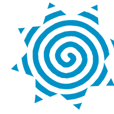


LAHDEN AMMATTIKORKEAKOULU
Lahti University of Applied Sciences

PATIENT SIMULATION ON FIRST YEAR NURSING DEGREE STUDENTS

LAHTI UNIVERSITY OF APPLIED SCIENCES
Degree programme in Nursing
Bachelor Thesis
Spring 2015
Elizabeth Ndegwa
Anne Seronei
Salami Olubukola

Lahti University of Applied Sciences
Degree Programme in Nursing

ELIZABETH NDEGWA

ANNE SERONEI

SALAMI OLUBUKOLA

Patient Simulation on First Year Nursing Degree Students

Bachelor Thesis in Nursing

41 Pages, 8 Appendices

Spring 2015

ABSTRACT

Simulation in nursing education has now been recognized as an important part in enabling nursing students to gain multiple training and experimental opportunities during their nursing studies. The aim of this project was to enable first year nursing degree students at Lahti University of Applied Sciences to conduct basic patient simulation sessions to improve their knowledge and skills in nursing care through simple patient cases. This project also highlights ethical issues that arise in simulation training.

Data was collected using a quantitative research method. Data was collected from the participants through a questionnaire, evaluation scale and oral feedback obtained during the debriefing session. 27 first year nursing students participated in the simulation session. Three different clinical scenarios were provided for the students. The students were divided into small groups to carry out the task.

Results from the simulation sessions showed improved knowledge and skills as well as increased confidence. Students expressed deep satisfaction and hoped for continuity. Future considerations would be integrating simulation into nursing theoretical studies to ensure student centered learning, socialization, team training and to bridge the gap between knowledge and clinical practice. Further considerations would be ensuring the functionality of the manikins in order for students to experience fidelity and realness during the simulation sessions. Lastly, it is recommended that simulation sessions be carried out every semester and as frequent as possible, by providing access to simulation labs with a simulation instructor to let students to practice as often as they would like.

Key words: Simulation, Education, Nursing, Ethics, Student, Participant, Patient Safety

Lahti University of Applied Sciences
Degree Programme in Nursing

ELIZABETH NDEGWA

ANNE SERONEI

SALAMI OLUBUKOLA

Potilas simulaatio ensimmäisen vuoden sairaanhoitajaopiskelijoille

Hoitotyön opinnäytetyö

41 Sivua, 8 Liitesivua

Kevät 2015

TIIVISTELMÄ

Simulaatio on tunnistettu tärkeäksi osaksi hoitotyön koulutusta ja se mahdollistaa hoitotyön opiskelijoille monenlaisia oppimiskokemuksia opintojen aikana. Tämän hankeen tavoitteena oli tarjota Lahden ammattikorkeakoulun ensimmäisen vuoden sairaanhoitajaopiskelijoille mahdollisuus suorittaa hoitotyön perustaitojen simulaatioharjoittelua. Tarkoituksena oli kehittää opiskelijoiden tietoja ja taitoja yksinkertaisten potilastapausten kautta. Simulaatioharjoituksissa korostettiin lisäksi myös hoitotyön eettisiä kysymyksiä.

Tutkimuksen aineisto kerättiin pääasiassa kvantitatiivisella tutkimusmenetelmällä. Aineisto kerättiin kyselylomakkeen, arviointiasteikon sekä ohjauskeskustelujen suullisen palautteen kautta. Simulaatiotilanteisiin osallistui 27 ensimmäisen vuoden sairaanhoitajaopiskelijaa. Opiskelijoille järjestettiin kolme erilaista skenaarioita, joiden toteutukseen opiskelijat jaettiin pienryhmiin.
Tulokset osoittavat, että opiskelijoiden tiedot, taidot ja itseluottamus kasvoivat. Opiskelijat olivat hyvin tyytyväisiä ja toivoivat lisää simulaatio-opetusta. Tulevaisuudessa olisi tärkeä integroida simulaatiota enemmän hoitotyön teorianpinnoihin. Tämä mahdollistaisi muun muassa opiskelijakeskeisyyttä, tiimityön harjoittelua ja kaventaisi teorian ja käytännön kuilua. Jatkossa on tärkeä huomioida tilanteiden realistisuus ja laitteiden sekä välineiden toiminta. Lopuksi on suositeltavaa, että simulaatiota järjestetään opiskelijoille lukukausittain ja että opiskelijat pääsevät simulaatiotiloihin ohjaajan kanssa harjoittelemaan niin usein kuin haluavat.

Avainsanat: simulaatio, koulutus, sairaanhoito, etiikka, opiskelija, osallistuja, potilasturvallisuus

TABLE OF CONTENTS

1 INTRODUCTION 1

2 NURSING EDUCATION 6

2.1 Expertise in Nursing 7

2.2 Learning in Nursing 8

3 ETHICS IN NURSING EDUCATION 11

3.1 Ethics education in nursing 11

3.2 Ethics in Nursing Simulation Education 13

4 PATIENT SIMULATION IN NURSING EDUCATION 15

4.1 History of Patient Simulation in Nursing 15

4.2 Nursing Simulation in Finland 18

5 AIM, PURPOSE AND OUTCOME 20

5.1 Aim 20

5.2 Purpose 20

5.3 Outcome 20

6 DESIGN, PARTICIPANTS AND SETTING 21

6.1 Design 21

6.2 Participants 21

6.3 Setting 21

7 METHODOLOGY 22

7.1 Research Method 22

7.2 Simulation Evaluation Scale Design 24

8 ETHICAL CONSIDERATIONS 28

8.1 Ethical Considerations 28

8.2 Informed Consent and Confidentiality 28

8.3 Beneficence and risk 29

8.4 Research Permit 29

9 SIMULATION IMPLEMENTATION 31

9.1 Simulation day 31

9.2 Post simulation 31

10 DATA ANALYSIS AND RESULTS 32

10.1 Data analysis and results from the questionnaire 32

10.2 Data analysis and results from Evaluation scale 36
10.3 Debriefing 37
10.4 Competency checklist 38
11 CONCLUSION 39
REFERENCES 42
APPENDICES

1 INTRODUCTION

"What's wrong with me? I can't get my breath. Can't you do something?"
The students respond, some hesitant at first, others take immediate action.
"Sit him up" one says. "And get some oxygen quickly!"
"I still can't breathe" their patient gasps. "
Now what?" Some students stand back, overwhelmed, unsure.
One wants to make a Medical Emergency Team (MET) call; another begins a focused assessment.

(Extract from Levett-Jones et al. 2011, 380.)

This is an example of what goes on in a simulation classroom as well as in real life. From the extract above, we see various students' response to a care need of the patient. Whist some were able to make some decisions under such circumstances; others are overwhelmed and uncertain as to what to do. We can also see from the extract, the patient who has a serious care need, and if not treated appropriately, might die. The question then follows as to how to ensure patient safety as well as encourage nursing students to practice their nursing skills and gain a wealth of knowledge. The answer appears to be simulation.

According to the Oxford Advanced Learners Dictionary(2014) simulation is 'a situation in which a particular set of conditions is created artificially in order to study or experience something that could exist in reality'. McGaghie (1999) defines simulation as a person, device or set of conditions which attempts to present education and evaluate problems authentically. It is a technique or activity which aims at realistically producing and imitating the characteristics, processes and experiences of the real world. The sole reason for this activity would be in order to teach students effectively and enable them to acquire and assess the necessary knowledge and skills. (Guise et. al. 2012, 411; Rutherford–Hemming 2012, 130; Norman 2012, 24; Dowie& Phillips 2011, 36; Cant & Cooper, 2010, 3; McGaghie 1999, 198.)

According to Professor David Gaba, Simulation is 'a technique, not a technology, to replace or amplify real experiences with guided experiences, often immersive in nature, that evoke or replicate substantial aspects of the real world in a fully interactive fashion'. Gaba explains further that by the word 'immersive' it means that the

experience being observed by the participant is not faked but is as natural as it would be in real life. Furthermore, Gaba defines asimulator as a tool that exhibits a simulated patient and tries to communicate effectively with the activities done by the simulation participant. (Gaba 2004, i2.)

In addition, simulation is seen as an educational intervention which creates an environment that is conducive to experiential learning and is able to imitate real life clinical practices. In a research study by Flo et. al. (2013), it was ascertained by nursing students after experiencing simulation sessions that the mode of learning is quite beneficial because it provides for good practical and theoretical learning. (Flo et. al. 2013.)

Nursing simulation education has become quite popular in most nursing schools and health faculties as it offers numerous benefits to students. It offers students the chance of practicing different tasks and skills over and over again as well as the chance to be able to apply knowledge and make decisions without any fear of causing harm to the patient. It also offers students the opportunity to work within a lifelike environment and acquire necessary skills. (Rutherford-Hemming 2012, 130; Guise et. al. 2012, 411-412; Cant & Cooper 2010, 4.)

Nursing simulation also provides a safe and supportive educational place that cannot always be attained with live humans. It ensures that specific learning task is addressed. It also enables students to gain confidence and technical proficiency as they practice whilst encouraging self-directed and self-motivated learners that can make the link between theories and practical life situations. Nursing simulation provides students with immediate feedback on performance which can boost their confidence and allows them to be able to safely make mistakes and learn the implications of failure. (Rutherford-Hemming 2012, 130; Guise et. al. 2012, 411-412; Cant & Cooper 2010, 4.)

Furthermore, nursing simulation encourages critical reflection and clinical reasoning in students and allows one to draw on a variety of adult learning theories. Sullivan-Mann et. al. 2009 carried out a study aimed to assess whether simulation improves critical thinking with the use of a Health Science Reasoning test. Having utilized 53

nursing students, results showed an increased score level in the critical thinking of the nursing students. (Sullivan Mann et. al. 2009, 111.)

Simulation offers an increased level of satisfaction and self-confidence to practitioners. Numerous studies attest to this advantage. According to Burns et. al. 2010, the results from the research using a pre and post test revealed a significant gain in nursing knowledge, confidence and communication. As for Mills et. al. 2014, similar results were deduced after the students experience a simulation session. Results showed high level scores on student satisfaction as well as high desire on the part of the student to want to participate in more sessions. (Mills et. al. 2014,12; Burns et. al. 2010, e87.)

Simulation experience has been further known to help develop nursing patient safety competences in nursing student. According to Ironside et. al. 2009, a study was conducted with 67 nursing students using a multiple stimulus types ambiguity tolerance scale-I as the evaluation tool. The results from this study showed a great improvement in the student's safety competencies as they participate from the first to the second simulation sessions. (Ironside et. al. 2009, 332.)

Whilst there are numerous benefits in the utilization of simulation, there are a few limitations. Despite the increase in knowledge and satisfaction that simulation offers, it cannot be used as a replacement for everyday practice. One major disadvantage of utilizing this model of teaching is that some of the manikins used are quite expensive and it takes a lot of time to develop, implement and maintain. Also, there appears to be a lack of guidance on how to incorporate simulation into educational programs. Furthermore, not all students are comfortable with this mode of learning. (Guise et. al. 2012, 411-412;Joutsen 2010, 1-10; Laschinger et. al. 2008, 278.)

According to Decker et. al. 2008, there are several models of simulation ranging from low tech stimulators to high tech stimulators. Low tech stimulators involve the utilization of models with little or no responses. Examples of low tech stimulators are partial task trainers and peer to peer learning. Peer to peer learning helps students to develop basic health skills and physical assessment and master same. (Dowie & Phillips 2011, 36; Cant & Cooper 2010, 4.)

There are also the medium tech simulators such as the screen based stimulators, virtual reality and Haptic systems. Through the use of computer and an interactive software, this model of simulators help to offer solutions to challenges experienced within clinical situations. They often need a large amount of inputting by someone in order to work properly.(Dowie& Phillips, 2011, 36; Cant & Cooper 2010, 4.)

Furthermore, there are high tech simulators that integrate a full electronic body manikin which is programmed to provide lifelike responses to clinical actions. For its functionality it requires the actual use of medical equipment and supplies. Moreover, the simulators automatically respond to stimuli and are computer driven. High tech simulators are more frequently used because they allow the student to be able to identify what is good and/or bad practice. (Dowie & Phillips 2011, 36; Cant & Cooper 2010, 4.)

Simulation education has only just begun in Lahti University of Applied Sciences (Lahti UAS), hence this project aims to help develop simulation studies within nursing school, create awareness, highlight the enormous benefits it provides to first year nursing students and increase their skills. In teaching simulation education, various ethical issues arise that will help develop critical reflection. These ethical issues flow from the principles of beneficence, normal efficiency, autonomy and justice. This ethical principles form the foundation of the nursing professional code. This project also hopes to highlight ethical issues that may arise in simulation training as well as state briefly the nurse’s code. General ethical issues in this research project including securing voluntary consent from participants and ensuring information privacy are also highlighted in this project. (Khan 2014, 306; Carlson 2011, 12-15.)

The literature search for this thesis was done in March, 2014. The databases were primarily from Cinahl and PubMed. The search words used were ‘patient simulation’ as well as ‘nursing’ and ‘student’. The search years were from 2004 to 2014. Cinahl database produced 246 search results out of which about 42 relevant peer reviewed materials were selected. From the PubMeb database using the same search words, it produced 543 results out of which about 9 relevant peer reviewed materials were selected. Attached as appendix 1 is a table showing the relevant research works found, the methods and results. The figure below summarizes the literature search and results for this thesis project from the various databases that were selected.

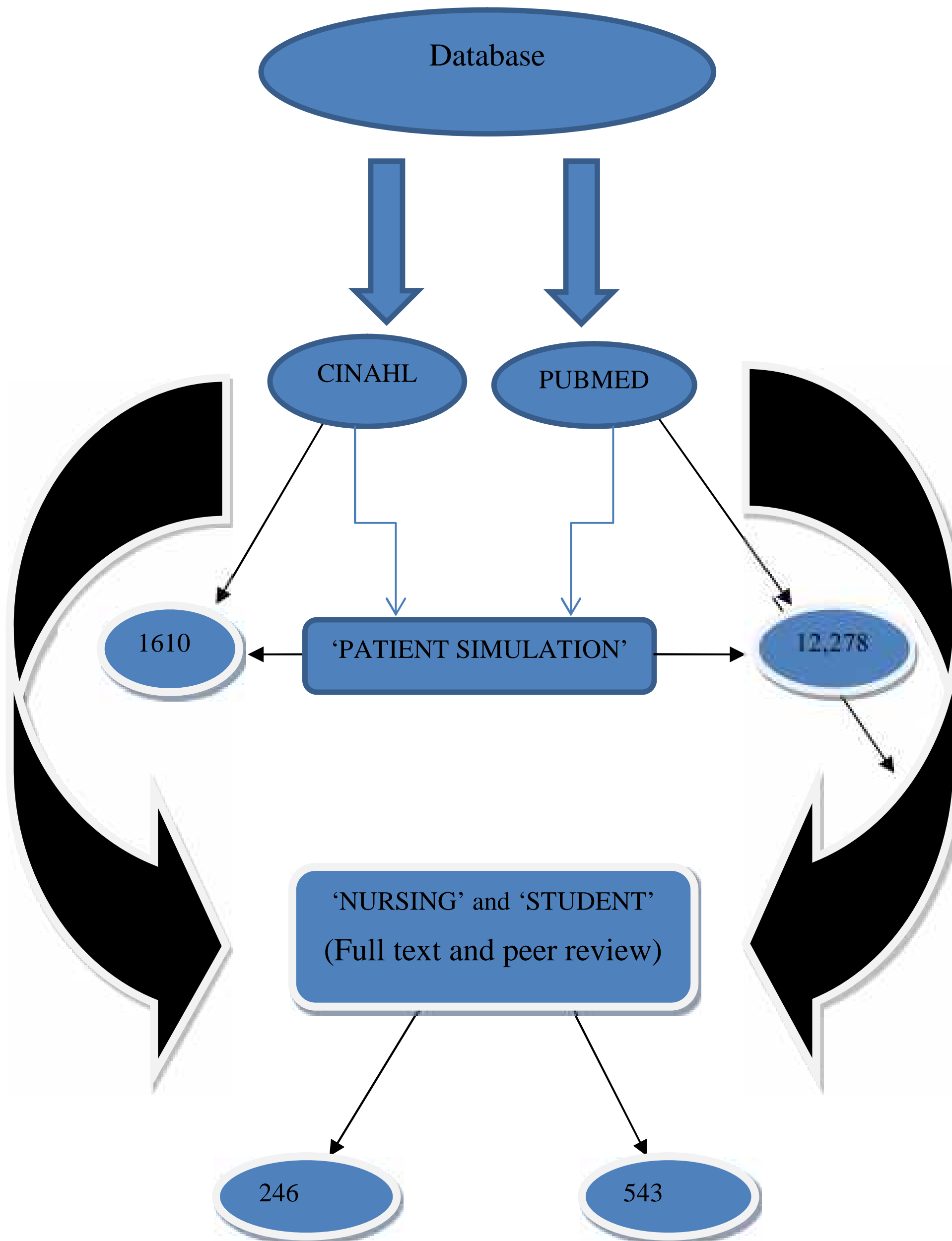


Figure 1: Literature search and results.

2 NURSING EDUCATION

2.1 Nursing Education in Finland

In Finland the basic nursing education is provided by the polytechnic schools otherwise known as ‘Ammattikorkeakoulu’. The polytechnic schools came into operation in the year 1991. In 1996, nine polytechnic schools attained permanent status. By the year 2000, all polytechnic schools as at then were granted permanent status replacing previous college-level basic nursing education. University education in nursing started in 1989. There are currently a total of 24 polytechnic schools under the Ministry of Education and Culture. Three of the polytechnics are being managed by the joint municipal authorities and the remaining 21 polytechnics are being managed by limited companies. (Ministry of Education and Culture, 2014; Managements by Results in Higher Education, 2001.)

In Finland a Bachelor's degree programme in nursing consists of 210-270 ECTS (European Credit Transfer and Accumulation) and the study period is between 3.5 - 4.0 years. One ECTS is equivalent to 27 hours of school work. Registered nurses require 210 ECTS to complete their study programme. Public health nurses and paramedics require 240 ECTS to complete their study programme. Midwives require 270 ECTS to complete their study programme. Further specialization studies can be attained after the completion of a nursing program. (Finnish Nurses Association, 2014; Råholm et.al. 2010, 2130-2134.)

The Act of higher education (351/2003, 426/2005) states that degree studies should provide the basic skills needed for an individual to work as a qualified nurse. The nursing studies are categorized into basic, professional, optional and clinical studies. A bachelor thesis is needed to be able graduate comprising of 15 ECTS. Nursing professional competence is based on both theoretical and practical skills that are acquired during the entire period of the degree course. In addition, nurses in Finland need to be competent in at least Finnish, Swedish and English, Finnish and Swedish being the official languages in Finland. (Råholm et.al. 2010, 2130-2134.)

The education and exercise of health care practice are strongly regulated due to the special nature of the health care field, its significance in society, and its risks to patient safety. The Act on Health Care Professionals (559/1994) and the Decree on Health

Care Professionals (564/1994) regulate the professional nursing practice. The purpose of the Act and decree is for the enhancement of patient safety and the assurance of quality care given by the professionals as well ensuring that it fulfills the required educational and competence levels. (Directive 2013/55/EU of the European Parliament and of the Council 2013, 150-152.)

The National Supervisory Authority for Welfare and Health (Valvira) offers, upon application, the right to practice as a licensed professional. Valvira also permits the use of the occupational title 'health care professional'. According to the Decree 423/2005 licensing is approved for 17 occupational titles of health care professions, one of them being a registered nurse. The practice of these professions is restricted to licensed professionals only. The names of the professionals entitled to use an occupational title will be entered into the central register of health care professionals. This central register is kept by Valvira. Valvira also issues decisions based on licensing matters as well as to applicants whose trainings have been obtained from outside of Finland. (Valvira 2013, 2-10.)

2.2 Expertise in Nursing

According to Benner (1984), expertise is a combination of practical and theoretical knowledge. A nurse's level of expertise will determine the level, extent and quality of care that would be given. Expert nurses are mostly more organized in their work and are able to respond faster and efficiently to situations. A nurse possesses expert skills by developing and implementingnursing interventions that helps individuals, families and communities. The nurse acts as an advocate for the patient supporting and empowering themin different situations. The nurse is seen as an independent expert whose actions are guided by up-to-date and evidence-based principles and professional guidelines. The nurse functions as a multi professional team mate and must be able to co-operate and negotiate with other health care professionals. (Ministry of Education and Culture, 2014; Benner, 1984.)

The Ministry of Education has produced guidelines on nursing education in order to ensure the equal and international competences of Finnish nurses. Professional nursing expertise involves a depth of knowledge in ethics, promotion of health, decision-making, being able to teach and offer guidance, being co-operative, doing research,

development and leadership, multicultural nursing, societal activity, clinical nursing and medication. (Foreign nurses guide to Finnish working life, 2010.)

2.3 Learning in Nursing

Learning is defined as “the acquisition of knowledge or skills through study, experience or being taught” (Oxford University Press 2012). Knowledge can beclassified under two subcategories; theoretical knowledge - ‘knowing that’, and practical knowledge- ‘knowing how’. Theoretical knowledge can be acquired from various different sources. Such knowledge acquired is objective and can be scientifically proven. Practical knowledge on the other hand can be acquired through one’s experience. These categories of knowledge are required in nursing and they go hand in hand (Benner 1984). Becoming an expert in one’s professional field requires mastering and understanding the professional knowledge and skills of the field, gaining the ability to implement this knowledge and skills in practice and the ability to maintain and develop professional knowledge. (Ruohotie & Honka 2003.)

Dreyfus and Dreyfus (1986) developed a theory of expert cognition by studying the development of skills and knowledge of the informants. The beginner often lacks experience-based knowledge and has difficulties in seeing all aspects of a situation; the qualified practitioner is capable of understanding the entire process and acting in a planned and goal-oriented manner. The expert can utilize intuitive thinking processes in understanding the entirety and structuring this understanding. The expert obtains more knowledge than they are able to voice out. (Dreyfus & Dreyfus 1986.)

Benner (1984) studied the above theory in relation to nursing and found it to be coherent.Benner (2001) suggests that a sound background in theoretical nursing field is highly recommended for nurses in order for advancement in their clinical expertise. Benner developed a continuum which shows various levels of clinical expertise. One can only attain some level of competency when one is in between the novice level and the expert level within the continuum chart. It is the nurse educators’ role to put in place learning that incorporates nursing theories and linking it to clinical experience. The point of linkage between theories and clinical experience is when a nurse attains competence. (Galloway, 2009.)

Learning in nursing is based on obtaining knowledge and learning and this knowledge is the foundation of nursing expertise. The nurse is then able to interpret and understand the problems and situation of the patient. The nurse is able to use evidence-based nursing practices to create and implement proactive nursing interventions. (Kassara, Paloposki, Holmia, Murtonen, Lipponen, Ketola & Hietanen 2005; Chapelhow, Crouch, Fisher & Walsh, 2005.)

Theoretical nursing knowledge makes up a large portion of the curriculum for the degree programme in nursing at Lahti UAS. The curriculum is designed so that each theoretical course builds upon the knowledge from previous courses. Education begins with the basics of nursing theory and philosophy, and the basics of understanding the person as an organic and spiritual whole. This knowledge then supports the learning of nursing assessment, planning, interventions and documentation. Courses on understanding disease and medical treatment are held by doctors or other specialists before each practical placement, for example a surgeon will hold a course on common surgical procedures and patients before the surgical nursing placement. As the education progresses, the students deepen their basic nursing knowledge by considering the ethical, multi professional, leadership and innovation sides of nursing in-depth. (Lahti UAS Nursing Study guide, 2014.)

The skills required in nursing are practical knowledge. It is not just knowing how to perform the necessary actions but also knowing why and when they are performed. It includes situation assessment, which requires skills in communication, observation, decision making and prioritizing. Planning in nursing and carrying out interventions require cognitive skills like reflection, thinking, decision making and guidance. Nursing evaluation requires skills in communication and the ability to use medical equipment to attain specified measurements, for example, measuring blood pressure, blood sugar or severity of depression symptoms. These skills are developed with knowledge and improve with experience. (Råholmet. al. 2010, 2130-2134; Lauri 2007, 6-7.)

Nursing education includes practical placements to develop knowledge through experience. The Lahti UAS curriculum includes seven practical placements, which are worth 75 credits. These placements aim to develop skills in specific fields of nursing. The placements begin with geriatric nursing, which focuses on encountering patients

in a holistic and respectful way and implementing and developing basic nursing skills. The other placements focus on medical-surgical, mental health, home care and pediatric nursing. The last three placements, which account for thirty five credits, are placements related to the student's own path of specialization. During these studies, students focus on developing the skills needed in nursing. They also focus on developing decision making skills, professional teamwork, thinking about new innovations and critically analyzing the health care industry. The aim ofthe placements is to develop from students into nurses by implementing the knowledge gained from theoretical lessons. (Lahti UAS Nursing Study guide, 2014.)

3 ETHICS IN NURSING EDUCATION

3.1 Ethics education in nursing

According to the Oxford Advanced Learner's dictionary (2014), ethics are moral principles that control or influence a person's behaviour. They help influence one's decisions thereby helping one to differentiate between right and wrong. It can be very challenging to ascertain what is right from what is wrong. An understanding of ethics is essential to the delivery of skilled professional care. It is vital that nurses appreciate the value of ethics in their work as it helps motivate them to ponder on their practices, and as nurses reflect on their practices, they are able to develop skills on how to better offer care to patients. Ethics is significant to nursing practice-based issues and touches on all areas of a nurses' role. (Oxford Advanced Learner's Dictionary 2014; Chaloner 2007, 42.)

To apply ethics effectively, nurses must develop reasoning skills and understand the concepts and principles that assist ethical analysis. An understanding of nursing ethics helps to carry out tasks in the appropriate way. Ethics in nursing education aims to encourage a moral attitude in nurses, providing a set of guidelines to follow and by adhering to these guidelines, the nurses' critical reflection skills are developed. In order to develop these critical reflections by nurse, the practical use and understanding of the codes of ethics is required. (Vanlaere & Gastman 2007, 759-763.)

Fundamental ethical principles taught to nurses are autonomy, beneficence, non-maleficence, fidelity and justice. These ethical principles form the basis of nurses' professional codes and ethical guidelines. The principle of autonomy signifies that a patient has the right to make choices about his treatment and as nurses, we need to respect these decisions. The principle of beneficence signifies that as nurses, our role is to support the welfare of our patients. The principle of non-maleficence signifies that as nurses, we must ensure that no harm comes to our patients. The principle of fidelity signifies that as nurses, our patients should be able to trust us with treatments and information shared. The principle of justice signifies the treatment of equality to all patients. (Carlson 2011, 12; Bosek & Savage, 2007.)

Ethics education for nurses can be taught using the ethical guidelines to nurses. The Finnish Nurses Association offers these guidelines to nurses to help provide the support needed as well as education as one encounters ethical questions within their day to day task. This guideline highlights the duty of the nurse, the responsibility to patients, responsibility to develop oneself in nursing competence, responsibility to other colleagues, to the society at large and to the nursing profession. The nurses' responsibility extends beyond the patient alone but also towards their families and the community in which they live. Ethical responsibilities to patients includes respecting their autonomy and self-determination. The patient must be treated without any bias and their values taken into consideration when care is given. (Ethical guidelines for nursing, 1996)

Ethics education for nurses can also be taught through virtue ethics which helps nurses to place greater importance on their attitude in providing care. Virtue ethics helps to empower nurses to act in difficult or stressful situations. Virtue ethics suggests that much knowledge and many skills are required for nursing care and that this knowledge when applied, can only provide good care when it comes from the nurses' virtuous care attitude. (Vanlaere & Gastman 2007, 759-763)

Ethics education can furthermore be taught through codes of ethics which helps introduce the nurses to principles of right action as well as what not to do in providing care. Codes of ethics play a big role in helping nurses to fulfill their ethical responsibilities. According to the International Council of Nurses code of Ethics for Nurses, 2012, nurses have four fundamental responsibilities which are to promote health, to prevent illness, to restore health and to alleviate suffering. Nurses are required as part of their responsibility to show respect for human rights, cultural rights, the right to life and choice, dignity and to be treated with respect. In care, a nurse must be respectful of their patients and not show impartiality due to one's age, color, creed, culture, disability or illness, gender, sexual orientation, nationality, politics, race or social status. (ICN, 2012; Fry & Johnson 2008, 69-109.)

The nurse's basic responsibility is to patients who require nursing care. The nurse must respect the human rights, values, customs and spiritual beliefs of the patients taken care of as well as their family and the community in which they live. Consent must be obtained from patients before care and treatment is offered. Sufficient and

accurate information must be given to patients. Such personal information must be held in confidence and only shared with consent from patients. The nurse also has responsibilities within the society. These responsibilities include finding ways to commence and enhance activities that help meet the health and social needs of the public; promoting equity and social justice in resource allocation, in the access to health care as well as in social and economic services. It is highly required that the nurse shows respect and compassion while offering care as well as be integral and trustworthy. The nurse must also be responsive to care needs. (ICN 2012; Fry & Johnson 2008, 123-132.)

Continual learning in nursing practice is the responsibility of the nurse. A standard of personal health and conduct must be upheld by the nurse in order that the care provided is not compromised. Such standards must reflect well on the profession and enhance its image and public confidence. The nurse must support and enhance an ethical organizational environment. Ethical conducts must be enhanced and supported whilst unethical practices must be frowned at. Judgment must be utilized when accepting and delegating responsibility. (ICN, 2012; Fry & Johnson 2008, 140-178.)

3.2 Ethics in Nursing Simulation Education

Ethics education for nurses can be taught through simulation settings which help to increase the perception and reflective skills of students. Ethical issues mainly arise from offering care to patients, reporting, autonomy and professional standards. Training within a simulation environment will offer confidence in ethical decision making. As the nurses discuss in simulation sessions these ethical dilemmas, they realize their strengths as well as their weaknesses. Also the nurses acquire more understanding on how to handle ethical situations in a different way. The atmosphere within a simulation setting is less stressful as compared to a real situation. Also nurses are usually limited in their time as they have other patients to attend to. In a simulation setting the time to care for the patient is not so restrictive. Hence ethical dilemmas can resolved better hereby helping to decrease the number of errors made during decision making which ultimately leads to an increase in patient safety. Simulation helps to resolve conflicts that arise from religious situations. Often times the nurses' morals or religion contradicts with the patients. Simulation offers a safe environment wherein

the participants can learn from the role playing as well as from errors made in non-destructive way. (Bagnasco et. al., 2014, 742-745; Shapira-Lishchinsky 2014, 60-68)

4 PATIENT SIMULATION IN NURSING EDUCATION

4.1 History of Patient Simulation in Nursing

Simulation first originated in the airline industry which helped the flight crews to prepare them for decision making during critical incidents while in flight. In the 1960s, the health care started to educate with its first simulation models – *Resusci Anne* and *Harvey*. Resusci Anne was used in training resuscitation classes whilst Harvey was used to train cardiology professionals. Simulation was later used in the medical field in anesthesia education to teach psychomotor skills. High fidelity simulation has continued to emerge in nursing education in the form of role plays, practical scenarios, and the use of low-fidelity mannequins. Earlier versions included rubber and plastic dolls. (Goldsworthy & Graham 2013, 2; Jeffries 2007, 2.)

Globally, simulation has been identified as an innovative method of teaching students to gain practical experience in nursing skills, as well as enabling students to put their theoretical knowledge into practice. Simulated practice learning has been used as an adjunct to clinical skills gained in practice settings for a number of years. Life size manikins were first used to support learning in 1911, becoming more popular in the 1950s (Moule 2011, 645-646.) According to Hermann, the author of *Remembering Mrs. Chase*, "For nurses who were educated from 1911 through the late 80's, - we remember Mrs. Chase and her descendants, who inhabited our clinical laboratories and who suffered as we practiced our beginning nursing skills on their poor, defenseless bodies. I'm not sure how old she was, but one "Mrs. Chase" was an integral part of Washington Hospital School of Nursing in 1981-83 when I attended. Regardless of her age, Mrs. Chase seemed an eternal 25-30 year old. She never complained, despite her illnesses (of which she had many). Nor did she complain about inept nursing students who sometimes rolled her too far to one side of the hospital bed, or when she was treated a bit roughly by some." (Hermann, 2011.) Mrs. Chase is an example of one mannequin who was created by Mrs. Martha Chase, the wife of a physician and whose hobby was making cloth dolls for her children and neighborhood children. Her aim was to enable a practice platform where nursing students could demonstrate their nursing skills.

Today, simulation encompasses a range of delivery methods and modes including low-fidelity interactive manikins with life-like qualities, role play, case studies and virtual online environments. In recent years, human like simulators are now in use. These simulators can talk, sense, have breath sounds and have a heartbeat. They are computer operated, and are attached to various monitors that show different measurements. (Goldsworthy & Graham 2013, 2; Moule 2011, 645-646.)

According to Pakkanen et. al., 2012, patient simulation can be divided into low, medium and high levels which corresponds to actual real life nursing experiences. In the low levels the manikins are without sounds and lifeless. In the medium levels the manikins are making just breathing sounds. In the highest level, the manikins are speaking, chest movements are evident and eye movements are seen making the experiences real. (Pakkanen, Salminen & Stolt 2012, 163-174.)

Simulation allows different learning objectives to be taught in a realistic clinical kind of environment without causing any risk to patients. Students are exposed to a situation that requires them to combine their assessment and clinical decision-making skills with communication, teamwork and leadership to care for the simulated patient. After the simulation scenarios, the learners are able to reflect on their performances with a facilitator who discusses their areas of strength and weaknesses and how to improve their skills and confidence. For simulation to be successful, learners need to suspend reality and interact with the simulator as though it was a real patient. (Wilford & Doyle 2006, 604.)

Nursing simulation addresses the need for new nurses, the increasingly complex health needs and patient safety which is at the forefront of nursing education. These are some of the challenges facing nursing education include the increasingly number of patients, nursing staff shortages, lack of enough clinical practice sites, and the changing roles of nurses. These are the driving forces behind the introduction of simulation. Patient safety has become the most important aspect of nursing care, which requires nursing students to be able to provide a safe and effective environment. They are expected to demonstrate leadership, teamwork, coordination and problem solving skills. Therefore,

simulation offers them an environment to learn and demonstrate these skills through simulation scenarios. (Campbell & Daley 2013, 2.)

The appeal of simulation is routed in its capacity to offer learners exposure to real-life scenarios in a safe environment. Learners can practice skills, receive feedback from facilitators, fellow students, and with the use of high-fidelity simulators; can also learn from patient response and outcomes. Through the process of practice and feedback students can be helped to develop in both confidence and competence prior to delivering care in real life practice settings. Sophisticated simulation techniques can be used by facilitators to support psycho-motor skill development and also help learners achieve critical thinking, decision making and problem solving skills. Simulation also provides facilitators with a vehicle to support learner assessment. Using standardized scenarios and grading criteria facilitates the assessment of student competencies in preparation for skill delivery in the practice setting. The figure below summarizes simulation learning to the Miller's pyramid, a proposed framework for assessing and developing clinical competence, developed by a psychologist named George Miller in 1990. The lowest level defines the knowledge of a skill, followed by the knowhow on how to conduct the skill, showing how to do a skill in a realistic environment, and doing the skill in practice. Other modes of assessment such as multiple choice questions, simulation design tests are also used to assess and collect information on the lower levels of the Miller's pyramid. (Moule 2011, 645-646; Norcini 2003, 753–755.)

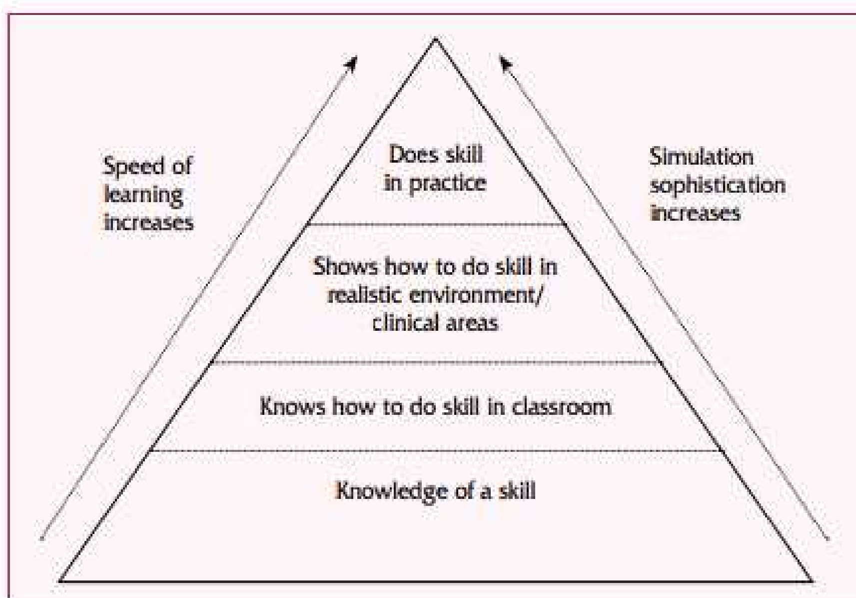


Figure 2: Linking Simulation Learning to Millers Pyramid (Wilford & Doyle 2006, 605).

In addition to that, several characteristics and attributes need to be illustrated, in order for simulation sessions to achieve the desired outcomes. The three characteristics i.e. knowledge acquisition, fidelity and outcomes all seek to explain the result of the plan simulation sessions. The table below outlines in detail, the attributes and characteristics of the attributes of a simulation design. (Nickerson et. al 2011, 83).

Table 1: Attributes and Characteristics of the Concept Clinical Simulation (Nickerson et. al 2011, 83).

Attributes	Characteristics of the Attribute
Knowledge acquisition	Learner centered
	Experiential
	Socialization
	Team training
	Bridge between knowledge and clinical practice
Fidelity	Imitation
	Reality based
	Analogous situation/apparatus
	Interactive
	Environment
	Safe
	Nonjudgmental
	Controlled
	Ethical
Outcomes	Skill development
	Knowledge integration
	Critical thinking
	Independence
	Self-confidence
	Learner satisfaction

4.2 Nursing Simulation in Finland

Nursing Simulation has developed a great deal in Finland. In the 1980's, Finland began to utilize resuscitation manikins extensively. As technology improved, computer based resuscitation manikins were developed and were being utilized in 1990`s. By the year 2000, high tech simulation equipment was used. Currently, mobile

simulation manikins are being used in nursing training in order to better offer safety to patients. Currently simulation is offered in majority of the nursing schools in Finland. The first nursing school to start offering simulation studies was Arcada Polytechnic School situated in the Helsinki region. Arcada runs a Patient Safety and Learning Center, which is used for simulation learning in reality like settings. As at today, the nursing school offers simulation studies in pre-hospital, anesthesia, labor, emergency room, patient safety and crisis resource management rhythm management (CRM) (Väisänen 2011, 2-4; Hallikainen & Väisänen 2007, 436 - 437).

By the year 2004, there were only two nursing schools in Finland which had stimulation centers and offered training to students (Arcada and Kittilä Polytechnic Schools). In the same year the first simulation center, Arcada Medical Simulation Center was founded. In 2007, the Emergency Services College also founded a simulation learning development workgroup, to help build simulation training schools for their staff. Currently, there are simulation centers in quite a number of the nursing schools all over Finland, Lahti being one of them, with an up to date simulation laboratory and de-briefing room, opened in September, 2013, where students can watch simulation implementations and later reflect and de-brief about them. All this aims to give nursing students expertise and competence as well as help reduce adverse events which could result in the death of a patient (Väisänen 2011, 6-8;Helveranta et. al. 2009, 2-5,Hallikainen&Väisänen 2007, 436.)

The learning pathways of simulation in Finland ranges from skill station simulation learning to full scale simulation learning. Skill station simulation learning in Finland offers to students the ability to learn basic life support cardiopulmonary resuscitation (CPR) skills and competence. The students also receive voice feedback during training. Full scale simulation learning is otherwise called high fidelity simulation learning. This simulation learning integrates a full electronic body manikin which is programmed to provide lifelike responses to clinical actions. For its functionality it requires the actual use of medical equipment and supplies. Furthermore, the simulators automatically respond to stimuli and are computer driven. (Väisänen 2011, 3;Hallikainen &Väisänen 2007, 436.)

5 AIM, PURPOSE AND OUTCOME

5.1 Aim

The aim of this project was to develop nursing simulation education for first year nursing students at Lahti University of Applied Sciences with the purpose of enhancing basic nursing skills.

5.2 Purpose

The project was designed to increase knowledge and skills in basic nursing care and patient safety of first year nursing students who have just finished their first clinical placement. This will promote preparation for the students, who are still relatively new nurses as it will give room for critical thinking, decision making, problem solving, delegation and team work.This project will also enable the teachers to support and enhance innovative teaching strategies, which will help them to evaluate their teaching methods and make improvements on areas of weakness.

5.3 Outcome

The project involves coming up with three basic simulation scenarios that will be conducted at Lahti UAS simulation center, together with the simulation instructors. By the end of this project, the students will be able to handle different scenarios while ensuring patient safety as a primary goal.

6 DESIGN, PARTICIPANTS AND SETTING

6.1 Design

In this project, the first year nursing degree students, studying in English at Lahti UAS, were the main focus group. The project was undertaken together with the simulation facilitators and instructors. Constructive instructors provide opportunities for students to analyze the facts and to allow for critical thinking and problem solving, enabling them to fully understand the material. They also provide an avenue for discussion, therefore facilitating the learning process for students from different backgrounds. (Nickerson et. al. 2011, 84.) Scenarios are attached as appendix 2.

6.2 Participants

The project participants were first year nursing students at Lahti UAS. The group consisted of 30 students from different countries, all pursuing the international Degree Programme in Social and Health Care. The students were relatively new student nurses, who had just completed their first clinical placement in geriatric care. They had basic knowledge on primary care and nursing. Knowing the ground rules and learning of the simulation scenario was conducted to allow for responsibility, self-instruction, motivation, problem solving and teamwork. The rules included mechanisms that allowed the students to make mistakes, which they could later learn from. (Nickerson et. al. 2011, 84.)

6.3 Setting

The project was conducted at the new Lahti UAS simulation center. All the simulation scenarios were conducted in the simulation center which is designed to look like a real standard hospital room. It is equipped with a high-tech manikin that the simulation instructor can use to programme, in order for it to mimic human-like behaviors and symptoms such as eye movement, pulsating, speak to the caregivers, react to pain, bleed and heart beating. It also contains all the necessary clinical equipment needed. The center will help to provide a safe and more efficient place for the students to conduct simulation practice.

7 METHODOLOGY

7.1 Research Method

According to the Oxford Advanced Learner's dictionary (2014), research is defined as a 'careful study of a subject, especially in order to discover new facts'. Grove et. al(2015) defined nursing research as a scientific method which helps to certify and improve the existing knowledge of things and ultimately affecting the nursing practice in general. This research project, though a developmental project, will be implemented using a quantitative research method in order to collect in-depth feedback on student's current opinions on simulation.(Grove et. al. 2015, 3; Oxford Advanced Learner's Dictionary 2014.)

Quantitative research method is an objective form of research study where numerical data is utilized in order to obtain information from a set of people. This research method is subcategorized into four different types. They are descriptive, correlational, quasi-experimental and experimental quantitative research method. A descriptive quantitative research offers a detailed view of real life events with the hope of discovering something new. A correlational quantitative research method is mostly involved in examining the correlation of variables and investigating the relationship that exist between the variables. A quasi-experimental quantitative research method helps to study the effects one variable has on another. This method aims at putting into place certain interventions and investigating the effectiveness of such inventions thereafter. An experimental quantitative research method aims to establish the causality between independent and dependent variables. In this project, information will be gathered through a questionnaire, attached as appendix 3, and an evaluation scale, attached as appendix 4. (Grove et. al. 2015,19, 33-34.)

7.2 Questionnaire Design

Questionnaires are self-reports used to gather information about opinions, beliefs and attitudes from individuals. These reports can be gathered through written forms, verbal forms or through electronic responses. Items in a questionnaire must be clearly written, so that they are comprehensible to the respondent. Close-ended items, or

questions, are used when a fixed number of alternative responses are chosen. Fixed-response items simplify the respondent's task and the researcher's analysis, but may miss some important information about the subject. In addition, people are known to answer in a way that makes favorable impression, also known as social desirability. Because there is no way to tell what the reality is, the researcher is forced to assume that the respondent is telling the truth. Questionnaires are desirable tools when the purpose is to collect information. They are also inexpensive, allow for complete anonymity, and are free of interviewer bias.(Grove et. al. 2015, 304; LoBiondo-Wood & Haber 2006: 325-328.)

There are different phases when developing a questionnaire; naming the matters that are researched upon, designing the structure of the questionnaire, testing the questionnaire, revising the structure and questions, and then coming up with the final form. In addition, they have to consider the content and functionality of the response options, as well as the burden of filling out the form and the time it consumes. The respondents should also consider if something relevant is missing, or if there are unnecessary questions involved. Designing a questionnaire requires familiarizing with literature, reasoning a research problem and clarifying it, defining concepts, and choosing a research layout. When planning, one must also consider how the matter is processed. (Heikkilä 2005, 47-48, 61.)

This project was be implemented through a questionnaire, which means that it was structured. The participants were given a predetermined set of questions that they answered according to what described them best. The survey included a cover letter informing the participants of why the survey was being conducted, assuring them of their anonymity and of their right to refuse to answer, and thus gaining informed consent. (Mack et. al., 2005.)

The majority of the questions were closed-ended from which participants had to provide their answers from the options provided. The closed-ended questions attempted to gauge in what ways the participants benefited from the simulation sessions and the need of using it as a teaching tool in nursing education. The questions were designed to determine student views and opinions related to the ideas about simulation as a learning tool in nursing suggested by the theoretical research. (Paunonen & Vehviläinen-Julkunen 2006).

The purpose of the questionnaire was to gather information about how simulation facilitates learning and so the participants were asked how they felt concerning the simulation experience, if it helped them learn. The wording of the question attempted to remain neutral but still inspire the participant answer in-depth, even if they felt that they did not benefit from the simulation. The participants were asked how the simulation motivated their learning as it was one of the purposes of the simulation as a learning tool.

Based on research, the main purpose of simulation in nursing is to help facilitate learning, so the participants were asked how they felt, where this was achieved through participating in the simulation session. They were asked if they felt that the simulation process was easy or difficult, since learning is best facilitated through learning tools which the student are comfortable using. A question about why they would continue to participate in simulation sessions throughout their studies was also asked to compare the answers with those to questions about benefits of simulation because a participant could describe simulation as useful in motivating and organizing learning but still not plan on participating in the simulation sessions. The participants' perspective on future benefits of simulation during clinical placements was also explored. The questionnaire ended by asking the students to numerically rate how helpful simulation is in the learning process. Lastly, the participants were also asked to write down any other comments they may have had.

7.3 Simulation Evaluation Scale Design

Evaluation of simulation is an essential part in evaluating the effectiveness of the scenarios in meeting the learning objectives. Some other components that can be evaluated include the simulation design, the students' satisfaction and a presence of positive educational practices. Through evaluation, students' performance is enhanced. Simulation design and facilitator skills are also further developed. Simulation is useful in evaluating competencies such as critical thinking, decision making and judgment. (Goldsworthy & Graham 2013, 19.)

The aim and purpose of conducting the simulation cases is to ensure that the students are able to learn more about patient safety, acquire problem solving and decision making skills, teamwork and to provide them with a safe learning environment that

does not jeopardize patient safety, by practicing on a human-like manikin in a clinical setting scenario.

The design elements therefore include objectives, fidelity, problem solving, student support, and debriefing. The objectives must be clearly stated, in line with the level of the practicing students, to ensure that the goals are met. Fidelity is defined as the level of realism between the simulation manikin being used and the environment in which simulation is being conducted. The simulation should be as realistic as possible in order to enable the learner to acquire useful knowledge that will be transferred in dealing with the real world cases.

Problem solving skills enable the patient to think outside of the box for solutions to solve the cases, as well as include decision making in the process, to ensure the best possible treatment or care is given to the patient. Simulation scenarios challenge the students to think of solutions in a team or individually. Student support is also an important aspect in the design phase. This involves giving the students first-hand information about the case and giving them clues to enable them to solve the case. (Wilson & Klein 2012, 58.)

One of the most common types of evaluation scales is checklists, which measures the skills and competencies of the students. Other evaluation tools such as the facilitator feedback and the peer feedback are also used. In facilitator feedback, the tool is used only by the facilitator, to provide feedback in the middle or at the end of the session. The students are then able to make improvements, based on the feedback given. On the other hand, in peer feedback, the facilitator prompts questions during debriefing which enables the students to refocus and promote self-reflection. Other tools that are commonly used in assessing integration of knowledge are the pre-test and post-tests, which are based on the learning outcomes. The pre-test is completed prior to the simulation and the post-test is completed after the simulation sessions.

For this project, a Likert scale was used as the simulation evaluation scale in order to evaluate and ascertain the opinions of the students as it relates to the simulation exercise. Likert scales consist of declarative statements affixed with an evaluation rating scale. In addition, the peer feedback otherwise known as the debriefing session were utilized. The focus of this project’s simulation evaluation scale was on the

student's specific opinions on enhanced learning, boosting of confidence, feedback, fidelity, satisfaction, teamwork, decision making and critical thinking. All the students were given an evaluation scale form to fill after their simulation sessions. The results were reported in terms of student achievement, attitudes, perceptions and simulation design. (Grove et. al. 2015, 307-308; Goldsworthy & Graham 2013, 19-20.)

7.4 Data Collection

Data was collected using a closed-ended questionnaire and a simulation evaluation scale during the simulation lessons. It is important that data is collected in a consistent way and the integrity of the information obtained be protected. The criteria was that the participant was a first year English nursing degree programme student at Lahti UAS. The participants were chosen from the English nursing degree programme to provide an international point of view. The questionnaires were handed out at school during simulation lessons with the permission of lecturers, and the participants were given ample time to answer the questions. (Grove et. al. 2015, 310.)

Oral data was also collected during the debriefing session. De-briefing, also referred to as guided reflection, is a planned session after the simulation sessions, led by the instructor, to allow the students to reflect on the scenarios, to assess their decisions, actions, communication and ability to deal with the case. (Shinnick et al, 2012.)

It is considered as the most important aspect of simulation, since it is through this approach that knowledge, skills and attitudes are developed by the students. It encourages the students to analyze the situation and identify pitfalls that they encountered and develop a plan of how to handle similar cases in real life cases. Moreover, debriefing enhances critical thinking, problem solving, clinical decision making and judgment. The facilitator is the key person in guiding the students towards reflecting on the performance and enabling them to acquire new knowledge and skills. It is an important aspect in preventing psychological harm to the students who encounter a wave of emotion, as the debriefing sessions allow the students to talk and reflect on the simulation scenario that they performed. (Goldsworthy & Graham 2013, 16-17.)

Feedback is one of the most important aspects in simulation based learning, since it promotes reflection which is a tool to promote the process of continuous learning. Therefore, de-briefing sessions should be held immediately after the simulation session has been concluded, to focus on the objectives that the learner did, or did not achieve. The feedback given, positive or negative, should allow the learners to assess their actions and decisions. (Nickerson et. al. 2011, 84.) Figure 2 below summarizes the knowledge acquisition from introduction to simulation in theory, simulation implementation in practice, de-briefing and reflection and finally the process of knowledge acquisition.

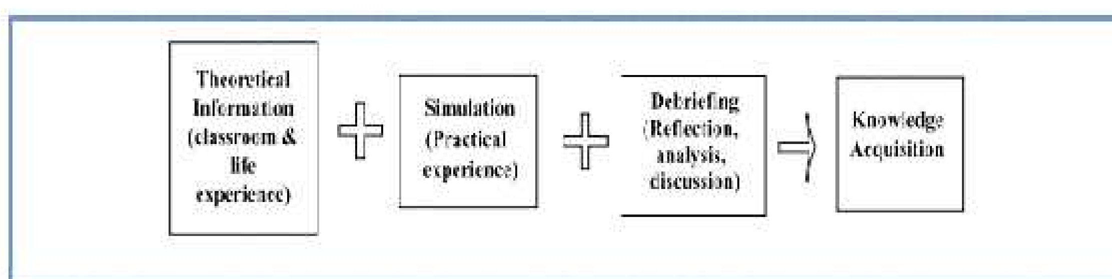


Figure 3: Process of Knowledge Acquisition Using Simulation (Nickerson et al, 2011, 85).

Debriefing was the last part of the scenario. As earlier stated, this allows the students to reflect on how they tackled the simulation scenario, the mistakes they made, the challenges they encountered and what they would have done better. This enables them to have a clear picture of how to handle the same or similar case in real life.

7.5 Data Analysis

Data was analyzed using a frequency distribution method. Frequency distribution is mostly used to arrange data for easy examination, describing the frequency of scores in a study. Display of the data analyzed was done inform tables and graphs. Examples of graphs include pie charts, bar chart and line graph. For the purpose of this project, a bar chart was used in analyzing the data obtained. The numerical values were first presented on a table and then further displayed on a bar chart. (Grove et. al. 2015, 330-331.)

8 ETHICAL CONSIDERATIONS

8.1 Ethical Considerations

Ethical considerations were taken into consideration while developing this project. Approval was obtained from the Faculty of Social and Health Care of Lahti UAS prior to the commencement of the project. The participants who were first year English Nursing Degree students, consisted of students from diverse cultural and religious backgrounds. Measures concerning ethical issues during the simulation implementation were therefore taken into account to avoid any form of discomfort or disrespect to the students.

8.2 Informed Consent and Confidentiality

The Nuremberg Code (1947) states that the voluntary consent of the subjects is essential and that a person involved in any kind of study should have legal capacity to give permission or should consent and allowed to choose without any intrusion, force or deceit. The main purpose of the informed consent process is to provide sufficient information of the subject matter so as to enable them to make an informed decision about participating in the subject matter. Moreover, more information such as the nature, duration, methods and purpose of the project should also be communicated so as to avoid any inconveniences in health or any other aspects. (Shuster 1997, 1436.)

In this project, introduction of the simulation development project was done during normal lecture hours of the students. Information about the aim, purpose, benefits, processes to be undergone and evaluation was presented on this day as well. The facilitators informed the students about their right and benefits to participate in the project, as well as obtain written consent from them. Confidentiality of personal information given was also discussed and emphasized, in that all the information provided was to remain confidential and was not to be disclosed to any other person, but only be used for the purpose of the project. Full disclosure was also made to ensure that the students fully understand the informed consent process and address any questions or concerns that they might have had. The participants were then asked

to fill an informed consent form, attached as appendix 5, to give permission to conduct the project with them and collect information from them.

8.3 Beneficence and risk

The aim of beneficence and risk is to inform the students of the benefits that come with their participation in the study, as well as the risks involved, if any. This development project has direct benefits to the students since learning through simulation allowed them to be exposed and better prepared to a variety of clinical situations that require the ability to critically analyze, prioritize and enable them to make rapid decisions in a complex clinical environment. This project aimed to provide a safe and risk-free environment, without causing any harm to patients. Apart from developing psychomotor skills, the students were also able to learn how to deal with emotional and sensitive issues which might include family members, friends or even end of life scenarios. Since the subject group consisted of patients from different cultural and religious backgrounds, ethical considerations were taken into account to ensure that no risk, harm or disrespect was caused to the students in terms of culture, religion or beliefs during the simulation implementation.(Goldsworthy & Graham 2013, 2.)

In addition, the simulation scenarios included a component to handle a patient from a different culture, to allow the students to make sound decisions on how to handle the patient, taking into consideration, ethical issues that did not compromise with the patient's beliefs or cause any harm or disrespect.

8.4 Research Permit

The Lahti UAS instructions for a research permit application state that for any thesis or development project that is conducted within the organization involving staff and fellow students, a research permit must be obtained from the research director and filled accordingly. This is to give a conformation and agreement to the rules which state that Lahti UAS, including staff and project/thesis facilitators should not provide any data or information about its staff or students for research purposes, to any

external or third parties but only to the target participants. The plan is first submitted to the project supervisor who approves it, before submitting it, together with the research permit application to the research director, for approval or disapproval of the project, and then informs the applicants about the decision. If given a go ahead, the applicants proceed with the project, and must then later attach the research permit in the final report. (Lahti UAS Instructions for Research Permit, 2014.)

In addition, facilitators must conform to the rules outlines in the guidelines for good scientific practice published by the Finnish Advisory Board on Research Integrity (TENK). The board was founded in 1991 with the aim of addressing ethical issues that arise when conducting research, to prevent misconduct and to advance the research in Finland, by spreading information about ethics and integrity of research. (Finnish Advisory Board on Research Integrity, 2012.)

Responsible Conduct of Research (RCN) guidelines have been developed to ensure that researchers and students adhere to the rules and regulations of TENK. The main objective of these guidelines is to ensure that research and other development projects are carried out in a responsible and ethical manner as well to prevent various kinds of misconduct in sectors such as universities, research institutions and universities of applied sciences. The guidelines go on to state that universities and universities of applied sciences have to ensure that the students fully understand the principles behind conducting responsible research and the consequences that follow a research misconduct. Universities and universities of applied sciences should therefore offer continuous studies and education on research and integrity to their staff, who in turn transfer the education to their students. (Finnish Advisory Board on Research Integrity,Guidelines,2012, 28-31.)

9 SIMULATION IMPLEMENTATION

9.1 Pre information

Pre information about the simulation session and the project's purpose was given to the entire year one nursing students both orally and through a message sent through the students' school pages. A 15 minutes class lecture was offered to all the students informing them about the proposed simulation and teaching what it was all about. The messages were communicated on the 29th April, 2014. In addition, consent forms along with signatures were obtained from all the students who participated in the simulation session prior to the day.

9.2 Simulation day

5th May, 2014 was reserved as the day for the simulation. The timetable of the simulation day is attached as appendix 6. The time was reserved from 8:30am till 15:45pm with coffee and lunch break assigned in between. To help out with the simulation, two nursing lecturers were assigned to oversee the whole process as well as provide guidance where necessary. A total of 27 students attended the simulation session. The students were divided into groups of five with the last group consisting of two students. A copy of the Identify, Situation, Background, Assessment and Recommendation form (ISBAR), was distributed to each of the students explaining the process they had to follow. Furthermore the scenarios were distributed to the students to help familiarize themselves with the cases. Three different scenarios were issued to the students. A copy is attached in the appendix 3.

9.3 Post simulation

After the simulation session, questionnaires and evaluation papers were issued out to be filled by the participants. Both forms are attached as appendix 6 and 7. The focus of the evaluation scale was to get feedback on the effect of the simulation training on participants and how it affected their learning.

10 DATA ANALYSIS AND RESULTS

10.1 Data analysis and results from the questionnaire

The questionnaire used in this project consisted of 17 closed ended questions as well as one open question. These questionnaire was filled by all 27 nursing students that participated in the simulation session. In the closed ended questions, the students had to choose one of the options given in order to answer the questions (strongly disagree, somewhat disagree, somewhat agree and strongly agree). In analyzing the data received from the questionnaire, a frequency distribution method was used which was put in place through an excel spreadsheet program and results are presented in a table below (Table 2).

Table 2: Results from Questionnaires

Table 2: Results from the questionnaire	**Strongly disagree**	**Somewhat disagree**	**Somewhat agree**	**Strongly agree**
The simulation scenarios were designed in an effective method		2	12	13
The facilitators instructions were clear and materials provided were understandable		2	6	19
I feel better prepared to deal with real life patients	1	1	12	13
I am more knowledgeable in checking for basic signs of life for a patient			8	19

I developed a better understanding of the simulation and its importance			8	19
I developed a better understanding of the ways and channels to follow in case of an emergency	1	1	8	17
I was challenged and I’m now more confident in decision making, problem solving and critical thinking		1	15	11
I am more confident in determining what to report to the doctor	1	5	13	8
My patient assessment skills have improved		2	16	9
I feel confident in handling patients from various religious, cultural and racial backgrounds		3	14	10
I feel knowledgeable in being able to assess changes in a patient’s condition		1	14	12
I am able to better predict what changes may occur with my real patients		6	12	9

The simulation sessions helped to understand and relate classroom theory to real life practical implementation		2	6	19
I learnt a lot from observing my peers tackling the simulation scenarios			5	22
Debriefing reflection and group discussion sessions were valuable and educative in helping me to understand what went well, what to do better and what went wrong			4	23
Have these simulation sessions been helpful in helping you to enhance your nursing knowledge?	3		15	9
Would you recommend this method of teaching?	3		8	16

The data received shows that 16 students out of the 27 students that participated and filled the questionnaire strongly agreed that simulation sessions should be recommended as a method of teaching based on their experience. Majority of the simulation participants agreed that simulation was a positive way to learn. 25 out of the 27 students that participated strongly and somewhat agreed that they felt better prepared to deal with real life patients after the simulation session. 19 out of the 27 students that participated strongly agreed that they felt more knowledgeable in

checking for basic signs of life for a patient. 26 out of the 27 students that participated strongly and somewhat agreed that they were challenged and more confident in decision making, problem solving and critical thinking. 23 out of the 27 students that participated strongly agreed that the debriefing, reflection and group discussion sessions were valuable and educative in helping to understand what to do better.

Below is a graphical representation of the results. (Figure 4)

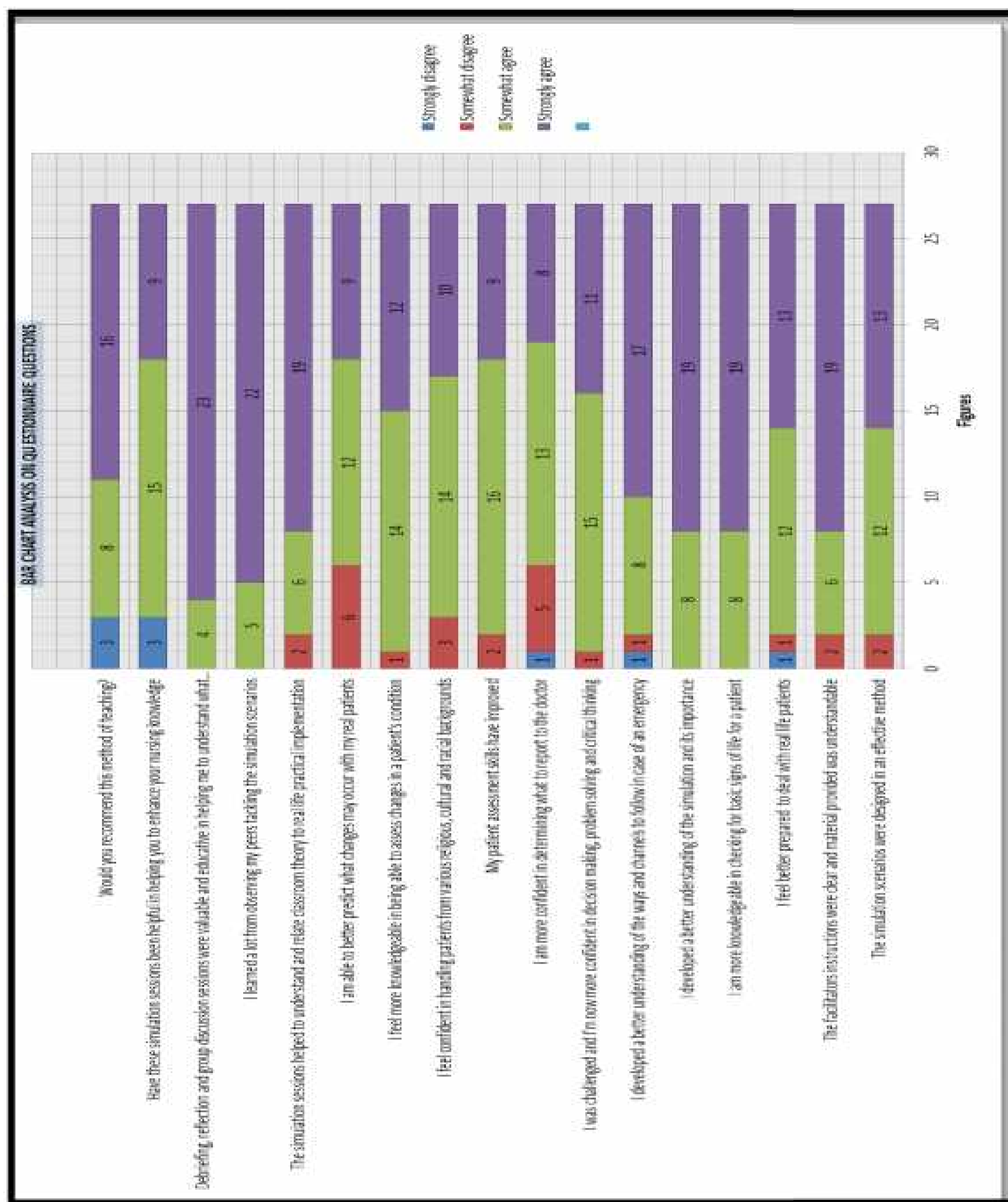


Figure 4: Bar Chart analysis on Questionnaire results

From the open questionnaire, the students had the opportunity to comment freely about their simulation experience. All the students strongly agreed that they were grateful for such an opportunity to learn in this manner. Majority strongly agreed that they gained confidence and improved learning skills through the experience. They also wished that simulation would be conducted more routinely each semester. Some of the comments made are stated below.

'I'm really happy that you showed us the importance of simulation and what it means in general. Beforehand I knew it exists but I didn't know that it is related to such great opportunities.'

'It's a really good method, it's easier to remember and apply for the real cases. ..... I hope we will have more in the future.'

'*Simulation days improve learning, team working skills, allow hands on learning while providing positive feedback*'.

10.2 Data analysis and results from Evaluation scale

The evaluation scale used in this project consisted of eight focused themes. This evaluation scale was filled by all 27 nursing students that participated in the simulation session. In the evaluation scale, the students had to choose one of the grades given in order to answer the questions (grade 1-5). The scale ranged from grade 1 to 5, grade 5 being the highest and grade 1 being the lowest. The focus themes of the scale was on enhanced learning, boosting of confidence, feedback, fidelity, satisfaction, teamwork/collaboration, decision making and critical thinking. In analyzing the data received from the evaluation scale, a frequency distribution method was used which was put in place through an excel spreadsheet program and results are presented in a bar graph as shown in appendix 7 as well as a bar chart as shown below. (Figure 5)

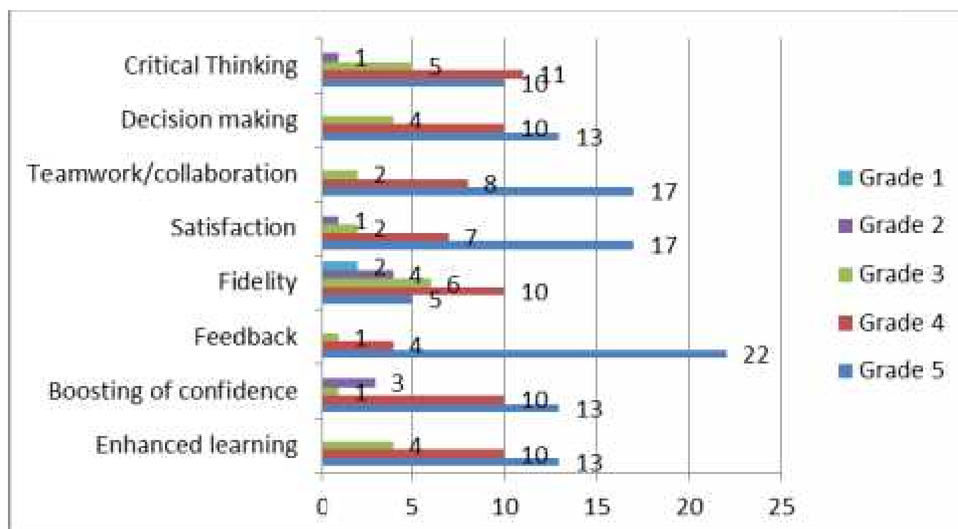


Figure 5: Bar chart analysis of Evaluation Scale results

From the results as shown in the bar chart above, a vast majority of the participants (22) evaluated the highest rating for feedback as the students felt that the session helped them identify their weaknesses and areas of improvement. More than half of the participants (17) evaluated the highest rating for teamwork and satisfaction as the participants were able to work in a team to accomplish the task delegated to them. Participants felt satisfied with this learning method as it was new and informative to them. In regards to enhanced learning, decision making and boosting of confidence, 13 out of the 27 students rated the highest score as they felt that the simulation sessions greatly boosted their confidence to practice. Only a few participants (five) rated the highest scale for fidelity. This is due to manikin malfunction experienced on the simulation day, causing the participants not to experience the reality of simulation on a manikin that can perform basic human functions. However, results still show that only two participants rated fidelity the lowest grade scale.

10.3 Debriefing

At the end of the session, oral feedback was encouraged from the participants. Majority stated that they learnt a lot on delegation of duties to others and the whole essence of team working, communication with others in order to better ensure patient safety, how to read, interpret and record vital signs, the importance of learning and understanding about vital signs and how to check them, respect for other cultures

especially that relating to the patient and finally improved competence and confidence.

10.4 Competency checklist

A competency checklist was filled out by the facilitators. It was to assess whether and how the participants approached the scenario, their assessment of the consciousness level and ABCD (Airway, Breathing, Circulation, and Disability), how they utilized ISBAR in calling for help and how they observed vital signs and made observations. The facilitators concluded that most participants had understood the ABCD procedure as they were able to assess the area and patient quite well as well as use the ISBAR tool to call for emergency help. However, it was also noted that a large number of participants were not confident enough in calling for help and in assessing and observing of vital signs. The competency checklist is attached as appendix 8.

11 CONCLUSION

The aim of this project was to develop nursing simulation education for first year nursing students at Lahti UAS. The project was to enhance basic nursing skills. The project was designed to increase knowledge and skills in basic nursing care and patient safety of first year nursing students who had just finished their first clinical placement. This would promote preparation for the students, who were still relatively new nurses as it would give room for critical thinking, decision making, problem solving, delegation and team work. This project was also to enable the teachers to support and enhance innovative teaching strategies, which would help them to evaluate their teaching methods and make improvements on areas of weakness.

The results from the questionnaire reveal that simulation session is highly preferred as a method of teaching and viewed as a positive way to learn. The preference for this choice was highlighted by Shinnick et. al., 2012 and Flo et. al., 2013 in their articles, wherein simulation as a learning method was rated positive and effective because it provided a good practical and theoretical learning environment. According to Kivinen, 2008 results showed similar results as the simulation experience was agreed to be meaningful and a good way of skill learning.

The results also show that simulation sessions help to prepare first year nursing students for real life scenarios, enhancing confidence and critical thinking skills as well as helping students to develop problem solving skills. The results from the evaluation scale reveal increase in confidence, learning and critical thinking skills. The first year nursing students revealed a high level of satisfaction from the simulation experience. Similar results were shown in Mould et. al., 2011 and Baillie & Curzio, 2008 where the students experienced an improvement in nursing competence, confidence and increased ability after the simulation experience. In Sullivan Mann et. al., 2009, the results showed that the experimental participants exhibited an increased score level in critical thinking.

According to Burns et.al.,(2010), the results from the research revealed a significant gain in nursing knowledge, confidence and communication. In Mills et.al.,(2014), similar results were deduced after the students experience a simulation session. Results showed high level scores on student satisfaction as well as high desire on the

part of the student to want to participate in more sessions. In Sullivan-Mann et. al.,(2009), study results showed an increased score level in the critical thinking of the nursing students.

The results from the research also revealed that majority strongly agreed that the debriefing, reflection and group discussion sessions were valuable and educative in helping to understand what to do better. Similar results were highlighted by Wotton et. al., 2010, as debriefing was viewed as being an important part of the sessions as it helped to clarify the students' knowledge and rationale for practice.

After conducting this development project, a number of conclusions are drawn based on the challenges encountered during the entire process, as well as from the data analysis. One of these conclusions is that the attributes of simulation i.e. knowledge acquisition, fidelity and outcomes, need to be the key issues to be addressed when conducting simulation. It is recommended that simulation sessions be carried out every semester and as frequent as possible, by providing access to simulation labs with a simulation instructor to let students to practice as often as they would like. This is to ensure that simulation outcomes such as skill development, knowledge acquisition, critical thinking, independence, self-confidence and learner satisfaction are fully achieved by the students, to better prepare them for real life clinical situations.

In the future, more research will need to be done to ascertain how many simulation sessions nursing students need to attend in order to ascertain competency as well as the benefit of simulation sessions before going for a practical training as compared to after practical training. Research is also needed to know the full extent of the benefits that can be derived from simulation to students as compared to the cost expended on the materials.

In the future simulation should be integrated into nursing theoretical studies as a module on its own, to ensure student centered learning, socialization, team training and to bridge the gap between knowledge and clinical practice. In addition, while conducting simulation, it is important to make sure that the manikins function properly in order to ensure fidelity and realness of simulation is experienced by the

students. This will also provide an interactive and reality based environment that is safe, non-judgmental, controlled and ethical.

Finally, newer simulation models would need to be developed with multi-functioning capabilities that create realness. Training of simulation teachers is also recommended in the future to help coordinate the sessions and ensure realness.

REFERENCES

Baillie, L. &Curzio, J. 2008. Students’ and facilitators’ perceptions of simulation in practice learning. Nurse Education in Practices 9(5), 279 -306.

Bagnasco, A., Catania, G., Aleo G. &Sasso L. 2014. Commentary on nursing ethics article: Facilitating ethics education in nursing students. Nursing Ethics 21(6), 742-745.

Baxter, P., Akhtar-Danesh, N., Valaitis, R., Stanyon, W. & Sproul, S. 2009. Simulated experiences: Nursing Students shares their perspectives. Nurse Education Today 29(8), 859 – 866.

Benner, P. 1984. From Novice to expert: Excellence and Power in Clinical Nursing Practice Menlo park, ca: Addison –Wesley.

Benner, P. 2001. From Novice to expert: Excellence and Power in Clinical Nursing Practice Prentice Hall.

Bogossian, F., Cooper, S., Cant, R., Beauchamp, A., Porter, J., Kain, V., Bucknall, T. & Phillips, N. 2014. Undergraduate nursing students’ performance in recognizing and responding to sudden patient deterioration in high psychological fidelity simulated environments: An Australian multi-center study. Nurse Education Today 34(5), 691-696.

Bosek, M. & Savage, T. 2007. The ethical components of nursing education: integrating ethics into clinical experience.Lippincott Williams & Wilkins.

Brannan, J., White, A. &Bezanson, J. 2008. Simulators effects on cognitive skills and confidence levels. Journal of nursing Education. 47(11), 495 – 500.

Burns, H., O’Donnell, J. &Artman, J. 2010. High Fidelity Simulation in teaching problem solving to first year nursing students. A novel use of the nursing process. Clinical Simulation in Nursing. 6, e87 – e95.

Cant, R. & Cooper, J. 2010. Simulation-based learning in nurse education: Systematic Review. Journal of Advanced Nursing. 66(1), 3–15.

Campbell, S. & Daley, D. 2012. Simulation Scenarios for nursing Educators: Making it Real. Second Edition Spencer Publishing House.

Carlson, E. 2011. Ethical considerations surrounding simulation based competency training. Chart, Journal of Illinois Nursing. 109(3), 11-14.

Chaloner, C. 2007. An introduction to ethics in nursing. Nursing Standard 21(32),42 – 46.

Chapwelhow, Crouch, Fisher & Walsh, 2005. Uncovering skills for practice: Foundations in Nursing and Health Care Series. Nelson Thornes Limited.

Decker, S., Sportsman, S., Puetz, L. & Billings, L. 2008. The evolution of simulation and its contribution to competency. Journal of Continuing Education in Nursing 39(2), 74–80.

Directive 2013/55/EuOf The European Parliament and of the Council, 2013. Amending Directive 2005/36/EC on the recognition of professional qualifications and Regulation (EU) No 1024/2012 on administrative cooperation through the Internal Market Information System ('the IMI Regulation'). Official Journal of the European Union. [Online]. [Accessed 19 November 2014]. http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013L0055&from=EN

Dowie, I. & Phillips, C. 2011. Supporting the lecturer in developing high fidelity simulation. Nursing Standard 25(49), 35–40.

Dreyfus, H. & Dreyfus, S. 1986. Mind over Machine: the power of human intuition and expertise in the age of the computer, Oxford, Basil Blackwell.

Ethical Guidelines of nursing, 1996. [Online]. [Accessed 9 March 2015].https://sairaanhoitajat.fi/artikkeli/ethical-guidelines-nursing/

Finnish Advisory Board on Research Integrity**,** 2012. [Online]. [Accessed 27 March 2014]. http://www.tenk.fi/en

Finnish Advisory Board on Research Integrity (Guidelines)**,** 2012. Responsible conduct of research and procedures for handling allegations of misconduct in

Finland[Online]. [Accessed 27 March 2014].
http://www.tenk.fi/sites/tenk.fi/files/HTK_ohje_2012.pdf

Finnish National Board of Education. Higher Education. [Online].[Accessed 18 April 2014]. http://www.oph.fi/koulutus_ja_tutkinnot/kielitutkinnot/yleiset_kielitutkinnot

Finnish Nurses Association, 2014. Nursing and Nurse Education in Finland. [Online]. [Accessed 18 April 2014].
http://www.sairaanhoitajaliitto.fi/sairaanhoitajan_tyo_ja_hoitotyon/

Flo, J., Flaathen, E. &Fagerström, L. 2013. Simulation as a learning method in nursing education – A case study of students' learning experiences during use of computer –driven patient simulators in preclinical studies. Journal of Nursing Education and practice 3(8).

Foronda, C., Gattamorta K. Snowden, K. & Bauman, E. 2013. Use of Virtual Clinical Simulation to improve communication skills of baccalaureate nursing students: A pilot study. Nursing Education Today, Pii: so260 – 6917 (13), 00383-3.

Fry, S. &Johnstone, M. 2008. Ethics in nursing practice: a guide to ethical decision making. Third Edition Blackwell publishing.

Gaba, D. M. 2004. The future vision of simulation in Health care.QualSaf Health Care, 13(Suppl 1):i2–i10.

Galloway, S. 2009. Simulation Techniques to Bridge the Gap between Novice and Competent Healthcare Professionals OJIN: The Online Journal of Issues in Nursing 14(2), Manuscript 3.

Goldsworthy, S. & Graham, L. 2013. Simulation Scenarios: A Practical Handbook for Nurse Educators. Philadelphia: Wolters Kluwer Health Lippincott Williams & Wilkins.

Guise, V., Chambers, M. &Valimaki M. 2012. What can virtual patient simulation offer mental health nursing education? Journal of Psychiatric and Mental Health Nursing 19, 410-418.

Grove, S., Gray, J. & Burns, N. 2015. UnderstandingNursingResearch. BuildinganEvidence- basedpractice. 6th Edition, Elsevier Saunders.

Hallikainen, J. & Väisänen, O. 2007. Simulaatio opetus ensihoidossa. Finnanest 40 (5), 436-439.

Heikkilä, T. 2005. Tilastollinentutkimus. Helsinki: Edita.

Helveranta K., Laatikainen K., Törrönen R. 2009. Simulaatio-oppimisen perusteet pelastusopistolla. Tampereen ammattikorkeakoulu. Tampereen ammatillinen opettajakorkeakoulu. Opettajankoulutuksen kehittämishanke.

Hermann, E. 2011. Remembering Mrs. Chase. [Online]. [Accessed 30 March 2014]. http://www.nsna.org/Portals/0/Skins/NSNA/pdf/Imprint_FebMar08_Feat_MrsChase.pdf

Howard, V., Ross, C., Mitchell, A. & Nelson, G. 2010. Human Patient simulators and interactive case studies: a comparative analysis of learning outcomes and student perceptions. Computer informative nursing 28(1), 42-48.

ICN Code of Ethics for Nurses, 2012.[Online]. [Accessed 3 March 2015].http://www.icn.ch/who-we-are/code-of-ethics-for-nurses/

Ironside, P., Jeffries, P. & Martin, A. 2009. Fostering patient safety competencies using multiple-patient simulation experiences. Nursing outlook 57(6), 332 – 337.

Jeffries, P. 2007. Simulation in Nursing Education: From conceptualization to evaluation. National Nursing League.

Joutsen, S. 2010. Potilassimulaattori hoitotyön koulutuksessa. Pro gradu-tutkielma Hoitotieteen Laitos.

Kassara, H., Paloposki, S., Holmia, S., Murtonen, I., Lipponen V., Ketola, M. & Hietanen, H. 2005. Hoitotyön Osaaminen Sanomapro Oy.

Kelly, M., Forber, J., Conlon, L., Roche, M. & Stasa, H. 2014. Empowering the registered nurses of tomorrow: Students' perspectives of a simulation experience for

recognizing and managing a deteriorating patient. Nurse Education Today 34(5), 724-729.

Khan, S. 2014. Qualitative Research Method-Phenomenology Asian Social Science 10(21), 298-310

Kivinen, E. 2008. Sairaanhoitajaopiskelijoiden arvioita simulaatiosta hoitamisen taitojen oppimisessa. Pro gradu-tutkielma. Kuopion Yliopisto: Hoitotieteen Laitos.

Lahti University of Applied Sciences. 2014. Degree Programme in Nursing: Study guide 2014-2015. [Online]. [Accessed 15 November 2014]. http://lamk.fi/opiskelijalle/opinto-opas/Documents/ops1415-st-nursing.pdf

Lahti University of Applied Sciences. 2014. Lahti University of Applied Sciences Instructions for Research Permit. [Online].[Accessed 27 March 2014]. http://www.lamk.fi/palvelut/tutkimuspalvelut/tutkimusluvat/Documents/LUAS%20Research%20permit%20application_Instructions_eng.pdf

Laschinger, S., Medves, J., Pulling, C., McGraw, R., Waytuck, B., Harrison, M. &Gambeta, K. 2008. Effectiveness of simulation on health profession students' knowledge, skills, confidence and satisfaction. International Journal of Evidence based health care 6, 278 -302.

Lauri, S. 2007. Nursing Knowledge – What is it? Sairaanhoitaja 80(6-7).

Levett-Jones, T., Lapkin, S., Hoffman, K., Arthur, C. & Roche, J. 2011. Examining the impact of high and medium fidelity simulation experiences on nursing students' knowledge acquisition. Nursing Education in Practice 11, 380-383.

LoBiondo-Wood, G. & Haber, J. 2006. Nursing Research Methods and Critical Appraisal for Evidence-Based Practice. 6th ed. St. Louis: Mosby Elsevier.

McGaghie, W. 1999. Simulation in professional competence assessment: Basic considerations. In a Tekian, C. H. McGuire & W. C. McGaghie (Eds), Innovation simulations for assessing professional competence (pp 28-50). Chicago Department of Medical Education, University of Illinois at Chicago.

Mills, J., West, C., Langtree, T., Usher, K., Henry, R., Chamber-Salaun, J. & Mason, M. 2014. 'Putting it together': Unfolding case studies and high fidelity simulation in the first year of an undergraduate nursing curriculum. Nurse education in Practice 14, 12-17.

Ministry of Social Affairs and Health. 2014. Social and Health Services. [Online]. [Accessed 18April 2014]. http://www.stm.fi/sosiaali_ja_terveyspalvelut

Ministry of Education and Culture. 2014. Polytechnics (Universities of Applied Sciences). [Online]. [Accessed 19 November 2014]. http://www.minedu.fi/OPM/Koulutus/ammattikorkeakoulutus/ammattikorkeakoulut/?lang=en

Moule, P. 2011. Simulation in nurse education: Past, Present and Future. NurseEducationToday31, 645–646.

Moule, P., Wilford, A., Sales, R. &Lockyer L. 2008. Student experiences and mentor views of the use of simulation for learning. Nurse Education Today 28, 790-797.

Mould, J., White, H. & Gallagher, R. 2011. Evaluation of a critical care simulation series for undergraduate nursing students. Contemporary Nurse 38 (1-2), 180 -190.

National League for Nursing. 2005. Sample Items.[Online]. [Accessed 15 March 2014]. http://www.nln.org/researchgrants/nln_laerdal/sampleitems.pdf

National Supervisory Authority for Welfare and Health. 2013. Working as a registered nurse in Finland. [Online]. [Accessed 15 November 2014].http://www.valvira.fi/files/ohjeet/working_as_a_registered_nurse.pdf

Nickerson, M. et al. 2001. Simulation in Nursing Staff Development. Journal for Nurses in Staff Development 27(2), 81-89.

Norcini, J. 2003. Work Based Assessment. British Medical Journal 326(7392), 753–755.

Norman, J. 2012. Systematic review of the literature on simulation in Nursing Education. The ABNF Journal 24-28. Oxford Dictionary, 2012. Oxford University Press.

Oxford Advanced Learner's Dictionary, 2014. Eight Edition, (App Edition), Oxford University Press.

Pakkanen, J., Salminen, L. & Stolt, M. 2012. Potilassimulaatio sairaanhoitajaopiskelijoiden hoitotyön taitojen oppimisessa- kirjallisuuskatsaus. Hoitotiede (2), 163-174.

Pamela, R., Jeffries, P., et al. Testing a Simulation Framework Using a Simulation in Insulin Management.[Online]. [Accessed 18 March 2014]. planning.iupui.edu/392.html

Paunonen, M. &Vehviläinen-Julkunen, K. 2006. Hoitotieteentutkimusmetodiikka. 4th edition. Helsinki: WSOY Oppimateriaalit.

Ruohotie, P. & Honka, J. 2003. Ammatillinen huippuosaaminen: kompetenssi-tutkimusten avaama näkökulma huippuosaamiseen, sen kehittämiseen ja johtamiseen. Hämeenlinna: Hämeenammatikorkeakoulu.

Rutherford-Hemming, T. 2012. Simulation Methodology in Nursing Education and Adult Learning Theory Adult learning 23(3), 129-136.

Råholm, M-B., Hedegaard, B.L., Löfmark, A. &Sletteböå. 2010.Nursing Education in Denmark, Finland, Norway and Sweden - from Bachelor's Degree to PhD. Journal of Advanced Nursing. [Online]. 66(9), 2130-2134. [Accessed 19 November 2014]. http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2648.2010.05331.x/full

Shapira-Lishchinsky, O. 2014. Simulations in Nursing Practice: towards authentic leadership. Journal of Nursing Management (22), 60-69.

Sharp, A. & Fisher, K., 2008. Engage, Empower and Enhance: Using Human Patient Simulation with Baccalaureate nursing students. Critical Care Nurse 28.

Shinnick, M.& Woo, M. 2013. The effect of human patient simulation on critical thinking and its predictors in pre-licensure nursing students. Nurse Education Today 33(9), 1062 – 1067.

Shinnick, M., Woo, M. & Evangelista, L. 2012. Predictors of knowledge gains using simulation in the education of pre-licensure nursing students. Journal of professional nursing 28(1), 41-47.

Shuster, E. 1997. Fifty Years Later: The Significance of the Nuremberg Code. New England Journal of Medicine337(20), 1436-1440.

Sullivan-Mann, J., Perron, C. &Fellner, A. 2009.The effects of simulation on nursing students' critical thinking scores: A quantitative study. Newborn and Infant Nursing Reviews 9(2), 111-116.

Thidemann, I. &Soderhamn, O. 2013. High Fidelity Simulation among bachelor students in simulation groups and use of different roles. Nurse Education Today 33, 1599-1604.

Tosterud, R., Hedelin, B. & Hall-Lord, M. 2013. Nursing students' perceptions of high and low fidelity simulation used as learning methods. Nurse Education in Practice 13, 262 – 270.

Vanlaere L. and Gastmans C. 2007 Ethics in nursing education: learning to reflect on care practices. Nursing Ethics 14(6) 758 – 766.

Väisänen, O. 2011. Simulation Based Health care Education in Finland: History and Future Enhancing Competence for Patient Safety. [Online]. [Accessed 19 February 2014].http://www.ramk.fi/loader.aspx?id=14e0048a-dde4-47e7-8b80-c51df0070995

Wilford, A. & Doyle, T.J. 2006. Integrating simulation training into the nursing curriculum. BritishJournalofNursing 15 (11), 604-607.

Wilson, R. & Klein, J. 2012. Design, Implementation and Evaluation of a Nursing Simulation: A Design and Development Research Study. The Journal of Applied Instructional Design 2(1), 57-67.

Wotton, K., Davis, J., Button, D. & Kelton, M. 2010. Third year undergraduate nursing students' perceptions of high fidelity simulation. Journal of nursing Education 49(11), 632 – 639.

Appendix 1: Table showing literature search results from Cinahl, Medic and PubMed

Name, title of article and date	**Research Purpose**	**Number of Participants**	**Method used**	**Results**
'Putting it together': Unfolding case studies and high fidelity simulation in the first year of an undergraduate nursing curriculum Mills et. al (2014)	To evaluate first year undergraduate nursing student's level of satisfaction	47 first year nursing students, 3 academic staffs and 2 standard parties	A live videotaping, playback sessions and student debriefing. Also unfolding case studies designed in a high fidelity simulated clinical setting	High Scores were clearly seen on student satisfaction and high desire for students to participate more in the simulated sessions
Undergraduate nursing students' performance in recognizing and responding to sudden patient deterioration in high psychological fidelity simulated environments: An Australian multi-center study Bogossian et. al. (2014)	To identify the characteristics that may predict primary outcome measures of clinical performance, teamwork and situation awareness in the management of deteriorating patients	97 nursing students	Mixed method multi-center study	Results indicate that students experienced an improvement in knowledge and also difficulties in responding and recognizing appropriately patient deterioration
Empowering the registered nurses of tomorrow: Students' perspectives of a simulation experience for	Accessing impact of deteriorating patient simulation experience on students' technical	57 nursing students	Pre/post simulation survey rating	Learning activity provided students with an experience on the importance of

recognizing and managing a deteriorating patient Kelly et. al. (2014)	and communication skills			recognizing and responding to acute situation in a timely manner
High Fidelity Simulation among bachelor students in simulation groups and use of different roles Thidemann & Soderhamn (2013)	Measure knowledge, student satisfaction and self-confidence in learning	87 nursing students	Quasi – experimental design.	Student satisfaction and self-confidence in learning was rated high by the students. Furthermore knowledge about specific patient focus was rated high after simulation
Nursing students' perceptions of high and low fidelity simulation used as learning methods Tosterud et. al. (2013)	Examine nursing students' perceptions of scenarios using different simulation methods	86 nursing students	Quantitative, evaluative and comparative design	High report of satisfaction experienced after simulation sessions
Simulation as a learning method – A case study of students' learning experiences during use of computer driven patient simulators in preclinical studies Flo et. al (2013)	Evaluate first year nursing students' experiences as it connects to learning	216 nursing students	Descriptive case study design	Reflection during debriefing and peer observation was rated very beneficial. Also the learning method was rated positive as it provided a good practical and theoretical learning
The effect of human patient simulation on critical	Effect of High patient simulation on critical	154 prelicensure nursing students	Quasi experimental pre test/post test	High rates of improvement in learning

thinking and its predictors in pre-licensure nursing students Shinnick &Woo (2013)	thinking		design	
Use of virtual clinical simulation to improve communication skills of baccalaureate nursing students: A pilot study Foronda et. al(2013)	To evaluate educational innovation of using clinical simulation to improve communication skills of nursing students	8 nursing students	Clinispace ISBAR rating	Reported that there was less anxiety after simulation. Also the students stated that it helped to know what to expect in given situations and the method encouraged a better flow of communication
Predictors of knowledge gains using simulation in the education of pre-licensure nursing students Shinnick et. Al(2012)	To ascertain whether high patient simulation improves learning outcome	162 nursing students	Experimental design and knowledge questionnaires	Improves test scores and majority attested that it was an effective teaching method
Evaluation of a critical care simulation series for undergraduate nursing students. Mould J., White H., Gallagher R. (2011)	To access self-reported confidence and competence using scenario-based simulations	252 nursing students	Pre-test post-test design (self-report surveys)	That the use of medium to high fidelity simulation in a series of multiple simulations over the semester demonstrated an improvement in the nursing student's competence and confidence

High-Fidelity Simulation in Teaching problem solving to first year nursing students. A novel use of the nursing process Burns et. al.(2010)	Assessing problem solving skills in first year nursing students through HF Simulations	114 nursing students	Pre and post test	Significant number attested that there was high knowledge gained, confidence and communication
Third year undergraduate nursing students' perception of high fidelity simulation Wotton et. al (2010)	To assess perceptions about the implementation of high fidelity simulation	300 under-graduate third year students	Evaluation form	Results showed that high fidelity simulation sessions were enjoyable. Debriefing especially was viewed as being an important part of the sessions as it helped to clarify students' knowledge and rationale for practice
Human patient simulators and interactive case studies: a comparative analysis of learning outcomes and student perceptions Howard et. al (2010)	A comparative analysis of learning outcomes and student perceptions	49 nursing students	Quantitative, Quasi experimental 2 group pretest and posttest design	Students responded positively to HPS attesting that it is a good teaching method.
Simulated experiences: Nursing students share their perspectives Baxter et al. (2009)	Nursing students viewpoint on the use simulation in their nursing program	24 students from 17 universities	Q Methodology	Majority of students felt that simulated experiences support learning

Student experiences and mentor views of the use of simulation for learning Moule et. al. (2008)	To assess whether simulation supported clinical skills development	50 nursing students and 6 mentors	Pre and post test	Results shows that simulation offered the scope for interdisciplinary learning as well as providing for collaborative working
Students' and facilitators' perceptions of simulation in practice learning Baillie L. Curzio J. (2008)	.To assess whether simulation can enhance practice learning	267 nursing students	Questionnaires, Chi Square	Students experienced an increased ability and confidence
Engage Empower and Enhance: using Human patient simulation with Baccalaureate nursing students. Sharp A., Fisher K. (2008)	To prove that patient simulation will improve nursing student's ability to critically gain knowledge over traditional teaching strategies	16 nursing students	Post test scores	That there was an increase in knowledge and improved critical thinking skills
Sairaanhoitaja-opiskelijoiden arvioita simulaatiosta hoitamisen taitojen oppimisessa Kivinen, E. (2008)	To be able to describe how nursing students view simulation learning skills	77 nursing students	Qualitative study through essay responses	Results showed that the experience was meaningful and a good way of skill learning. Majority agreed that simulation was a positive way to learn

Appendix 2: Simulation scenarios

Scenario 1:

It is a sunny afternoon as you and two of your friends are out shopping at Prisma. While you are there, you hear a woman shouting for help, saying that a man has collapsed and doesn't seem to be getting up. Both of you run to see what is going on. When you get to the scene, you find a man lying down on the ground. Your first thoughts are to help him get up. When you talk to him, you realize that he is unconscious, motionless and unresponsive, but is breathing. The man is approximately 40 years old, 5'4 and 70kgs. As nursing students in this situation, what actions would you take to assist him?

Scenario 2:

Zaitun, a 35 year old Muslim lady has been admitted in the urological ward for a serious urinary tract infection. It is visiting hours and her husband has come to pay her a visit. A male nurse together with a male student nurse enter Zaitun's room and request Zaitun's husband to step out in order for them to take out her urine catheter and also to take blood pressure measurements from underneath her abaya, which is a Muslim women's outfit. Zaitun's husband quickly raises his concerns about his wife's body being exposed to the male nurses and them touching her, stating that it is taboo for Muslim women to expose their bodies to men, other than their husbands, according to the religious norms.

The male nurse and the male student are now faced with a dilemma. What would be your next step of action in handling Zaitun and her husband if you were in the same

Scenario 3:

Pentti a 46 year old Finnish male has been admitted in Päijät Häme Central Hospital of having Pneumonia. Some of the symptoms and complications that have manifested include fever, general weakness, low oxygen saturation, cough with phlegm, chest pain and difficulties in breathing, especially when breathing deeply. It is in the early morning after the doctor's round when Pentti suddenly begins to cough. His airway seems to be blocked by the phlegm, and he is too weak to cough it out. What would you do as a nurse, to ease his condition?

Appendix 3: Patient Simulation Effectiveness Questionnaire

Date: ______________________________

Course: ______________________________

Nursing group: ______________________________

Facilitators: ______________________________

Name (Optional): ______________________________

Please rate the following statements based on the scale provided.

	Strongly disagree	**Somewhat disagree**	**Somewhat Agree**	**Strongly agree**
1. The simulation scenarios were designed in an effective method	0	1	2	3
2. The facilitators instructions were clear and material provided was understandable	0	1	2	3
3. I feel better prepared to deal with real life patients	0	1	2	3
4. I am more knowledgeable in checking for basic signs of life for a patient	0	1	2	3
5. I developed a better understanding of the simulation and its importance	0	1	2	3
6. I developed a better understanding of the ways and channels to follow in case of an	0	1	2	3

emergency				
7. I was challenged and I'm now more confident in decision making, problem solving and critical thinking	0	1	2	3
8. I am more confident in determining what to report to the doctor	0	1	2	3
9. My patient assessment skills have improved	0	1	2	3
10. I feel confident in handling patients from various religious, cultural and racial backgrounds	0	1	2	3
11. I feel more knowledgeable in being able to assess changes in a patient's condition	0	1	2	3
12. I am able to better predict what changes may occur with my real patients	0	1	2	3
13. The simulation sessions helped to understand and relate classroom theory to real life practical implementation	0	1	2	3
14. I learned a lot from observing my peers tackling the simulation scenarios	0	1	2	3

15. Debriefing, reflection and group discussion sessions were valuable and educative in helping me to understand what went well, what to do better, and what went wrong	0	1	2	3
16. Have these simulation sessions been helpful in helping you to enhance your nursing knowledge?	0	1	2	3
17. Would you recommend this method of teaching?	0	1	2	3

Comments:

____

____

____

Appendix 4: Evaluation Scale

Focus	Grading statement	Grade 5	Grade 4	Grade 3	Grade 2	Grade 1
Enhanced Learning	I can honestly say that I have learnt a lot					
Boosting of Confidence	This sessions has greatly made me more confident to practice					
Feedback	I valued the feedback as it made me aware of my errors and how I can make amends					
Fidelity	Was the experience very real to you					
Satisfaction	How satisfied are you with this learning method					
Teamwork/collaboration	We were able to work as a team to accomplish the task done					
Decision making	Was able to assess the situation and make the appropriate decision					
Critical Thinking	Was able to assess the situation and analyse correctly					

Appendix 5: Informed Consent for Project Participation

Date: 25th April 2014

Dear participant,

We are 2nd year nursing students at Lahti University of Applied Sciences and we are currently writing up our thesis, in form of a development project on 'Patient Simulation on First Year Nursing Degree Students' to come up with a method to assist first year nursing students to be able to practice their nursing knowledge and skills by implementing pre-planned simulation cases.

Following the simulation implementation sessions and participation in this project, you will be asked to fill out an evaluation form as well as a questionnaire to the best of your ability, to rate the simulation design scale, the effectiveness and your perspectives on the whole session. The simulation will be conducted on 5 & 9th May 2014 starting at 8.30-15.45 on both days. You will have ample time to complete the questionnaire. You will not receive any compensation to participate in this project.

There are no potential risks in participating in this project, and any information provided by you will only be used for the purpose of the project, and will not be distributed to any third parties. Even though you will not be receiving any compensation, it is our hope that you acquire more nursing knowledge and skills and also boost confidence in being able to handle real patients in real life situations at clinical placement and later in your career.

Participation in this study is strictly voluntary; your refusal to participate will involve no prejudice, penalty, or loss of benefits to which you would otherwise be entitled. If you agree to participate, you may choose not to answer questions that you may feel jeopardize you in some way.

We therefore seek to maintain the confidentiality of all data and information collected for this project. The data will be stored in an archived file in our project hard disk. Should a rare instance occur when we are required to share the data and information collected, for example according to policy and regulation or in response to a complaint, staff at Lahti University of Applied Sciences, Elizabeth, Salami and Anne may access the data. After completion of the project, data analysis

results will be reported to the participants in September 2014, and presentation of the final project will also be conducted on the same day.

Signing this form means that you agree to the terms and conditions of the project and allow us to collect data and information from you. If you have any questions about this project or would like more information before, during, or after the study, you may contact the facilitators i.e. Elizabeth on elizabeth.ndegwa@student.lamk.fi, Anne at anne.seronei@student.lamk.fi and Salami at olubukola.salami@student.lamk.fi to discuss them.

Your signature ____

Thank you for your consideration.

Sincerely,

Elizabeth Ndegwa,

Anne Seronei,

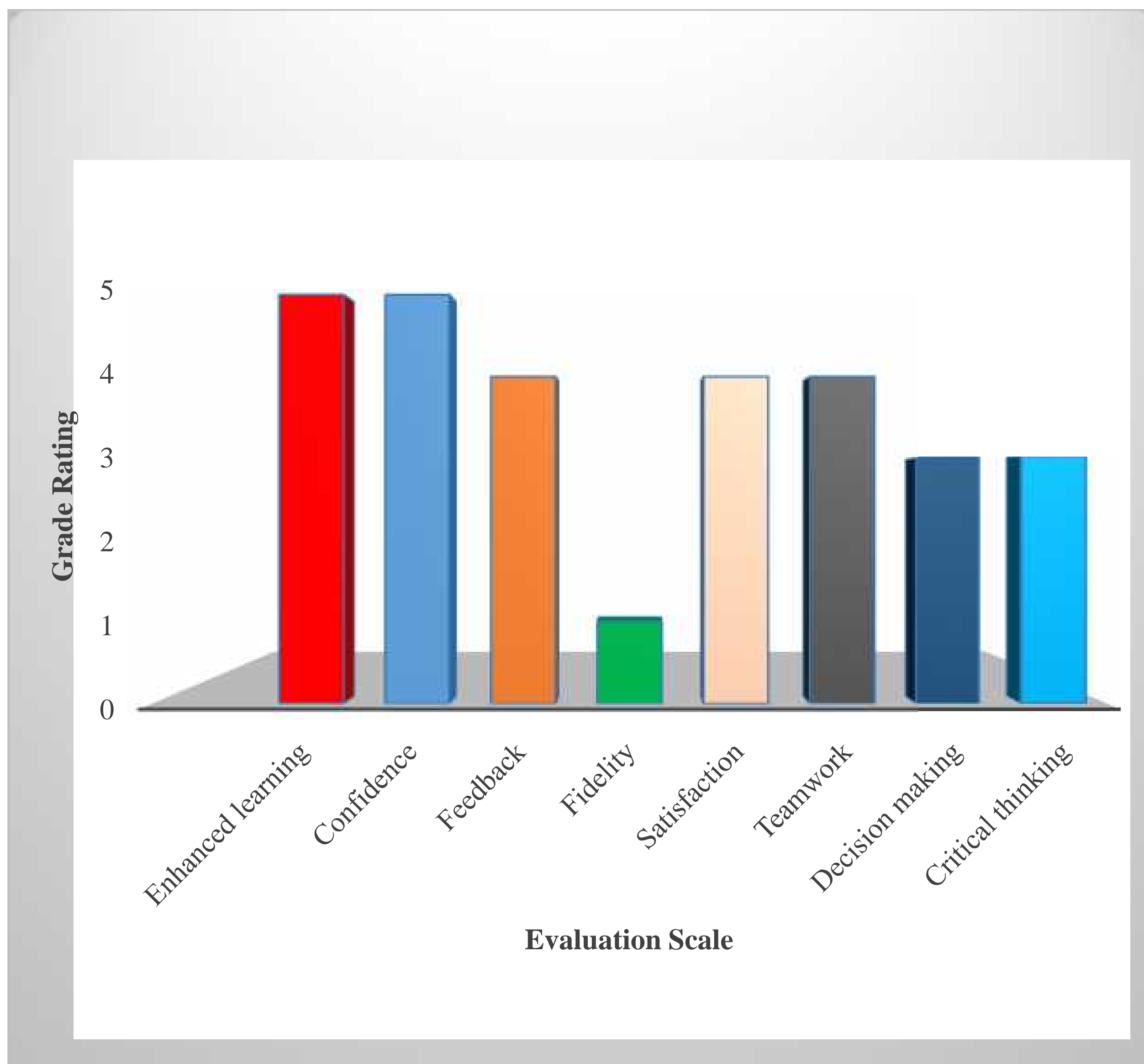
Olubukola Salami.

Appendix 6: Simulation day timetable

5.5.2014

Time	**Activity**
8.30 -10.00	Introduction to simulation & thesis project
10.00 - 10.20	Coffee break
10.20–10.40	Case 1: Implementation (Group 1)
10.40 – 11.00	Case 1: Reflection and De-briefing
11.00– 11.20	Case 2: Implementation (Group 1)
11.20 – 11.40	Case 2: Reflection and De-briefing
11.40 – 12.30	Lunch break
12.30 - 12.40	Case 3: Implementation (Group 1)
12.40 – 13.00	Case 3: Reflection and De-briefing
13.00 – 13.10	Case 1: Implementation (Group 2)
13.10 - 13.30	Case 1: Reflection and De-briefing
13.30 - 13.45	Coffee break
13.45 - 13.55	Case 2: Implementation (Group 2)
13.55- 14.15	Case 2: Reflection and De-briefing
14.15- 14.25	Case 3: Implementation (Group 2)
14.25 -14.45	Case 3: Reflection and De-briefing
14.45- 15.00	Q & A
15.00- 15.30	Filling in the questionnaire & Evaluation form

Appendix 7: Bargraph depicting feedback based on evaluation attributes



Appendix 8: Competency Checklist

Expected Student Actions	**Met**	**Unmet**	**Comments**
1. Student immediately assesses level of consciousness, ABCD			
2. Calls for help from fellow nurses and phones the doctor			
3. Assesses the vital signs and takes measurements			
Feedback			