x 1					
Oxygen cylinder	x 1					
Oxygen gauge	x 1					
Sharps container	x 1					
Bedpans	x 5					
Bedpan 1						
Bedpan 2						
Bedpan 3						
Bedpan 4						
Bedpan 5						
Urinals	x 5					
Urinal 1						
Urinal 2						
Urinal 3						
Urinal 4						

Urinal 5						
Steel jugs	x 2					
Steel jug 1						
Steel jug 2						
Large dish basins	x 5					
Large dish basin 1						
Large dish basin 2						
Large dish basin 3						
Large dish basin 4						
Large dish basin 5						
Small basins	x 7					
Small basin 1						
Small basin 2						
Small basin 3						
Small basin 4						
Small basin 5						
Small basin 6						
Small basin 7						
Receivers	x 3					
Receiver 1						

Receiver 2						
Receiver 3						
Measuring jugs	x 3					
Measuring jug 1						
Measuring jug 2						
Measuring jug 3						
Gloves						
Haemolances						
Dressing-packs						
Urine sticks						
Thermometers						
Baumanometer	x 6					

Appendix 7.4: Usage spread sheet

Usage of the skill laboratory over a six month period					
Month	Number of students	Intake	Division	Demonstration done	Equipment used
June					
week 1					
week 2					
week 3					
week 4					
week 5					
July					
week 1					
week 2					
week 3					
week 4					
August					
week 1					
week 2					
week 3					
week 4					
week 5					
September					
week 1					
week 2					
week 3					
week 4					
October					
week 1					
week 2					
week 3					
week 4					
week 5					
November					
week 1					
week 2					
week 3					
week 4					

Appendix 7.5: Ethical clearance



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31 August 2011

Ms. R Moodley (202522605)
School of Nursing

Dear Ms. Moodley

PROTOCOL REFERENCE NUMBER: HSS/0315/011M
NEW PROJECT TITLE: A Process Evaluation of the Clinical Skills Laboratory In a private nursing school (KZN)

APPROVAL AND CHANGE OF DISSERTATION TITLE

I wish to confirm that ethical clearance has been granted full approval for the above mentioned project:

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach/Methods must be reviewed and approved through an amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years

Best wishes for the successful completion of your research protocol.

Yours faithfully

PROFESSOR STEVEN COLLINGS (CHAIR)
HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE

cc. Supervisor – Ms. J Chlpps
cc. Mr. S Reddy

Appendix 7.6: Informed sheet document for participants

INFORMATION DOCUMENT FOR PARTICIPANTS

Title: A Process Evaluation of the Clinical Skills Laboratory in a private nursing school (KZN)

I, Roxann Moodley am doing research on a private nursing school in Kwa Zulu Natal skills laboratory. The reason for performing such a research project is to evaluate the skills laboratory in the private nursing school is because since it has been opened (1996) an evaluation of the equipment, staffing and the effectiveness of the laboratory has not been done.

I am inviting you to participate in this study as your input will greatly contribute to the findings

A simple quantitative and qualitative study will be used where all students in the first year and all the students from the second year will be included in the study bring it to a total of 108 students. As the participate you will be required to either fill out a questionnaire or a survey in a classroom setting. This will require approximately 15 – 25 minutes of your time. You will not be put at risk of harm at time of this research project.

A simple qualitative design will also be used for the evaluation of the clinical facilitators in the Private Nursing School. As a participant you will be required to answer a series of opened ended questions asked by the researcher. It will require approximately 15-25 minutes of your time. You will not be put at risk or harm at the time of this research project.

By participating in this study you will provide the data required for a baseline information about the laboratory for the future students by making it more effective. It will also provide the information required to assess whether the skills laboratory is an effective resource to the students as well as the support staff.

You may choose not to participate in this project. Your refusal to participate will involve no penalty or loss of benefits to which the participant is otherwise entitled, and you may discontinue participation at any time without penalty.

Every effort will be made to keep personal information confidential. Absolute confidentiality cannot be guaranteed. Personal information may be disclosed if required by law.

Organizations that may inspect and/or copy your research records for quality assurance and data analysis include groups such as the Research Ethics Committee, Data Safety Monitoring Committee and the Medicines Control Council.

If results are published, could this lead to individual / cohort identification? If so, specify or anonymise.

Roxann Moodley 083 361 9654 - for further information you may contact the researcher.

Contact details of BREC Administrator or Chair - for reporting of complaints/problems:

Biomedical Research Ethics, Research Office, UKZN, Private Bag X54001, Durban 4000

Telephone: +27 (0) 31 260 4769 / 260 1074

Fax: +27 (0) 31 260 2384

Administrator: Ms P Ngwenya Email: ngwenyap@ukzn.ac.za

Chair: Email: Prof D R Wassenaar c/o ngwenyap@ukzn.ac.za

Appendix 7.7: Informed consent document for participants

Consent to Participate in Research

Dear participant

I, Roxann Moodley - the researcher will be doing a research project on the process evaluation of the clinical skills laboratory in a private nursing school (KZN).

You are being asked participate in a research project. Your role will either be to answer a questionnaire or survey in a classroom setting with the rest of the research participants or to be interviewed by the researcher in a classroom setting as well.

You have been informed about this study by : Roxann Moodley (researcher)

You may contact Roxann Moodley at 083 361 3654 any time if you have questions about the research.

You may contact the **Biomedical Research Ethics Office** on **031-260 4769** or **260 1074** if you have questions about your rights as a research participant.

Your participation in this research is voluntary, and you will not be penalized or lose benefits if you refuse to participate or decide to stop at any time.

If you agree to participate, you will be given a signed copy of this document and the participant information sheet which is a written summary of the research.

The research study, including the above information, has been described to me orally. I understand what my involvement in the study means and I voluntarily agree to participate. I have been given an opportunity to ask any questions that I might have about participation in the study.

Signature of Participant

Date

Signature of Witness
(Where applicable)

Date

Signature of Translator
(Were applicable)

Date

Appendix 7.8: Editors Report

Reg. No. 2006/156780/23

14 April 2013

Dear Sir/Madam

EDITING AND PROOF-READING OF DISSERTATION OF ROXANN MOODLEY: “A process evaluation of the clinical skills laboratory in a private Nursing School in E’thekwini District, Durban” : WORDWEAVERS CC

I hereby confirm that the above student’s research dissertation was submitted to me for editing and proof-reading, and that these tasks were carried out and that errors and anomalies were amended accordingly. Items corrected include grammar, punctuation, spelling and syntax.

Please note that an Error Report was submitted to the student and her Supervisor with suggestions, recommendations and notations of errors which it was not possible for the editor to rectify and which required attention by the student. Once these corrections have been implemented the document can be regarded as complete.

I trust that this service will prove satisfactory

Yours faithfully

Catherine P. Eberle (MA)

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