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**Developing clinical skill competency of undergraduate  
Nursing students utilising a simulated psychomotor skill laboratory  
and model of self-directed learning: An Evaluation research study**

A thesis presented in partial fulfilment of the requirements for the degree of  
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## **ABSTRACT**

Nursing education today emphasises higher-level thought processes than in the past. The requirement for Bachelor of Nursing students to also demonstrate competence in the core clinical skills is critical for safe professional practice. Balancing curricular emphases on technical knowledge, clinical and interpersonal skills, ethical decision-making, and other critical thinking skills is becoming increasingly difficult for nurse educators.

Changes in the health sector have resulted in increased complexity of care, reduced numbers of venues for clinical practicum experiences, and increased financial costs associated with student practicum. The commitment to ensure that students have requisite clinical skills appropriate to each stage of their programme, prior to their clinical practicum involves curricular, pedagogical and financial considerations. Drawing on international literature and a Faculty committed to the development of nursing knowledge and skill, discovery, reflection and self-directed learning, the Eastern Institute of Technology (EIT) implemented the use of the Clinical Arts and Technology Centre and a cooperative model of self-directed learning into the Bachelor of Nursing curriculum in January 2000. The Clinical Arts and Technology Centre is an “enhanced” clinical simulation laboratory that provides students with the facilities and resources to support and enhance their knowledge and skills in preparation for clinical practicum.

This Evaluation Research study explores and determines the effectiveness of the Clinical Arts and Technology Centre and the cooperative model of self-directed learning in terms of student clinical competency outcomes, and student satisfaction with the facility and model of self-directed learning. An extensive review of literature was undertaken in relation to the development and use of clinical simulation laboratories, clinical simulation, and models of self-directed learning in nursing education. A combination of qualitative and quantitative data collection methods were used including a pre piloted research questionnaire and a collation of student competency assessment outcomes. One hundred and fifty-six EIT Bachelor of Nursing students participated in the study. Statistical research findings and themes that emerged demonstrated a high level of overall student satisfaction with the facility resources and model of learning and

provide direction for future facility and resource development, and ongoing quality improvement initiatives.

## **ACKNOWLEDGEMENTS**

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- Appendix II Letter of Approval from the Massey University Human Ethics Committee
- Appendix III Participant Information Sheet
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- Appendix V Research Poster
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- Appendix VII Descriptive Statistical Frequencies

## **CHAPTER 1.0 ORIENTATION TO THE STUDY**

### **1.1 Introduction**

It is acknowledged that nursing education today emphasises higher-level thought processes than in the past. The requirement for students to also demonstrate competence in core clinical skills is critical for safe professional practice. Balancing curricular emphases on technical knowledge, clinical and interpersonal skills, ethical decision-making and other critical thinking skills is becoming increasingly difficult for nurse educators. The Faculty of Health and Sport Science at the Eastern Institute of Technology developed and implemented the Clinical Arts and Technology Centre and a model of teaching and learning which was designed to address some of these difficulties, which were impacting on the Bachelor of Nursing programme.

This thesis describes an Evaluation research study which was undertaken at the Faculty of Health and Sport Science at the Eastern Institute of Technology. The study is a component of the Faculty's overall evaluation of the Clinical Arts and Technology Centre, and the associated "co-operative model" of self directed learning which are imbedded in the Eastern Institute of Technology undergraduate Bachelor of Nursing programme.

This chapter provides a background to the development of the initial Clinical Arts and Technology Centre concept and implementation of the facility. The researcher's interest, the significance of this study, and the research logic are outlined. The chapter concludes with a brief description of the overall thesis structure.

### **1.2 Background**

Changes in the health sector nationally and internationally have resulted in increased complexity of care, reduced numbers of venues for clinical practicum experiences, and increased financial costs associated with student practicum (D'A Slevin & Lavery, 1991; Nolan & Nolan, 1997a; Bjork, 1997; Morton, 1997; Knight, 1998a; Knight & Mowforth, 1998; Vernon, 2000). Therefore, fulfilling the clinical practicum component of undergraduate nursing education and facilitating the development of undergraduate nurses has become a major challenge of creativity and innovation. The commitment to

ensure that students have requisite clinical skills appropriate to each stage of their programme, prior to their clinical practicum involves curricular, pedagogical and financial considerations. Whilst these concerns may appear relatively new to nursing education in New Zealand, appearing in the literature toward the latter end of the 1990s, international literature suggests nurse educators in North America, Europe and more recently the United Kingdom have been working to address similar issues since the early 1990s (Studdy, Nicol, & Fox-Hiley, 1994; Morton, 1997; Nolan & Nolan, 1997a & 1997b; Knight, 1998a; Knight & Mowforth, 1998).

In 1998, drawing on national and international literature and a Faculty committed to the development of nursing knowledge/skill, discovery, reflection and self-directed learning, the Faculty of Health and Sport Science at the Eastern Institute of Technology initiated a project team to investigate the feasibility of implementing an alternative model of “clinical skill” teaching and learning for undergraduate student nurses. As a result the concept of developing a multifunctional clinical simulation (psychomotor skill) laboratory was born. Recommendations made by the project team resulted in the development and resourcing of a “pilot” simulation laboratory in July 1999, followed by an eight-week trial of the psychomotor skill laboratory concept with student volunteers from the undergraduate Bachelor of Nursing programme. In January 2000 the simulation laboratory, then named the Clinical Arts and Technology Centre at the Eastern Institute of Technology was officially opened and the associated model of cooperative self directed learning was embedded and implemented throughout the undergraduate Bachelor of Nursing curriculum.

The Clinical Arts and Technology Centre is a “virtual” simulation environment that provides students with access to a facility and resources designed to support and enhance assimilation of theoretical and clinical knowledge, whilst providing them with an opportunity to prepare for practicum experiences in a safe and supportive environment. The Clinical Arts and Technology Centre builds upon the traditional clinical simulation (psychomotor) laboratory concept to include a fully equipped, simulated hospital environment, with a combination of learning aids such as video taping/recording facilities, interactive computer assisted learning packages, and self-directed learning modules. In parallel with the development of the Clinical Arts and Technology Centre and critical to the implementation of the facility, was a need to

develop and embrace a philosophy of teaching, which supported student-centred learning and discovery. Following an extensive review of literature and investigation of a variety of theories related to teaching and learning of clinical skills a “co-operative model of self directed learning” (Nolan & Nolan, 1997b, p. 103) was adopted and implemented. This model complemented the overall philosophy of self-directed learning and discovery within the Faculty of Health and Sport Science and the Bachelor of Nursing programme.

### **1.3 The Researcher’s Interest**

My interest as the researcher has grown from my involvement as project coordinator at the inception of the Clinical Arts and Technology Centre project, and throughout the ongoing planning, development and implementation of what is now the Clinical Arts and Technology Centre at the Eastern Institute of Technology. However, I believe working with undergraduate Bachelor of Nursing students both as an educator and clinician over a number of years, has contributed to my interest and provided me with valuable insight into the issues which educators, clinicians, and ultimately nursing students face when trying to balance the need for appropriate supportive practicum experiences with the rapidly changing and financially constrained health and education environment.

In my current role as Section Manager / Head of the Department of Nursing I have a particular interest in improving nursing students’ opportunities to access quality ‘practicum’ learning experiences. Due to a number of reasons, none more so than current regional and national economic constraints within the education and the health sectors, the opportunity for students to access consistent and appropriate practicum learning environments which support and enhance the acquisition and development of undergraduate nursing knowledge and skill have become limited. This situation has provided the opportunity for nurse educators within the faculty to take a more strategic and innovative approach to the provision of undergraduate nursing education and efficient utilisation of the available resources.

#### **1.4 The Significance of this Study**

In order for the Faculty of Health and Sport Science at the Eastern Institute of Technology, to make informed quality decisions and improvements regarding ongoing programme and facility developments and/or necessary programme and facility changes it is important to ascertain the students' perception of the effectiveness of the Clinical Arts and Technology (CAT) Centre facility, resources, and the associated cooperative model of self directed learning, in facilitating and enhancing student learning.

Since implementation of the Clinical Arts and Technology Centre student evaluations and anecdotal comments have cited, and continue to cite the positive aspects and benefits of the facility and resources with regard to student learning. It was therefore appropriate eighteen months after implementation of this initiative to formally investigate the following question:

*Is the Clinical Arts and Technology Centre, and the associated "co-operative model" of self directed learning, effective in facilitating and enhancing clinical (psychomotor) skill acquisition and clinical skill competency of first and second year undergraduate student nurses?*

The absence of a significant body of literature relating to the utilisation of similar facilities and learning approaches, particularly within New Zealand, lends added importance to this research within the context of undergraduate nursing education in New Zealand.

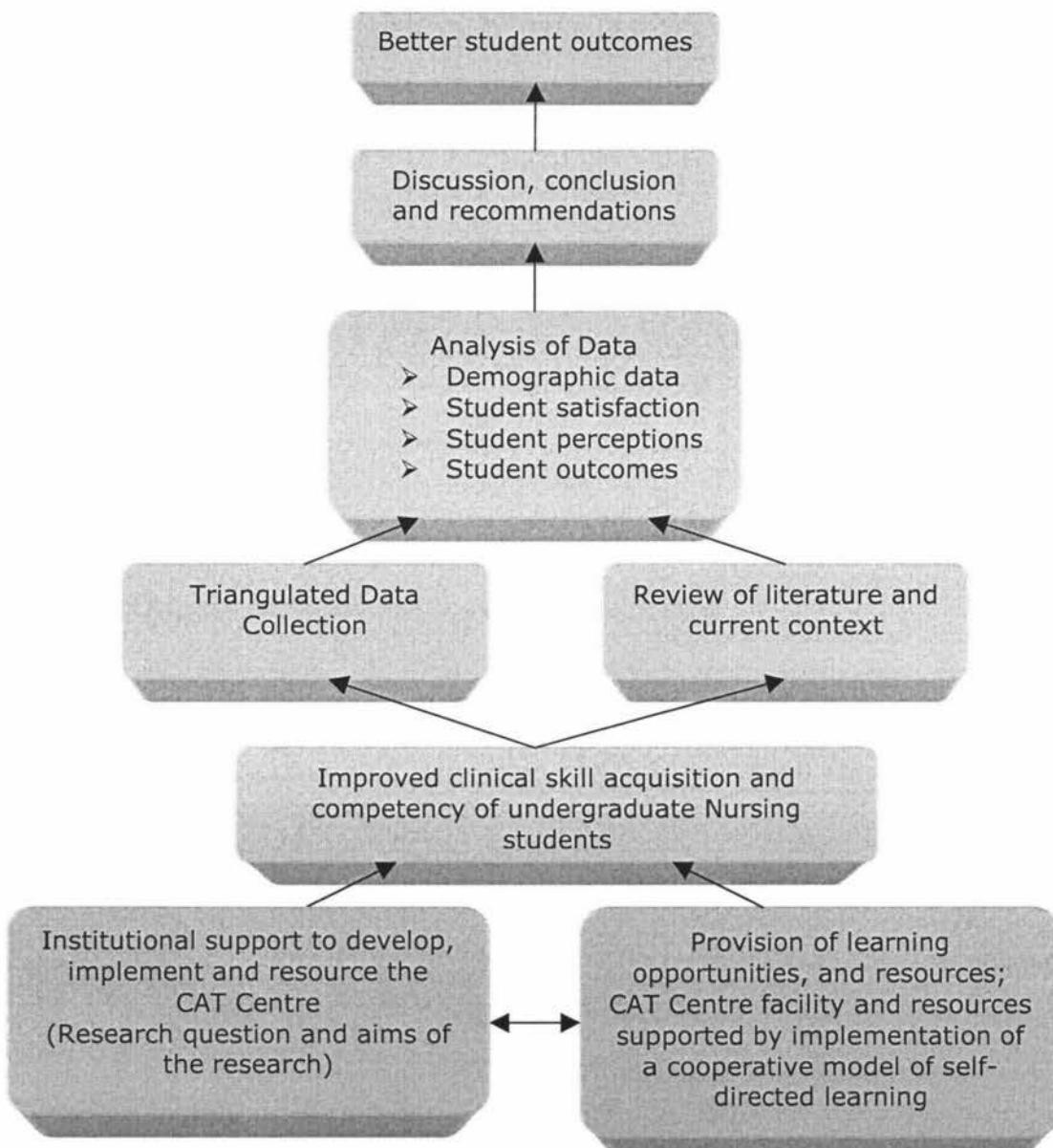
#### **1.5 Aims of the Research**

- i. To determine student satisfaction with and perceptions of the Clinical Arts and Technology Centre facility, resources and model of self directed learning.
- ii. To determine overall student competency outcomes in relation to utilisation of the Clinical Arts and Technology Centre.
- iii. To identify areas for programme improvement, and facility and resource development.

## 1.6 Organisation of the Thesis

### 1.6.1 Evaluation logic

In planning and conceptualising the research aims and strategy I developed the following framework in order to link each aspect of the study.



**Figure 1 Evaluation Logic**

### **1.6.2 Thesis outline**

**Chapter one** – Throughout chapter one the thesis topic has been introduced. A background to the research has been provided positioning the research significance, the interests of the researcher, the research question, related research aims, and the evaluation logic.

**Chapter two** – In chapter two, national and international literature in relation to the current context of undergraduate nursing education, the introduction of clinical simulation laboratories, clinical simulation, computer-assisted simulated learning, and self directed learning is explored with a particular focus on the development of undergraduate nursing student knowledge, clinical skill acquisition and competency.

**Chapter three** examines the methodological underpinnings of this research, and discusses the researcher's rationale for choosing to use an Evaluation Research Methodology. A detailed explanation of the research process, ethical considerations which formed the basis of the ethics approval documentation submitted to the Massey University Human Ethics committee and the Eastern Institute of Technology Ethics Committee, and methods of collection and data analysis undertaken to complete this research are provided.

**Chapter four** presents the research findings under the following broad categories:

- Characteristics of the Sample.
- Student satisfaction.
- Student competency outcomes (in terms of clinical skill acquisition and achievement of prescribed clinical competencies) in relation to attendance/utilisation of the Clinical Arts and Technology Centre.

**Chapter five** focuses on a discussion of the overall research findings in relation to the research question, aims, data triangulation and relevant national and international literature. The strengths and limitations of the research are presented and recommendations drawn from the study findings are made for future programme improvement, and facility and resource development.

**Chapter six** – The thesis concludes with a summary of the research study, the conclusions and understandings which have been gained, and recommendations that have been made.