SIMULATION AS EDUCATIONAL STRATEGY: AN INTERPROFESSIONAL APPROACH AT THE FACULTY OF HEALTH SCIENCES, UNIVERSITY OF THE FREE STATE

By

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DECLARATION

I, Riaan van Wyk declare that the Master's research dissertation that I herewith submit at the University of the Free State, is my independent work and that I have not previously submitted it for qualification at another institution of higher education.

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LISTS OF ACRONYMS

ACLS	Advanced Cardiovascular Life Support
AIPPEN	Australasian Interprofessional Practice & Education Network
BLS	Basic Life Support
CAIPE	Centre for the Advancement of Interprofessional Education
CPR	Cardiopulmonary resuscitation
CSUM	Clinical Simulation Unit, UFS
ECG	Electrocardiogram
FoHS	Faculty of Health Sciences, UFS
HPCSA	Health Professions Council of South Africa
IOM	Institute of Medicine
IPCP	Interprofessional collaborative practice
IPE	Interprofessional Education
OSCE	Objectively Structured Clinical Examination
SAHP	School for Allied Health Professions, UFS
SBHE	Simulation Based Health Education
SBME	Simulation Based Medical Education
SoM	School of Medicine, UFS
SoN	School of Nursing, UFS
SP	Standardised patient
UFS	University of the Free State
WHO	World Health Organization
WHPA	World Health Professions Alliance

CLARIFICATION OF CONCEPTS

Undergraduate module leaders:

Each School in the Faculty of Health Sciences has individuals responsible for the creation of programme content and outcomes, and decisions regarding which educational tools will be used to deliver the content in the programme. In the School of Medicine these personas are called module leaders. An individual might be responsible for more than one module and a module might have more that one responsible person.

In the School of Nursing they are called coordinators and each is responsible for a year group in the undergraduate programme.

In the School for Allied Health Professions they are called class coordinators and they are responsible for various programme content and which educational tools will be used to deliver it.

For the purpose of this dissertation all these individuals will be referred to as the module leaders.

The seven core attributes (HPCSA 2014):

These attributes have been derived from the CanMEDS roles. The CanMEDS roles were developed by the Royal College of Physicians and Surgeons of Canada and are regarded as valid principles for training successful and competent physicians. The Undergraduate Education and Training Subcommittee of the Medical and Dental Professions Board, in collaboration with the training institutions and the South African Committee of Medical and Dental Deans (HPCSA 2014), developed a document where the same roles and principles are expanded to include all health care practitioners and not only physicians. For the purpose of this dissertation it will be referred to as the seven core attributes for undergraduate students.

Technical and non-technical competencies

These competencies all integrate to form part of the clinical skillset of a healthcare professional. The non-technical competencies (or skills) should not be seen as separate (or "soft") competencies. However, for the purpose of the structured interviews and reporting, the terms technical versus non-technical are used to clarify and ascertain which type of competencies (skills) are focused on in the relevant module.

Simulation Based Health Education

In the literature the term Simulation Based Medical Education (Ziv 2009:217) is used to describe the processes in using simulation while training medical students. However, in this dissertation the term Simulation Based Health Education will be used and indicates all health professions-related simulation education.

Patient management

In this dissertation references to patient management will include all the different health professions' handling of patients. This will include all patient interaction by any health professional, extending to interactions with the family and community of the patient.

Patient

The person, individual or service user receiving care or management from healthcare professionals.

Collaborative practice

Collaborative practice (also referred to as Interprofessional Collaborative practice) occurs when a team of health workers from different professions works together to provide patient management. This interaction is not limited to the actual patient but can also include family members and/or the community. (WHO: 2010:7)

Interprofessional Education

Interprofessional education is defined as: “Occasions when two or more professions learn with, from and about each other to improve collaboration and the quality of care” (CAIPE 2002:online). For the purpose of this dissertation, interprofessional education would not only include the learning activities, but also collaborative practice.

SUMMARY

Key terms: interprofessional, education, clinical, simulation, undergraduate, health, students, curriculum, collaborative, practice, medical, nursing, allied, competencies, small-group, learning, quantitative, structured, interviews, research

With an ever-evolving and complex patient population, healthcare professionals need to adapt to these changes. A response to this challenge is to deliver patient care and management as an interprofessional healthcare team or collaborative practice. In order to deliver professionals that are ready for collaborative practice, education institutions need to enhance interprofessional education (IPE) amongst its students.

Various strategies can be followed for effective IPE. These are didactic lessons, simulated experiences and community based education. The question arises as to the extent and techniques currently used by the Faculty of Health Sciences, UFS, to achieve IPE amongst its undergraduate students. Specific focus was given to addressing IPE utilising simulation.

A quantitative descriptive study was performed and data was collected using structured interviews with 47 of 57 (82.5%) undergraduate module leaders of the Faculty of Health Sciences, UFS, covering 66 of 80 (82.5%) undergraduate modules. The research topics covered by the interview were interprofessional education, the use of and opinions on simulation and the possibility of utilising simulation to address IPE. The results were analysed and reported quantitatively.

It was found that 36 out of 66 modules (56.1%) had no form of interprofessional education. In cases where interprofessional education was present, it was mostly addressed coincidentally (58.7%) and was not part of the formal outcomes of the module. The main platform utilised for interprofessional education is ward rounds in hospital and clinic visits during community based education.

Simulation is used by 36 out of 66 (54.5%) modules and the most common type utilised is low-fidelity skills training. The module leaders' opinions on simulation are

positive, highlighting the advantages it holds for improved student learning. Some concerns were raised on the logistical challenges simulation could pose.

The majority of module leaders (66.7%) indicated that simulation would not be a viable training tool to address interprofessional education in their module. The most common (84.1%) reason given was that there were no interprofessional activities in the relevant module to address. However, 21.7% did not see any disadvantages of its potential use to address interprofessional education where needed. Some challenges were highlighted and the biggest potential advantage mentioned (41.3%) was improved role clarification amongst the students.

The conclusion was that although IPE does take place, it is mostly coincidental and not formalised in the modules. The majority of module leaders were positive about the possible use of simulation to address IPE, but various challenges and concerns were also reported and discussed.

When using simulation to address interprofessional education, it is important to engage the students from all professions. In most cases the scenarios would be role-play using standardised (simulated) patients. These actors must be properly trained to ensure the authenticity of the scenario. The principles of interprofessional education (aspects such as collaboration, communication and professionalism) should be addressed in the outcomes and must be the focus during the debriefing phase of the simulation experience. Facilitators must be trained and competent in debriefing and reflection techniques.

OPSOMMING

Sleutelterme: interprofessionele, opvoeding, klinies, simulasie, voorgraads, gesondheid, studente, kurrikulum, samewerking, praktyk, medies, verpleegkunde, aanvullende, vaardighede, kleingroep, leer, kwantitatief, gestruktureerd, onderhoude, navorsing

Pasiëntpopulasies is kompleks en verander voortdurend. Gesondheidsorgpersoneel moet hierby aanpas. Een manier is om die versorging en bestuur van pasiënte met ‘n interprofessionele gesondheidsorgspan en samewerkingpraktyk te benader. Opvoedkundige instansies moet interprofessionele opvoeding by studente versterk om hulle gereed te maak vir die samewerkingspraktyk.

Verskillende strategieë vir doeltreffende interprofessionele opvoeding kan gevolg word: didaktiese lesings; gesimuleerde ervarings; en gemeenskapsgebaseerde onderrig. Die vraag is wat die huidige omvang en tegnieke van die Fakulteit Gesondheidswetenskappe, UV, is om interprofessionele opvoeding by voorgraadse student vas te lê, met die fokus op die gebruik van simulasie.

‘n Kwantitatiewe, beskrywende studie is uitgevoer en data is deur gestruktureerde onderhoude met 47 uit 57 (82.5%) voorgraadse moduleleiers van die Fakulteit Gesondheidswetenskappe, UV, ingewin. Die onderhoude het 66 uit 80 (82.5%) voorgraadse modules gedek. Die navorsingstemas wat deur die onderhoude gedek is, is interprofessionele opvoeding, die gebruik van en opinies oor simulasie en die moontlike gebruik van simulasie om interprofessionele opvoeding aan te spreek. Die resultate is kwantitatief geanaliseer en weergegee.

Dit is bevind dat 36 uit 66 modules (56.1%) geen vorm van interprofessionele opvoeding bevat nie. Waar interprofessionele opvoeding wel plaasvind, is dit meestal toevallig van aard (58.7%) en nie deel van die formele uitkomste van die module nie. Die platform wat die meeste gebruik is vir interprofessionele opvoeding, was saalrondtes gedurende hospitaalbesoeke en kliniekbesoeke tydens gemeenskapsdiensonderrig.

Simulasie word gebruik in 36 uit 66 (54.5%) van die modules en die algemeenste tipe is lae realisme, vaardigheidsopleiding. Die moduleleiers se menings oor simulasie is positief en die voordele wat dit vir studentopleiding inhou, word uitgelig. Sekere kwelpunte oor die logistieke uitdagings van simulasie is beklemtoon.

Die meerderheid van moduleleiers (66.7%) het aangedui dat simulasie nie ‘n lewensvatbare opsie is vir interprofessionele opvoeding in ‘n spesifieke module nie. Die mees algemene (84.1%) rede hiervoor is dat interprofessionele opvoeding nie aangespreek word in ‘n betrokke module nie. Daar is egter aangedui deur 21.7% dat daar geen nadele is aan die potensiële gebruik van simulasie om interprofessionele opvoeding aan te spreek nie. Sommige uitdagings is uitgelig en die grootste (41.3%) voordeel wat genoem is, is die feit dat studente beter rolverheldering kry.

Die gevolgtrekking was dat interprofessionele opvoeding wel plaasvind, maar dat dit toevallig is en nie in modules geformaliseer is nie. Die oorgrootte meerderheid moduleleiers was positief oor die moontlike gebruik van simulasie vir interprofessionele opvoeding, maar verskeie uitdagings en kwelpunte is ook meegedeel en bespreek.

Wanneer simulasie gebruik word om interprofessionele opvoeding aan te spreek, is dit belangrik om studente van al die relevante professies te betrek. In die meeste gevalle sal die simulasie ‘n rolspel wees deur middel van gestandaardiseerde (gesimuleerde) pasiente. Om realisme te verbeter, moet hierdie akteurs opgelei word vir die rol. Die beginsels van interprofessionele opvoeding (aspekte soos spanwerk, kommunikasie en professionalisme) moet deur die simulasie se uitkomste aangespreek word. Hierdie beginels moet ook die fokus wees van die refleksiegedeelte van die simulasie ervaring. Fasiliteerders moet opgelei en bevoegd wees in refleksietegnieke.

SIMULATION AS EDUCATIONAL STRATEGY: AN INTERPROFESSIONAL APPROACH AT THE FACULTY OF HEALTH SCIENCES, UNIVERSITY OF THE FREE STATE.

CHAPTER 1
ORIENTATION TO THE STUDY

1.1 INTRODUCTION

In this research project, a quantitative descriptive study was performed with the aim to determine the opinions of module leaders of the Faculty of Health Sciences (FoHS), University of the Free State (UFS) regarding the use of simulation as training tool in interprofessional education (IPE).

To provide the necessary context, the researcher determined the current approach of undergraduate module leaders with regard to using interprofessional education in the various modules as well as which interprofessional education training tools are currently utilised.

1.2 BACKGROUND TO THE RESEARCH PROBLEM

Evolving developments in healthcare and patient populations, results in patients with more complex needs and this shift highlights the need for interprofessional cooperation. It is apparent that no one profession can adequately respond to such complex needs in isolation (Barr 2009:187).

According to The Centre for the Advancement of Interprofessional Education (CAIPE) interprofessional education is defined as: “Occasions when two or more professions learn with, from and about each other to improve collaboration and the quality of care” (CAIPE 2002:online).

The difference between “discipline” and “profession” in healthcare is clarified by Casimiro and Hall (2011:2) in the following way: Professions have different roles

and functions, e.g. nursing and medicine are two different professions within healthcare. Disciplines can be defined as several disciplines within a profession, e.g. family doctor, surgeon and oncologist are all disciplines within the medicine profession.

Other closely related terms are, uniprofessional care, intraprofessional, and transdisciplinary teams as well as multiprofessional education.

Casimiro and Hall (2011:3) defines uniprofessional care as "instances when one healthcare professional team member collaborates with one patient and/or family."

According to the Miller-Keane Encyclopaedia and Dictionary of Medicine, Nursing, and Allied Health, (2003:online) the following definitions can be distinguished.

Multidisciplinary team: "A team of professionals including representatives of different disciplines who coordinate the contributions of each profession, which are not considered to overlap, in order to improve patient care."

An intraprofessional team is a team of professionals who are all from the same profession, such as three physiotherapists collaborating on the same case.

A transdisciplinary team is a team composed of members of a number of different professions cooperating across disciplines to improve patient care through practice or research for example a nurse assisting a patient with walking exercises, prescribed by a physiotherapist.

Barr, Koppel, Reeves, Hammick and Freeth (2005:xxiii) defined multiprofessional education as "when members of two or more professions learn alongside each other, but there is no interactive (not about and from each other) learning."

1.2.1 Interprofessional Education

Multidisciplinary teams deliver healthcare, and interprofessional education is important in preparing students to be effective in this complex environment. The

Lancet commissions of 2010 (Frenk, Chen, Bhutta, Cohen, Crisp, Evans, Fineberg, Garcia, Ke, Kelley, Kistnasamy, Meleis, Naylor, Pablos-Mendez, Reddy, Scrimshaw, Sepulveda, Serwadda & Zurayk 2010:1923) focused on how education should be transformed to strengthen health systems in an interdependent world. One of the proposals in the Lancet report was the promotion of interprofessional education to break down the professional "silos" and to enhance collaborative relationships in health teams.

The Accreditation Council of Graduate Medical Education (ACGME) and American Board of Medical Specialities (ABMS) published a set of six core competencies for medical graduates in 1999 (ABMS 2016:online).
These six competencies are:

- "Practice-based Learning and Improvement"
- "Patient Care and Procedural Skills"
- "System-based Practice"
- "Medical Knowledge"
- "Interpersonal and Communication Skills"
- "Professionalism" (ABMS 2016:online).

The Royal College of Physicians and Surgeons of Canada developed the CanMEDS principles (referred to as Roles) between 1993 and 2005. The purpose is to address the changes in the health care needs of society by enabling health care workers to be trained in a well-rounded manner. This resulted in a framework of multifaceted competencies for physicians organised thematically around physicians' roles. These competencies' focus is on post-graduate healthcare students (Frank 2005:4).

These CanMEDS Roles were adapted by the Health Profession Counsel of South Africa for the South African context with the focuson all heath care professionals and students. The South African adaptation is known as "Core competencies for undergraduate students in clinical associate, dentistry and medical teaching programmes in South Africa". As the focus should not only be on the physicians' roles alone, the phrase "Healthcare Practitioner" replaced "Medical Expert" in this adaptation. Thus it includes the important contribution every healthcare practitioner

makes towards a patient or community, irrespective of their profession (HPCSA 2014).

These competencies all integrate to form part of the clinical skillset of a healthcare professional and should not be seen as separate, non-technical competencies. However, for the purpose of the structured interviews and reporting, the terms technical versus non-technical are used to clarify and ascertain which type of skills (competencies) are focused on in the relevant module.

These seven core competencies, and their inter-relationships, are illustrated in Figure 1.1.

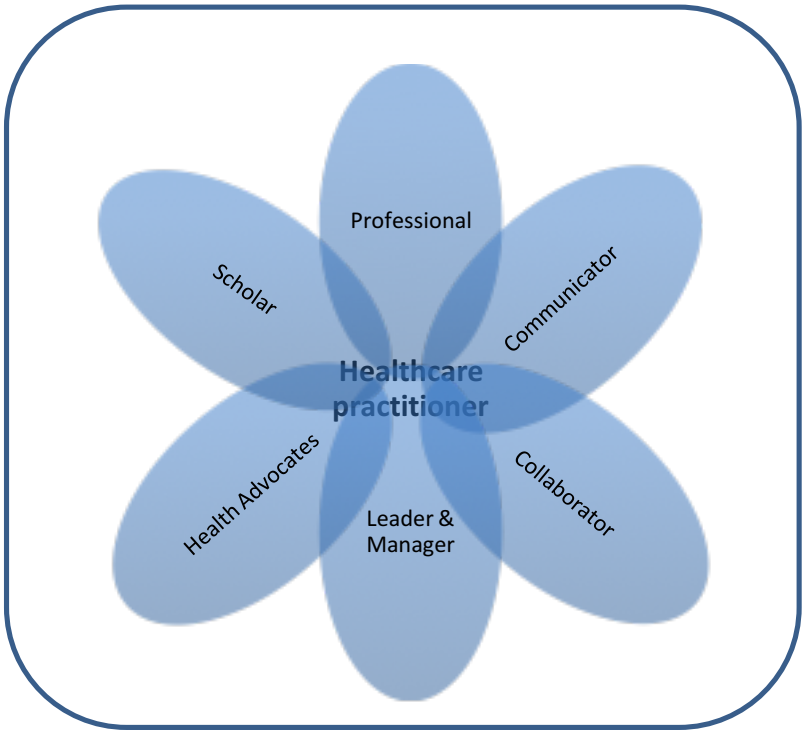

Figure 1.1: The seven graduate core competencies (HPCSA 2014)

The focus will be on the HPCSA's framework as this is the relevant framework for South African health professionals. Each core competency has its own definition and key competencies that will be elaborated on in Chapter 2. For the sake of interprofessional education, the focus will be on the collaborator competency.

According to the HPCSA (2014:7) the role of the collaborator competency is defined as follows: "As Collaborators, healthcare professionals work effectively within a team to achieve optimal patient/client care."

The two key competencies are defined as:

1. “Participate effectively and appropriately in multicultural, interprofessional and trans-professional teams, as well as teams in other contexts (the community included).”
2. “Work effectively with other healthcare professionals to promote positive relationships and prevent, negotiate, and resolve interprofessional conflict.” (HPCSA 2014:7)

From the definition and key competencies, it is clear that when the seven core competencies are considered as part of an educational approach, interprofessional education should be addressed.

Another driving force for interprofessional education is the outcomes of investigations when things do go wrong in the clinical setting. Frequently investigations will list failed interprofessional communication or teamwork as a cause of what went wrong (Freeth 2007:4). In these cases, interprofessional education is very often advised as a corrective measure (Kohn, Corrigan & Donaldson 2000:34).

When looking at modes of delivery for interprofessional education, it is important to keep in mind that some modes will be better suited for certain situations than others (Freeth 2007:16).

Bridges, Davidson, Odegard, Maki and Tomkowiak (2011:2) describe three interprofessional learning experiences as an approach to achieve interprofessional competencies. These are didactic learning experiences, community-based learning experiences (with authentic care) and interprofessional simulation experiences.

Scherer, Myers, O’Connor and Haskins (2013:e498) found that simulation is an effective strategy to address interprofessional education. Attitudes towards learning with other professions improve and it also fosters teamwork and collaboration.
Simulation is a safe training environment for both students and patients and will be outlined in the following section.

1.2.2 Simulation Based Health Education

Ziv (2009:220) used the term "Simulation Based Medical Education", when discussing simulation for medical students. For the purpose of this dissertation, the term Simulation Based Health Education (SBHE) will be used to encompass all simulation based training received by healthcare students.

According to Ziv (2009:220) the rationale for Simulation Based Medical Education (SBME) has solid social and educational grounding. Some of the educational and social advantages include:

The student can practice in a safe environment without the need to practice on real patients. This is obviously beneficial when looking at ethical considerations regarding training and patient safety (Kohn *et al.* 2000:34).

Simulation based health education trains and assesses students in the higher order thinking skills. Considering Miller's (1990:S63) framework for clinical assessment in Figure 1.2, it is clear that simulation can be used to train and assess students in the higher order skills such as behaviour or action and not only knowledge (Labuschagne 2012:108).

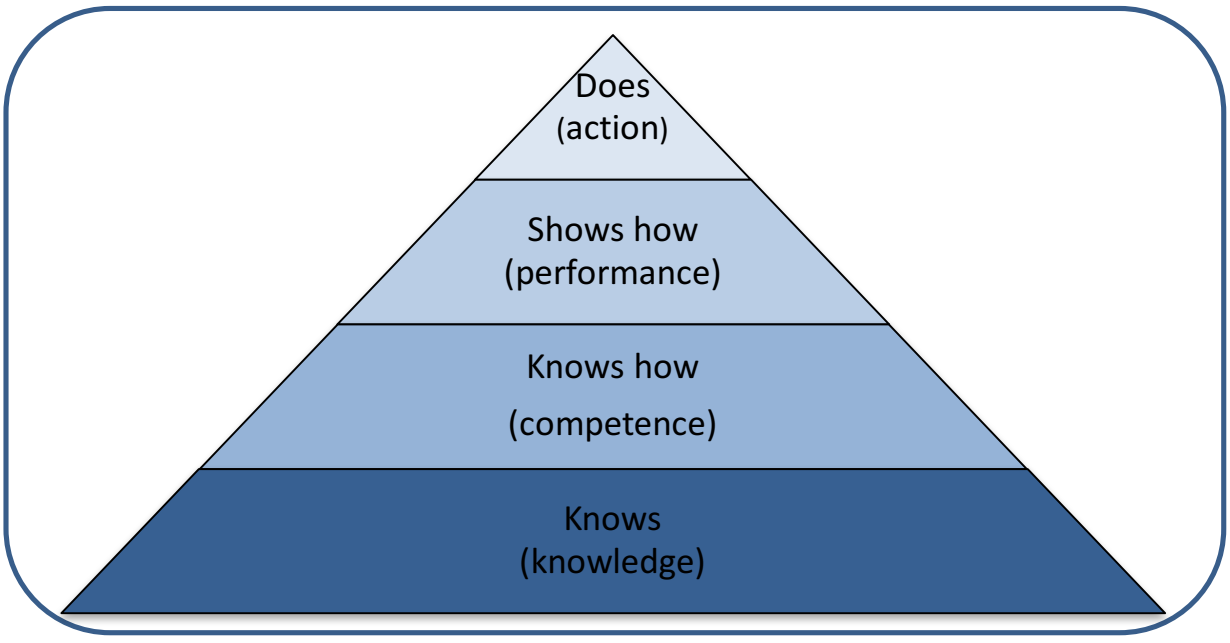

Figure 1.2: Miller's framework for clinical assessment (Miller 1990)

Simulation based health education can create a safe training environment for students where they can make mistakes in a simulation without the fear of compromising patient safety. This mistake-forgiving environment can be a very powerful learning tool if the educator or facilitator takes advantage of it. Debriefing or reflection after simulation exposure is a vital and powerful educational tool and students could be advised to integrate the principles of reflection in everyday practise. Simulation based health education addresses training in e.g. communication, leadership and teamwork (Labuschagne 2012:20). A well-developed scenario will assist students to develop these often-overlooked skills.

Ziv (2009:219) stated that another benefit of simulation is the fact that it produces a unique training environment where focus can fall on teamwork and the enhancement of students' teamwork skills.

Simulation based health education has the additional advantage that the learning experience can be standardised and replicated. Due to practical considerations, not all students are exposed to the same patients during their hospital rounds. There might be cases to which the students never get any exposure during training, simply because there was no such case in hospital during their clinical rotation. With simulation, the students could be trained in these rare cases and they could all be exposed to the same clinical case. This principle of standardisation is also very important to consider in assessment. Objectively Structured Clinical Examination (OSCE) can be standardised with simulation tools.

1.2.3 Interprofessional Education and Simulation at the Faculty of Heath Sciences at the UFS

Van Zyl (2015:presentation) introduced a community based education approach to interprofessional education at the University of the Free State. This approach would utilise the placing of students at rural healthcare settings, not only to achieve the community-based learning outcomes, but also interprofessional education outcomes from 2016 onwards. To streamline and assist in this process a community based co-ordinator will be appointed. The co-ordinator would liaise between the different role-players of each of the three Schools within the Faculty of Health

Sciences to ensure that students from all the different professions are aligned in their rural placements. This ensures that with each rural placement a multiprofessional team of students are at the same location and works together as an interprofessional team. These placements would be during the students' clinical phase of their training.

Each of the three Schools within the Faculty of Health Sciences have their own, unique simulation unit focussing on the needs of the professions they are training.

The simulation unit at the School of Nursing (SoN) was opened in November 2009 and scenario-based simulation sessions have been in use from 2010. These sessions are mainly high-fidelity scenarios and standardised patients in a role-play scenario for the nursing students (Devenish 2014:E-mail).

The School for Allied Health Professions (SAHP) simulation unit was opened in October 2011 and simulations started in 2013. These simulations are role-play scenarios with standardised patients. The departments that utilise the unit are Physiotherapy and Occupational Therapy. These two departments use the unit separately (Swanepoel 2014:E-mail).

The School of Medicine's (SoM) simulation unit opened in February 2013 and simulations started the same year. The simulations utilised are skills training with part-task trainer, role-play with standardised patients and high-fidelity scenarios. The unit is used by the various departments within the School of Medicine (University of the Free State 2013:Online).

The aim of these units is to provide a facility where health professions students can be exposed to (University of the Free State 2013:Online):

- Training in a safe environment;
- Training without harm to the patient;
- Scenario-based learning; and
- Debriefing.

During 2014 and 2015, the Faculty of Health Sciences at the University of the Free State started to utilise simulation based interprofessional education. However, these sessions are only in pilot phase and are not formally incorporated into the curriculum (Botma, Butler, Coetzee, Hattingh, Labuschagne & Van Wyk 2014b:5). The aim of the pilot study is to determine the students' conceptual grasp of collaborative practice (the principles of collaboration, professionalism, communication and improving healthcare system) utilising an unfolding simulated case study (Labuschagne & Botma 2015:poster).

During these sessions, 4th year undergraduate students from the School of Nursing, School of Medicine and School for Allied Health Professions were divided into 28 groups. Each group consisted of approximately ten students (Labuschagne & Botma 2015:poster). Each group was assigned a facilitator and standardised patient. Each group consisted of at least one student from each of the following professions: Biokinetics, Dietetics, Medicine, Nursing, Occupational therapy, Optometry and Physiotherapy. The facilitators were also from these professions.

The pilot phase consisted of four sessions (Figure 1.3). The first was a theoretical background and orientation on interprofessional education, the second and third were simulated sessions with a standardised patient for each group. The simulation took the form of role-play in a hospital setting with the standardised patient playing the role of a stroke patient. The group managed the patient as an interprofessional team with the focus on collaborative practice. After each session a facilitator debriefed the students. Each debriefing session was divided into two, the first part included the standardised patient and he/she gave feedback to the group from a patient's perspective. The second part of the debriefing was without the standardised patient. The fourth session was used for the groups to present an interprofessional care plan for collaborative practice (Botma *et al*. 2014b: 5).

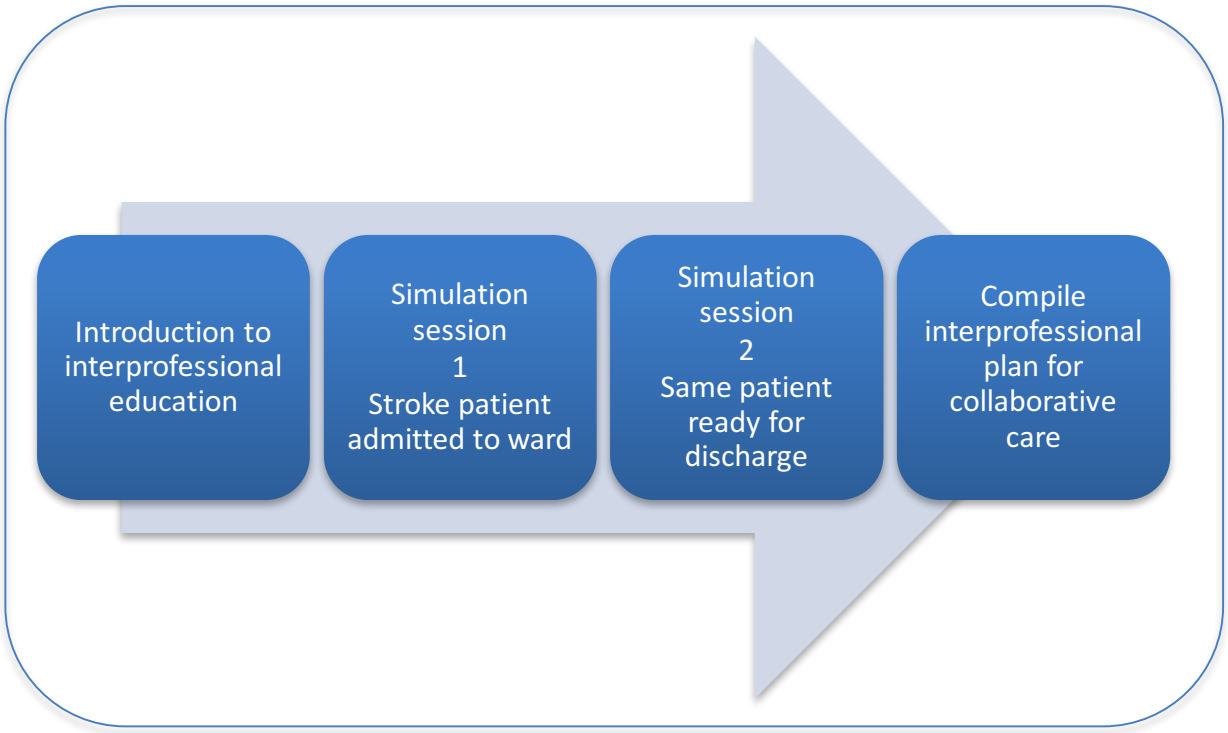

Figure 1.3: IPE sessions during simulation pilot at the FoHS, UFS (Labuschagne & Botma 2015:poster)

These simulated, interprofessional education sessions were effective as the students proved that they grasped the principles of interprofessional care and collaborative practice (Labuschagne & Botma 2015:poster).

1.3 PROBLEM STATEMENT AND RESEARCH QUESTIONS

Although profession specific simulation training takes place in the three simulation units of the Faculty of Health Sciences, the units are not utilised for formal, module based, interprofessional education training.

This dissertation determines the current approach of the undergraduate module leaders at the three Schools concerning interprofessional education, as well as the opinions of the module leaders on using simulation as tool for interprofessional training. Currently, the assumption is that, undergraduate interprofessional education is mostly achieved through coincidental contact during hospital ward rounds and clinic rotations.

The researcher used available research published in the literature and a structured interview to gather the information needed to answer the following research questions:

- Is interprofessional training being incorporated into modules?
- What training tools are currently utilised for interprofessional training at the Faculty of Health Sciences (UFS)?
- Is simulation a viable training tool when considering interprofessional education of healthcare profession students?
- What are the opinions of the module leaders on utilising simulation as training tool for interprofessional education of health profession students?

1.4 OVERALL GOAL, AIM AND OBJECTIVES OF THE STUDY

1.4.1 Overall goal of the study

The overall goal of the research was to contribute to the knowledge on and awareness of simulation as educational tool for interprofessional education in the undergraduate programmes at the FoHS (UFS). Using simulation to address interprofessional collaborative competencies, would also prepare a student for the interprofessional educational challenges faced during the community based education phase. This could contribute to more well-rounded healthcare professionals and better management and care of patients (WHO 2010:7).

1.4.2 Aim of the study

The aim of the study was to determine the opinions of the undergraduate module leaders in the Faculty of Health Sciences, UFS on using simulation as training tool in interprofessional education.

To provide the necessary context, the current approach of undergraduate module leaders across all three Schools in the FoHS (UFS) with regard to interprofessional education was determined.

1.4.3 Objectives of the study

To achieve the aim and address the research questions of the study, the following objectives were pursued:

1. To establish which modules within the undergraduate programmes of the FoHS utilise interprofessional education (structured interviews with the undergraduate module leaders).
2. To gain insight into the current training tools utilised for interprofessional training at the FoHS (structured interviews with the undergraduate module leaders).
3. To determine whether simulation is a viable training tool when considering interprofessional education for healthcare profession students (literature study).
4. Ascertain the opinions of the undergraduate module leaders on utilising simulation as training tool for interprofessional education of health profession students (structured interviews with the undergraduate module leaders).

1.5 SCOPE OF THE STUDY

The domain of the study is in Health Professions Education with the focus on the use of simulation as educational tool in interprofessional education. It involved the various staff members from the three Schools in the FoHS at the UFS and was consequently multiprofessional.

In a personal context, the researcher is chief technical expert at the Clinical Simulation Unit (CSUM), SoM, FoHS, UFS and is qualified with a post-graduate diploma in Health Professions Education (HPE). He was interested in the topic as he observed that the various undergraduate students were not utilising the simulation units in interprofessional education teams in any formal module driven capacity. During the interprofessional education simulation pilot study, he was involved as a facilitator for one group.

The study was conducted between September 2014 and December 2015, with the empirical research phase between November 2014 and July 2015.

1.6 VALUE AND SIGNIFICANCE OF THE STUDY

The value of the study is the understanding of opinions of the undergraduate module leaders in the FoHS (UFS) with regard to interprofessional education and the use of simulation as a training tool. The significance is the potential integration of simulation as training tool for interprofessional education.

1.7 RESEARCH METHODOLOGY

1.7.1 Design of the study and methods of investigation

The study was a quantitative, cross-sectional descriptive study. This non-experimental design was used because the measurement of the units did not take place over time but rather at a specific time (Botma, Greeff, Mulaudzi & Wright 2010:108). Furthermore, there was no manipulation of the variables (De Vos, Strydom, Fouche & Delport 2011:158).

According to De Vos *et al.* (2011:134) the literature study is aimed at contributing a clearer understanding of the nature and meaning of the identified problem. A literature study was done to determine whether simulation is a viable training tool when considering interprofessional education of healthcare profession students.

Structured interviews (conducted with undergraduate module leaders from all three Schools) were used to gather the data.

The interview schedule was mainly quantitative in nature, with some open ended questions allowing for qualitative opinions. The answers to these questions were coded into themes and analysed quantitatively.

The research methodology will be discussed in detail in Chapter 3.

1.7.2 Schematic overview of the study

A schematic overview of the study is given in Figure 1.4

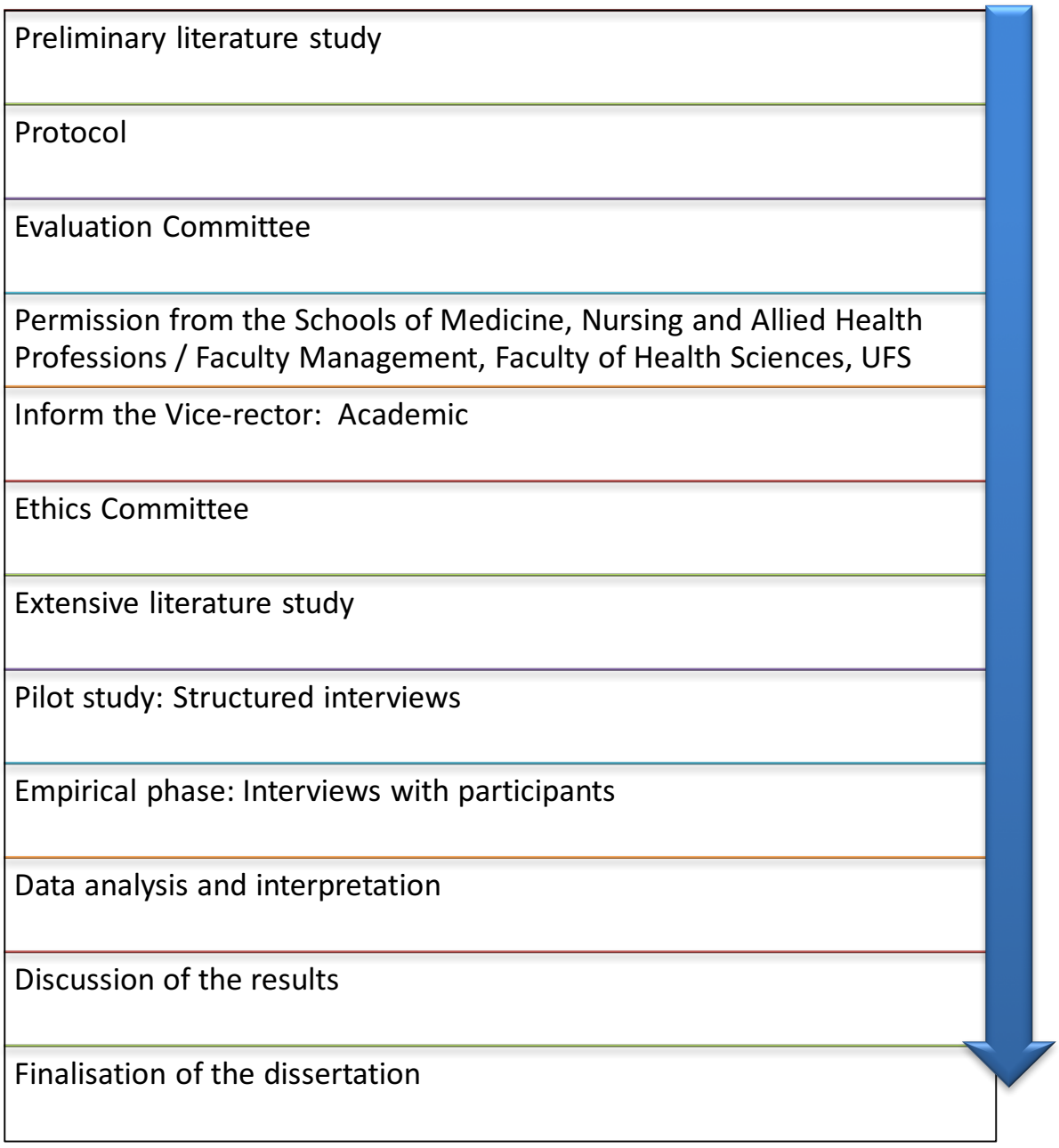

Figure 1.4: Schematic overview of the study

1.8 IMPLEMENTATION OF THE FINDINGS

The report will be submitted to the Programme Directors and Heads of the three Schools of the FoHS at the UFS to contribute to the knowledge on and awareness of simulation as educational tool that could be utilised for interprofessional education in the undergraduate programmes at the FoHS (UFS).

1.9 ARRANGEMENT OF DISSERTATION

Reporting on the topic, the methods used and the results of the study will be arranged as follows:

In this chapter, ***Chapter 1: Orientation to the study***, the background to the study was provided as well as the problem statement and research questions. The overall goal, aim and objectives were also stated. The scope and domain of the study were defined. The research design was provided, with a full explanation following in Chapter 3.

In ***Chapter 2: The contextualisation of Interprofessional Education and Simulation Based Health Education,*** the contextualisation of interprofessional education using simulation will be discussed. This chapter served as the theoretical framework of the study. The discussion focuses on simulation based health education as an educational strategy and on interprofessional education as it applies to the training of undergraduate, healthcare students.

Chapter 3: Research Methodology, is the detailed description of the research design and methodology.

Chapter 4: Findings of the structured interviews, encompasses the presentation of the results of the structured interviews.

In ***Chapter 5: Simulation as educational strategy: an interprofessional approach at The Faculty of Health Sciences, University of the Free State,*** the results will be discussed.

In ***Chapter 6: Conclusion, recommendations and limitations of the study,*** an overview and summary will be provided of the study.

1.10 CONCLUSION

Chapter 1 provided the introduction, overview and background to the research problem that was addressed. In the next chapter, ***Chapter 2: The contextualisation of Interprofessional Education and Simulation Based Health Education,*** the contextualisation of interprofessional education using simulation will be discussed to serve as the theoretical framework of the study.

CHAPTER 2
THE CONTEXTUALISATION OF INTERPROFESSIONAL EDUCATION AND SIMULATION BASED HEALTH EDUCATION

2.1 INTRODUCTION

This chapter gives an overview of interprofessional education (IPE) as an educational strategy in health professions education. The discussed focus areas for interprofessional education include the following: importance, the principles of interprofessional education, interprofessional education and the core competencies, as defined by the HPCSA, challenges of interprofessional education, the design of effective interprofessional education, assessment and delivery modes for interprofessional education.

Thereafter an overview will be given of using simulation in the training of health professions students. The areas that will be discussed for simulation based health education are, the principles, the advantages and disadvantages, small group learning, the types of simulation available and the curriculum integration of simulation.

Finally, the role of simulation to address interprofessional education will be discussed. A framework for the literature study is represented in Figure 2.1

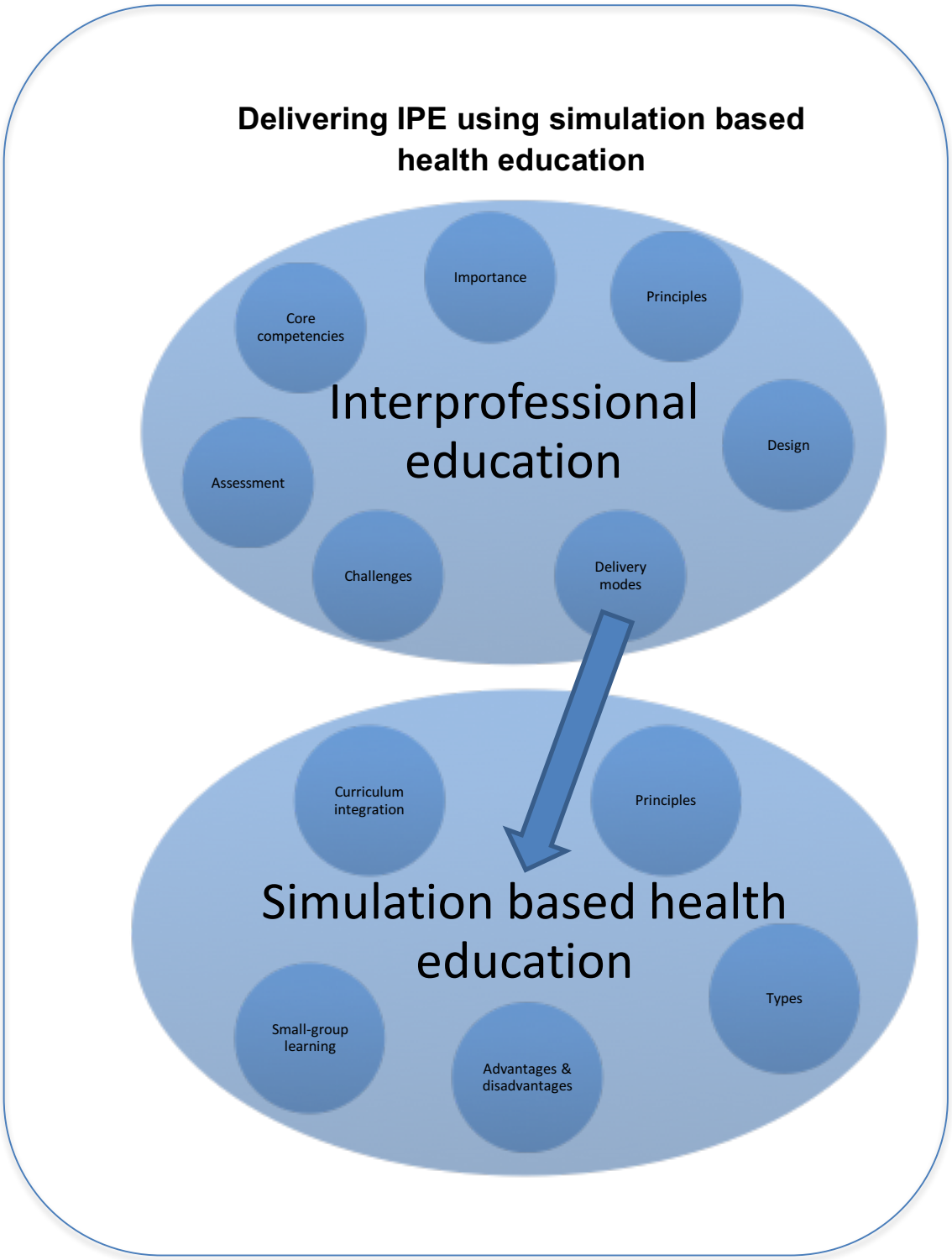

Figure 2.1: Framework for literature study

2.2 INTERPROFESSIONAL EDUCATION

As patient needs become more complex and patients present with multiple problems, it is apparent that students must be prepared to function effectively as part of an interprofessional team to address patient needs (Barr 2009:187).

2.2.1 Defining interprofessional education

According to Freeth (2007:2), the Centre of the Advancement of Interprofessional Education (CAIPE) has the most widely recognised definition for interprofessional education*:* "Occasions when two or more professions learn with, from and about each other to improve collaboration and the quality of care." (CAIPE 2002:online). This is also the definition adopted by the World Health Organisation in the 2010 Framework for Action on Interprofessional Education and Collaborative Practice (WHO 2010:7).

The Australasian Interprofessional Practice & Education Network (2009:online) endorses the CAIPE definition and identifies five key elements of interprofessional education. These are that interprofessional education:

- "Works to improve the quality of care"
- "Focusses on the needs of service user and carers and actively involves them"
- "Encourages professions to learn with, from and about each other"
- "Respects the distinctive contributions of each profession"
- "Enhances practices, and increases satisfaction, within professions"

The Centre for the Advancement of Interprofessional Education (CAIPE) expands on its definition, stating that interprofessional education includes: "… all such learning in academic and work-based settings before and after qualification, adopting an inclusive view of 'professional'" (CAIPE 2002:online).

Freeth (2007:2) focusses on three key elements. These are that education is defined by learning; it implies active learning based on exchanges ("with, from and about"); and it aims to improve collaboration and care.

2.2.2 The importance of interprofessional education

Multidisciplinary teams deliver healthcare, therefore interprofessional education is important in preparing students to be effective in this complex environment (Thistlethwaite 2014:190).

When providing care in an increasingly complex patient environment and setting, collaborative practice is important to achieve consistent and reliable care (Chan & Wood 2010:22). Haire (2010:12) states that traditional health education models promoted isolation of professions within the health sector. To promote collaborative care, students need to be trained in an interprofessional (i.e. collaborative) setting. The shift of focus towards interprofessional collaborative care, necessitates the need for the education system to provide professionals that have been trained using interprofessional education (Casimiro, MacDonald, Thompson & Stodel 2009:391).

The World Health Organization in 2010 created a framework for action on interprofessional education and collaborative practice (Figure 2.2). The framework focusses on the need for an effective interprofessional education strategy that will enable future healthcare workforce to apply collaborative practice effectively (WHO 2010:9).

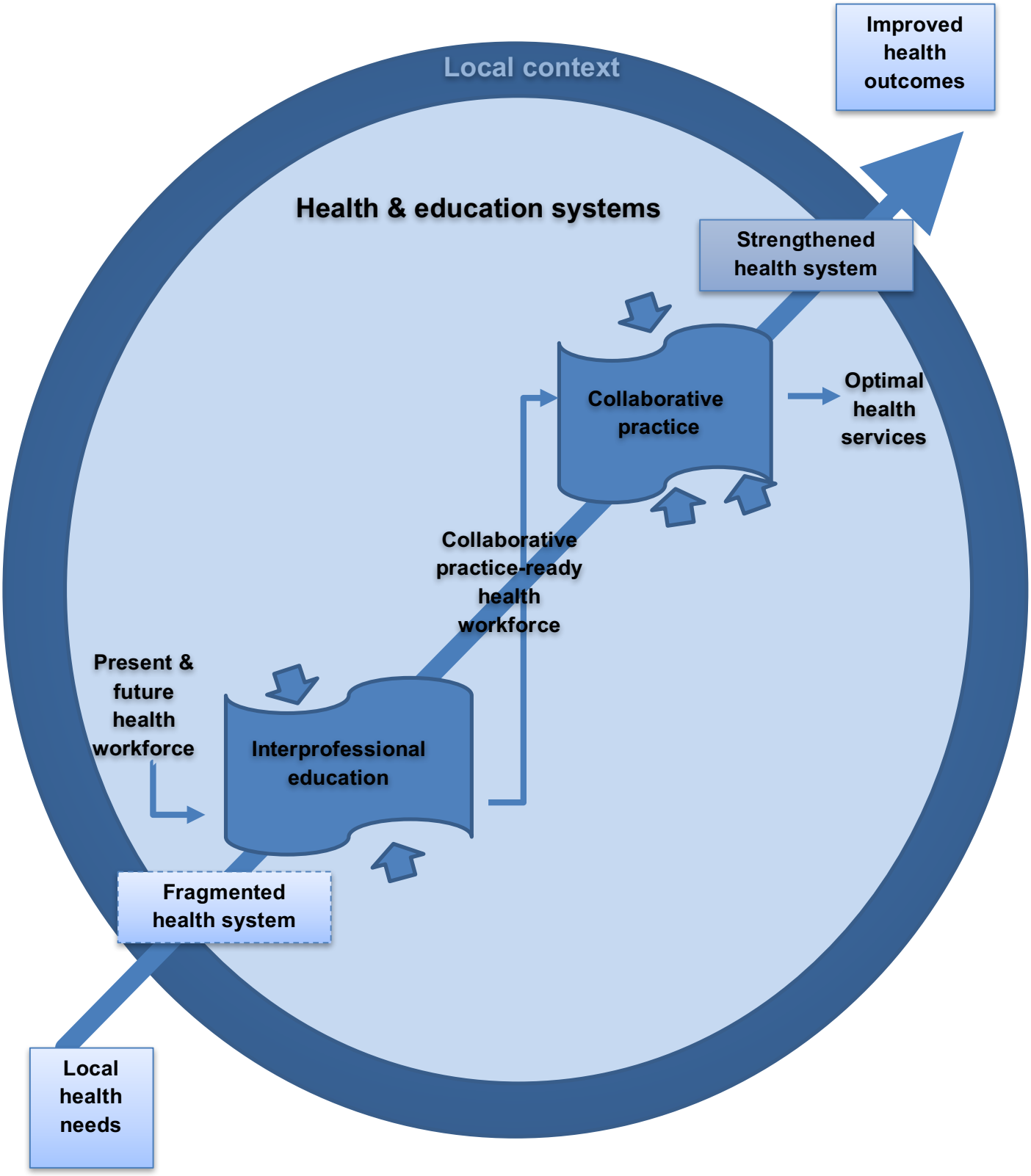

Figure 2.2: Framework for action on interprofessional education and collaborative practice (WHO: 2010)

Communication breakdowns regularly lead to poor teamwork within an interprofessional team (Anderson, Manek & Davidson 2006:182). The results of investigations when things do go wrong in healthcare practice, frequently list failed interprofessional communication or teamwork as a cause (Freeth 2007:4).

The lack of interprofessional collaboration and communication is cited as contributor to up to 98 000 preventable deaths per year in the United States of America (Olenick & Allen 2013:149). These preventable deaths in the United States also have a financial cost of between $17 billion and $29 billion per year (Kohn *et al.* 2000:1). According to Armitage, Connolly and Pitt (2008:277) poor teamwork leads to adverse events in up to 10.6% of admitted patients in Australia.

An example is the case of Beth Bowen, a four-year-old girl in the United Kingdom, whose death in the operating room could have been prevented if there were better interprofessional communication and teamwork. This teamwork and communication could have served as a safety net to prevent individual team members from making mistakes (MPS 2014:12).

Although no similar data could be found for South Africa, it could be assumed that ineffective communication and teamwork that lead to adverse patient events, might even be worse in South Africa due to the 11 official languages. Team members of a healthcare team might have difficulty in expressing themselves in a particular language (Botma *et al.* 2014b:4).

Other negative factors that are caused by inadequate interprofessional communication are delays in patient care, poor patient outcomes and wasted staff time and resources (Olenick & Allen 2013:150).

Interprofessional education is very often advised as a corrective measure in these type of cases (Kohn *et al*. 2000:173).

The World Health Organization lists benefits and advantages regarding the importance of interprofessional education and collaborative practice (WHO 2010:18).

Following treatment by a collaborative team, patients reported higher levels of satisfaction and improved health outcomes as well as better acceptance of care. Collaborative practice also improves the patient safety and better health outcomes for patients with chronic diseases. Another area of improvement with collaborative practice is that clinical specialist resources are appropriately used and the better overall coordination of healthcare services. Research has also showed that collaborative practice has led to the decrease in mortality rates, total patient complaints, clinical error rates and the length of hospital stays. Looking at the healthcare workforce, collaborative practice leads to less tension and conflict amongst caregivers and better staff turnover rates (WHO 2010:18).

Another advantage of interprofessional education and collaborative practice is that these are more responsive to the needs of the patient population and improve care (Craddock, O'Halloran, McPherson, Hean & Hammick 2013:65). Improved job satisfaction and reduced stress amongst health professionals are further consequences (World Health Professions Alliance 2013:online).

Barr *et al.* (2005:27) describe the advantages of effective interprofessional education as a potential chain reaction (Figure 2.3) that flows into effective interprofessional collaboration and towards the promotion of partnerships for health.

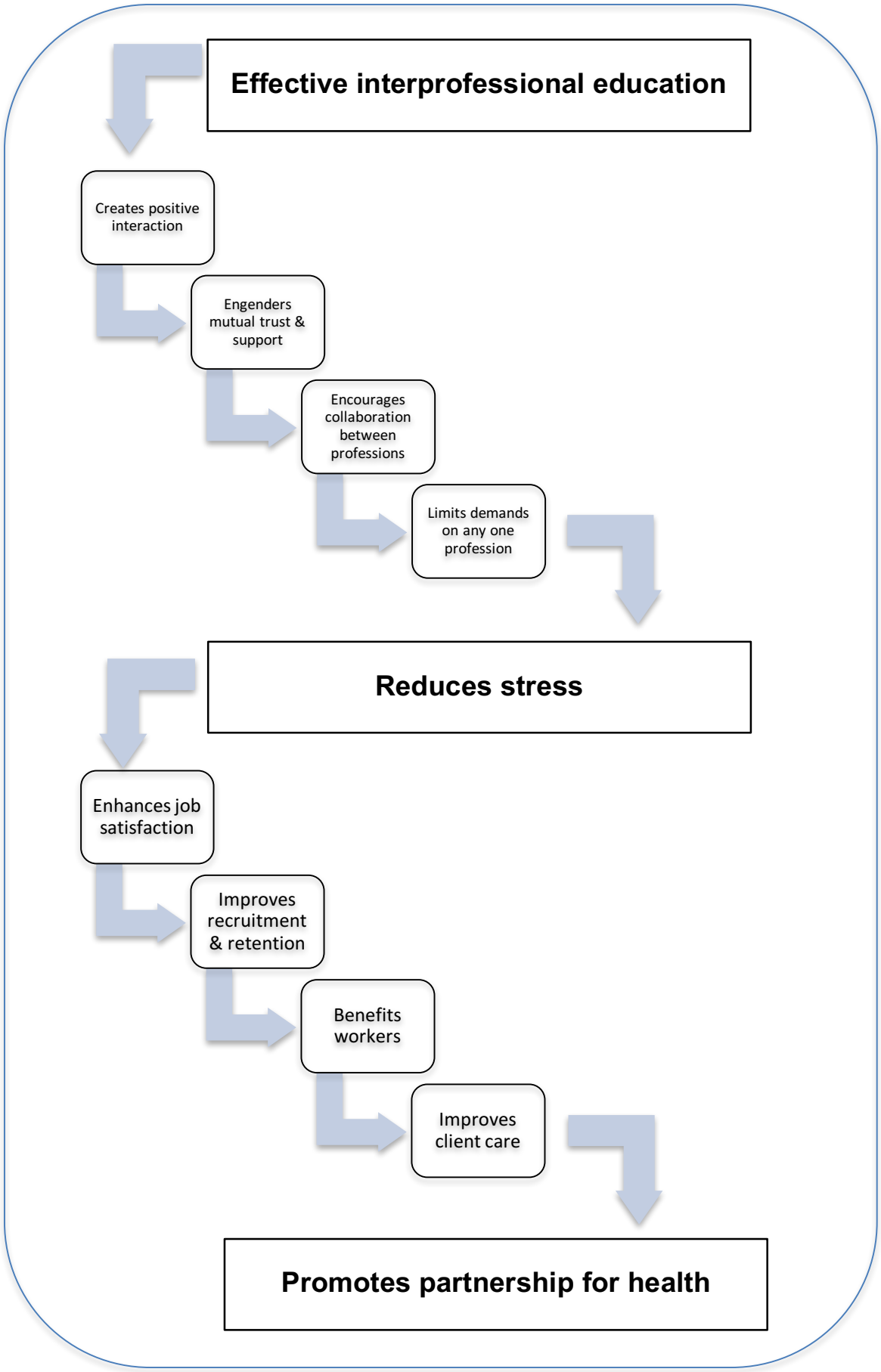

Figure 2.3: Chain reaction in effective Interprofessional education. (Barr *et al*. 2005)

2.2.3 Principles for effective interprofessional education

The United Kingdom Centre for the Advancement of Interprofessional Education (CAIPE) lists 24 principles of interprofessional education (CAIPE 2011:online):

- "Focuses on the needs of individuals, families and communities to improve their quality of care, health outcomes and wellbeing"
- "Applies equal opportunities within and between the professions and all with whom they learn and work"
- "Respects individuality, difference and diversity within and between the professions and all with whom they learn and work"
- "Sustains the identity and expertise of each profession"
- "Promotes parity between professions in the learning environment"
- "Instils interprofessional values and perspectives throughout uniprofessional and multiprofessional learning"
- "Comprises a continuum of learning for education, health, managerial, medical, social care and other professions"
- "Encourages student participation in planning, progressing and evaluating their learning"
- "Reviewing policy and practice critically from different perspectives"
- "Enables the professions to learn with, from and about each other to optimise exchange of experience and expertise"
- "Deals in difference as it searches for common ground"
- "Integrates learning in college and the work place"
- "Synthesises theory and practice"
- "Grounds teaching and learning in evidence"
- "Includes discrete and dedicated interprofessional sequences and placements"
- "Applies consistent assessment criteria and processes for all the participant professions"
- "Carries credit towards professional qualifications"
- "Involves service users and carers in teaching and learning outcomes"

- “Engenders interprofessional capability”
- “Enhances practice within each profession”
- “Informs joint action to improve services and instigate change”
- “Improves outcomes for individuals, families and communities”
- “Disseminates its experience”
- “Subjects developments to systematic evaluation and research”

Looking at the importance and principles of interprofessional education it is clear that integrating it into the curriculum will lead to better -equipped and more rounded health professionals. This is an important factor to consider, as we must address complex patients needs more than ever before (WHO 2010:10).

2.2.4 Design of effective interprofessional education

To have students from different schools (Medicine, Nursing and Allied Health) on the same physical campus would not guarantee shared interprofessional learning experience amongst the students and these experiences should not be left to chance, but should be integrated in the formal curriculum (Baldwin & Baldwin 2007:52).

According to the Institute of Medicine (IOM) (2015:28), interprofessional education can be achieved by formal (organised) learning and informal (workplace) learning. As students progress from foundational education to graduate education and later to continued professional development, the percentage of interprofessional education should increase (Reeves, Goldman, Gilbert, Tepper, Silver, Suter, & Zwarenstein, 2011:169).

Wagner and Reeves (2015:509) state that competency-based education has become popular for interprofessional education and when a framework is being developed, these competencies should be considered. Expected outcomes should also be developed, not only for the individual learner but also for the health of patients and health system.

The external enabling or interfering influences on the health system and collaborative practice should also be taken into account. These might differ for certain settings, or countries (IOM 2015:30).

The IOM (2015:29) created a model (Figure 2.4) to demonstrate the interprofessional learning continuum (IPLC).

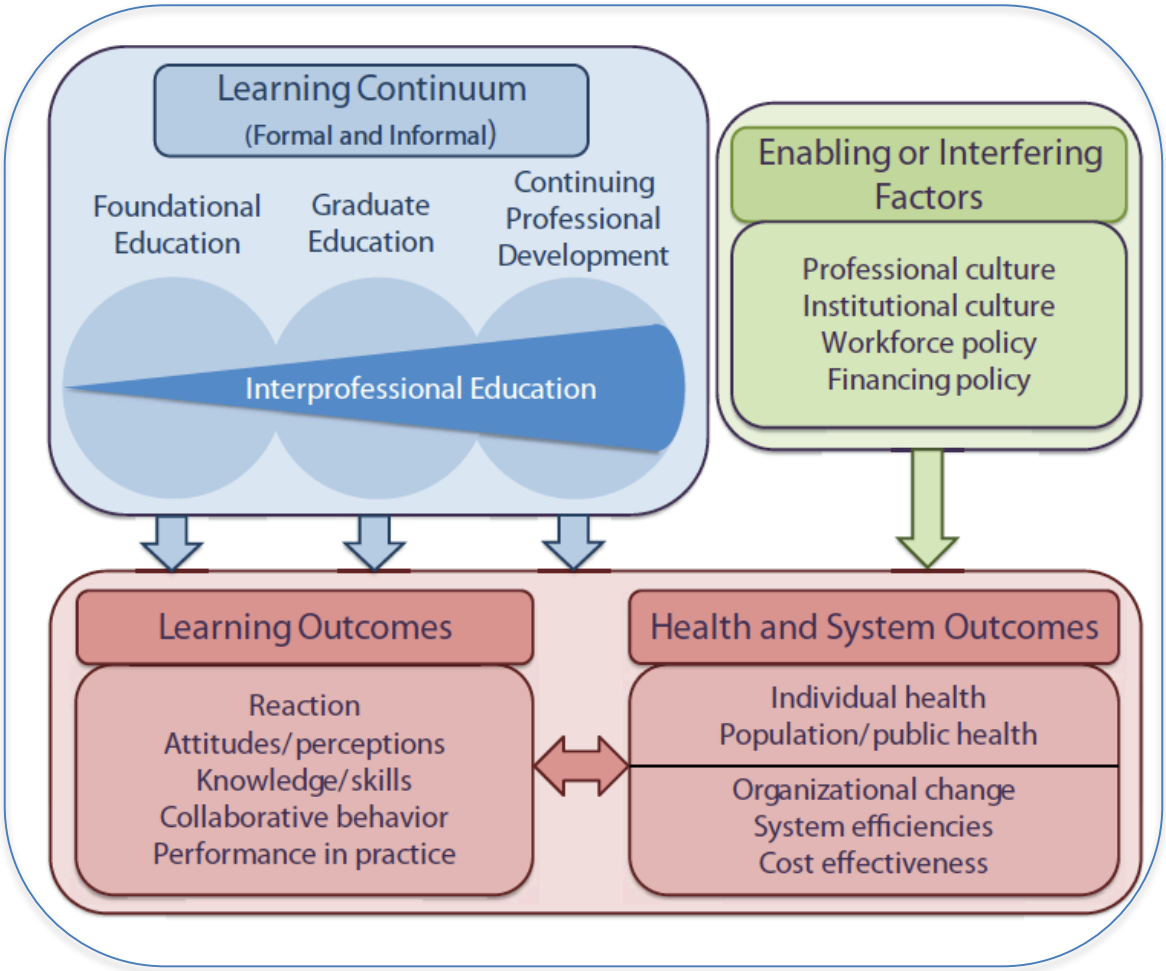

Figure 2.4: Interprofessional learning continuum (IOM 2015)

Barr (1998:184) proposes that competencies relative to collaborative practice be classified in three distinct, but overlapping (Figure 2.5) categories. The three categories are common, complimentary and collaborative.

Common competencies refer to those that are common amongst all professions. The complementary competencies are those "which distinguish one profession and complement those which distinguish other professions." Collaborative

competencies are the collaborative aspects (between all different role players and organisations) for every profession.

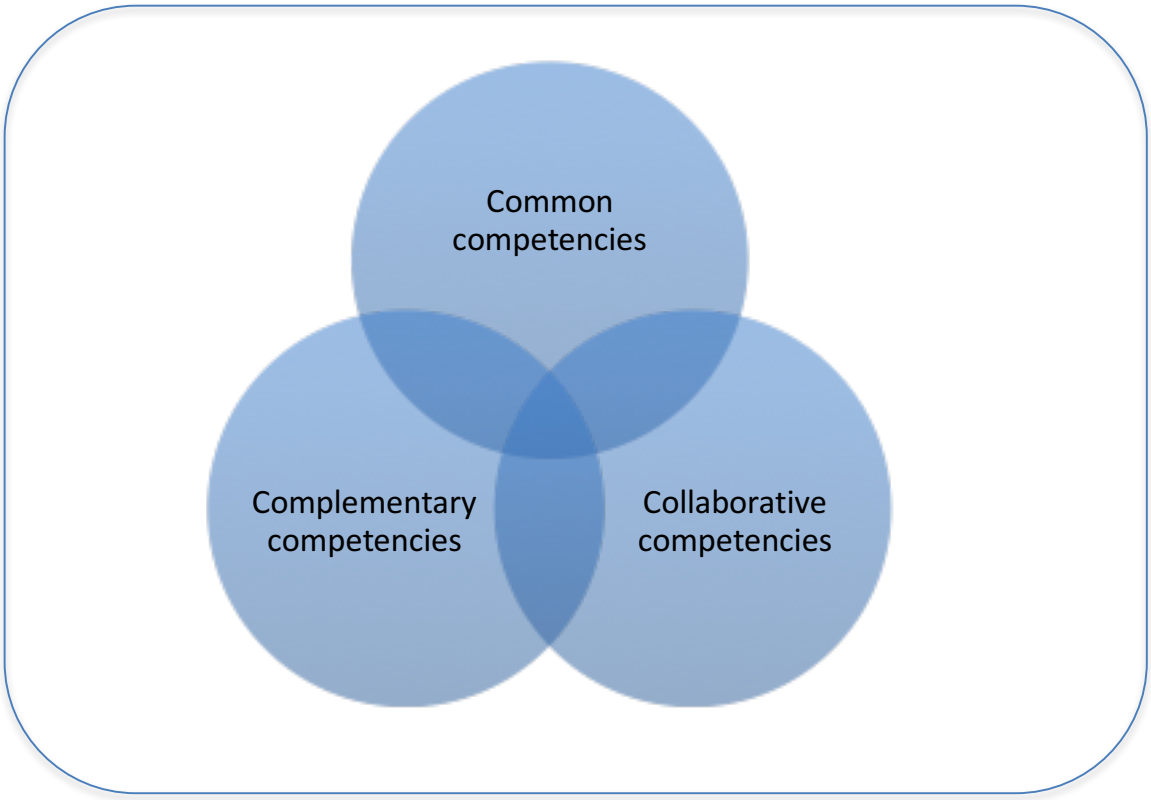

Figure 2.5: Three types of professional competencies (Barr 1998)

Freeth (2007:9) gives key aspects about the learners to consider when designing interprofessional education. These are:

- "The perceived relevance of the learning opportunity"
- "The perceived demands of the learning context."
- "The relationship of current learning to prior learning."
- "The learner' self-concept."
- Room for repeated practise and as well as feedback and reflection.

Learning opportunities must be carefully aligned with the students' interests, concerns and level of expertise (Knowles, Holton and Swanson 2015:44). This is more challenging with interprofessional education since there might be great diversity amongst multidisciplinary students (Freeth 2007:10).

Care should be taken to balance the workload of students, not to overload them, prompting surface learning (Ruiz-Gallardo, Castano, Gomez-Alday & Valdes 2011:624). An example of this might be to have an interprofessional learning opportunity right before a big summative assessment.

It is important to take into account the students' level of prior learning. Good interprofessional education should leverage existing knowledge of the students to enhance their learning opportunities (Freeth, Hammick, Reeves, Koppel & Barr 2008:82).

Successful education should challenge students, but these challenges should be monitored and adjusted to ensure productive learning. Initially the facilitator should structure the program, but as students' confidence grows these structured approaches may be lessened (Barr *et al.* 2005:97).

Repeated, deliberate practise leads to improved performance (Erricsson, Krampe & Tesch-Römer 1993:363) and opportunities for regular practise in interprofessional education should be built in. As with any other skill, repeated practise is vital to imbed interprofessional collaboration skills in students.

Feedback and reflection are also important since it will promote learning, if done correctly. Reflection and feedback can lead students to be self-evaluating, seeking constant improvement and exploring alternative strategies to a problem. The most effective feedback for interprofessional education is guided, structured feedback (Clark 2009:216).

It is always important to consider the relevant policies, trends and guidelines in health professions education (Cholerton & Jordan 2009:193) and with that in mind an overview of the the seven core competencies (HPCSA 2014) will be set out in 2.2.5. These can be used as guidelines when developing outcomes and competencies for Interprofessional education.

2.2.5 Core competencies for undergraduate students in the context of interprofessional education

The CanMEDS principles (referred to as Roles) were developed by the Royal College of Physicians and Surgeons of Canada for training successful and competent physicians with the focus on post-graduate training (Frank & Danoff 2007:342).

According to Frank (2005:4) the main purpose of the CanMEDS initiative is to "identify the core competencies generic to all specialists to meet the needs of society". This new framework of competencies was needed due to the rapid changes in the healthcare environment, and producing competent health professionals to meet them. Some of these changes were identified as the rapid growth in medical knowledge, government regulations, litigation concerns, the access to medical information on the Internet and patient consumerism.

Another challenge brought about by the changing environment was the fact that patients spent less time in hospital. This increase in patient turn-around time leads to less time spent by students on a specific case. There was also a rising emphasis on accountability of a health professional towards the patient and community when in practice, and student training needs to reflect the importance of this as well (Norman 2011:547).

These environmental changes were identified during the late 1980s and work on the development of the framework was started in the early 1990s. In 2005, it was revised with optimal wording to reflect current usage and validity (Stafford, Sedlak, Fok & Wong 2010:1).

This framework development project resulted in a framework of multifaceted competencies for physicians organised thematically around physicians' roles, known as the seven CanMEDS Roles (Frank 2005:6).

During 2012 a process was started in South Africa to adapt the CanMEDS roles for the South African context (Nel 2012:presentation). This adaptation is known as

"Core competencies for undergraduate students in clinical associate, dentistry and medical teaching programmes in South Africa". The phrase "Healthcare Practitioner" replaced "Medical Expert" (HPCSA 2014) in this adaptation. The reason for this is that the focus should not be on the role of physicians alone, but must include the important contribution every healthcare practitioner makes towards a patient or community, irrespective of their profession. These competencies were also adapted for undergraduate students and not only for post-graduate students.

2.2.5.1 ***The seven core competencies*** (*cf.* Figure 1.1)

The resulting seven core competencies from the framework development are listed below with their relevant definitions (HPCSA 2014).

Health care practitioner: "As Health care practitioners, healthcare professionals integrate all of the graduate attribute roles, applying profession-specific knowledge, clinical skills, and professional attitudes in their provision of patient/client-centered care. Healthcare practitioner is the central role in the framework of graduate attributes."

Communicator: "As Communicators, healthcare professionals effectively facilitate the carer-patient/carer-client relationship and the dynamic exchanges that occur before, during, and after interventions."

Collaborator: "As Collaborators, healthcare professionals work effectively within a team to achieve optimal patient/client care."

Leader and Manager: "As leaders and managers, healthcare practitioners are integral participants in healthcare organisations, organizing sustainable practices, making decisions about allocating resources, and contributing to the effectiveness of the healthcare system."

Health Advocate: "As health advocates, healthcare professionals responsibly use their expertise and influence to advance the health and well-being of individual patients, communities, and populations."

Scholar: "As Scholars, healthcare professionals demonstrate a lifelong commitment to reflective learning, as well as the creation, dissemination, application and translation of knowledge."

Professional: "As professionals, healthcare professionals are committed to ensure the health and well-being of individuals and communities through ethical practice, profession-led self-regulation, and high personal standards of behaviour."

It is clear that although the attribute of Healthcare Practitioner stands central, the other six attributes cannot be neglected when developing a successful curriculum.

2.2.5.2 *The collaborator attribute*

Considering the definitions, it is clear that the focus should be on the collaborator attribute when thinking about integrating interprofessionalism into a curriculum.

Two key competencies and their enabling competencies, are identified for the collaborator attribute, and these are (HPCSA 2014):

1. "Participate effectively and appropriately in multicultural, interprofessional and trans professional teams, as well as teams in other contexts (the community included)."

The enabling competencies for this are:

- "Describe their roles and responsibilities to other professionals."
- "Recognise and respect – irrespective of profession, status, age, gender, race, class or beliefs – the diversity of roles, responsibilities and competencies of other team members. Appreciate diversity, and demonstrate the ability to adapt."
- "Work interdependently and share tasks with others to assess, plan, provide and integrate quality care for individual patients/clients."
- "Collaborate with others, where appropriate, to assess, plan provide and review other tasks, such as research problems, educational work, programme review or administrative responsibilities."
- "Participate effectively in interprofessional team meetings, respecting team ethics, including confidentiality, resource allocation and professionalism."
- "'Demonstrate appropriate leadership in a healthcare team."

2. “Work effectively with other healthcare professionals to promote positive relationships and prevent, negotiate, and resolve interprofessional conflict.”

The enabling competencies for this are:

- “Demonstrate a respectful attitude towards other team members, and work with other professionals to promote positive relationships and prevent conflict.”
- ”Employ collaborative negotiation skills to achieve consensus and/or resolve conflict.”
- “Recognise differences, misunderstandings and limitations in other professionals, and acknowledge their own differences, misunderstandings and limitations that may contribute to interpersonal tension.”
- “Reflect on improving interprofessional and transprofessional team function.”

Various other frameworks for interprofessional competencies exist and their domains often overlap (Thistlethwaite, Foreman, Matthews, Rogers, Steketee & Yassine 2014:873). Examples of these are:

- Interprofessional Capability Framework, UK, 2004
- National Interprofessional Competency Framework, Canada, 2010
- Core Competencies for Interprofessional Collaborative Practice, US, 2011
- Interprofessional Capability Framework, Australia, 2011

The focus for this dissertation is the relevant framework by the HPCSA for the South African context.

2.2.6 Challenges of delivering interprofessional education

It is important to be aware of the key challenges to the uptake and implementation of interprofessional education, as identified by the Interprofessional Education Collaborative Expert Panel (2011:34), and to alleviate them when considering the implementation of interprofessional education.

In most cases health professionals are trained in their relevant school separately and usually with minimal interaction with other health professions students (Oandasan & Reeves 2005:40).

A potential challenge could be a lack of support from the leadership of the institution or wider policy makers. Support and leadership are critical to secure the needed resources for interprofessional education (Pirrie, Wilson, Harden & Elsegood 1998:414).

Planning and co-ordination might be more time consuming due to all the relevant role players that need to be incorporated (Kim, Lowe, Srinivasan, Gairy & Sinclair 2010:9).

Another challenge identified is the lack of collaborators or partners. Some institutions need partnerships from other institutions, and this might be difficult due to geography or lack of interest from other institutions (Interprofessional Education Collaborative Expert Panel 2011:34).

Another potential barrier to effective interprofessional education could be the difference in professional cultures, values and training. An example could be the focus on action and outcome and the neglect of relationship in physician training. This might lead to difficult interaction in an interprofessional education setting (Hall 2005: 190).

Practical issues might also have a negative impact. It might be difficult to schedule interprofessional education to accommodate different professions. In some case

huge organisational changes will need to be made to accommodate interprofessional education (Carlisle, Cooper & Watkins 2004:549).

A further challenge could be the lack of skilled staff to deliver interprofessional education. Staff development will have to take place because educators might not be skilled in delivering effective interprofessional education (Thistlethwaite 2014:194).

The next challenge is the lack of regulatory expectations. Recognition of interprofessional education competencies by accrediting bodies is important to give the needed impetus for starting interprofessional education (Gilbert 2005:93).

The question of assessment in interprofessional education is also challenging. The development of effective assessment tools for assessing interprofessional competencies could be difficult and challenging (Freeth 2007:21).

2.2.7 Interprofessional education and assessment

According to Freeth (2007:21), no assessment is needed since the experience and exposure during training is more important than formal assessment. However, in most instances assessment drives learning. This means that if the student knows there will be no assessment on interprofessional competencies, the perception can be created that it is simply not important. It might lead to a learning experience that is less than optimal. The way to address this will be by constructive alignment (whereby the outcomes are aligned with the training material and the assessment criteria). This will lead to the reinforcement of outcomes by the use of assessment (Biggs & Tang 2011:297).

Care should be taken to choose the correct assessment tool to effectively assess certain competencies. This is to ensure that an institution can prove that the students are competent to function effectively within a collaborative health team. An example is direct observation of a group of students' teamwork skills during an

interprofessional simulation (Havner, Nelson, Wingo, Comfere, Halvorsen, McDondald & Reed 2016:online).

It is important to assess values and skills in a non-fragmented way, and assessment instruments should be aligned with learning outcomes or competencies (Lown, Mcintosh, Gaines, McGuinn & Hatem 2016:online).

Team assessment might be considered, but regulations might limit this option. Interprofessional education assessment tools should measure basic areas such as attitudes, knowledge, skills, behaviours, as well as facilitator evaluation (Brashers & Owen 2013:online).

2.2.8 Delivery modes for interprofessional education

When considering modes of delivery, it is important to keep in mind that some modes will be better suited in certain situations than others (Freeth 2007:16) and the delivery mode can be changed at any time to suit the students' needs (Barr *et al.* 2005:97).

Freeth (2007:16) lists four possible approaches to interprofessional education. These are, case based, clinical work in interprofessional student teams, shadowing and simulation.

Freeth (2007:16) describes these four as follows:

- **Case based.** These can be real cases or authored scenarios. The participants should find this familiar from their uniprofessional training and this will be natural to them.
- **Clinical work in interprofessional student teams.** Programmes have achieved this with a great deal of success and positive feedback. These teams must operate under the supervision of qualified practitioners. This training occurs in an authentic work-based environment. However, the

supervising and facilitation of reflection for these teams can be demanding on the staff involved.

- **Shadowing.** Shadowing is a valid and useful tool to contribute to the understanding of interprofessional roles, responsibilities, expertise and models of practice. Shadowing must be interchanged and followed-up by discussion and reflection.
- **Simulation.** Simulation for interprofessional education can be done in a wide variety of ways, from simple role-play with standardised patients (SP), to high-tech, high-fidelity scenarios.

Barr *et al*. (2005:98) list eight possible approaches to interprofessional education. These are, exchange-based learning, action-based learning, practice-based learning, simulation-based learning, observation-based learning, e-based (blended) learning, received learning and simulation-based learning.

Barr *et al*. (2005:98) gives the following descriptions for the eight approaches:

- **Exchange-based.** When students from different professions relate stories to each other about their experiences and perspectives. It can also be a debate between the students about certain aspects or topics, for example ethics.
- **Action-based.** This is problem-based learning where the students are required to cooperate in a group to solve real-life problems. This method encourages deeper learning and teamwork as well as independence and better integration of knowledge.
- **Practice-based.** An example would be when students from different professions are part of a joint out-placement in a clinical setting.
- **Observation-based.** This is similar to the shadowing of a student from another profession.
- **E-Based**. E-based and blended learning utilise technology platforms to complement or enhance face-to-face teaching.
- **Received learning**. This should be used sparingly when utilised for interprofessional education due to the non-interactive nature of receiving

learning. However, it could play a role to provide background information on certain topics to the students.

- **Simulation-based**. This can be utilised in a wide variety of ways, the most common is the use of standardised patients in a role-play scenario.

Bridges *et al.* (2011:2) suggest three main approaches. These three aredidactic learning experiences, community-based learning experiences and interprofessional simulation experiences.

- **Didactic learning experiences.** These are interprofessional, small-group, guided discussions on the concepts of interprofessional practice.
- **Community-based learning experiences**. A group of students from multiple professions work as out-placed group with a selected community partner.
- **Simulation experiences**. Aspects to consider when using simulation is the availability of experts to develop experiences with interprofessional outcomes in mind as well as facilitators for effective debriefing and reflection.

An example of interprofessional education through community-based learning experience in South Africa is the approach followed by the University of Stellenbosch (Snyman, Von Pressentin & Clarke 2015:316). In this model fourth year undergraduate students from different professions have placements in different rural, healthcare settings. These interprofessional student teams are monitored and guided by preceptors, in this case health professionals and/or interprofessional education facilitators. As part of the students' interprofessional education outcomes, each team has to compile an interprofessional management plan for their respective patients.

Van Zyl (2015:presentation) proposes a similar approach to interprofessional education at the University of the Free State (*cf.* 1.2.3).

2.3 SIMULATION BASED HEALTH EDUCATION

Simulation in its broadest sense is “an imitation of some real thing, state of affairs, or process” (Rosen 2008:157). The most common example of simulation is in the training of pilots. After the fundamental theory has been taught to a pilot, time will be spent in a simulator to hone his or her skills. Exposure can be given to a trainee pilot for various adverse flight conditions during such a simulated flight. Because this is a simulation, it will be a in a safe environment, with no harm to the pilot or an actual plane or passengers in case something goes wrong.

2.3.1 Defining simulation in a health education setting

Simulation Based Health Education (SBME) can be defined as a training and feedback method where learners practise tasks and processes in lifelike circumstances using models or virtual reality, with feedback from observers, peers, actor-patients, and video cameras to assist improvement in skills (Eder-van Hook 2004:4).

2.3.2 Types of simulation in a health education setting

Simulation education modalities can be broadly divided into two main groups (Ziv 2009:217): low-technology and high-technology simulation. Some examples of low-technology simulators are basic plastic manikins and simple skills trainers or part task trainers. Part task trainers are models consisting only of a subcomponent of the human body for repeated practise of a specific skill. An example of a part task trainer is a model of an arm, for the practise of taking blood pressure (Weller, Nestel, Marshall, Brooks & Conn 2012:594). These trainers can be used to train certain basic, life-saving skills. Cardiopulmonary Resuscitation (CPR) manikins can be used to train students in basic life support (BLS). Part task trainers can also be used to train students for intimate physical examinations, e.g. rectal examinations.

An animal model is also a low-technology simulator. An isolated animal gut might be used in the training of certain surgical and suturing skills. These trainers are usually low-cost and very specifically train only one or a very limited skill. A human cadaver is another example of low-technology simulation, extensively used in anatomy and pathology training (Ziv 2009:217).

Standardised patients (SP), actors or volunteers can be trained to act as patients providing students with valuable feedback on, among other things, bedside manner. This low-technology method is used during a scripted, role-play scenario (Østergaard & Dieckmann 2014:208).

Another low-technology simulation is the combination of part task trainers and SP also known as hybrid simulation (Cantrell 2009:226). An example of this will be a SP that uses a simple birthing simulator to simulate a delivery. The student will interact with the SP while also practising a specific skill. In this way non-technical skills such as communication can be integrated with the practical skill as part of the learning outcomes of the session. Another hybrid simulation would be if the SP plays the role of a family member that needs to be managed with the actual patient, e.g. a difficult father during a delivery scenario.

The second simulator modality group is high-technology (Ziv 2009:218) and some examples of high-technology simulators include screen-based or flat-screen simulation. These are computer based software programs that train and assess clinical knowledge and decision-making skills. These programs can enhance cognitive knowledge, clinical reasoning and decision-making skills (Østergaard & Dieckmann 2014: 208). An example of a flat-screen simulator is the Advanced Cardiovascular Life Support (ACLS) simulation from ANESoft.

Virtual reality devices and simulators are also high-technology simulators. These devices replicate a clinical setting or procedure. Students can interact with this virtual procedure or setting, for instance laparoscopic surgery trainers, where a student can load a certain procedure on the software and with haptic (sense of touch) feedback practise certain procedures. The software will usually monitor the student's progress and ability, and provide feedback. The student can return again

and again to improve his/her score and in this way his/her skills (Kim, Rattner & Srinivasan 2004:228).

A final example of high-technology simulators is interactive patient simulators or realistic patient simulators, also referred to as Human Patient Simulators (HPS). These are high fidelity simulators that can simulate multiple clinical situations and conditions. They are usually controlled by computer based software, either wired or wireless. These can be pre-programmed and controlled by the medical educator. HPS provide health profession students with a computer based patient that breathes, responds to drugs, talks, and controls all the clinical monitors in the operating room, e.g. blood pressure and pulse rate (Milkins, Moore & Spiteri 2014:29).

2.3.3 Advantages and disadvantages of simulation in a health education setting

According to Ziv (2009:220) the rationale for simulation based health education has solid social and educational grounding.

Labuschagne, Nel, Nel and Van Zyl (2014:141) state that simulation enhances the medical curriculum, simulation should be a required component of the curriculum and should be utilised for certain aspects of student assessment.

The most obvious advantage of simulation is patient safety. The student can practise in a safe environment without the need to practise on real patients. This is obviously beneficial when looking at ethical considerations regarding training and patient safety (Kohn *et al.* 2000:34). This mistake-forgiving environment can be a very powerful learning tool and encourages skills transfer through experience (Bradley 2006:259).

As mentioned in Chapter 1, simulation based health education trains and assesses students in the higher order thinking skills on Miller's framework (*cf.* 1.2.2).

An updated version of Miller's framework was developed by Cruess, Cruess and Steinert (2015:online) to include professional identity formation of the students. They state that with increasing emphasis on professional identity formation of the students, the "Does" should not be the highest level of aspiration. Instead they propose that "Is" should be added at the highest level as this would incorporate the values and attitudes of a professional. Their proposed adaptation is in Figure 2.6.

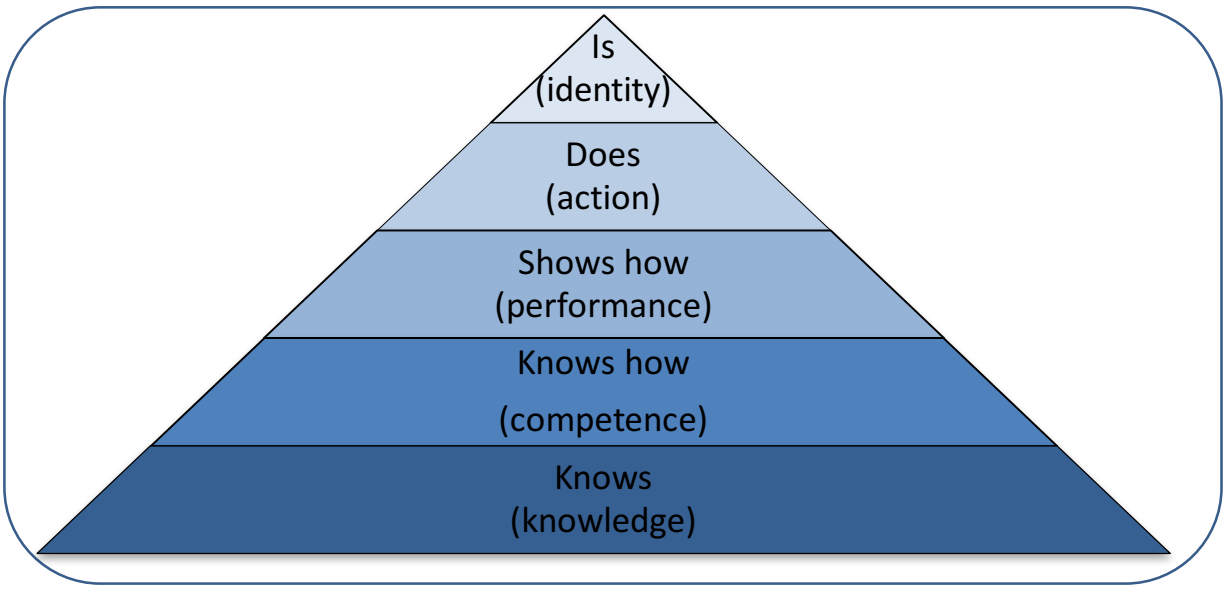

Figure 2.6: Amended version of Miller's framework for clinical assessment (Cruess, Cruess and Steinert 2015)

Using this adapted Miller's framework when developing simulation scenarios, the scenarios will address often overlooked skills such as communication, leadership and teamwork as mentioned by Labuschange (2012:20).

Simulation based health education also has the advantage that the learning experience can be standardised and replicated. Due to practical considerations, not all students are exposed to the same patients during their hospital rounds. There might also be cases that they never experience during training, simply because there was no such case in hospital while they were busy with their rotation. With simulation the students can be trained in these rare cases and they can all be exposed to the same clinical case (Lin, Travlos, Wadelin & Vlasses 2011:3).

This principle of standardisation is also important to consider during assessment. Objectively Structured Clinical Examinations (OSCE) can be standardised with simulation tools (Pugh, Hamstra, Wood, Humphrey-Murto, Touchie, Yudkowsky & Bordage 2015:88). These OSCE's could assess the students' proficiency in certain competencies as described in CanMEDS or the seven core competencies (Nguyen, Tardioli, Roberts & Watterson 2015:33).

The biggest disadvantage of simulation is the fact that it is not 100% authentic. The level of individual engagement of the students will also affect how useful the learning experience will be to them (Lin *et al*. 2011:3).

The financial cost of a simulation unit, its day-to-day operations and specialised training equipment can be very high compared to other teaching methods and the return on investment should be taken into account (Østergaard & Dieckmann 2014: 208).

Lastly simulation can also be burdensome on staff resources. In some cases, educators must often first be trained in facilitation and debriefing for simulation experiences to be effective (Decker, Sportsman, Puetz & Billings. 2008:79).

2.3.4 Small-group learning

According to Rudland (2009:80) students tend to learn in different ways and a range of learning situations will ensure learning for all. Small-group learning is one of many educational methods. Small groups have a positive effect on learning performance (Van Blankenstein, Dolmans, Van der Vleuten & Schmidt 2011:198). The reason for this is the fact that small groups have both cognitive (facilitating elaboration and reflection) and socio-behavioural (social cohesion and authenticity) aspects (Durning & Conran 2014:69).

The reason for the focus in this dissertation on small-group learning is the fact that it lends itself to simulation based health professions education, as outlined below.

2.3.4.1 *Characteristics of small-group learning*

Small-group learning is driven by student participation and interaction. A group might be small, but if the participation of the students is minimal it should not be considered as small-group learning but rather a lecture. The group should focus on a certain task and then reflection on the completion of the task (Rudland 2009:80).

According to Newble and Cannon in Durning and Conran (2014: 70) optimal small group teaching can only occur when all of the three signature characteristics are present. These three are active participation, face-to-face contact and purposeful activity.

The number of students must be small. The larger the group the more difficult it becomes to ensure equal and fair training. There is, however, no rule on the number of students in a group, and the efficient number will be determined by the learning experience. A large group may split into two or more groups or sessions. The learning goals and objectives must be taken into account when determining the optimal group size to achieve efficient exchange of ideas (Durning & Conran 2014:69).

It is also important to realise that, as with any other teaching method, learning should not only take place using the small-group technique, but should be complementary to other methods (Rudland 2009:81).

2.3.4.2 *Advantages of small-group learning*

There are various advantages when using the small-group learning technique. Due to the fact that small-group learning is characterised by student interaction and participation, one of the biggest advantages of small-group learning is that it enhances and encourages problem-solving through real-time interactions (Day, Srinivasan, Der-Martirosian, Griffin, Hoffman & Wilkes 2015:336).

This student-centred approach also has the advantage that students take more responsibility for their own teaching and learning. This is usually not the case in a more teacher-centred learning model (Rudland 2009:80).

The small-group learning technique encourages self reflection as students take more responsibility for their learning (Durning & Conran 2014:70).

Jaques (2003:493) states that small-group learning is valuable for professional development and life-long learning.

Due to the social aspects of small-group learning it encourages participation and is usually a more enjoyable form of learning, which could lead to better motivation for learning. This social aspect of small-group learning also creates an awareness of different viewpoints amongst a group. It has the potential to increase tolerance of opposing viewpoints. The social and team aspect of small-group learning also leads to the increased development of interpersonal, communication, presentation and teamwork skills. In a traditional lecture setting these skills would be very difficult, if not impossible, to develop further (Rudland 2009:80).

2.3.4.3 *Types of small-group learning*

When looking at health professions undergraduate training, a host of different small-group sessions might be relevant to address the training needs. In some situations, a more structured, teacher-centred approach might be beneficial. These more structured sessions typically focus on an identified task and often pursue a series of conclusions (Allery 2012:447).

On the other side of the spectrum is the unstructured, student-centred group. These types of groups rather focus on the exchange of views and reflection. Small-group learning can take place on any level between these two extremes, summarised in Figure 2.7.

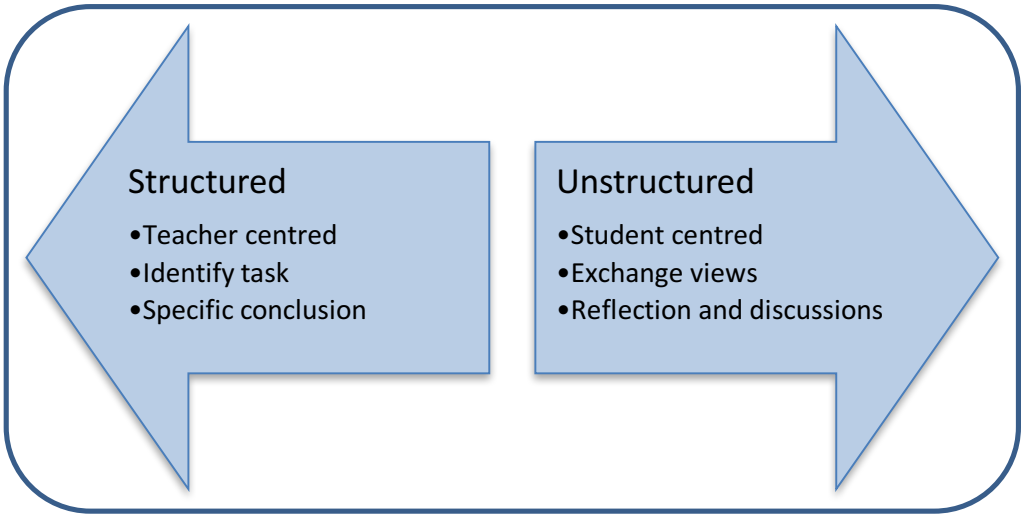

Figure 2.7: Structured and unstructured small-group learning

Examples of where small-group learning sessions can be held are seminars, workshops, problem-based tutorials, communication skills sessions, clinical skills sessions and clinical simulation sessions (Rudland 2009:81). Whichever method is chosen, clear objectives and goals should be set out (Durning & Conran 2014:71).

These sessions should not stand in isolation but must complement the overall curricular activities. For example, a group of students might receive a traditional lecture on a certain condition or procedure. The small-group activity might be a simulation where the content of the lecture will be integrated into the simulation. After the simulation, reflection will take place on the case (Rudland 2009:80).

Interprofessional teams of students can be deployed to a rural setting. These students will be immersed in the community and work and live in teams. This assists with the building and strengthening of interprofessional relationships (Van Schalkwyk, Bezuidenhout, Conradie, Fish, Kok, Van Heerden, & De Villiers 2014:online)

2.3.5 Curriculum integration of simulation based health education

It is important to keep in mind that simulation is in fact an education technique and not a technology (Gaba 2004:i2).

When considering the challenges of integrating simulation training in a health education programme for the first time, it is important to be aware of possible resistance to change and how to manage this (Ziv 2009:221). One strategy to overcome this issue is the principle of *picking low-hanging fruit*, aligning the simulation department (unit) with other departments that are pro-simulation and running simulation in those fields first. Once the other (more "difficult") departments see the impact of simulation, they are more inclined to accept the principles of simulation based health education. Another way to achieve this is to convert current didactic classroom lectures into a simulation based health education experience for the students. As an example, instead of giving them a lecture on the different electrocardiogram (ECG) patterns, it might be considered to run a flatscreen simulation on ECGs for the students. This would be a more interactive learning experience.

Simulation activities must be carefully planned and be aligned to learning outcomes. Aspects in the curriculum that cannot be trained on real patients must be identified e.g. emergency and life-threatening conditions. It is important to remember that a well-designed curriculum must convey the importance of patient safety. Jeffries (2005:97) developed a model for simulation (Figure 2.8) to demonstrate the relationships and interactions between the relevant factors and processes when developing simulation experiences. These factors and some examples are:

- **Teacher.** Demographics of the teacher.
- **Students.** Which program, level of knowledge, and age.
- **Educational practices.** These include, aspects of active learning, student/teacher interaction, collaboration and feedback.
- **Outcomes.** Knowledge, skill performance, Critical thinking and self confidence
- **Design aspect of the simulation experience**. Setup, objectives, fidelity, complexity and debriefing.

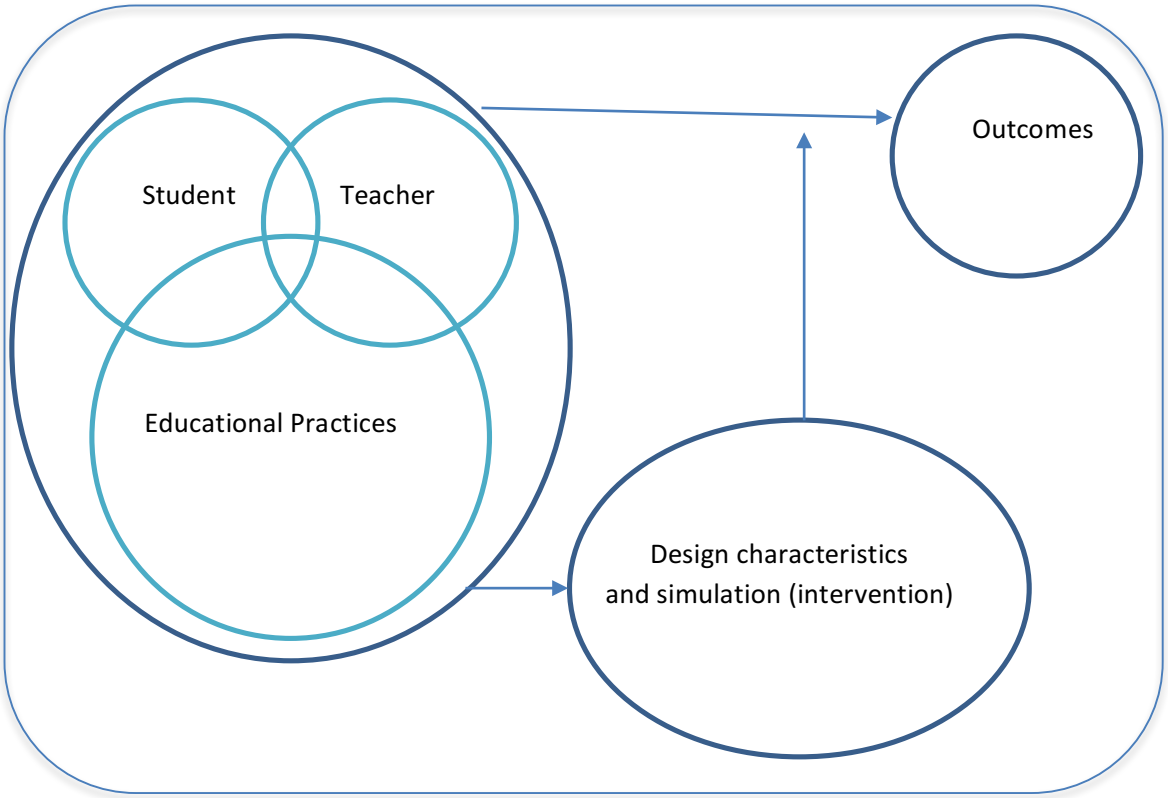

Figure 2.8: Jeffries' simulation model (Jeffries 2005)

The learning experience should be an up and down spiral movement between theory, simulation and clinical training, increasing in complexity as the student becomes more competent (Labuschagne 2012:20).

Gaba (2004:i4) identified eleven dimensions (Figure. 2.9) of simulation that should be taken into account when planning a simulation experience. Each dimension has certain parameters that could be adjusted depending on the setting.

Dimension 1: The purpose and aims of the simulation activity

Education	Training	Performance assessment	Clinical rehearsal	Research (human factors)

Dimension 2: The unit of participation in the simulation

Individual	Crew	Team	Work Unit	Organisation

Dimension 3: The experience level of simulation participants

School	University	Initial professional education	Residency	CPD

Dimension 4: The health care domain in which the simulation is applied

Imaging	Primary care	In-hospital	Procedural	Dynamic high hazard

Dimension 5: The health care discipline participating in the simulation

Clerks	Technicians	Nurses	Physicians	Managers

Dimension 6: The type of knowledge addressed

Conceptual understanding	Technical skills		Decision making skills	Attitudes and behaviours

Dimension 7: The age of the simulated patient

Neonates	Infant	Children	Adults	Elderly

Dimension 8: The required technology

Verbal role play	Standardised patient	Part task trainer	Computer screen based	Human patient simulator

Dimension 9: The site of simulation participation

Home or office	School or library	Dedicated laboratory	Replicated clinical environment	Actual work unit

Dimension 10: The extent of direct participation

Remote viewing only	Remote viewing with verbal interaction	Remote viewing with hands-on interaction	Direct on-site	Immersive

Dimension 11: The feedback method accompanying simulation

None	Automatic critique by simulator	Instructor critique	Real-time critique	Video based post-hoc debrief

Figure 2.9: Gaba's dimensions of simulation (adapted from Gaba 2004)

Effective simulation integration can also lead to better and safer training of non-technical skills. These skills include, but are not limited to, communication, professionalism, leadership, interprofessional teamwork and interprofessional decision-making (Labuschagne *et al*. 2014:140).

An important aspect of simulation experience is debriefing or reflection, it is the cornerstone of simulation, the most difficult part and also where the learning takes place (Østergaard & Dieckmann 2014:212).

De Ridder, Stokking, McGaghie and Ten Cate (2008:189) define feedback (in the medical education setting) as “specific information about the comparison between a trainee’s observed performance and a standard, given with the intent to improve the trainee’s performance.”

Rall, Manser and Howard (2008:516) discuss debriefing in 3 categories, the importance of pre-briefing, elements of successful debriefing and what should be avoided during debriefing. For effective debriefing, thorough pre-briefing must be done with the students. This should include information such as the limitations of the simulation model used and introduction to the environment. The students must also know that the simulation is a non-threatening environment, where they are allowed to make mistakes and would not be assessed on these and they should see it as a learning experience.

Debriefing can also be an interactive experience during the simulation scenario. This will typically be in the form of an ongoing discussion and explanations during the session as opposed to a separate event after the session (Nandate, Abola, Murray, Whitfield, Lang & Sinz 2009:234).

Elements for successful debriefing include keeping a friendly atmosphere where students feel comfortable to discuss the scenario. The facilitator should also use open-ended questions, but must keep the overreaching objectives of the simulation in mind to guide discussions. The facilitator must reinforce the positive aspects of the session. Debriefing elements that should be avoided are the use of destructive language during criticism, closed ended questions and the facilitator taking over the discussion. Blaming and ridiculing the students for failures should also be avoided (Rall et al 2008:516).

2.4 SIMULATION AND INTERPROFESSIONAL EDUCATION

According to Botma, Brysiewics, Chipps, Mthembu. and Phillips (2014a:106) the main purpose of interdisciplinary simulation is the increase of patients' safety. It also serves as an education strategy to break down professional barriers.

Scott, Perrone and Drozd (2015:130) give an example of various simulated scenarios in a paediatric medical-surgical unit. Apart from the clinical outcomes of the interprofessional team, they also identify competencies such as communication, teamwork and professionalism. The scenarios are developed with these specific competencies listed as learning objectives.

Baker, Pulling, McGraw, Dagnone, Hopkins-Rosseel and Medevs (2008:378) state that learners find simulation-based interprofessional experiences useful and relevant. These experiences also serve to help break down barriers between professions and contribute to clarify the different roles each profession plays.

Interprofessional simulation sessions have their own unique challenges. Baker *et al.* (2008:377) list some challenges encountered. These are logistical, the strain on resources and managing teams with learners from different foundational backgrounds.

- **Logistical issues.** In this context it is the challenge to schedule an interprofessional group of students from different schools and departments and rosters to attend small-group sessions.
- **Resource intensive.** Multiple rooms are needed for the sessions and due to the small groups of each session, multiple sessions are needed. A strain is also placed on staff (of different professions) availability as facilitators and technical support.
- **Students with varied foundational background.** As the students are from different foundational background orientation sessions might be necessary before the simulation to clarify concepts of the different professions involved.

- **Bad role-modelling**: Negative attitudes from observed collaborative practice, might have a negative influence on the attitude of students regarding interprofessional education.

Robertson and Bandali (2008:503) focus more on the structural challenges, such as staff development and organisational culture.

- **Staff development.** For effective interprofessional simulation, staff need to be trained as facilitators in the principles of interprofessional education as well as simulation methodology.
- **Organisational structure and culture.** Some organisations might not be effectively structured for the high level of collaboration needed between different professions for effective interprofessional simulation. In some cases, a culture of non-collaboration would need to be addressed first.

2.5 CONCLUSION

Evolving, complex patient needs require healthcare professionals that are competent to function in a collaborative practice. These professionals must demonstrate interprofessional collaboration, communication and teamwork competencies. In order to produce these competencies in the healthcare professionals, students must be taught with interprofessional principles in mind. Methods for interprofessional training that are available are, didactic lessons, simulation sessions, community based education and authentic work-based learning.

Simulation is a safe teaching environment for both students and patients. Students are free to learn from their mistakes, without harm to a patient and various types of simulation modalities are available.

Even though interprofessional simulation sessions could be a strain on logistics and on resources, it can be utilised as effective training tool for interprofessional education.

The question arises as to what the module leaders' usage of interprofessional education in their relevant modules are, what their usage of simulation is and what is their view on using simulation to address interprofessional education in a formal way.

In the next chapter, ***Chapter 3: Research Methodology,*** the detailed description of the research design and methodology will be given.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 INTRODUCTION

In chapter 2 the context was given on interprofessional education, simulation based health education and addressing interprofessional education with simulation. This context is vital as it is used as a framework in the research design to address the research questions.

In this chapter the design and methods will be discussed. A literature study was done and structured interviews were conducted with module leaders in the FoHS, UFS. Appendices A to D provide the documentation used in the study.

3.2 RESEARCH DESIGN IN THIS STUDY

A quantitative, cross-sectional descriptive~~,~~ design was used for this study. Leedy and Ormond (2010:183) described this approach as the examination of a situation as it is, and does not involve changing or modifying the situation. The intention is not to determine cause-and-effect relationships.

A non-experimental design was used because there was no manipulation of the variables (De Vos *et al.* 2011:158).

3.3 DESCRIPTION OF THE METHODS

3.3.1 Literature study

According to De Vos *et al*. (2011:134) the literature study is aimed at contributing a clearer understanding of the nature and meaning of the identified problem. A literature study was done to determine whether simulation is a viable training tool when considering interprofessional education of healthcare profession students.

The online search portal of the UFS Library and Information Services was used to search for articles. This portal has access to a wide range of scholarly journals and resources. Keywords used included interprofessional health education, simulation based health education, small-group learning, interprofessional curriculum, health curriculum outcomes and patient safety. The searches focused on journal articles from the last 20 years (1994 onwards) and focussed only on English articles.

The literature study was divided into three focus areas. The first section on interprofessional education focused on seven main areas namely the importance of interprofessional education, the principles of interprofessional education, how interprofessional education addresses the “Core Competencies”, design of effective interprofessional education, assessment aspects, challenges of interprofessional education and finally the delivery methods of interprofessional education.

As second focus area simulation based health education was investigated under the following five main areas: the principles of simulation based health education, the advantages and disadvantages of simulation based health education, the types of simulation based health education available, the role of small group learning within simulation based health education and curriculum integration.

The third area was where interprofessional education and simulation based health education overlap and simulation is used as training tool to deliver interprofessional education.

3.3.2 Empirical study

3.3.2.1 *Structured interviews*

Bryman (2012:210) described the structured interview as a research instrument to standardise the asking and recording of questions. There are two advantages to conducting structured interviews: the fact that the response rates are typically higher, as well as clarification of concepts where the respondent might be unsure of some detail (Babbie 2010:274).

The interviews were used to address research questions one, two and four.

3.3.2.2 *The structured interview schedule*

An interview schedule was developed to guide and record the interviews. The questions were predetermined, organised into themes and arranged in a logical order (De Vos *et al*. 2011:352).

The schedule was developed and created in Word in both English and Afrikaans. This was printed out on paper and used by the researcher to structure the questions and to capture the responses during the interviews (*cf.* Appendix D).

The structured interview was divided into four main sections. First was the gathering of demographic data of the module leader. The second section was to ascertain whether any interprofessional education activity takes place within the module and if it is the case, in which form. The third section was to gather the module leader's opinion on aspects in simulation based medical education. In this section various statements about simulation based health education were given and the participant had to use a 5 point Likert scale for their responses. Principles and characteristics of health simulation as described by Ziv (2009:219) were used as guide in the formulation of question / statements and options of the interview schedule. The last area was to gather the module leader's opinions on the possible use of simulation to address interprofessional education needs. The structured interview was mainly quantitative in nature, with some open-ended questions.

The physical layout of the interview schedule was created according to the best practices and visual-design of Artino, La Rochelle, Dezee and Gehlbach (2014:269).

3.3.2.3 *Target population*

The term population can be described as the universe of units from which the sample can be selected (Bryman 2012:714).

The target population was all the undergraduate module leaders in the FoHS at the UFS: 57 individuals, each within a specific department, from the three Schools. At the School of Nursing these individuals are referred to as “year co-ordinators”, and at the School for Allied Health professionals, they are called “theme leaders”. For the purpose of this research project all these individuals are referred to as “undergraduate module leaders”.

The details of these individuals were obtained from the relevant office of the School’s Programme Director. Study leaders of this Masters dissertation were excluded from the target population.

3.3.2.4 *Description of the sample and sample size*

All 57 members of the target population were approached for participation. The 57 members were, 38 from the School of Medicine, 6 from the School of Nursing and 13 from the School for Allied Health Professions.

3.3.2.5 *The pilot study*

The pilot study was conducted with three undergraduate module leaders, one from each School within the FoHS. The three participants were chosen randomly using random.org. Since all three participants were familiar with interprofessional education, and the use of simulation, it was not necessary to select further participants (as proposed in the protocol). The purpose of the pilot study was to determine whether interview questions were well designed, clear and in the correct order. Minor adjustments were made after the first pilot participant and the data from all three participants were included in the main study.

3.3.2.6 *Data gathering*

The researcher sent out an initial e-mail (*cf.* Appendix B) to all members of the target population introducing and explaining the purpose of the study, asking them for their participation and indicating how much of their time would be needed, as well as their language preference. This introductory e-mail was in English and Afrikaans.

Responses were gathered and a time was arranged with the module leader for the interview to take place. During the scheduling of the interview the interview schedule was sent by e-mail in the language of choice. Instructions were given to the module leader that they need not print out their own copy for the capture of the interview data, but that the researcher would bring his own copy and complete it during the interview.

A further e-mail was sent 3 weeks later to all module leaders who did not respond to the initial e-mail. After the initial e-mail invitations, the module leaders were contacted telephonically to obtain an interview appointment. For module leaders who did not respond to either e-mail nor telephone calls, personal contact was made at their offices to obtain an appointment.

Written informed consent (*cf.* appendix C) was obtained from each participant at the start of each interview.

3.3.2.7 *Data analysis*

According to Bryman (2012:14), data analysis refers to the “management, analysis and interpretation” of the data. All data were coded and summarised on an Excel spreadsheet by the researcher to ensure confidentiality before it was sent to a biostatistician at the Department of Biostatistics (UFS). The biostatistician summarised collected data in terms of frequencies and percentages. Answers to open questions were coded into themes by the researcher and summarised quantitatively. The analysed data are reported using frequency tables and pie charts in Chapter 4.

3.4 VALIDITY AND RELIABILITY

3.4.1 Validity

Miller's (2011:online) definition of validity states: "Validity is defined as the extent to which the instrument measures what it purports to measure."

Using both national and international literature contributed to the validity during the literature study. The literature study served as guide towards the development and content of the interview schedule. A specific target population was selected. To ensure a high response rate, the participants were contacted personally. This led to a high response rate of 82.5% amongst the module leaders which further enhanced the validity. The validity of the structured interview was also enhanced by the use of a pilot study.

3.4.2 Reliability

Reliability is the extent to which a measurement procedure can produce the same results when repeated. These measurement tools can be in the form of a questionnaire, test or observation (Miller 2011:Online).

To enhance reliability in this project a structured interview, which is a structured research instrument, was used.

The pilot study also enhanced the reliability of this study as minor improvements to the interview questions were made before the main study.

3.5 ETHICAL CONSIDERATIONS

3.5.1 Approval

Approval for the research project was obtained from the Ethics Committee of the FoHS at the UFS, the Dean of the FoHS at the UFS, and the three Heads of the

Schools within the Faculty (*cf.* Appendix A). The Vice-Rector, Academic at the UFS was informed of the project. The assigned ethics number (ECUFS) for the study is: 146/2014. The Ethics Committee approval was obtained on 16 September 2014.

3.5.2 Informed consent

All members of the target population were given the interview questions before the interview in their choice of Afrikaans or English (*cf.* appendix D). Participation was voluntary and participants had the right to withdraw from the study at any stage. Participants did not receive any remuneration, nor did they incur costs. The contact details of the researcher were available to them. Guarantees of information confidentiality of all respondents were given. Information will only be used for research purposes and will not be released for any academic and/or employment-related performance evaluation, promotion and/or disciplinary purposes. At the start of the interviews written, informed consent was obtained (*cf.* appendix C).

3.5.3 Right to privacy

All data reporting was done in a confidential method. No names or personal information was published.

3.6 CONCLUSION

Chapter 3 provided the detailed discussion of the research design and methodology as well as the data colleting methods and analysis. The structured interview method, which was applied in the study was described, including the construction of the interview schedule and the processing of the data.

In the next chapter, ***Chapter 4: Findings of the structured interviews,*** the results processed from the structured interviews will be presented.

CHAPTER 4
FINDINGS OF THE STRUCTURED INTERVIEWS

4.1 INTRODUCTION

In the previous chapter, the research methodology was explained and in this chapter the results of the structured interviews will be presented. The interviews were conducted between November 2014 and July 2015. Some module leaders were responsible for more than one module and in some cases a module had more than one leader. A total of 57 module leaders were approached representing 80 modules. Table 4.1 represents the interviews conducted with the module leaders in the different Schools in the Faculty of Health Sciences and Table 4.2 represents the number of modules covered by the interviews. Eighty-two point five percent of the module leaders were interviewed, covering 82.5% of the modules. The School of Medicine had the lowest response rate, namely 78.9% of module leaders and 79.3% of modules.

Table 4.1: Total number of module leaders interviewed

School	Total	Interviewed	Not interested	No Reply	Percentage Interviewed
Medicine	38	30	2	6	78.9%
Nursing	6	6	0	0	100.0%
Allied Health	13	11	0	2	84.6%
Total	57	47	2	8	82.5%

Table 4.2: Total number of modules included in interviews

School	Total	Interviewed	Module leader not interested	No Reply	Percentage Interviewed
Medicine	58	46	4	8	79.3%
Nursing	4	4	0	0	100.0%
Allied Health	18	16	0	2	88.9%
Total	80	66	4	10	82.5%

4.2 DEMOGRAPHIC DATA

The median number of years of experience of teaching undergraduate health professions students of the module leaders interviewed was 12 years. This is also the median for their number of years teaching at the University of the Free State (Table 4.3).

Table 4.3: Median years of experience of undergraduate module leaders interviewed (*n* = 47)

	Median	1-10 years	11-20 years	21-30 years	31-40 years	41-50 years
Total experience teaching undergraduate health professions students	12 years	19 (40.4%)	20 (42.6%)	5 (10.6%)	2 (4.3%)	1 (2.1%)
Total experience teaching undergraduate health professions students at the UFS	12 years	20 (42.6%)	20 (42.6%)	4 (8.5%)	2 (4.3%)	1 (2.1%)

The academic years of students represented in the modules range from one to five years in the case of the School of Medicine and from one to four years in the case of the School for Allied Health Professions and School of Nursing. The represented percentages of each year are reported in Table 4.4.

Table 4.4: Distribution of academic year of the modules covered by the interviews (*n* = 66)

Academic year	Number	Percentage
1st year	15	22.7%
2nd year	15	22.7%
3rd year	19	28.8%
4th year	12	18.2%
5th year	5	7.6%

The module leaders were requested to divide the content of the 66 modules into technical (science) content versus non-technical skills. The median percentage of technical/science content was 90% for the 66 modules (Figure 4.1).

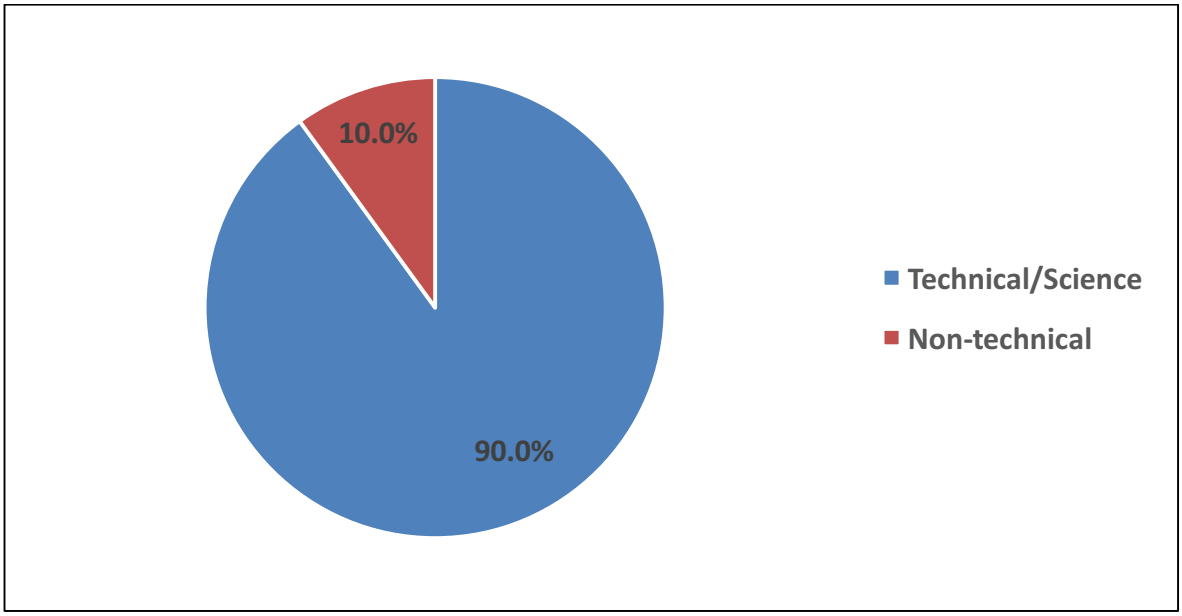

Figure 4.1: The median percentage of technical and non-technical content (n=66)

4.3 THE OCCURRENCE OF INTERPROFESSIONAL EDUCATION WITHIN A MODULE

The breakdown of modules between those that have an interprofessional education component and those that do not is in Figure 4.2. Of the 66 modules included in the interviews, the majority (56.1%) have no form of interprofessional education.

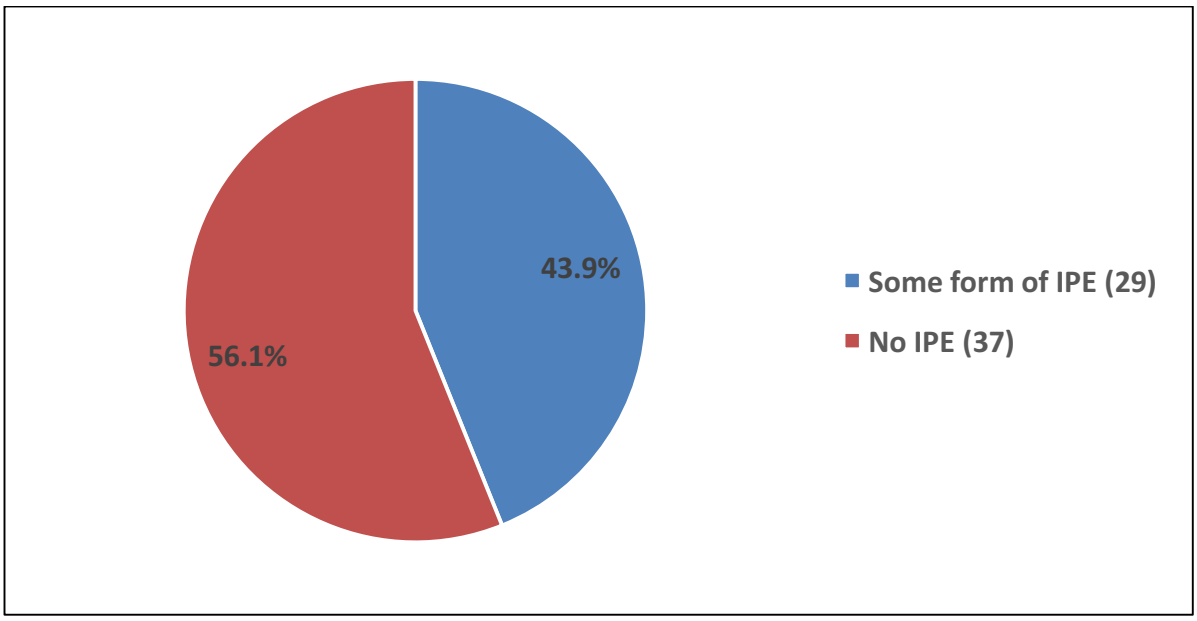

Figure 4.2: Number of modules with IPE and no IPE activities (n=66)

The percentage of modules per year in which students are exposed to some form of interprofessional education is shown in Table 4.5. The largest percentages are during the latter years of the undergraduate programme. In the second year of study students are only exposed to some form of IPE in 2 of the 15 modules, ie 3.1% of second year modules.

Table 4.5: Modules including IPE exposure per year (n=66)

	IPE
1st year (n=15)	5 (33.3%)
2nd year (n=15)	2 (3.1%)
3rd year (n=19)	11 (57.9%)
4 & 5 year (n=17)	11 (64.7%)

To differentiate between formal and informal interprofessional education, the interviewer put it to the interviewees that formal is when interprofessional education is part of a module's outcomes and there is some form of assessment on it. Informal interprofessional education could happen coincidentally as part of the student's activities in the modules, but these exposures are not part of the module's outcomes and are not assessed in any way.

In the 29 cases where interprofessional education are being incorporated, the majority of interprofessional education taking place is informal or coincidental (Figure 4.3).

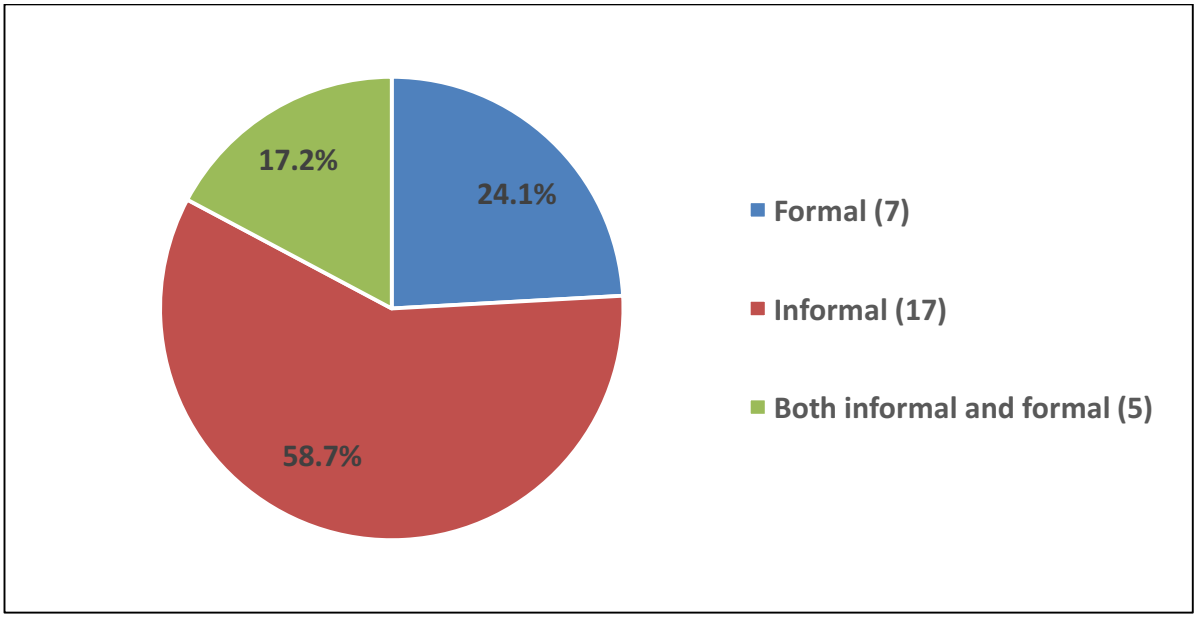

Figure 4.3: Formal and Informal IPE activities (n=29)

The percentage of interprofessional education activities in the 29 modules are shown in Table 4.6. Interprofessional education consists of ten percent or less in more than half (58.6%) of the modules.

Table 4.6: The percentage of IPE in modules that include IPE (n=29)

	Number	Percentage
0 – 10%	17	58.6%
11 – 20%	5	17.2%
21 – 30%	4	13.8%
31 – 40%	1	3.5%
41 – 50%	2	6.9%
51 – 100%	0	0%

The types of interprofessional education activities in the 29 modules are listed in Table 4.7. Ward rounds where students are exposed to other professions are used in the majority (65.5%) of the modules which make use on interprofessional education. Some modules have more than one interprofessional education activity. Thus 65.5% of modules use ward rounds during which IPE takes place, but the amount of IPE specific exposure during these ward rounds was not determined.

Table 4.7: Type of IPE activities (n=29)

	Number	Percentage
Ward rounds	19	65.5%
Community service	7	24.1%
Clinic work	6	20.7%
Multi-professional classes	5	17.2%
Simulation (pilot)	1	3.4%
Other (Visit other professions)	1	3.4%

The percentage use of a specific learning tool for interprofessional education in the 29 modules is listed in Table 4.8. From the data gathered for the 29 modules, patients were used as learning tool for interprofessional education in the majority of modules. No other learning tool (apart from lectures) was used in more than 20% of the modules.

Table 4.8: The type of learning tools used for IPE (n=29)

	None	1-25%	26-50%	51-75%	76-100%
Lectures	17 (58.2%)	3 (10.3%)	3 (10.3%)	1 (3.4%)	5 (17.2%)
Small-group	24 (82.8%)	1 (3.4%)	2 (6.9%)	2 (6.9%)	0
Patients	9 (31.0%)	2 (6.9%)	7 (24.1%)	3 (10.3%)	8 (27.6%)
Skills training	29 (100%)	0	0	0	0
Simulation	26 (89.7%)	2 (6.9%)	1 (3.4%)	0	0
Bedside	25 (86.2%)	1 (3.4%)	1 (3.4%)	0	2 (6.9%)
Community service	25 (86.2%)	1 (3.4%)	1 (3.4%)	1 (3.4%)	1 (3.4%)
Other	0	0	0	0	0

4.4 THE USE OF SIMULATION AND OPINIONS OF MODULE LEADERS ON THE USE OF SIMULATION

Amongst the 66 modules included in the structured interview, 30 (45.5%)used no form of simulation versus 36 (54.5%) that utilised simulation in some way.

The number and percentage of the type of simulation utilised in the modules are listed in Table 4.9. The most predominant form of simulation used is skills training.

Table 4.9: Types and percentage of simulation used (n=66)

	None	1-25%	26-50%	51-75%	76-100%
Skills Training	41 (62.1%)	19 (28.8%)	1 (1.5%)	4 (6.1%)	1 (1.5%)
Role-play	55 (83.3%)	11 (16.7%)	0	0	0
High-fidelity scenarios	61 (92.4%)	3 (4.5%)	1 (1.5%)	1 (1.5%)	0
Standardised patients	59 (89.4%)	5 (7.6%)	1 (1.5%)	0	1 (1.5%)
Virtual reality	66 (100%)	0	0	0	0
Wet lab	62 (93.9%)	3 (4.5%)	1 (1.5%)	0	0
Other (Flat screen)	65 (98.5%)	0	1 (1.5%)	0	0

Considering the opinions of the module leaders on simulation (Table 4.10), the majority (74.5%) indicated that simulation should not replace traditional lessons or real patients (80.8%) (clinical work) completely, however the majority (93.7%) also indicated that some traditional classes and clinical work (83.0%) could be replaced by simulation sessions.

More than half of the module leaders indicated that simulation sessions are not disruptive to the schedule, but the majority (61.7%) also indicated that they need more time in the schedule to add simulation sessions.

The majority (97.9%) indicated that simulation sessions and the use of debriefing/reflection increase the students' understanding of a problem.

The majority (95.7%) also agreed that simulation can be used in the assessment of the students.

More than 50% said that they believe their colleagues know the advantages and disadvantages of simulation sessions.

The majority indicated that they are of the opinion that simulation is a safe environment for both the student (97.9%) and the patients (95.7%).

The majority (68.1%) said that simulation would be beneficial to their module(s) and would not simply be a “nice-to-have” and that small-group learning (85.1%) would be an effective strategy for their module(s)

More than 90% of the module leaders were of the opinion that simulation could be used for training technical skills as well as non-technical skills.

Table 4.10: Opinions on simulation based health education (n=47)

Statement:	1 Strongly disagree	2 Disagree	3 No Opinion	4 Agree	5 Strongly agree
All traditional lessons can be substituted by simulation sessions	13 (27.7%)	22 (46.8%)	4 (8.5%)	7 (14.9%)	1 (2.1%)
Some traditional lessons can be substituted with simulation sessions	0	2 (4.3%)	1 (2.1%)	20 (42.6%)	24 (51.1%)
There is enough time in the schedule to add simulation sessions	11 (23.4%)	18 (38.3%)	2 (4.3%)	12 (25.5%)	4 (8.5%)
A simulation learning environment is safe for students	0	0	1 (2.1%)	6 (12.8%)	40 (85.1%)
A simulation learning environment is safe for patients	0	1 (2.1%)	1 (2.1%)	12 (25.5%)	33 (70.2%)

Table 4.10: Opinions on simulation based health education (n=47) (Continued)

Statement:	1 Strongly disagree	2 Disagree	3 No Opinion	4 Agree	5 Strongly agree
Simulation can be used for assessment	1 (2.1%)	1 (2.1%)	0	17 (36.2%)	28 (59.6%)
Simulation sessions are non-disruptive to the schedule	5 (10.6%)	5 (10.6%)	8 (17.0%)	17 (36.2%)	12 (25.5%)
Small-group training is effective for the module	1 (2.1%)	4 (8.5%)	2 (4.3%)	8 (17.0%)	32 (68.1%)
Reflection/debriefing enhances student understanding	0	1 (2.1%)	0	9 (19.1%)	37 (78.7%)
Simulation is a "nice to have" and can not be used for the module outcomes	24 (51.1%)	8 (17.0%)	2 (4.3%)	5 (10.6%)	8 (17.0%)
Simulation can be used for non-technical skills	1 (2.1%)	0	1 (2.1%)	15 (31.9%)	30 (63.8%)
Simulation can be used for science/technical skills	0	0	1 (2.1%)	12 (25.5%)	34 (72.3%)
Simulation may lead to deeper understanding of a problem	0	1 (2.1%)	0	10 (21.3%)	36 (76.6%)
Simulation training can replace all practical, real patient management	23 (48.9%)	15 (31.9%)	3 (6.4%)	6 (12.8%)	0
Simulation training can replace some practical, real patient management	1 (2.1%)	5 (10.6%)	2 (4.3%)	24 (51.1%)	15 (31.9%)
Staff are aware of advantages of simulation training	3 (6.4%)	7 (14.9%)	10 (21.3%)	18 (38.3%)	9 (19.1%)
Staff are aware of disadvantages of simulation training	2 (4.3%)	8 (17.0%)	10 (21.3%)	18 (38.3%)	9 (19.1%)

During the interviews 35 module leaders also added comments on the use of simulation. These comments were collated into themes and are summarised in Table 4.11.

A quarter of the module leaders who added comments, commented that simulation improves the student's learning, however almost 23% commented that simulation is time consuming and has many logistical challenges.

Table 4.11: Comments on the use of simulation based health education (n=35)

	Number	Percentage
Student learning improves with simulation	9	25.7%
Logistical challenges (time consuming, scheduling, labour intensive)	8	22.9%
Need to use simulation more/ plans to implement it in future	6	17.1%
Simulation is not applicable for this module	6	17.1%
Staff need to be more informed on the uses of simulation	5	14.3%
Will improve assessment (Standardisation and patient ethics)	5	14.3%
Currently utilising only one type of simulation	5	14.3%
Simulation must be integrated with theory	4	11.4%
Should be in clinical years and be an add-on and not replace clinical exposure	3	8.6%
Simulation must be authentic	3	8.6%
Theory must be understood by students before simulation	2	5.7%

4.5 INTERPROFESSIONAL EDUCATION AND THE USE OF SIMULATION TO ADDRESS IT

In this section the module leaders were asked whether they believe simulation could be a viable training tool to address interprofessional education in that specific module.

The opening question in this section established the perceived viability of simulation for a specific module. “Do you believe, in this module, simulation is a viable training tool to address IPE in undergraduate health professions students?” For a third of the 66 modules the response was yes (Figure 4.4).

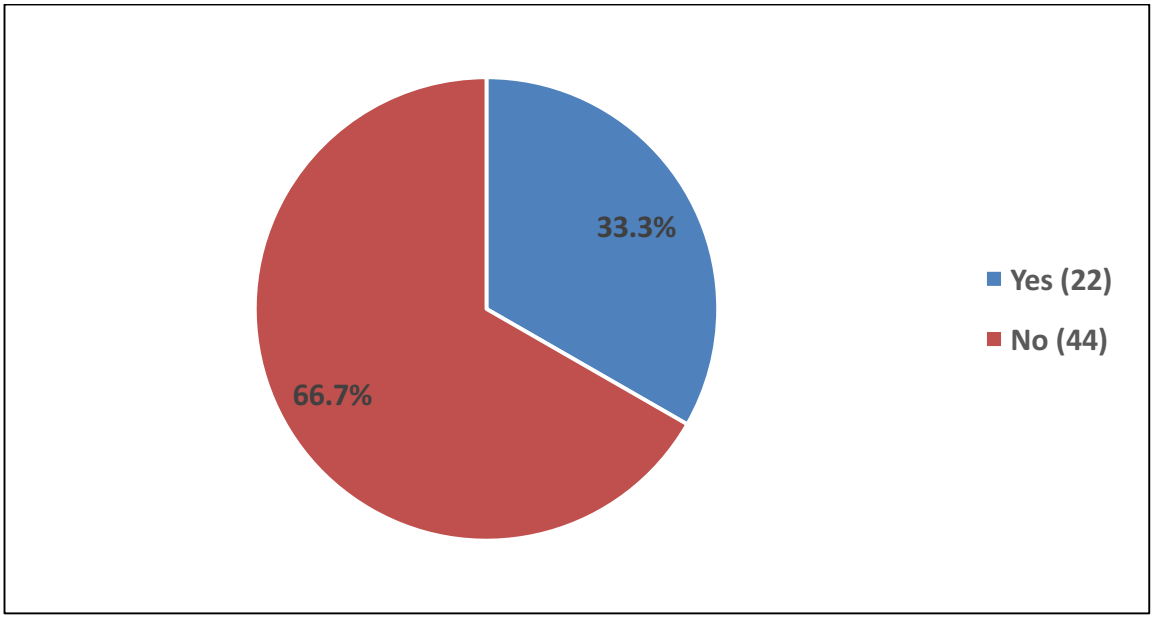

Figure 4.4: Simulation as viable training tool in a specific module (n=66)

In the 22 modules where simulation could be a viable training tool, the types of considered simulation were mainly role-play with 77.3% followed by standardised patients (63.6%) (Table 4.12).

Table 4.12: Types of simulation considered for IPE in module where it was regarded as viable (n=22)

	Number	Percentage
Skills Training	7	31.8%
Role-play	17	77.3%
High-fidelity scenarios	4	18.2%
Standardised patients	14	63.6%
Virtual reality	2	9.1%
Wet lab	0	0
Other	0	0

When asked to comment on what type of simulation could be considered to address interprofessional education, eight interviewees responded. The largest number responded that IPE is already addressed in community based education (Table 4.13).

Table 4.13: Comments on the types of simulation considered for IPE (n=8)

	Number	Percentage
IPE gets addressed utilising CBE.	3	37.5%
Role play would be beneficial for interview skills.	1	12.5%
Would like to utilise skill training in an IPE setting.	1	12.5%
Standardised patients would be ideal for IPE role-play.	1	12.5%
Simulation could be too artificial.	1	12.5%
IPE simulation could be beneficial for team dynamics.	1	12.5%
IPE simulation could be beneficial to train a holistic approach to patient management.	1	12.5%

When asked to explain why they believe simulation is not a viable training tool for interprofessional education in that particular module the main reason given was the fact that there are no interprofessional education activities in the module, followed by the fact that interprofessional education is informal and coincidental (Table 4.14). In some cases, more that one reason was given.

Table 4.14: Reasons for not considering simulation as viable training tool for IPE (n=44)

	Number	Percentage
No IPE activities in the module	37	84.1%
IPE is informal and coincidental	6	13.6%
Paper cases and group work are adequate	4	9.1%
Concept of own profession not yet formed	3	6.8%
Only multi-professional classes	2	4.5%

In the 29 modules where interprofessional education does take place, the types and percentages of simulation (if any) that are used, are listed in Table 4.15. Generally, simulation is not used to address interprofessional education, however where it does feature, it is mainly done using standardised patients participating in role-play.

Table 4.15: Types of simulation used for IPE (n=29)

	None	1-25%	26-50%	51-75%	76-100%
Skills Training	29 (100%)	0	0	0	0
Role-play	26 (89.7%)	0	2 (6.9%)	0	1 (3.4%)
High-fidelity scenarios	29 (100%)	0	0	0	0
Standardised patients	25 (48.1%)	0	2 (6.9%)	0	2 (6.9%)
Virtual reality	29 (100%)	0	0	0	0
Wet lab	29 (100%)	0	0	0	0
Flat screen	29 (100%)	0	0	0	0

In cases where the respondent indicated that simulation could be potentially used to address interprofessional education in a specific module, they were asked to discuss possible advantages, disadvantages and challenges for the implementation of simulation in that module. The results were collated into themes and reported in Tables 4.16, 4.17 and 4.18.

Considering the potential advantages of using simulation to address interprofessional education (Table 4.16), the main potential advantage listed amongst the module leaders was the fact that role clarification would be improved amongst the students of different professions.

Table 4.16: Potential advantages of using simulation for IPE in a specific module (n=16)

	Number	Percentage
Improves role clarification amongst the different professions	6	36.5%
Improves teamwork amongst professions	3	6.25%
Benefit to see theory in practice	3	6.25%
Safe learning environment	2	12.5%
Improves patient management	2	12.5%
Improves empathy and respect for other professions	2	12.5%
Better preparation for real-world situations and clinical training	2	12.5%
Opportunity for students to reflect	1	6.25%
Better understanding of case history	1	6.25%
Professional communication improves	1	6.25%
Improves confidence in the students	1	6.25%
The holistic, patient-centred approached is better understood	1	6.25%

A quarter of the module leaders, who answered regarding potential disadvantage of using simulation to address interprofessional education, indicated that students might have a negative attitude towards interprofessional education and may not prepare adequately for the sessions (Table 4.17).

Table 4.17: Potential disadvantages of using simulation for IPE in a specific module (n=16)

	Number	Percentage
Negative attitudes or unprepared students	4	25%
No disadvantages	3	18.8%
Can't replace real patients completely	2	12.5%
Theory might not be learned	2	12.5%
Shallow interactions / not enough critical reasoning	2	12.5%
Students might feel exposed amongst other professions	1	6.25%
Takes time away from traditional lessons	1	6.25%
Latest techniques might not be taught	1	6.25%
Too artificial	1	6.25%
Takes time to plan and execute	1	6.25%

The most commonly identified potential challenges of using simulation to address interprofessional education were scheduling challenges and organising large groups of students across different Schools (Table 4.18). One respondent declined to answer.

Table 4.18: Potential challenges of using simulation for IPE in a specific module (n=15)

	Number	Percentage
Scheduling challenges	10	66.7%
Staff resources	3	20%
Paradigm shift needed from staff	3	20%
Physical resources and correct equipment	2	13.3%
Difficult to standardise training for multiple professions	2	13.3%
Potential negative attitudes from students	2	13.3%
Simulation needs to be more realistic	1	6.7%
Students might be afraid of failure when training in teams	1	6.7%

All module leaders were asked to give their opinion on the potential advantages, disadvantages and challenges for using simulation to address interprofessional education in health professions education in general at the University of the Free State. This was irrespective of whether they used interprofessional education or simulation in a specific module. These answers were collated into themes and reported in Tables 4.19, 4.20 and 4.21. One respondent declined to answer.

The two biggest potential advantages identified for using simulation to address interprofessional education were that it would improve role clarification amongst the different professions' students and that it would be a safe learning environment for both students and patients (Table 4.19).

Table 4.19: Potential advantages of using simulation for IPE in health education (n=46)

	Number	Percentage
Improves role clarification amongst the different professions	19	41.3%
Safe learning environment for students and no real patients are used	15	32.6%
Improves empathy and respect for other professions	9	19.6%
Improved student training through expanded platform and scenarios	9	19.6%
Improved student training through exposure to other professions	9	19.6%
Improves teamwork amongst professions	8	17.4%
Professional, inter-team, communication improves	6	13%
Improves patient management	4	8.7%
Opportunity for students to reflect	3	6.5%
Better preparation for real-world situations and clinical training	3	6.5%
Improved student's non-technical skills	3	6.5%
Assessment could be objective and ongoing	2	4.3%
Less staff might be needed for simulation that CBE	1	2.2%

More than 20% of interviewees indicated that they do not foresee disadvantages of using simulation to address interprofessional education (Table 4.20). The most commonly mentioned potential disadvantages were the high costs of simulation and the logistical challenges.

Table 4.20: Potential disadvantages of using simulation for IPE in health education (n=46)

	Number	Percentage
No disadvantages	10	21.7%
Logistic issues and high costs	9	19.6%
Negative attitudes or unprepared students	8	17.4%
Balance between the focus on multiple professions	5	10.9%
Too artificial	4	8.7%
Shallow interactions / not enough critical reasoning	4	8.7%
Can't replace real patients completely	2	4.3%
Conflict within a group lead to negative perceptions	3	6.5%
Students might feel exposed amongst other professions	2	4.3%
Theory might not be learned	1	2.2%
Could lead to compartmentalising of skills	1	2.2%
Own role/profession must first be defined	1	2.2%
"Hidden roles" difficult to expose with simulation	1	2.2%
Undergraduate students not exposed to simulation	1	2.2%

Almost three quarters of respondents mentioned that scheduling challenges are the main challenge when considering simulation for interprofessional education (Table 4.21). Just over 21% are concerned about the attitude of the staff and that a paradigm shift is needed.

Table 4.21: Potential challenges of using simulation for IPE in health education (n=46)

	Number	Percentage
Scheduling challenges	34	73.9%
Paradigm shift needed from staff	10	21.7%
Staff resources	9	19.6%
Physical resources and correct equipment	8	17.4%
Difficult to standardise training for multiple professions	8	17.4%
Simulation needs to be more realistic	4	8.7%
Potential negative attitudes from students	4	8.7%
Challenging to apply formal assessment of IPE	1	2.2%

A total of six module leaders who were interviewed experienced the Faculty's pilot simulation for interprofessional education (*cf.* 1.2.3). The modules of only two module leaders were involved in the pilot. For these two, the biggest challenges were: the large number of students that had to be accommodated in the training; the logistics of organising such a large and diverse group of students across multiple facilities; and the fact that it was very labour intensive to run all the simulations.

4.6 CONCLUSION

The results of the structured interviews showed that although there are modules that address interprofessional education, these are in the minority and the form of interprofessional education is mostly informal or coincidental.

The platform used to achieve interprofessional education is mostly ward rounds during clinic/hospital or community-based visits.

The majority of modules utilise simulation and the form most widely used is low-fidelity, skills trainers.

The opinions on simulation from the module leaders were mostly positive focussing on the students' improved learning when simulation is utilised. However, concerns were raised about the logistical challenges of simulation.

Most of the interviewed module leaders did not foresee any disadvantages utilising simulation to address interprofessional education. The biggest advantage highlighted was the fact that student from different professions would get a better understanding of role clarification between the different professions involved. Logistical challenges were highlighted as well as the potential negative impact that negative attitudes from students could have.

In the next chapter, ***Chapter 5: Simulation as educational strategy: an interprofessional approach at The Faculty of Health Sciences, University of the Free State*** the results will be discussed in full.

CHAPTER 5
SIMULATION AS EDUCATIONAL STRATEGY: AN INTERPROFESSIONAL APPROACH AT THE FACULTY OF HEALTH SCIENCES, UNIVERSITY OF THE FREE STATE

5.1 INTRODUCTION

In the previous chapter, the results of the structured interviews were presented. In this chapter the results will be discussed. An overview of the demographics will be given and then the discussion will be divided into three themes. The first will focus on the occurrence of interprofessional education (IPE) in the undergraduate modules covered by the interviews. The second focusses on the use of simulation based health education (SBHE) as well as the opinions of the module leaders regarding simulation. The third will cover the module leaders' response on the use, or possible use, of simulation based health education to address interprofessional education in their particular module as well as health professions education in general.

The discussion concludes with a proposed learning continuum for interprofessional education of undergraduate students.

5.2 DEMOGRAPHIC OVERVIEW

A total of 57 undergraduate module leaders were approached in the Faculty of Health Sciences. These represented the module leaders from all three Schools and 80 modules. The response rate for the module leaders as well as the modules was high at 82.5% (*cf.* Table 4.1, Table 4.2). The academic years of students covered, were one to four for all three Schools and year five for the School of Medicine (The School for Allied Health Professions and School of Nursing only have years one to four) (*cf.* Table 4.4).

Most of the module leaders interviewed have extensive teaching experience for undergraduate students as the median is 12 years. However, the median for

experience at the University of the Free Sate is also 12 years, which shows that most had little to no experience of undergraduate teaching outside the University of the Free State (*cf.* Table 4.3).

The median response for non-technical content of the modules was 10% (*cf.* Figure 4.1). This would indicate that students spend about 10% of their undergraduate time developing non-technical skills (competencies). These competencies include aspects such a communication, collaboration and professionalism.

5.3 INTERPROFESSIONAL EDUCATION WITHIN MODULES

The majority of the 66 modules that were covered by the interviews, had no form of interprofessional education (*cf.* Figure 4.2). A possible reason for this is the fact that the students are being trained in their various schools, focussing on their particular professions and outcomes. When we consider the first part of the definition of interprofessional education, “occasions when two of more professions learn with, from and about each other”, (CAIPE 2002:online) it indicates interactive learning. The students from the different schools need to actively engage with each other for effective interprofessional education. This form of interactive engagement can be logistically very difficult as each school focusses on their particular outcomes and professions (*cf.* 2.4).

Another possible reason is the fact that students in the initial exposure and pre-clinical phase of their training have not yet developed their own professional identity and role clarification and this will pose a challenge for effective interprofessional education during the early years of the students. Students in their pre-clinical training years (years 1 and 2) are exposed in a lesser degree to any form of interprofessional education than students in their clinical training (years 3-5) phase.

5.3.1 Formal and informal interprofessional education

In the modules that do have interprofessional education, the majority was informal of nature. Most of the interprofessional education exposure occurs during

community based rotations and clinical training sessions in the clinical training platform (hospital or clinic). During these placements, the healthcare students are exposed to students and staff from various other professions and have to work collaboratively as an interprofessional team. These interactions are a natural outflow from the students' work when managing and caring for patients. During these interactions the students do learn with, about and from each other. However, in most cases, the interprofessional interactions are not the focus of the students and in most cases, they are rarely (7 out of 29 modules) assessed on these skills.

The approach introduced by the University of the Free State, Faculty of Health Sciences, by Van Zyl, (2015:presentation) (*cf.* 1.2.3) would formalise the training of interprofessional education when the students are placed for their community based education rotations.

With this formalisation, the students' competencies and outcomes would not only focus on the clinical, management and caring aspects of community service, but also on the competencies and outcomes of interprofessional education. These include aspects such as role clarification of the different professions, their attitudes and perceptions of other professions, teamwork in an interprofessional team, professionalism, professional communication and collaboration (*cf.* 2.2.5).

Improved role clarification should also lead to a better understanding of different professions, empathy for the different role-players and respect for other professions. This should enable the students to perform better in an interprofessional team with shared values and the focus on improved patient management and care with a patient-centred approach (*cf.* 1.2.3.).

5.3.2 Modes of delivery

When considering the three main delivery modes for interprofessional education (*cf*. 2.2.8), namely didactic classes for interprofessional education, interprofessional simulation experiences and community based learning experiences, the main mode of delivery is community based experience (*cf*. Table 4.7, Table 4.8).

Community based experiences are considered as interprofessional education exposure with patients and consist of ward rounds in the provincial hospitals, clinic work and any other form of community based learning, while working with students of other professions.

Some respondents indicated that their students are exposed to the students of other professions in multi-professional classes. However, these exposures are considered multi-professional (*cf.* 1.2) and not interprofessional education (*cf.* 2.2.1).

One module leader replied that the students get a class from a lecturer from other professions as overview. These cannot be considered as interprofessional classes, nor multi-professional classes, as there is no interaction with other students from different professions. These can merely act as information sessions on the role other professions play in patient care.

Interprofessional education should be incorporated throughout the learning continuum (*cf.* 2.2.4). A proposed education strategy would be to start interprofessional education at initial exposure level for the students and gradually build it up to be more complex and ultimately to produce healthcare professionals who are competent in the principles and values of collaborative practice. This should lead to a better, well-rounded healthcare worker and the outflow from that should be better management and care of patients. This is in line with the World Health Organization framework for improved collaborative practice (WHO 2010:9).

5.4 OPINIONS AND THE USE OF SIMULATION

The majority of the modules covered by the study included some form of simulation.

5.4.1 Forms of simulation used

The most common (*cf.* Table 4.9) use of simulation is when it is utilised for skills (low-fidelity) training is utilised (*cf.* 2.3.2). This type of usage is typically when a single student practises a specific skill on a part-task trainer. Examples of this include skills such as setting up an IV infusion with a simulated arm or practising intubation techniques using only a simulated head. This type of skills training is focused on the technical aspects of a specific skill and usually does not include aspects such as teamwork, communication and professionalism. This low-fidelity skills training is relatively accessible as it is generally also the cheapest form of simulation, as it does not require expensive, high-tech manikins nor a dedicated environment (*cf.* 2.3.2).

In order to enhance the experience, the lecturer could expand the skills training by adding a simulated patient (actor) together with the low-fidelity trainer. To expand one of the examples above, an actor could play the role of a patient visiting the healthcare worker in a clinic. The overarching aim of the practise would be to successfully insert an IV infusion; however, during the interaction with the “patient”, the student will also practise skills such as communication, empathy and professionalism. The actor does not need to be an external person but could be a fellow student. The class could divide in groups of two and take turns practising the relevant skill as the other plays a “patient”. This is a typical example of hybrid simulation, where part task trainers are used for the technical aspect of a procedure and a standardised patient used for the non-technical aspect (*cf.* 2.3.2).

The most common combination of simulation, is the use of standardised patients or simulated patients in a role-play scenario (*cf.* 2.3.2). A standardised patient (or even multiple standardised patients) is trained to play a certain role(s) and the student would interact with the patient(s) to train a certain skill. These role-play scenarios can be used for technical skills training, for example an eye or ear examination,

however, in most cases they are utilised for non-technical skills training. An example of this is breaking of bad news, to either a patient or patient's family member.

Another area where simulation could play a bigger role is the training of group dynamics. In these scenarios the students will train as a group and could utilise a variety of simulation modalities, low-fidelity, high-fidelity and standardised patients or a combination. An example of such a scenario is an interprofessional team resuscitation of a patient. A high-fidelity manikin such as the *Laerdal SimMan 3G* could be used to simulate the clinical aspects of the patients (*cf.* 2.3.2). The group of students can be between four and six and each individual will be responsible for a different aspect of the resuscitation. Apart from the clinical outcomes, aspects such as teamwork, team communication and professionals could be discussed and practised.

This same scenario could also be enhanced to include a standardised patient who plays the role of a family member of the patient. After the resuscitation the students should explain what happened to the patient to the family member. A discussion could then take place on how well the students explained the situation to the family member in non-technical language.

Using these techniques (*cf.* 2.3.2), healthcare students could utilise different forms of simulation to build-up and practise their skill-set.

5.4.2 Opinions on simulation

The opinions of the module leaders on some statements regarding simulation based health education were gathered using a 5-point Likert scale (*cf.* Table 4.10). These were collated into positive feedback (Agree and Strongly agree) and negative feedback (Disagree and Strongly disagree).

Looking at some teaching aspects, the majority were positive about the use of simulation and that it could be used to achieve some of their outcomes. The use of small-group learning is (or could be) beneficial in their module(s). In most cases where this was not the case it was due to the fact that the students are in their initial

exposure phase. These students still need to be familiarised with the background and theory of the relevant healthcare aspects (theory building) and are not yet ready to integrate this knowledge into practice during a simulation session, nor small-group discussions. These students' outcomes can usually be achieved using traditional classes or lectures (*cf.* 2.3.5).

As the healthcare students' progress through their undergraduate programme, simulation needs to play a bigger role to prepare them for clinical and practical exposure. Simulation should be a stepping-stone between the theory and practice (*cf.* 2.3.5).

Almost all module leaders indicated that a simulation scenario and debriefing/reflection could enhance the students' understanding of a problem. This is in line with Miller's framework of clinical assessment (*cf.* 1.2.2). The module leaders agree that by "doing" the scenario and "reflecting" on it, a deeper level of understanding will be obtained by the students.

The debriefing phase of a scenario should be done in a safe environment of trust and confidentiality. This is to ensure that students do not feel exposed to ridicule when discussing the outcomes of a scenario. Students should be given the freedom to discuss their feelings on how they perceived the scenario. The facilitator should guide the discussion to make sure the outcomes for the session are met. Debriefing is essential to the simulation experience as this is where the students learn from each other, and from mistakes made (*cf.2.3.5)*.

The majority of the module leaders interviewed are of the opinion that simulation could be used to train the students in certain technical competencies as well as non-technical competencies. These non-technical competencies include communication, leadership, collaboration and interprofessional teamwork (*cf.* 2.3.3). This is also in line with the adapted framework of clinical assessment (*cf.* Figure 2.3) where the highest level of aspiration should not be the "do" but rather "is". "Is" includes values and attitudes that define the person within a profession, and teaches and assesses concepts like professionalism, communication and leadership.

Looking at current teaching methods that could be replaced by simulation, the majority indicated that traditional lectures could not be completely replaced by simulation, however they responded that there are some lectures that could fall away and be replaced by practical, simulation sessions. The main reason for not replacing all traditional lectures is that students need to be trained in the theory and background of certain aspects before they continue with the practical side. Simulation should be used to enhance the learning experiences while some traditional training remains. Some traditional lectures could however fall away to make the training more interactive using simulation. An example of this is replacing a traditional lecture on ECGs through PowerPoint presentation, by flat screen simulation using an ECG training program (*cf.2.3.5)*.

The majority response was that not all real patient time could be replaced by simulation, but certain training time with real patients could be replaced. Health professions students should be exposed to real patients during their undergraduate training. However, some practical aspects make the addition of simulated scenarios a necessity. Students might not get the opportunity to be exposed to rare cases during their training, however these rare cases could be simulated for the students (*cf.2.3.5)*.

Not replacing all traditional lectures or real-patient training with simulation, adheres to the principle of simulation based health education as an enhancement to current methods used and not a total replacement (*cf.* 2.3.3).

Simulation can also be utilised in assessment, however it is important to keep in mind that when a certain part-task trainer, high-fidelity manikin or role-play scenario is used as an assessment tool, the students must have had opportunity to use it during their training. Utilising simulation tools for assessment also helps with the standardisation and fairness of the assessment of students. All students will be exposed to the same simulated, controlled scenario.

In terms of safety towards the patients and students, the majority of module leaders agreed that simulation is a safe training tool. Ethical aspects are always important to consider in healthcare and healthcare training. In simulation, these aspects are

two-fold. One focusses on the rights of the patient and the other focusses on the training of the student. With simulation the students can train and practise in a simulated environment and less time is spent exposing real patients to students. The patient's right to dignity is paramount and exposing them to young students as "training material" could infringe on this right. The second aspect focusses on the young, inexperienced students who should be free to train in an environment where mistakes are not high-stakes. Simulation provides such an environment where a student or a group of students can make mistakes, learn from it, with no consequences to real patients (*cf.* 2.3.3).

Scheduling of simulation sessions seems to be a concern to most module leaders. Most indicated that there is not enough time to add simulation (*cf.* 2.3.3) sessions to their current schedule.

With the majority of the module leaders reporting that some traditional lectures or patient management could be replaced by simulation sessions, one way of solving the scheduling issue is to convert some lectures or patient management time-slots into simulation sessions. This way more simulation sessions can be added, without adding additional strain on the schedule of the students.

5.4.3 General comments on simulation

Module leaders added comments on the use of simulation (*cf.* Table 4.11). The main concern amongst module leaders was that simulation has various logistical challenges.~~,~~ These include~~,~~—financial costs, scheduling issues, being– labour intensive and time consuming to prepare. These concerns echo those stated in the literature (*cf*. 2.3.3).

Simulation has a high-cost due to the specialised equipment and consumables used. In some cases, there will be wear and tear due to the usage of manikins or models and these need to be either replaced or repaired from time to time. Another challenging aspect of simulation is that it is geared towards the individual student or small-groups. This means that in a class of 100 students, the same simulated session must be run 20 times if a group consists of five students. This increases

cost of simulation as well as time constraints on staff availability, as each session needs to be prepared and in some cases run by a technician. Each of these simulation sessions needs a facilitator to observe it as well as guide the debriefing or reflection aspect.

Almost the same number of module leaders that mentioned the logistical challenges of simulation, re-iterated that students' learning and comprehension improve with the use of simulation.

When module leaders consider using simulation to enhance a particular module, certain questions should be considered:

- Is the content applicable for simulation?
- Is the students' level of background theory knowledge adequate?
- What would the ethical benefits be to the students and patients?
- What would the financial costs, as well as staff resource costs be?
- Does the staff have adequate training to facilitate a simulation and debriefing session?
- What impact would the scheduling of small-groups have on the time constraints of the students and facilitators?

These factors must be weighed and considered and a decision can be made on whether to use simulation or not (Figure 5.1).

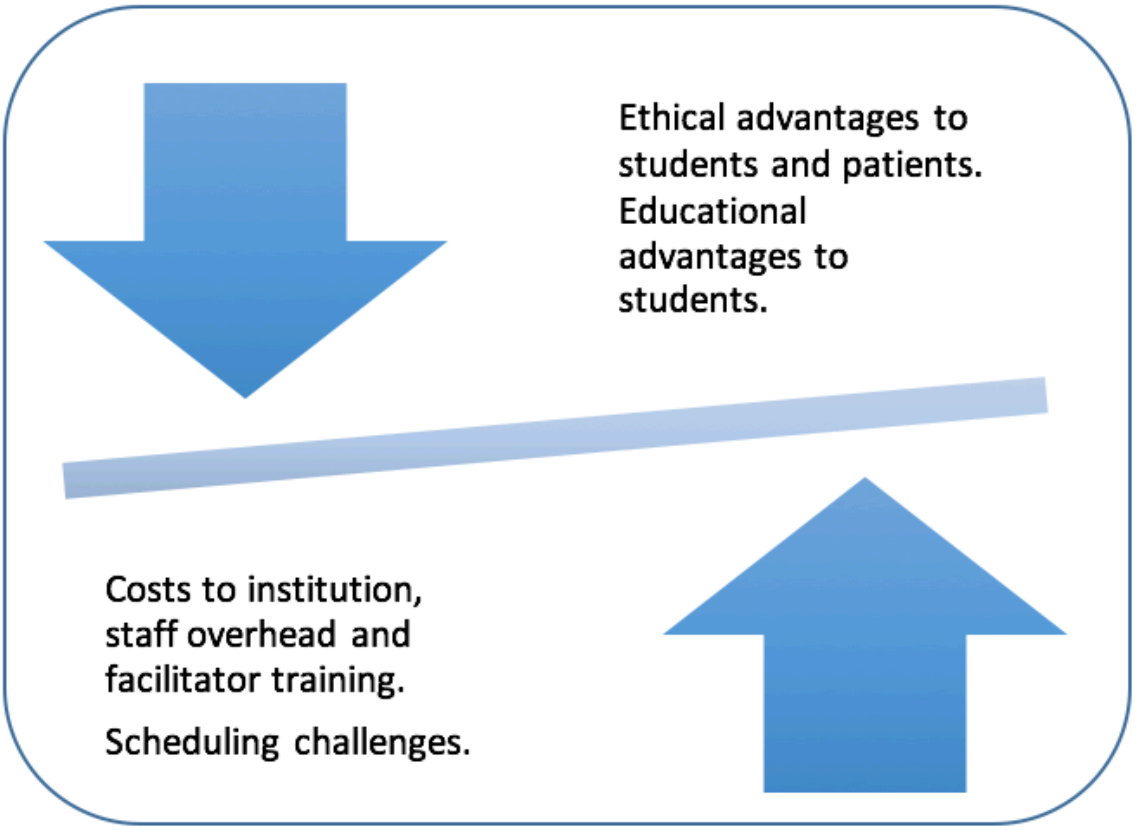

Figure 5.1: Weighing advantages versus challenges of using simulation.

Once a decision is made to incorporate simulation a module leader (or facilitator) could use Gaba's eleven dimensions (*cf.* 2.3.5) to guide and assist in planning the structure of the simulation.

5.5 THE USE OF SIMULATION TO ADDRESS INTERPROFESSIONAL EDUCATION.

Module leaders were asked whether they believe interprofessional education could be addressed using simulation based health education. Their responses were gathered on what the potential advantages, disadvantages and challenges could be with the use of simulation for interprofessional education. This was done not only for the respective module (if applicable) but also for undergraduate health professions education in general at the University of the Free State.

5.5.1 Potential viability of using simulation to address interprofessional education

When asked whether they believe that simulation is a viable training tool to address interprofessional education in a specific module, two thirds responded no (*cf.* Figure 4.4).

The most prevalent reason given for not considering simulation for interprofessional education was that the module simply does not have any interprofessional education outcomes to address. Thus, neither, simulation, didactic lessons nor community based education would benefit these modules with interprofessional education in mind. In other cases, the students might be too young and have not yet formed their own professional identity (*cf.* 2.2.4).

Another reason was that the students are already exposed to interprofessional education through their practical work during the community based education exposure. This interprofessional education exposure is not formalised and is coincidental.

In the cases where simulation could be considered to address interprofessional education various types of simulation were proposed (*cf.* Table 4.12, Table 4.13). These range from simple skills straining with part-task trainers to simulations with high-fidelity manikins, both in multi-professional groups. However, the most dominant suggestion is the use of standardised patients, in a role-play scenario.

Using standardised patients instead of high-fidelity manikins, enhances the communication aspect of a scenario, as the interaction between students and simulated patient is more natural. Patient interaction is much more emotional and life-like. This is important for interprofessional education as the focus is not so much on the science/ technical aspects (*cf.* 2.4), but rather on the team dynamics, patient interaction, communication and collaboration between the different professions (*cf.* 2.3.2).

Planning and executing a simulation session that is as authentic as possible, would benefit the students as they would feel more immersed in the situation. Simulation that feels too artificial might negatively impact the learning experience of the students as it might distract from the learning outcomes (*cf.* 2.3.3).

5.5.2 Advantages, disadvantages and challenges

The last two questions of the interview were divided into three questions each. In the first instance the 22 respondents who indicated that simulation could be a potential training tool to address interprofessional education in their specific modules were asked to discuss possible advantages, disadvantages and challenges for the implementation of simulation in that module.

In the second instance all respondents (irrespective of whether they used interprofessional education or simulation in a specific module) were asked to give their opinions on the potential, advantages, disadvantages and challenges for using simulation to address interprofessional education in health professions education in general at the University of the Free State.

The answers to both these main questions, with their sub questions were collated into themes. These themes, between “specific module” vs. “general opinions” overlap and are discussed below.

5.5.2.1 *Potential advantages* (*cf.* Table 4.16, Table 4.19)

In both cases the biggest potential advantage identified by the module leaders was that simulation sessions with the students would result in improved role clarification amongst the students for the different professions. Simulated sessions with students from different professions would ease the understanding of what the roles and responsibilities are of the other professions. However, as indicated, care should be taken not to expose the students to interprofessional education scenarios at a too early stage. The reason for this is that the students themselves have not yet developed their own role clarification of their profession.

Simulation is a safe learning environment for the students and this still holds true when utilised for interprofessional education. During simulation, the students are free to make mistakes and learn from those mistakes without harm to a real patient. Simulation for interprofessional education has the added benefit that debriefing or reflection is built in and students will have more time to debrief and reflect with students from other professions. Debriefing can also takes place in the form of interactive discussions during the sessions guided by a facilitator.

Teamwork and interprofessional interaction were also identified as a major advantage of the possible use of simulation to address interprofessional education. Improvement of interprofessional teamwork and professional communication would lead to improved empathy and respect towards other professions. Improvement in these teamwork and communication aspects is vital to address the “communication” and “collaborator” roles in the seven core competencies as listed by the HPCSA (*cf*. 2.2.9).

Student training would also improve with the use of simulation in interprofessional education, as it would expand the training platform and scenarios available to the students. Students are better trained as they are exposed to different professions. Student training would also benefit through the fact that they are better prepared for real-world situations and clinical exposure. Students will also be able to experience the theory in practice.

Patients would benefit from this exposure as the students would be better prepared for interprofessional patient management and the students will understand the holistic patient approach better.

5.5.2.2 ***Potential disadvantages*** (*cf.* Table 4.17, Table 4.20) ***and challenges*** (*cf.* Table 4.18, Table 4.21)

The disadvantages and challenges are closely related and will be discussed under one heading. Looking at the general response to what disadvantages simulation might have for interprofessional education the main response was that there was none.

A disadvantage that was mentioned is that interprofessional education simulation has various logistical issues and high cost. For effective interprofessional education simulation, students from various professions must be part of the same experience. The challenge this poses is that students from different departments and schools with different, class and clinical rosters must attend the same simulation session. To co-ordinate these different sets of students could be problematic if interprofessional education simulation is not formally incorporated into a module.

The cost of interprofessional education simulation is not only the financial costs, but also the cost in time for the staff and facilitators. As standardised patients in role-play scenario would be preferred for interprofessional education, time must be spent to train the standardised patients to play their role. These standardised patients would also be reimbursed for their time spent in training and the simulation. When high-fidelity simulators are used, these must be prepared and programmed and in some cases a technician must be available during the simulation to run it. The initial cost of a high-fidelity trainer could be very high and depending on the type of scenario, consumables might be an extra expense.

Physical space or rooms are needed for these simulated experiences. Depending on the content of the scenario the room must be prepared with the correct equipment or props.

In some cases, facilitators must also be trained in debriefing and reflection facilitation. Potentially, multiple facilitators from different professions might be attached to a scenario for effective guidance.

All these logistical and cost factors contribute to make planning and executing of simulated interprofessional education very complex and costly, not only on a financial level, but also on a time constraint level (*cf.* 2.2.6, 2.3.3*)*.

A non-logistical challenge identified by the module leaders could be attitude of some staff members regarding the use of simulation and interprofessional education in general. It was indicated that some staff members might be negative towards the use of simulation as they might not be fully informed on its uses and advantages as educational tool. Some staff might feel that informal or coincidental interprofessional education is adequate training and no formal sessions are needed. In some cases, a paradigm shift from staff is needed in order to utilise simulation for interprofessional education effectively (*cf.* 2.4).

Module leaders indicated that another challenge/disadvantage could be that the students have negative attitudes regarding interprofessional education. An example given was that some students regard interprofessional education as extra work and not directly related to the clinical (science) aspects of their training. When interprofessional education is not formally assessed, some students would simply ignore or disregard its importance, and rather spend time on aspects in the curriculum that are assessed (*cf.* 2.2.7).

Students should be properly prepared for interprofessional education sessions and for the simulation experience to get the full benefit from it. A student that is not prepared properly for the simulation experience could jeopardise the whole experience for the other students as well (*cf.* 2.2.6).

One respondent said that some students might have had a negative encounter with a different profession while rotating during clinical training. These negative interactions might happen before the students are exposed to simulation and can

influence them negatively towards a person of a certain profession during the simulation.

Conflict within a group could also lead to negative perceptions of certain professions or disciplines. These conflicts could be interpersonal or professional differences due to students from different professions not having the same initial exposure training. Negative perceptions could influence a student's viewpoint of a certain profession even before they start with their clinical training.

The fact that interprofessional simulation might not be balanced correctly was another concern raised. A challenge identified is the difficulty in writing a simulated experience to incorporate outcomes for all the professions or disciplines involved. The concern is that some professions might not benefit from the experience if the relevant students are not engaged in a meaningful way. Some students might feel "left out" and that might even lead to negative attitudes towards collaboration and interprofessional teamwork as well as certain other professions.

Simulation scenarios might be too artificial and the students will not benefit from it, if it is not closely aligned to real-world situations. If a simulation scenario is not well written it might lead to shallow interactions and not enough critical reasoning amongst the students. Students must be briefed that no simulation experience would be 100% authentic and a certain amount of suspension of belief is expected from them if they want to benefit from an experience (*cf.* 2.3.3). Students new to simulation might find this difficult, but this aspect can improve over time as the students are more exposed to simulated experiences. The students taking part in an interprofessional simulation must be used to simulation and simulation principles before the interprofessional education scenario. In other words, the interprofessional simulation experience, must not be their first encounter with simulation, standardised patients, or debriefing.

Another concern is that real patients should not be replaced completely by simulation sessions. Even though simulation is a safe place for the student and patient, even a well written scenario could never replace a real patient. Students should be exposed to real patients at some point during their interprofessional education training. This exposure to real patients will take place during their community based education

rotation. However, by exposing them to simulation, a safe steppingstone is created between theory and practice.

A challenge that was not mentioned by any module leader was the issue of support from leadership of an institution for interprofessional education (*cf.* 2.2.6). This would indicate that the module leaders feel confident with the leadership support provided at the Faculty of Health Sciences (UFS) regarding interprofessional education.

5.6 PROPOSED LEARNING CONTINUUM FOR INTERPROFESSIONAL EDUCATION

To enhance interprofessional education in the undergraduate programme, a three-phase approach is proposed. These three phases are; utilising didactic lessons at initial exposure level, simulated interprofessional experiences at the pre-clinical level and community based education platform during the clinical level (Figure 5.2).

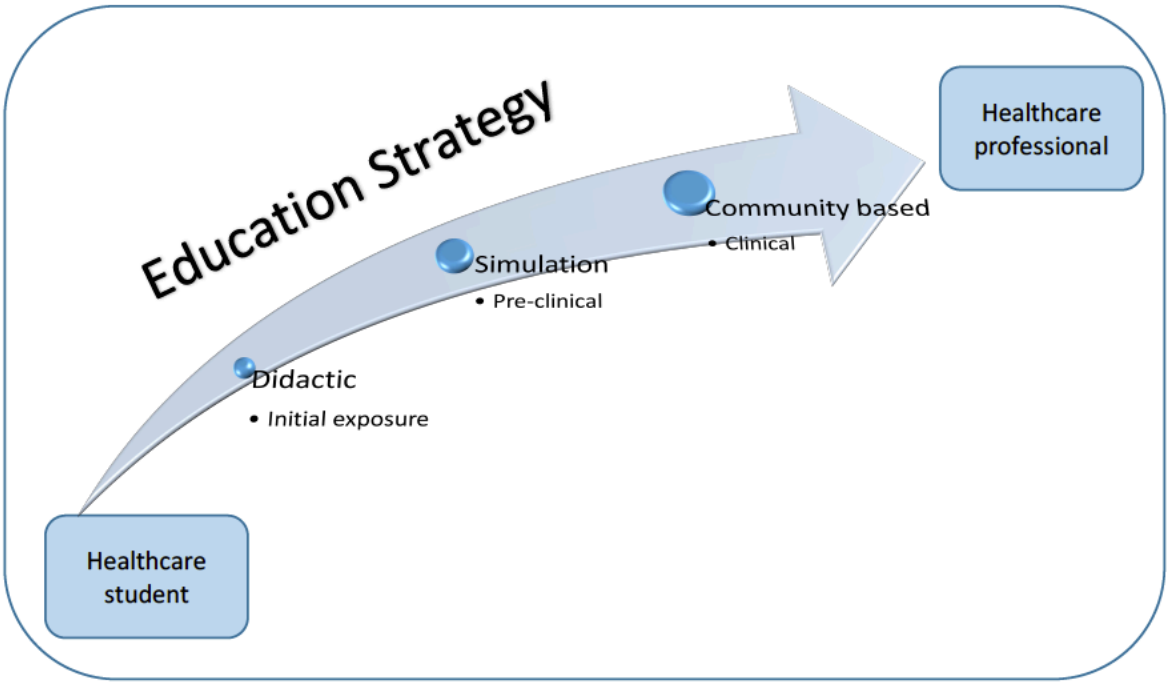

Figure 5.2: Proposed learning continuum for interprofessional education and the platforms utilised.

During all three phases, the interprofessional education principles and values should be addressed. Needless to say the didactic lessons must adhere to the definition of

interprofessional education. These must consist of groups of students from different professions, learning with, about and from one another. These small-group lessons should therefore be interactive in nature and facilitators from various professions should guide the learning process. These lessons serve as the background and introduction to interprofessional education. The principles and values of interprofessional education and collaborative practice are conveyed to the students in this manner (*cf*. 2.2.4).

The next phase is simulated interprofessional experiences during pre-clinical level. Simulated experiences should be designed to provide practical experience, without potential harm to a patient. These experiences should build on the groundwork that was laid during the didactic phase. The simulation experience should bridge the gap between the theoretical work and the practical, real-life work during their clinical level, when they go out into the community and interact with real patients.

Currently the simulation experience for interprofessional education at the University of the Free State is not formally part of the curriculum and is in pilot phase only (*cf.* 1.2.3).

The third phase should be the interprofessional aspects during the students' community based education placing.

This approach would guarantee that students are exposed to interprofessional education during each phase of their undergraduate studies. This exposure would be structured, guided and non-coincidental. Since assessment drives learning, each phase of the training should have an assessment component built in ~~it~~.

When we consider the adapted version of Miller's framework for clinical assessment (*cf.* Figure 2.6, 2.3.3) this three-phase approach addresses all the relevant levels. The didactic lessons (initial exposure phase) ensure the students have the relevant knowledge about interprofessional education ("knows"). The simulation experiences (pre-clinical) ensure the students are competent in the "knows how" and "shows how" aspects of interprofessional education (*cf.* 2.2.4). The community based interprofessional aspect (clinical) would build on the first two and ensure the students

are able to “shows how” and “do”. Thus all the building blocks are in place for the students to develop their sense of professionalism (“Is”) (Figure 5.3).

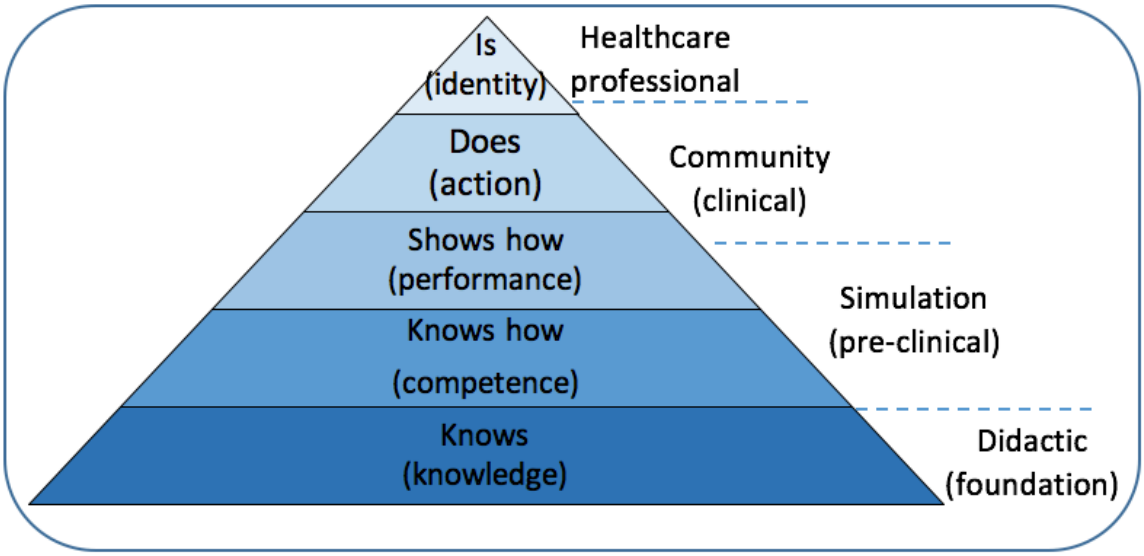

Figure 5.3: IPE learning continuum linked with adapted Miller’s framework (adapted from Cruess *et al.* 2015).

It is important to remember that collaborative practice does not stand in isolation. Healthcare professionals deliver management and care to patients, but are also part of the broader healthcare system. When one considers a patient, it is also important to consider the surrounding aspects relative to the patient. These include the patient’s family (or direct support structures) and the broader community. The healthcare professional utilises a professional culture to interact with the community and patient, while working within the healthcare system (*cf.* 2.2.4).

The healthcare system, on its part utilises an institutional culture to interact with the community and patient (Figure 5.4). Components of the healthcare system includes aspects such as, organisational structures and changes, the cost effectiveness of the system and the system efficiencies (*cf.* 2.2.4).

There are various enabling or interfering aspects that should be managed and taken into account when considering the relationship between the community, healthcare system and healthcare professionals. These factors include professional and institutional cultures as well as workforce and financial policies (*cf.* 2.2.4).

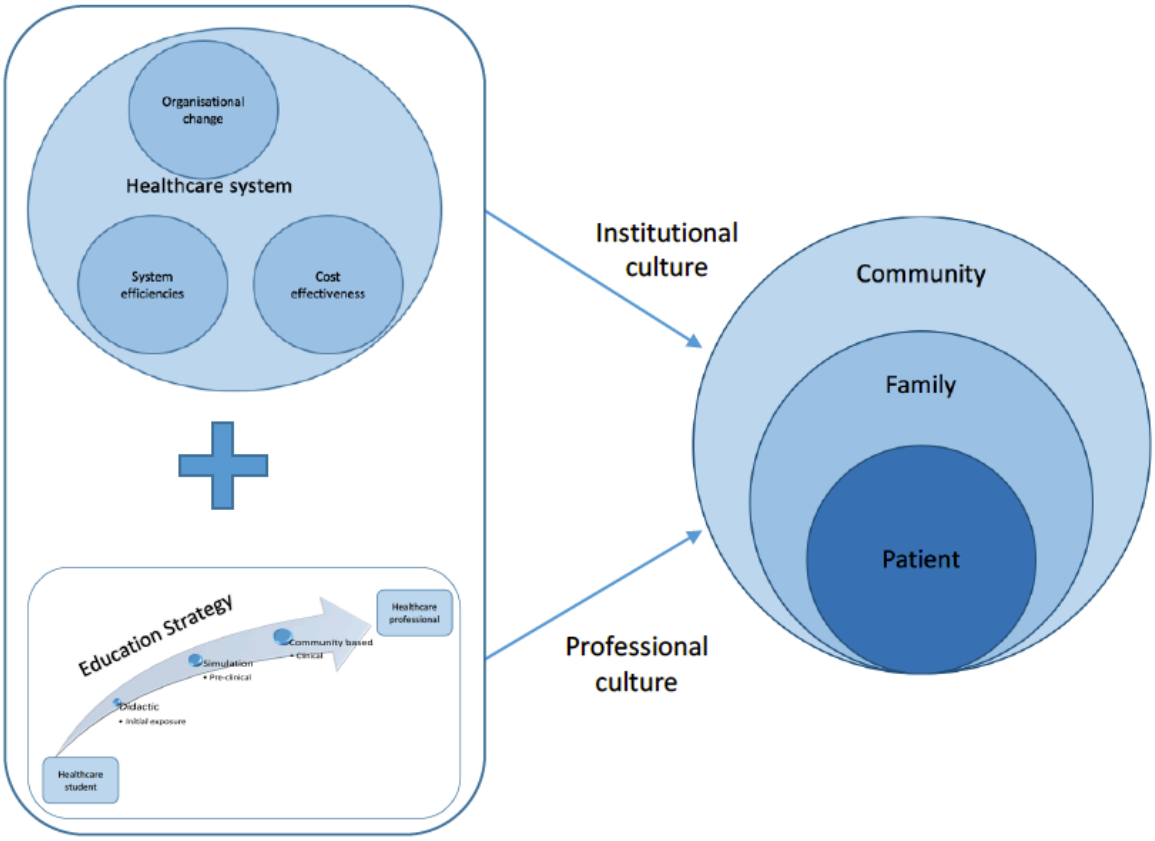

Figure 5.4: Relationship between IPE role-players

5.7 CONCLUSION

Interprofessional education brings various challenges to the fore, but also advantages to the patients and students. Care should be taken however when considering aspects such as education strategy and timing of interprofessional education. Students in their initial exposure phase would not have developed their own professional identity and exposing them to interprofessional situations might have a negative impact on their learning (*cf.* 2.4).

Interprofessional education could happen coincidentally when students rotate in their community based phase or it could be formalised with specific outcomes and assessment criteria during the students' undergraduate training.

Interprofessional education and healthcare do not take place in isolation but have

various role-players to take into account (*cf.* Figure 5.4).

Various educational strategies could be utilised to formalise interprofessional education, including: didactic interprofessional lessons, simulation and community based education (*cf.* Figure 5.2).

When considering simulation to address interprofessional education the main advantage could be improved role clarification for the students (*cf.* 5.5.2.1) as they see the different professionals work together in a practical scenario. However, various logistical challenges (*cf.* 5.5.2.2) should be addressed and managed for effective interprofessional education.

The costs (or challenges) versus benefits should be weighed and considered before planning a simulation session (*cf.* 5.4.3).

In the next chapter, ***Chapter 6: Conclusion, recommendations and limitations of the study,*** an overview and summary will be provided of the study.

CHAPTER 6
CONCLUSIONS, RECOMMENDATIONS AND LIMITATIONS OF THE STUDY

6.1 INTRODUCTION

In the previous chapter, the results of the structured interviews were discussed. In this chapter an overview of the study will be presented, conclusions will be drawn and recommendations arising from the study will be made. The limitations of the study will be identified and concluding remarks given.

With the needs of healthcare patients becoming more complex and being treated by healthcare professionals from different professions, there is a need for collaborative practice amongst these professionals. To enable this collaborative practice, the healthcare workforce should be trained with interprofessional collaboration in mind (*cf.* 1.2.1).

To achieve interprofessional education various educational strategies could be used. Amongst them is the use of simulation (*cf.* 2.2.8).

The goal of the study was to contribute to the knowledge on and awareness of the use of simulation to address interprofessional education in the undergraduate programmes of the Faculty of Health Sciences, at the University of the Free State.

6.2 OVERVIEW OF THE STUDY

The study was conducted between September 2014 and January 2016, and the empirical research phase was between November 2014 and July 2015 (*cf.* 1.5). The design of the study was a quantitative, cross-sectional descriptive study (*cf.* 1.7.1).

The focus of the study was the use of interprofessional education and simulation as teaching tool in modules of the undergraduate programmes for the School of Allied Health Professions, School of Medicine and School of Nursing (*cf.* 1.3).

Four research questions (*cf.* 1.3) were formulated to achieve the goal.

1. Is interprofessional training being incorporated into modules?
2. What training tools are currently utilised for interprofessional training at the Faculty of Health Sciences (UFS)?
3. Is simulation a viable training tool when considering interprofessional education of healthcare profession students?
4. What are the opinions of the module leaders on utilising simulation as training tool for interprofessional education of health profession students?

To address question three, a literature study was done. This was to conceptualise the concepts of interprofessional education, simulation based health education and their relationship (*cf.* 1.7.1).

To address questions one, two and four, an interview schedule was developed and structured interviews were conducted with the undergraduate module leaders (*cf.* 1.7.1).

6.2.1 Research question 1: Is interprofessional education incorporated into modules?

Through the use of the structured interviews with 47 module leaders, it was ascertained that interprofessional education takes place in 43.9% of undergraduate modules, mostly informally (or coincidental) (*cf.* Figure 4.2, Figure 4.3).

An answer was reached for research question 1 and the objective was achieved.

6.2.2 Research question 2: What training tools are currently utilised for interprofessional training at the Faculty of Health Sciences (UFS)?

The structured interviews also revealed that where interprofessional education does takes place, it is mostly done through ward rounds during hospital visits and clinic visits during community based education rotation (*cf.* Table 4.7). This exposure is

with real cases and patients. Some students are exposed to multi-professional classes, but these are not interprofessional in nature (*cf.* 5.3.2).

Some students were also exposed to the simulation experience to address interprofessional education. This experience is only in pilot phase and is not part of the formal curriculum, nor incorporated into the outcomes of any module (*cf.* 1.2.3).

An answer was reached for research question 2 and the objective was achieved.

6.2.3 Research question 3: Is simulation a viable training tool when considering interprofessional education of healthcare profession students?

The literature study focused on interprofessional education, simulation based health education and the use of simulation to address interprofessional education. The conclusion was that simulation is indeed a viable training tool to address interprofessional education (*cf.* 2.4).

An answer was reached for research question 3 and the objective was achieved.

6.2.4 Research question 4: What are the opinions of the module leaders on utilising simulation as training tool for interprofessional education of health profession students?

Using the structured interviews, the module leaders' feedback on the use of simulation was gathered. Simulation is used in more than half (*cf.* 4.4) of the modules. Where it is used the most prevalent mode is skills training with low-fidelity, part-task trainers (*cf*. 5.4.1).

The majority of module leaders indicated that simulation would not be a viable training tool to address interprofessional education in their respective module(s). In most cases this was because there were no interprofessional education outcomes to achieve in the module (*cf.* 5.5.1). In cases where there is indeed a need to address interprofessional education, the module leaders had a positive attitude as

they indicated that there are no negative aspects to the approach. Some did however indicate that logistical issues are the most challenging aspect for using simulation to address interprofessional education (*cf.* 5.5.2).

An answer was reached for research question 4 and the objective was achieved.

6.3 CONCLUSION

As patient needs become more complex and multi-dimensional, the healthcare teams responsible for the management and care of patients, need to be equipped with the correct skill-set to respond to these challenges. These competencies are not only the clinical aspects of patient management and caring but also to work in healthcare teams effectively. To make sure healthcare professionals are ready for these collaborative challenges, they need to be trained in an interprofessional approach. The main skills that should be developed are aspects on collaboration, effective team communication and professionalism. For interprofessional education to take place, students from different professions should learn with, from and about each other in an interactive manner.

The advantage of exposing students to interprofessional education is that the healthcare system is supplied with healthcare professionals that are collaborative practice ready. Various delivery modes exist for effective interprofessional education and care should be taken when deciding which mode should be used and during which phase of the students' training it should be introduced. The modes of delivery are didactic lessons, simulation experiences and community based education. Each mode will have its own unique challenges to overcome.

Once the mode and timing are decided, the costs and logistical challenges should be considered and addressed during the implementation of interprofessional education.

Where the use of simulation is considered, it is important to develop a scenario that will engage students from all the relevant professions. The type of simulation should also be decided and logistical challenges addressed. In most cases, standardised

patients (simulated patients) would be used in a role-play environment. Care should be taken to properly train these actors for the role to make it as authentic as possible. Effective debriefing and reflection are important and where needed, facilitators should be trained in debriefing techniques and principles. The outcomes of the scenario should be aligned with the principles of interprofessional education. These could be outcomes regarding collaboration, interprofessional communication and professionalism.

6.4 LIMITATIONS OF THE STUDY

Three limitations to the study were identified. These are: The limited level of knowledge about interprofessional education and/or simulation of the module leaders, expanding the target population to all lecturers and assessment.

Some module leaders' exposure to interprofessional education and/or simulation was either limited or none at all. Some acknowledged that although they are familiar with the core concepts, their practical experience is limited.

By expanding the target population to all lecturers (and not only the module leaders), richer information might have been gathered. Some module leaders do not work directly with the students and other lecturers are responsible for the practical side of the training. Input from these staff members might have given an expanded view on certain topics.

An aspect that was not explored with the module leaders during the structured interviews was their input on how to approach assessment within interprofessional education. Assessment is a driving force during student learning and formal interprofessional competencies should be assessed. The question arises as to how much weight should interprofessional education assessment have in terms of the global score of a student. Since interprofessional education by its definition is team driven, a fair balance should be created between individual and group assessment.

6.5 RECOMMENDATIONS

Interprofessional education should not be left to chance, but should be formally incorporated into the curriculum.

6.5.1 Recommendations regarding implementation

6.5.1.1 *A formal, three-phase approach to interprofessional education during the undergraduate programme*

When the three possible approaches for interprofessional education are considered, all three should be formally introduced into the curriculum (*cf.* Figure 5.2). Didactic, interprofessional lessons should be introduced during the students' foundation phase. The current simulation pilot programme (*cf.* 1.2.3) should be formally part of a module and introduced in the students' pre-clinical phase. During the clinical phase, community based education should be utilised as already introduced (*cf.* 1.2.3).

These three phases should be complementary to each other. The didactic lessons would introduce students to interprofessional education and collaboration on a theoretical level. During the simulation phase the theory will be put into practise in a safe environment, free from real patients. The simulation sessions would provide the needed practical experience for the students' community based phase.

6.5.1.2 *Additional staff development for interprofessional facilitators*

Staff competencies would need to be developed for the various aspects of formal interprofessional education. These include facilitation skills for small-group learning during the didactic lessons, debriefing and reflection facilitation skills for the simulation phase, and facilitation skills during the community based education phase, since the students' interprofessional activities and reflection should be guided.

6.5.2 Recommendations regarding further research

6.5.2.1 *Assessment*

Assessment is a specialised topic in its own right and assessment within interprofessional education could be explored in future research.

6.5.2.2 *Knowledge level of staff members regarding interprofessional education and simulation*

Additional research could be conducted on the knowledge level of staff members (not only module leaders) regarding interprofessional education and simulation and staff development could be recommended.

6.5.2.3 *The value of simulation in specific interprofessional competencies.*

Additional research could be conducted to investigate the value of simulation in specific interprofessional competencies to improve collaborative patient care.

6.6 CONCLUDING REMARKS

Effective patient care and management should be the top priority of everybody involved in healthcare and healthcare education. As the community and patient population evolve and become more complex, healthcare professionals must adapt to these changes. The function of health education professionals is to train the next generation of health professionals to meet the challenges of the future. In order to equip students with the necessary skills for the future, educational strategies must evolve and adapt with the changing patient environment.

As important as clinical skills are, healthcare professionals must also be equipped with a broader, non-technical skillset. As a healthcare worker almost never works

in isolation, collaboration, communication and professionalism are paramount to success.

Interprofessional education can bring these skills to the fore and develop a healthcare student into an effective team member in a collaborative practice. Interprofessional education should be part of the institutional culture.

Although there are various challenges, utilising simulation to enhance interprofessional education is a viable and realistic approach. It would enable students to bridge the gap between theory and practice. This would lead to better and more effective patient management and care.

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APPENDICES A1-A4

APPENDIX A1: LETTER TO DEAN, FACULTY OF HEALTH SCIENCES

APPENDIX A2: LETTER TO HEAD, SCHOOL OF MEDICINE

APPENDIX A3: LETTER TO HEAD, SCHOOL OF NURSING

APPENDIX A4: LETTER TO HEAD, SCHOOL OF ALLIED HEALTH PROFESSIONS

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YUNIVESITHI YA FREISTATA

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APPENDIX A1

Request for participation in a questionnaire survey

Dear Prof van Zyl

Request for permission to conduct a Masters study in the programme Health Professions Education (HPE) at the UFS with the title: Simulation as educational strategy: an interprofessional approach at the Faculty of Health Sciences, University of the Free State

I am currently occupying the position of Chief Technical Expert at the Clinical Simulation and Skills Unit, School of Medicine (CSUM), at the University of the Free State.

I am in the process of writing a thesis to obtain the M. degree in Health Professions Education in the Faculty of Health Sciences (FoHS) at the University of the Free State (Student number: 1996510200). The title of my research is: Simulation as educational strategy: an interprofessional approach at the Faculty of Health Sciences, University of the Free State.

My study leader is:
Dr Mathys Labuschagne
Head: Clinical Simulation and Skills Unit
School of Medicine
Faculty of Health Sciences
University of the Free State

My co-study leader is:
Prof Gina Joubert
Head: Department of Biostatistics
Faculty of Health Sciences
University of the Free State

As indicated by the title, the **purpose** of the study is to determine the opinions of the undergraduate module leaders in the Faculty of Health Sciences, UFS on using simulation as training tool in IPE.

With the opening of the Clinical Simulation and Skills Unit, SoM (CSUM), all three schools within the Faculty of Health Sciences now have a simulation unit. However these simulation units are currently only utilised for students of that specific school and is not for formal, module based IPE of health professions students.

The **aim** of the study is to determine the opinions of the undergraduate module leaders in the Faculty of Health Sciences, UFS on using simulation as training tool in IPE.

To provide the necessary context, the current approach of undergraduate module leaders across all three schools in the FoHS (UFS) with regard to IPE will be determined. This will establish which modules incorporate IPE. In cases where IPE is incorporated, it will be established which training tools are used to achieve this

The **overall goal** of the research will be to contribute to the knowledge on and awareness of simulation as educational tool for IPE in the undergraduate programmes at the FoHS (UFS). This can contribute to more well-rounded healthcare professionals and better management and care of patients.

The **methods** that will be utilised in this study include a comprehensive **literature survey** and document analysis that will have the specific aim of contextualising simulation based health education and the importance of IPE for health professions students. The information from the literature and the analysed documents will provide the necessary background and context to the stated problem and will form the basis for the development of the **structured interview** that will be conducted with the undergraduate module leaders in the faculty.

The **value** of the study is the understanding of opinions of the undergraduate module leaders in the FoHS (UFS) with regard to IPE and the use of simulation as a training tool. The significance will be the potential integration of simulation as training tool for IPE.

Kindly note that the information received during the project will only be used for research purposes and will not be released for any academic and/or employment-related performance evaluation, promotion and/or disciplinary purposes. The findings of this study will be made public to other educationalists in HPE through paper presentations at conferences and seminars and by the publishing of articles in applicable journals. The researcher undertakes to report the results in a way that will adequately protect the participants' identities.

I therefore kindly request your permision to conduct structured interviews with the undergraduate module leaders at the Faculty of Health Sciences.

Should you have any specific questions, my contact details are as follows:

Telephone number:	051 401 9307
Cellular phone:	082 291 5500
Email address:	vanwykr3@ufs.ac.za
Postal address:	Room 201, Block A, Francois Retief Building, University of the Free State, Bloemfontein, 9301.

Thank you for taking the time to read this communication and I sincerely hope that you will be willing to contribute to this project.

Yours sincerely

Mr Riaan van Wyk
Clinical Simulation and Skills Unit
School of Medicine
Faculty of Health Sciences
University of the Free State
Bloemfontein

Contact details of the Ethics Committee at UFS:
Mrs Jemima du Plessis
Tel: 051 405 3004
DuPlessisJ@ufs.ac.za

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APPENDIX A2

Request for participation in a questionnaire survey

Dear Prof St Clair Gibson

Request for permission to conduct a Masters study in the programme Health Professions Education (HPE) at the UFS with the title: Simulation as educational strategy: an interprofessional approach at the Faculty of Health Sciences, University of the Free State

I am currently occupying the position of Chief Technical Expert at the Clinical Simulation and Skills Unit, School of Medicine (CSUM), at the University of the Free State.

I am in the process of writing a thesis to obtain the M. degree in Health Professions Education in the Faculty of Health Sciences (FoHS) at the University of the Free State (Student number: 1996510200). The title of my research is: Simulation as educational strategy: an interprofessional approach at the Faculty of Health Sciences, University of the Free State.

My study leader is:
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Faculty of Health Sciences
University of the Free State

My co-study leader is:
Prof Gina Joubert
Head: Department of Biostatistics
Faculty of Health Sciences
University of the Free State

As indicated by the title, the **purpose** of the study is to determine the opinions of the undergraduate module leaders in the Faculty of Health Sciences, UFS on using simulation as training tool in IPE.

With the opening of the Clinical Simulation and Skills Unit, SoM (CSUM), all three schools within the Faculty of Health Sciences now have a simulation unit. However these simulation units are currently only utilised for students of that specific school and is not for formal, module based IPE of health professions students.

The **aim** of the study is to determine the opinions of the undergraduate module leaders in the Faculty of Health Sciences, UFS on using simulation as training tool in IPE.

To provide the necessary context, the current approach of undergraduate module leaders across all three schools in the FoHS (UFS) with regard to IPE will be determined. This will establish which modules incorporate IPE. In cases where IPE is incorporated, it will be established which training tools are used to achieve this

The **overall goal** of the research will be to contribute to the knowledge on and awareness of simulation as educational tool for IPE in the undergraduate programmes at the FoHS (UFS). This can contribute to more well-rounded healthcare professionals and better management and care of patients.

The **methods** that will be utilised in this study include a comprehensive **literature survey** and document analysis that will have the specific aim of contextualising simulation based health education and the importance of IPE for health professions students. The information from the literature and the analysed documents will provide the necessary background and context to the stated problem and will form the basis for the development of the **structured interview** that will be conducted with the undergraduate module leaders in the faculty.

The **value** of the study is the understanding of opinions of the undergraduate module leaders in the FoHS (UFS) with regard to IPE and the use of simulation as a training tool. The significance will be the potential integration of simulation as training tool for IPE.

Kindly note that the information received during the project will only be used for research purposes and will not be released for any academic and/or employment-related performance evaluation, promotion and/or disciplinary purposes. The findings of this study will be made public to other educationalists in HPE through paper presentations at conferences and seminars and by the publishing of articles in applicable journals. The researcher undertakes to report the results in a way that will adequately protect the participants' identities.

I therefore kindly request your permission to conduct structured interviews with the undergraduate module leaders at the School of Medicine, Faculty of Health Sciences.

Should you have any specific questions, my contact details are as follows:

Telephone number:	051 401 9307
Cellular phone:	082 291 5500
Email address:	vanwykr3@ufs.ac.za
Postal address:	Room 201, Block A, Francois Retief Building, University of the Free State, Bloemfontein, 9301.

Thank you for taking the time to read this communication and I sincerely hope that you will be willing to contribute to this project.

Yours sincerely

Mr Riaan van Wyk
Clinical Simulation and Skills Unit
School of Medicine
Faculty of Health Sciences
University of the Free State
Bloemfontein

Contact details of the Ethics Committee at UFS:
Mrs Jemima du Plessis
Tel: 051 405 3004
DuPlessisJ@ufs.ac.za

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APPENDIX A3

Request for participation in a questionnaire survey

Dear Prof Mulder

Request for permission to conduct a Masters study in the programme Health Professions Education (HPE) at the UFS with the title: Simulation as educational strategy: an interprofessional approach at the Faculty of Health Sciences, University of the Free State

I am currently occupying the position of Chief Technical Expert at the Clinical Simulation and Skills Unit, School of Medicine (CSUM), at the University of the Free State.

I am in the process of writing a thesis to obtain the M. degree in Health Professions Education in the Faculty of Health Sciences (FoHS) at the University of the Free State (Student number: 1996510200). The title of my research is: Simulation as educational strategy: an interprofessional approach at the Faculty of Health Sciences, University of the Free State.

My study leader is:
Dr Mathys Labuschagne
Head: Clinical Simulation and Skills Unit
School of Medicine
Faculty of Health Sciences
University of the Free State

My co-study leader is:
Prof Gina Joubert
Head: Department of Biostatistics
Faculty of Health Sciences
University of the Free State

As indicated by the title, the **purpose** of the study is to determine the opinions of the undergraduate module leaders in the Faculty of Health Sciences, UFS on using simulation as training tool in IPE.

With the opening of the Clinical Simulation and Skills Unit, SoM (CSUM), all three schools within the Faculty of Health Sciences now have a simulation unit. However these simulation units are currently only utilised for students of that specific school and is not for formal, module based IPE of health professions students.

The **aim** of the study is to determine the opinions of the undergraduate module leaders in the Faculty of Health Sciences, UFS on using simulation as training tool in IPE.

To provide the necessary context, the current approach of undergraduate module leaders across all three schools in the FoHS (UFS) with regard to IPE will be determined. This will establish which modules incorporate IPE. In cases where IPE is incorporated, it will be established which training tools are used to achieve this

The **overall goal** of the research will be to contribute to the knowledge on and awareness of simulation as educational tool for IPE in the undergraduate programmes at the FoHS (UFS). This can contribute to more well-rounded healthcare professionals and better management and care of patients.

The **methods** that will be utilised in this study include a comprehensive **literature survey** and document analysis that will have the specific aim of contextualising simulation based health education and the importance of IPE for health professions students. The information from the literature and the analysed documents will provide the necessary background and context to the stated problem and will form the basis for the development of the **structured interview** that will be conducted with the undergraduate module leaders in the faculty.

The **value** of the study is the understanding of opinions of the undergraduate module leaders in the FoHS (UFS) with regard to IPE and the use of simulation as a training tool. The significance will be the potential integration of simulation as training tool for IPE.

Kindly note that the information received during the project will only be used for research purposes and will not be released for any academic and/or employment-related performance evaluation, promotion and/or disciplinary purposes. The findings of this study will be made public to other educationalists in HPE through paper presentations at conferences and seminars and by the publishing of articles in applicable journals. The researcher undertakes to report the results in a way that will adequately protect the participants' identities.

I therefore kindly request your permission to conduct structured interviews with the undergraduate module leaders at the School of Nursing, Faculty of Health Sciences.

Should you have any specific questions, my contact details are as follows:

Telephone number:	051 401 9307
Cellular phone:	082 291 5500
Email address:	vanwykr3@ufs.ac.za
Postal address:	Room 201, Block A, Francois Retief Building, University of the Free State, Bloemfontein, 9301.

Thank you for taking the time to read this communication and I sincerely hope that you will be willing to contribute to this project.

Yours sincerely

Mr Riaan van Wyk
Clinical Simulation and Skills Unit
School of Medicine
Faculty of Health Sciences
University of the Free State
Bloemfontein

Contact details of the Ethics Committee at UFS:
Mrs Jemima du Plessis
Tel: 051 405 3004
DuPlessisJ@ufs.ac.za

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APPENDIX A4

Request for participation in a questionnaire survey

Dear Prof Van Vuuren

Request for permission to conduct a Masters study in the programme Health Professions Education (HPE) at the UFS with the title: Simulation as educational strategy: an interprofessional approach at the Faculty of Health Sciences, University of the Free State

I am currently occupying the position of Chief Technical Expert at the Clinical Simulation and Skills Unit, School of Medicine (CSUM), at the University of the Free State.

I am in the process of writing a thesis to obtain the M. degree in Health Professions Education in the Faculty of Health Sciences (FoHS) at the University of the Free State (Student number: 1996510200). The title of my research is: Simulation as educational strategy: an interprofessional approach at the Faculty of Health Sciences, University of the Free State.

My study leader is:
Dr Mathys Labuschagne
Head: Clinical Simulation and Skills Unit
School of Medicine
Faculty of Health Sciences
University of the Free State

My co-study leader is:
Prof Gina Joubert
Head: Department of Biostatistics
Faculty of Health Sciences
University of the Free State

As indicated by the title, the **purpose** of the study is to determine the opinions of the undergraduate module leaders in the Faculty of Health Sciences, UFS on using simulation as training tool in IPE.

With the opening of the Clinical Simulation and Skills Unit, SoM (CSUM), all three schools within the Faculty of Health Sciences now have a simulation unit. However these simulation units are currently only utilised for students of that specific school and is not for formal, module based IPE of health professions students.

The **aim** of the study is to determine the opinions of the undergraduate module leaders in the Faculty of Health Sciences, UFS on using simulation as training tool in IPE.

To provide the necessary context, the current approach of undergraduate module leaders across all three schools in the FoHS (UFS) with regard to IPE will be determined. This will establish which modules incorporate IPE. In cases where IPE is incorporated, it will be established which training tools are used to achieve this

The **overall goal** of the research will be to contribute to the knowledge on and awareness of simulation as educational tool for IPE in the undergraduate programmes at the FoHS (UFS). This can contribute to more well-rounded healthcare professionals and better management and care of patients.

The **methods** that will be utilised in this study include a comprehensive **literature survey** and document analysis that will have the specific aim of contextualising simulation based health education and the importance of IPE for health professions students. The information from the literature and the analysed documents will provide the necessary background and context to the stated problem and will form the basis for the development of the **structured interview** that will be conducted with the undergraduate module leaders in the faculty.

The **value** of the study is the understanding of opinions of the undergraduate module leaders in the FoHS (UFS) with regard to IPE and the use of simulation as a training tool. The significance will be the potential integration of simulation as training tool for IPE.

Kindly note that the information received during the project will only be used for research purposes and will not be released for any academic and/or employment-related performance evaluation, promotion and/or disciplinary purposes. The findings of this study will be made public to other educationalists in HPE through paper presentations at conferences and seminars and by the publishing of articles in applicable journals. The researcher undertakes to report the results in a way that will adequately protect the participants' identities.

I therefore kindly request your permission to conduct structured interviews with the undergraduate module leaders at the School for Allied Health professions, Faculty of Health Sciences.

Should you have any specific questions, my contact details are as follows:

Telephone number:	051 401 9307
Cellular phone:	082 291 5500
Email address:	vanwykr3@ufs.ac.za
Postal address:	Room 201, Block A, Francois Retief Building, University of the Free State, Bloemfontein, 9301.

Thank you for taking the time to read this communication and I sincerely hope that you will be willing to contribute to this project.

Yours sincerely

Mr Riaan van Wyk
Clinical Simulation and Skills Unit
School of Medicine
Faculty of Health Sciences
University of the Free State
Bloemfontein

Contact details of the Ethics Committee at UFS:
Mrs Jemima du Plessis
Tel: 051 405 3004
DuPlessisJ@ufs.ac.za

APPENDIX B

APPENDIX B: INVITATION TO PARTICIPATE IN A STRUCTURED INTERVIEW

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APPENDIX B

SIMULATION AS EDUCATIONAL STRATEGY: AN INTERPROFESSIONAL APPROACH AT THE FACULTY OF HEALTH SCIENCES, UNIVERSITY OF THE FREE STATE.

INVITATION TO PARTICIPATE IN A STRUCTURED INTERVIEW

Dear Colleague

I am Riaan van Wyk and the chief technical expert at the Clinical Simulation and Skills Unit at the School of Medicine, Faculty of Health Science, University of the Free State. I'm currently busy with my Masters degree (HPE793) in the Health Professions Education (HPE) programme at the UFS. As part of my dissertation, I will conduct structured interviews with the undergraduate module leaders at the School of Allied Health Professions, School of Nursing and School of Medicine.

The purpose of the structured interview is to determine the current approach in training interprofessionalism at the Faculty of Health Science, UFS, as well as to obtain insight into the opinions of undergraduate module leaders with regards to the use of simulation based medical education in interprofessional education of health profession students.

The interview will be approximately 40 minutes.

My study leader is:
Dr Mathys Labuschagne
Head: Clinical Simulation and Skills Unit
School of Medicine
Faculty of Health Sciences
University of the Free State
Tel: 051 401 3869

My co-study leader is:
Prof Gina Joubert
Head: Department of Biostatistics
Faculty of Health Sciences
University of the Free State
Tel: 051 401 3117

Contact details of the Ethics Committee at the UFS:
Mrs Jemima du Plessis
Tel: 051 405 3004
DuPlessisJ@ufs.ac.za

Please note the following:

- Participation in this project is voluntary. You have the right to refuse to participate in the study or to withdraw from the study at any stage. Should you be willing to participate in the research study, you will be requested to sign a consent form.
- Participation will cost you nothing; neither will you receive any remuneration for your participation.
- Should you decide to participate in the study, you can rest assured that the information you supply in the interview will be treated in a strictly confidential manner and that your personal information will not be made public under any circumstances. The interview schedule will be coded using a number system to ensure the confidentiality of the response. No names or personal identifiers will appear on any data sheet that is sent for statistical analysis.

- The information received during the project will only be used for research purposes and will not be released for any academic and/or employment-related performance evaluation, promotion and/or disciplinary purposes.
- Should you be willing to participate, you will not be held responsible for any decisions or conclusions made from the study.
- The results of this Masters study will be published without reference to any names of participants.

Thank you very much for your consideration of this initiative and I am looking forward to hearing from you.

Yours sincerely

Mr Riaan van Wyk

Telephone number: 051 401 9307
Cellular phone: 082 291 5500
Email address: vanwykr3@ufs.ac.za
Postal address: Room 201, Block A, Francois Retief Building, University of the Free State, Bloemfontein, 9301

SIMULATION AS EDUCATIONAL STRATEGY: AN INTERPROFESSIONAL APPROACH AT THE FACULTY OF HEALTH SCIENCES, UNIVERSITY OF THE FREE STATE.

Is: UITNODIGING OM DEEL TE NEEM AAN 'n GESTRUKTUREERDE ONDERHOUD

Geagte kollega

Ek is Riaan van Wyk, Hoof Tegniese Spesialis by die Kliniese Simulasie- en Vaardigheidseenheid aan die Skool vir Geneeskunde, Fakulteit van Gesondheidswetenskappe, Universiteit van die Vrystaat. Ek is tans besig met my Meestersgraad (HPE793) in die Gesondheidswetenskappe-onderwysprogram aan die UV. As deel van my verhandeling is ek van voorneme om gestruktureerde onderhoude met die voorgraadse moduleleiers van die Skool vir Aanvullende Gesondheidsberoepe, die Skool vir Geneeskunde, en die Skool vir Verpleegkunde te voer.

Die doel van die gestruktureerde onderhoud is om die huidige benadering van die voorgraadse moduleleiers ten opsigte van interprofessionele opleiding van studente in die gesondheidswetenskappe aan hierdie UV-fakulteit te bepaal, asook om menings te verkry ten opsigte van die gebruik van simulasie as opleidingsmetode van interprofessionele opvoeding onder gesondheidswetenskapstudente.

Die onderhoud sal ongeveer 40 minute duur.

My studieleier is:
Dr Mathys Labuschagne
Hoof: Kliniese Simulasie- en Vaardigheidseenheid
Skool vir Geneeskunde
Fakulteit van Gesondheidswetenskappe
Universiteit van die Vrystaat
Tel: 051 401 3869

My mede-studieleier is:
Prof Gina Joubert
Hoof: Departement van Biostatistiek
Skool vir Geneeskunde
Fakulteit van Gesondheidswetenskappe
Universiteit van die Vrystaat
Tel: 051 401 3117

Kontakbesonderhede van die Etiekkomitee van die UFS:
Me Jemima du Plessis
Tel: 051 405 3004
DuPlessisJ@ufs.ac.za

Neem asseblief kennis van die volgende:

- Deelname aan hierdie projek is vrywillig. U het die reg om deelname te weier of om u te enige tyd uit die studie te onttrek. Indien u gewillig is om aan die studie deel te neem sal u versoek word om 'n toestemmingsdokument te onderteken.
- Deelname sal u niks kos nie; u sal ook geen vergoeding ontvang vir u deelname nie.
- Indien u besluit om aan die studie deel te neem kan u verseker wees dat die inligting wat u verskaf streng vertroulik hanteer sal word, en dat geen persoonlike inligting onder enige omstandighede geopenbaar sal word nie. Die vrae in die onderhoud word gekodeer volgens 'n nommerstelsel om die vertroulikheid van die antwoorde te verseker. Geen name of persoonlike identifiseerders sal in enige data verskyn wat vir statistiese analise gestuur word nie.

- Die inligting wat tydens die projek versamel word, gaan slegs vir navorsingsdoeleindes gebruik word. Geen inligting sal vir akademiese en/of werksverwante prestasie-evaluasie, bevordering en/of dissiplinêre doeleindes gebruik word nie.
- Indien u gewillig is om deel te neem, sal u nie vir enige besluite of gevolgtrekkinge uit die studie verantwoordelik gehou word nie.
- Die resultate van hierdie Meesterstudie sal gepubliseer word sonder enige verwysing na deelnemers se name.

Baie dankie vir u oorweging ten opsigte van hierdie studie; ek sien uit om van u te hoor.

Die uwe

Mnr Riaan van Wyk

Telefoonnommer: 051 401 9307
Selfoonnommer: 082 291 5500
E-posadres: vanwykr3@ufs.ac.za
Posadres: Kamer 201, Blok A, Francois Retief Gebou, Universiteit van die Vrystaat, Bloemfontein, 9301

APPENDICES C1 & C2

APPENDIX C1: CONSENT TO PARTICIPATE IN RESEARCH – ENGLISH

APPENDIX C2: CONSENT TO PARTICIPATE IN RESEARCH – AFRIKAANS

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APPENDIX C1

CONSENT TO PARTICIPATE IN RESEARCH

Project title: **Simulation as educational strategy: an interprofessional approach at the Faculty of Health sciences, University of the Free State.**

Before signing consent for participating in the structured interview, you should take cognisance of the following:

- Participation in this project is voluntary. You have the right to decline to participate in the study or to withdraw from the study at any stage. Should you be willing to participate in the research study, you will be requested to sign this consent form.
- Participation will cost you nothing; neither will you receive any remuneration for your participation.
- Should you decide to participate in the study, you can rest assured that the information you supply in the interview will be treated in a strictly confidential manner and that your personal information will not be made public under any circumstances. Interview schedules will be coded using a number system to ensure the confidentiality of the response. No names or personal identifiers will appear on any data sheet that is sent for statistical analysis.
- The interview will be approximately 40 minutes.
- The results of this Masters study will be published without reference to any names of participants.
- Kindly note that the information received during the project will only be used for research purposes and will not be released for any academic and/or employment-related performance evaluation, promotion and/or disciplinary purposes.
- Should you be willing to participate, you will not be held responsible for any decisions or conclusions made from the study.

Hereby I, the undersigned consent to participate in the structured interview for undergraduate module leaders.

If you are willing to consent for execution of this study, kindly sign your consent below.

.....	.....
Signature	**Date**
.....	.....
Signature of witness	**Date**

Thank you for your kind cooperation.

Yours sincerely

Mr Riaan van Wyk

Telephone number: 051 401 9307
Cellular phone: 082 291 5500
Email address: vanwykr3@ufs.ac.za
Postal address: Room 201, Block A, Francois Retief Building, University of the Free State, Bloemfontein, 9301.

Study leader:
Dr Mathys Labuschagne
Clinical Simulation and Skills Unit
School of Medicine
Faculty of Health Sciences
University of the Free State
Tel: 051 401 3869

Co-study leader:
Prof Gina Joubert
Associate Professor
Department of Biostatistics
Faculty of Health Sciences
University of the Free State
Tel: 051 401 3117

Contact details of the Ethics Committee at the UFS:
Mrs Jemima du Plessis
Tel: 051 405 3004
DuPlessisJ@ufs.ac.za

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APPENDIX C2

TOESTEMMING TOT DEELNAME AAN NAVORSING

Projek titel: **Simulation as educational strategy: an interprofessional approach at the Faculty of Health sciences, University of the Free State.**

Neem asseblief kennis van die volgende voordat u die toestemmingsvorm onderteken:

- Deelname aan hierdie projek is vrywillig. U het die reg om deelname te weier of te enige tyd uit die studie te onttrek. Indien u gewillig is om aan die studie deel te neem, sal u versoek word om ‘n toestemmingsdokument te teken.
- Deelname sal u niks kos nie; u sal ook geen vergoeding ontvang vir u deelname nie.
- Indien u besluit om aan die studie deel te neem kan u verseker wees dat die inligting wat u verskaf in ‘n streng vertroulike wyse hanteer sal word, en dat geen persoonlike inligting onder enige omstandighede openbaar gemaak sal word nie. Die vrae in die onderhoud word gekodeer volgens ‘n nommeringstelsel om die vertroulikheid van die antwoorde te verseker. Geen name of persoonlike identifiseerders sal in enige data verskyn wat vir statistiese analise gestuur word nie.
- Die onderhoud sal ongeveer 40 minute wees.
- Die resultate van hierdie Meesterstudie sal sonder enige verwysing na deelnemers se name gepubliseer word.
- Die inligting wat tydens die projek versamel word gaan slegs vir navorsingsdoeleindes gebruik word. Geen inligting sal vir akademiese en/of werksverwante prestasie evaluasie, bevordering en/of dissiplinêre doeleindes gebruik word nie.
- Indien u gewillig is om deel te neem, sal u nie verantwoordelik vir enige besluite of gevolgtrekkinge uit die studie gehou word nie.

Hiermee gee ek, die ondergetekende, toestemming om deel te neem aan die onderhoud vir voorgraadse module leiers.

Indien u bereid is om deel te neem aan die studie, teken asb. hieronder vir toestemming.

....
Handtekening **Datum**

....
Handtekening van getuie **Datum**

Baie dankie vir u samewerking.

Die uwe

Mnr. Riaan van Wyk

Telefoonnommer: 051 401 9307
Selfoonnommer: 082 291 5500
Eposadres: vanwykr3@ufs.ac.za
Posadres: Kamer 201, Blok A, Francois Retief Gebou, Universiteit van de Vrystaat, Bloemfontein, 9301.

Studieleier:
Dr. Mathys Labuschagne
Hoof: Kliniese Simulasie- en Vaardigheidseenheid
Skool vir Geneeskunde
Fakulteit van Gesondheidswetenskappe
Universiteit van die Vrystaat
Tel: 051 401 3869

Mede-studieleier:
Prof. Gina Joubert
Hoof: Departement van Biostatistiek
Skool vir Geneeskunde
Fakulteit van Gesondheidswetenskappe
Universiteit van die Vrystaat
Tel: 051 401 3117

Kontakbesonderhede van die Etiekkomitee van die UFS:
Me Jemima du Plessis
Tel: 051 405 3004
DuPlessisJ@ufs.ac.za

APPENDICES D1 & D2

APPENDIX D1: INTERVIEW SCHEDULE – ENGLISH

APPENDIX D2: INTERVIEW SCHEDULE – AFRIKAANS

SIMULATION AS EDUCATIONAL STRATEGY: AN INTERPROFESSIONAL APPROACH AT THE FACULTY OF HEALTH SCIENCES, UNIVERSITY OF THE FREE STATE.

Structured interview by Riaan van Wyk (1996510200) as part of a Masters degreed in HPE.

1. Demographics

1.1 Date of interview: _____ | | | | | | | 1-6

1.2 Interviewee code: _____ | | | 7-8

1.2.1 How many years total experience do you have in the teaching of health professions students at undergraduate level?
_____ years | | | 9-10

1.2.2 How many years experience do you have in the teaching of health professions students at undergraduate level at the UFS?
_____ years | | | 11-12

1.3 Module code(s): _____ | | | | 13-15
| | | | 16-18
| | | | 19-21
| | | | 22-24
| | | | 25-27

1.3.1 Additional modules (if more than one module per interviewee, additional answer sheets will be used for the module specific questions in sections 2 & 3).

Y	N

| | 28

1.3.3 Module leader(s) - other than the interviewee (if applicable).

Y	N

| | 29

1.3.3 Department(s) under which the module(s) resort?
_____ | | | 30-31
_____ | | | 32-33
_____ | | | 34-35

1.3.4 Which school in the faculty is responsible for the module(s)?

SAHP	SoM	SoN

| | 36

1.3.5 What academic year are the students in the module?

1	2	3	4	5

| | 37

1.3.6 Divide the percentage between technical/science competencies, non-technical and other competencies in the module content.

Technical/Science	%			38-40
Non-Technical	%			41-43
Other:	%			44-46

2. Interprofessional Education (IPE)

2.1 Does the module incorporate Interprofessional education?

Y	N

47

If no, continue to section 3

2.2 Are the IPE activities formal or informal?

F	
I	

48
49

2.3 What percentage of the module is taken up by IPE? _____% 50-52

2.4 Indicate the IPE activities in the module

Ward rounds		53
Community service		54
Clinic work		55
Multi-professional classes		56
Other:		57

2.5 Indicate the usage percentage of each IPE learning tool used in the module:

Lectures	%	58-60
Small group	%	61-63
Patients	%	64-66
Skills training	%	67-69
Simulation	%	70-72
Bedside	%	73-75
Community	%	76-78
Other:	%	79-1

2.6 Comments:

2-3

3. Simulation

3.1 In your module, indicate the usage percentage of simulation:

None	%	4-6
Skills training	%	7-9
Role-Play	%	10-12
High-fidelity scenarios	%	13-15
Standardised patients	%	16-18
Virtual Reality	%	19-21
Wet lab	%	22-24
Other:	%	25-27

3.2 Please indicate how strongly you agree or disagree with the following:
1-Strongly disagree, 2-Disagree, 3-No opinion, 4-Agree, 5-Strongly agree

	Statement	1	2	3	4	5	
3.2.1	All traditional lessons can be substituted by simulation sessions						28
3.2.2	Some traditional lessons can be substituted with simulation sessions						29
3.2.3	There is enough time in the schedule to add simulation sessions						30
3.2.4	A simulation learning environment is safe for students						31
3.2.5	A simulation learning environment is safe for patients						32
3.2.6	Simulation can be used for assessment						33
3.2.7	Simulation sessions are non-disruptive to the schedule						34
3.2.8	Small-group training is effective for the module						35
3.2.9	Reflection/debriefing enhances student understanding						36
3.2.10	Simulation is a "nice to have" and can not be used for the module outcomes						37
3.2.11	Simulation can be used for non-technical skills						38
3.2.12	Simulation can be used for science/technical skills						39
3.2.13	Simulation may lead to deeper understanding of a problem						40
3.2.14	Simulation training can replace all practical, real patient management						41
3.2.15	Simulation training can replace some practical, real patient management						42
3.2.16	Staff are aware of advantages of simulation training						43
3.2.17	Staff are aware of disadvantages of simulation training						44

Comments:

3.2.18

	45-46

4. Simulation and Interprofessional Education

4.1 Do you believe, in this module, simulation is a viable training tool to address IPE in undergraduate health professions students?

Y	N

If "no" above, move to 4.3. **47**

4.2 Which simulation methods would you consider using for IPE in this module for undergraduate health professions students?

Skills training		**48**
Role-Play		**49**
High-fidelity scenarios		**50**
Standardised patients		**51**
Virtual Reality		**52**
Wet lab		**53**
Other:		**54**

Comments: **55-56**

4.3 Please explain why you believe simulation is not a viable training tool for IPE in this module. **57-58**

4.4 Only answer section 4.4 if IPE is used in this specific module

Applicable	N/A

59

4.4.1 In your module, indicate the usage percentage of simulation for IPE:

None	%	**60-62**
Skills training	%	**63-65**
Role-Play	%	**66-68**
High-fidelity scenarios	%	**69-71**
Standardised patients	%	**72-74**
Virtual Reality	%	**75-77**
Wet lab	%	**78-80**
Other:	%	**1-3**

4.4.2 In your opinion, what is/could be the biggest advantage for using simulation as a tool to address IPE in this module? **4-5**

4.4.3 In your opinion, what is/could be the biggest disadvantage for using simulation as a tool to address IPE in this module?

		6-7

4.4.4 In your opinion, what could be the biggest challenge in implementing simulation as a tool to address IPE in this module, if not already implemented?

		8-9

4.4.5 If already implemented, what in your opinion was the biggest challenge in implementing simulation as a tool to address IPE in this module?

		10-11

4.5 Section 4.5 is applicable to health care professions education in general.

4.5.1 In your opinion, what is/could be the biggest advantage of simulation as a training tool to address IPE in undergraduate health students?

		12-13

4.5.2 In your opinion, what is/could be the biggest disadvantage of simulation as a training tool to address IPE in undergraduate health students?

		14-15

4.5.3 In your opinion, what is/could be the biggest challenge in implementing simulation in IPE training for undergraduate students?

		16-17

SIMULATION AS EDUCATIONAL STRATEGY: AN INTERPROFESSIONAL APPROACH AT THE FACULTY OF HEALTH SCIENCES, UNIVERSITY OF THE FREE STATE.

Onderhoud skedule deur Riaan van Wyk (1996510200) as deel van ‘n Meesters graad in HPE.

1. Demografie

1.1 Datum van onderhoud: _____ | | | | | | | **1-6**

1.2 Onderhoud gevoer kode: _____ | | | **7-8**

1.2.1 Hoeveel jaar totale ondervinding het u t.o.v die opleiding van gesondheidswetenskappe studente op ‘n voorgraadse vlak?
_____ jaar | | | **9-10**

1.2.2 Hoeveel jaar totale ondervinding het u t.o.v die opleiding van gesondheidswetenskappe studente op ‘n voorgraadse vlak by die UV_____ jaar | | | **11-12**

1.3 Module kode: _____

			13-15
			16-18
			19-21
			22-24
			25-27

1.3.1 Addisionele modules (indien meer as een module per onderhoud gevoer, sal addisionele antwoordstukke gebruik word vir die module spesifieke vrae in afdelings 2, 3 & 4).

J	N

	28

1.3.2 Module leier(s) – behalwe die met wie onderhoud gevoer word (indien van toepassing).

J	N

	29

1.3.3 Verantwoordelike departement(e) vir die module(s)?

_____ | | | **30-31**
_____ | | | **32-33**
_____ | | | **34-35**

1.3.4 Verantwoordelike skool vir die module(s)?

SAHP	SoM	SoN

	36

1.3.5 Wat is die akademiese jaargroep van die module se studente?

1	2	3	4	5

	37

1.3.6 Verdeel die inhoud van die module tussen tegniese/wetenskaplike en nie-tegniese inhoud volgens persentasie.

Tegniese/wetenskaplike	%		**38-40**
Nie-tegniese	%		**41-43**
Ander:	%		**44-46**

2. Interprofessionele Opvoeding (IPE)

2.1 Sluit die module IPE in?

J	N

47

Indien nie, gaan na afdeling 3.

2.2 Is die IPE aktiwiteite formeel of informeel?

F	
I	

48
49

2.3 Watter persentasie van die module is IPE? _____% 50-52

2.4 Dui die tipe IPE aktiwiteite aan in die module

Saalrondtes		53
Gemeenskapsdiens		54
Kliniek werk		55
Multi-professionele klasse		56
Ander:		57

2.5 Dui die persentasie aan van opleidings instrument(e) wat gebruik word vir IPE in die module:

Lesings	%	58-60
Klein-groep leer	%	61-63
Pasiënte	%	64-66
Vaardigheidsopleiding	%	67-69
Simulasie	%	70-72
“Bedside”	%	73-75
Gemeenskapsdiens	%	76-78
Ander:	%	79-1

2.6 Opmerkings: 2-3

3. Simulasie

3.1 In hierdie module, dui die persentasie gebruik van simulasie aan:

Geen	%			**4-6**
Vaardigheidsopleiding	%			**7-9**
Rolspel	%			**10-12**
“High-fidelity” scenarios	%			**13-15**
Gestandardiseerde pasiënte	%			**16-18**
Virtuele Realiteit	%			**19-21**
“Wet lab”	%			**22-24**
Ander:	%			**25-27**

3.2 Dui aan hoe sterk u saamstem of verskil met die volgende:

1-Sterk verskil, 2-Verskil, 3-Geen Opinie nie, 4-Saamstem, 5-Sterk saamstem

	Stelling	1	2	3	4	5	
3.2.1	Alle tradisionele lesse kan vervang word deur simulasie sessies						**28**
3.2.2	Sekere tradisionele lesse kan vervang word deur simulasie sessies						**29**
3.2.3	Die skedule laat genoeg tyd oor vir simulasie sessies						**30**
3.2.4	‘n Simulasie omgewing is ‘n veilige omgewing vir die studente						**31**
3.2.5	‘n Simulasie omgewing is ‘n veilige omgewing vir die pasiënte						**32**
3.2.6	Simulasie kan gebruik word vir assessering						**33**
3.2.7	Simulasie sessies is nie ontwrigtend op die normale skedule nie						**34**
3.2.8	Klein-groep leer is effektief vir hierdie module						**35**
3.2.9	Refleksie/nabetragting verbeter die student se begrip						**36**
3.2.10	Simulasie is ‘n "nice to have" en kan nie gebruik word vir die module uitkomste nie						**37**
3.2.11	Simulasie kan gebruik word vir nie-tegniese vaardighede						**38**
3.2.12	Simulasie kan gebruik word vir tegniese/wetenskaplike vaardighede						**39**
3.2.13	Simulasie kan lei tot dieper insig van ‘n probleem						**40**
3.2.14	Simulasie opleiding kan alle praktiese, pasiënt bestuur/sorg vervang						**41**
3.2.15	Simulasie opleiding kan sommige praktiese, pasiënt bestuur/sorg vervang						**42**
3.2.16	Personeel is bewus van die voordele wat simulasie opleiding bied						**43**
3.2.17	Personeel is bewus van die nadele wat simulasie opleiding bied						**44**

Opmerkings:

3.2.18

	45-46

4. Simulasie en interprofessionele Opleiding (IPE)

4.1 Glo u dat simulasie ‘n doeltreffende opsie kan wees as opleidingsintrument vir voorgraadse studente om IPE aan te spreek in hierdie module?

J	N

47

Indien “nee”, beweeg asb. na 4.3.

4.2 Watter simulasie metode, sal u oorweeg om IPE aan te spreek vir voorgraadse gesondheidswetenskappe student, in hierdie module?

Vaardigheidsopleiding		48
Rolspel		49
“High-fidelity” scenarios		50
Gestandardiseerde pasiënte		51
Virtuele Realiteit		52
“Wet lab”		53
Ander:		54

Opmerkings:

	55-56

4.3 Verduidelik asb. waarom u glo dat simulasie nie ‘n doeltreffende opleidings metode sal wees vir IPE in hierdie module nie.

	57-58

4.4 Antwoord slegs afdeling 4.4 indien IPE gebruik word in die spesifieke module

VT	NVT	
		59

4.4.1 In hierdie module, dui aan wat die persentasie gebruik van simulasie is vir IPE:

Geen	%		60-62
Vaardigheidsopleiding	%		63-65
Rolspel	%		66-68
“High-fidelity” scenarios	%		69-71
Gestandardiseerde pasiënte	%		72-74
Virtuele Realiteit	%		75-77
“Wet lab”	%		78-80
Ander:	%		1-3

4.4.2 Na u mening, wat is/kan die grootse voordeel wees van simulasie as opleidingsinstrument om IPE in hierdie module aan te spreek?

	4-5

4.4.3 Na u mening, wat is/kan die grootse nadeel wees van simulasie as opleidingsinstrument om IPE in hierdie module aan te spreek?

		6-7

4.4.4 Na u mening, wat kan die grootste uitdaging wees met die implementering van simulasie as opleidingsinstrument om IPE aan te spreek indien dit nog nie ge-implementeer is nie?

		8-9

4.4.5 Indien dit reeds ge-implementeer is, wat was die grootste uitdaging gewees om simulasie as opleidingsinstrument vir IPE te gebruik in hierdie module?

		10-11

4.5 Afdeling 4.5 is van toepassing op gesondheidswetenskappe studente opleiding in die algemeen.

4.5.1 Na u mening, wat kan die grootse voordeel wees van simulasie as opleidingsinstrument om IPE aan te spreek in voorgraadse gesondheidswetenskappe opleidng?

		12-13

4.5.2 Na u mening, wat kan die grootse nadeel wees van simulasie as opleidingsinstrument om IPE aan te spreek in voorgraadse gesondheidswetenskappe opleidng?

		14-15

4.5.3 Na u mening, wat kan die grootse uitdaging wees van simulasie as opleidingsinstrument om IPE aan te spreek in voorgraadse gesondheidswetenskappe opleidng?

		16-17