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A LONGITUDINAL STUDY OF PORTFOLIO USE TO ASSESS THE COMPETENCE OF UNDERGRADUATE STUDENT NURSES

Catherine Griffin

A thesis submitted to the School of Education at Trinity College, Dublin, in fulfilment of the requirements of the Award of the Degree of Doctor of Philosophy.

May 2012
Thesis 9570
DECLARATION

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CSI, M. Ed.
SUMMARY

A LONGITUDINAL STUDY OF PORTFOLIO USE TO ASSESS THE COMPETENCE OF UNDERGRADUATE STUDENT NURSES

With the advent of the new BSc programmes, An Bord Altranais, the regulatory body for professional nursing would no longer host what was known as the ‘state final examinations’. Until this time, decisions on whether or not to grant a licence to practice were based on success in these examinations and in clinical assessments. Although the BSc curriculum development teams in third level institutions wanted autonomy, such diversity in the education of student nurses would not lend itself to a unified national standard for entry level practice and the granting of a licence to practice by An Bord Altranais.

In January 2000, An Bord Altranais established a Working Group, led by the author of the present study. The Working Group’s task consisted of three components: to define competence, to identify ‘competencies’ for registration with An Bord Altranais and to develop an assessment strategy. A definition of competence and five main domains of competence were agreed by the Working Group. Meanwhile, a pilot project began, also led by the author of this study, to test the suitability of the five domains of competence and to develop an assessment strategy. The preliminary findings from the pilot project suggested that the domains of competence were achievable and transferable across nursing disciplines, that is, general, psychiatric and mental handicap. In December 2000, An Bord Altranais published the domains of competence as requirements and standards for BSc programmes.

The Research Problem.

Three main issues from the pilot project were of concern to this research. Firstly, the confusion with the term competence remained. Secondly, the reductionist view of competence rather than a holistic view of competence led to an over emphasis on skills to the detriment of other essential ‘qualities’ of competence. Thirdly, the Working Group proposed ‘portfolios’ as an assessment strategy with little regard to the scanty literature on the validity of portfolios as an assessment tool.

When the present study began, the literature on what portfolios should include and how to implement a portfolio system was abundant. However, there was a paucity of longitudinal evaluations of portfolio use and on the use of portfolios to assess professional competence was minimal. The initial reading of the substantive literature revealed that an overriding issue of debate, that caused considerable tension, pertained to how portfolios are conceptualised. This debate focused on how the portfolio is perceived, that is, the ‘portfolio as a product’ versus the ‘portfolio as a process’. In keeping with the central tensions in the literature a conceptual framework was developed. The framework was guided by the integration of Paulson et al’s (1991) key elements of a portfolio and Zeichner and Wray’s (2001) conditions of portfolio use.
The Research Design.

The research design utilised methods from ethnography, phenomenology and the positivist traditions, thus, yielding a mixed model quantitative and qualitative prospective longitudinal design. Overall, the aim of the study was to investigate the validity of portfolio assessment scores as an indicator of undergraduate student nurses' competence to practice.

The research methods involved a four year longitudinal study of two groups of students from the same cohort of BSc nursing students enrolled in one university and one of three affiliated hospitals. This approach allowed for a time series design for data collection and for making comparisons between the two groups. The major data collection strategies were annual interviews with the student nurses, field work in the clinical sites and the assessment of the students' portfolios. Four portfolio raters evaluated seventy four students' portfolios and worked independently of each other, using one of two rubrics, analytic or holistic.

The Research Findings.

A series of comparative statistical analyses were conducted to compare scores by type of variable (clinical assessments, portfolio scores and university examinations). These analyses consisted of correlation studies and simple linear regression. The major findings are that the holistic portfolio scoring rubric provides a higher correlation between the four portfolio raters. The intraclass correlation coefficients (single measures) ranged from 0.810-0.918. Overall, the students' portfolio scores were resistant to change from year one to year four. The correlation coefficients between the students' portfolio average score and other university examinations were low to moderate; lowest 0.239 (p = 0.040), significant at the 0.05 level (2-tailed); highest 0.659 (p = 0.000) significant at the 0.01 level (2-tailed). There was no significant difference in the university examination results between the portfolio and the comparison group.

The qualitative data analyses revealed that a portfolio fulfils a variety of purposes. The students' experience of portfolio use changes from year one to year four. In year one, the portfolio is experienced as a 'badge of merit' and by year three and four, it is experienced as an essential part of the students' professional development. The results indicate that not all students engage in reflective practice at a deep or critical level; no significant difference was found between the portfolio and comparison group. Numerous factors, such as, preceptor availability, preceptor experience, preceptor student ratio, patient acuity, ward/unit learning climate and student motivation influence the effectiveness of the portfolio method for teaching learning and assessment.
ACKNOWLEDGEMENTS

I would like to express my gratitude to Dr. Carmel O’Sullivan for affording me the opportunity to complete this thesis.

I am indebted to my supervisor, Professor J. Heywood for his patience, words of encouragement and advice; his thought provoking discussions have shaped my thinking over the years. When personal circumstances took their toll, Professor Heywood continued to support and encourage me to complete the research. I will forever be in debt to him.

Gratitude must be expressed to the participants in the study, the student nurses, the clinical staff and the portfolio raters.

A special note of thanks to Professor Mary Neary for sharing pre-published material concerning the assessment of student nurses’ clinical practice and to Professor Judeen Shultee and Colleagues for their helpful suggestions concerning portfolio assessment. Professor Shultee made my week in Alverno College memorable.

I would like to express my gratitude to Ms. Sarah Heywood, Ms. Fionnuala Cuffe and Dr. Tim Grant (C-Star) for their help with the statistical analyses.

I owe special thanks to my colleague Jean Nee; her reliable friendship through all this time has made my task considerably more enjoyable. I also thank her for her assistance in proof reading and compiling the final draft of the thesis.

To past colleagues, Dr. Yvonne O’Shea (former CEO, An Bord Altranais), the Scope of Practice team and the ABA Working Group who provided valuable professional support throughout the early part of the research.

The preparation and work associated with this thesis has robbed valuable time from family and friends, for their patience I thank them, especially Betty my mother, my sisters and brothers. To Uncle Patrick, it has been a long time since Liverpool Street Station; it has been some journey and thank you for sorting out the computer problems. To Aunt Helena, I thank you for your continued support and encouragement.

I also owe special thanks to Bob, my stalwart friend, for his invaluable support and for his contributions to discussions concerning assessment and Standard Operating Procedures in the aviation industry.
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<td>ABA</td>
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<td>Clinical Placement</td>
<td>An approved learning experience that provides the student nurses with the practice elements of the nursing degree programme.</td>
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<td>Clinical Placement Co-ordinator</td>
<td>Practice-based nurse who co-ordinates student nurses’ clinical learning placements.</td>
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<td>In the United States of America it has become the convention to use the plural ‘competencies’ when referring to elements of competence.</td>
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<td>Health Care Institutions</td>
<td>Refers to hospitals, schools of nursing and community care settings involved in the education of student nurses.</td>
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<td>Practice</td>
<td>In Ireland, the United Kingdom and the United States of America it has become the convention to use the word ‘practice’ rather than ‘practise’ when referring to medical and nursing work.</td>
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Preceptor: A registered nurse who has been specially prepared to guide and direct student learning during clinical placements. A preceptor is an experienced nurse, midwife or community nurse, within a practice placement who acts as a role model and resource for a student who is assigned to him or her for a specific time span or experience. (Nursing Education Forum, p. 5).

Register: The register of nurses maintained by An Bord Altranais pursuant to the Nurses act 1985.

Rostered Placement: The element of the nursing degree programme during which time the service provider employs the student nurse.

Service Provider: Providers of health, welfare, social and educational services that will provide the clinical learning component of the four-year pre-registration degree programme.

Stakeholders: Those parties including An Bord Altranais, the Department of Health and Children, the Department of Education and Science, the Department of Finance, Higher Education Authority (HEA), National Council for Educational Awards, third level institutions, health service providers, health service users/patients and student nurses, involved in the four-year pre-registration degree programme.

Supernumerary: Student nurses who are not included in the complement of nurses who are employed by the health service providers.

Third Level Institutions: Institutions providing third-level education including Universities, Institutes of Technology and Colleges of Education.
The Road not Taken

Two roads diverged in a yellow wood,
And sorry I could not travel both
And be one traveller, long I stood
And looked down one as far as I could
To where it bent in the undergrowth;

Then took the other, as just as fair,
And having perhaps the better claim,
Because it was grassy and wanted wear;
Though as for that the passing there
Had worn them really about the same,

And both that morning equally lay
In leaves no step had trodden black.
Oh, I kept the first for another day!
Yet knowing how way leads on to way,
I doubted if I should ever come back.

I shall be telling this with a sigh
Somewhere ages and ages hence:
Two roads diverged in a wood, and I-
I took the one less travelled by,
And that has made all the difference.

Robert Frost
CHAPTER ONE

BACKGROUND TO THE STUDY.

Introduction.

This chapter identifies the significant influential factors that contributed to the changes that have occurred since 1994, in Pre-Registration nurse education in Ireland. These factors arose from the recommendations that were made in two reports. The first report, from the Commission on Nursing, which was established in 1997 by the Government due to the dissatisfaction amongst the nursing profession, made many recommendations. The recommendations concerning Pre-Registration Nurse Education and An Bord Altranais (ABA), due to their relevance to this study, are discussed in section one. The second report, which contributed to the changes in Pre-Registration nurse education was from an independent external evaluation of the existent Diploma Programme. The new Degree programmes, introduced in 2002, were based on the independent external evaluation of the Diploma Programme, commonly known as the Galway Model. The many recommendations of the second report are of particular importance to this study as they pertain to the validity and reliability of clinical assessments. A summary of the recommendations is presented in section two. The recommendations from these two reports had an impact, at Government level, with resultant implications for ABA and, subsequently, the regulation of the profession. In section three, the extent of these implications and the significance of the problem for both the profession and the public are discussed. However, the concern as to who should have control and responsibility for nurse education led to fundamental differences between the three interested parties: the health care institutions, the third level institutions, and ABA. Historically, ABA, as regulator of the nursing profession, made the decisions, however, the problem extended beyond the implications for ABA. The origins of the study and the fusion of the horizons of these three different groups into a method to define competence
acceptable to all are detailed in section four and the conceptual framework to guide the research process is presented in section five.

1.1 The Commission on Nursing: Recommends Degree Status.

In 1997, following a Labour Court recommendation, the Commission on Nursing was established by the Minister for Health (Government of Ireland, 1998). During the consultative process, the Commission was granted an extension of the terms of reference, which included "...the role and function of An Bord Altranais generally, including, inter alia, education and professional development, regulation and protection of the citizen" (Government of Ireland, 1998, p. 25). During the consultative process, numerous concerns were expressed to the Commission about the Diploma Programme which, primarily, related to the lack of planning. For example, it was argued that excessive demands were placed on the students due to the content of the Programme which front-loaded science subjects, that is, science subjects were taught primarily in the first year (Government of Ireland, 1998, p. 77). In addition, it was suggested to the Commission that much of the education was "...still largely didactic and did not reflect the culture of "... learning in third-level education" (Government of Ireland, 1998, p. 78). The Commission considered the future of Pre-Registration nurse education, at length, including the increasing complexity and pace of technological development in the health service. It anticipated that, in the future, nurses would need to be more flexible and able to work autonomously and that the health services would involve greater interdisciplinary co-operation in health care delivery. "All other professionals in the acute health care service have graduate status and if inter-disciplinary health care teams are to function effectively, all participants should have equality of status" (Government of Ireland, 1998, p. 79). Therefore, the Commission recommended that, starting in September 2002, the Minister for Health and Children facilitate the transition of Pre-Registration nursing education into third-level institutions at degree level (Government of Ireland, 1998, p. 80).
The framework for this degree, as recommended by the Commission, was a four year programme in each of the three disciplines (general, psychiatric and mental handicap nursing) which would encompass clinical placements, including twelve months continuous clinical placement as a paid employee of the health service (Government of Ireland, 1998, p. 80). The Commission emphasised that nursing education should continue to have a strong clinical foundation, as an essential element in ensuring the clinical competence of nurses on graduation and Registration with ABA. Following the successful completion of third-level examinations, students would be awarded a degree entitling them to register as a nurse with ABA.

Candidates should be assessed for clinical competence during the course of the year by third-level institutes under a system approved by An Board Altranais (Government of Ireland, 1998, p. 80).

The health service provider's view was that the third level institution staff should have the responsibility for developing and implementing the assessment strategy to assess the students' competence to practice and ABA would approve the assessment tool. The views from the third level institutions, fuelled by the evaluation of the Diploma programme were at odds with both the service providers and ABA as the following section will show.

1.2 The Evaluation of the Diploma Programme: Aligning Final Examinations.

Commissioned by the Department of Health in collaboration with ABA to evaluate the Diploma Programme (the Galway Model of undergraduate nurse education), the independent external evaluation team consisted of six researchers from the University of Southampton. The evaluation team did make many recommendations, some of which are of particular relevance to this study. For example, in regard to the student assessment scheme, the findings indicated the existence of anomalies between the two, non-aligned examination systems of ABA and the University. The over-assessed students were required to take final examinations for the University and ABA. An Bord Altranais' (1998) Rules and
University practices governing the management of practice-based assessments required for registration purposes were inappropriate (Simons et al., 1998, p. 268). For example, the existing criticisms of the Proficiency Assessment Form (PAF) (see Appendix 1, Proficiency Assessment Form) were highlighted, in particular, the problems regarding the appropriateness of the form, itself, and the question of 'who' should complete it. The relevance of the PAF was questioned by clinical and education staff because the same form was used throughout the programme. The issue was that the form did not allow assessors to evaluate the students' performance in relation to course objectives or other attributes, which were not part of the PAF. An opportunity to assess students in a range of clinical settings was restricted because of ABA's (1998) Rule stated that students must be in a clinical placement for six weeks before they can be assessed (Simons et al., 1998, p. 269).

The evaluation team recommended an urgent review of the PAF because there were no other standards or competencies to be achieved for registration, other than the PAF criteria. In addition, Simons et al. (1998, p. 270) suggested that the following issues needed to be addressed in such a review:

- Whether a national assessment tool can be designed to be appropriate for each clinical setting and any curriculum model;
- Whether, and how, course objectives for professional practice should be assessed if they are not explicit within the PAF;
- Whether the third-level institution should have a role in the assessment of nursing skills. It remains unclear what authority could be exercised by a third-level institution should they wish to influence the standards of clinical nursing skills required for the award of the Diploma in Nursing (at Degree level since 2002).
- Whether it might be appropriate to have national standards or competencies for registration purposes which can be demonstrated using a range of assessment models;
- Whether the standards required for registration purposes should be reviewed in the light of the fact that students are now studying nursing at Diploma level (at Degree level since 2002). This raises questions about the level and expectations of the minimum standard of achievement required for registration purposes only.
Should degree status be considered, it may be desirable to consider mechanisms for assessing the application of third-level skills to the practice of nursing:

- Whether clinical placement co-ordinators and Registered nurses other than those currently designated, should play a more formal role in the assessment of clinical nursing skills.

Further to the above suggestions, the evaluation team recommended that a wider range of assessment strategies be employed throughout the programme, including "...course work, critical incident analysis, use of portfolio assessments...." (Simons et al., 1998, p. 270). In relation to staff preparation and development, the evaluation team recommended that "nurse tutors and university teachers who have little experience with alternative assessment strategies might benefit from staff development in this area" (Simons et al., 1998, p. 271). The evaluation highlighted the deficiencies of the PAF as a valid and reliable tool in the assessment of clinical practice, in particular, the lack of correlation between the criteria assessed by the PAF and the course aims (Simons et al., 1998, p. 122).

The recommendations from these two reports impacted at Government level where policy changes directly affected the future of ABA as a regulator of the nursing profession. These implications are explored further in the following section where the significance of the problem is identified.

1.3 The Implications for An Bord Altranais: Regulator No More.

The Commission acknowledged the role of ABA as central to Pre-Registration nurse education with respect to the clinical assessment of student nurses. Therefore, during this time ABA was preparing for the imminent changes by making provision for Rule changes and publishing Requirements and Standards for Nurse Registration Education Programmes (An Bord Altranais, 1999, p. 5). The purpose of the latter document was to provide guidance to health care institutions and third level institutions for the submission of new BSc curricula for approval by ABA. It also provided a framework for ABA’s approval committee to ensure that national standards were being adhered to, however, these standards pertained to how
programmes would be administered and delivered, not the content or outcomes of the curriculum.

The evaluation of the Galway Model did bring about many changes to the Diploma Programme, of which, the most significant change was the eradication of ABA’s state final examinations. In 1998, due to the challenges of adhering to two assessment systems, that of ABA and the third level institution, the Minister for Health approved ABA’s (1998) Rule amendments. These amendments enabled the development of a single examination system, required quality assurance mechanisms in the educational programme and the clinical environments, and the development of national curriculum guidelines and mechanisms for audit and monitoring by ABA (1999). The intent of the Rule change was to develop a joint examination system between ABA and the third level institutions. The third level institutions objected and now had the freedom to develop the curriculum free from the shackles of service and ABA. Whilst there were standards for implementing and auditing the programmes, there were no national standards expressed as learning outcomes leading to Registration with ABA from the perspective of the Bord. This crisis led directly to the research problem examined in this study.

Table 1.1 Identifying the Significance of the Research Problem.

<table>
<thead>
<tr>
<th>Differences:</th>
<th>Diploma Programme.</th>
<th>Degree Programme.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment - Clinical:</td>
<td>An Bord Altranais Proficiency Assessment Form.</td>
<td>?</td>
</tr>
</tbody>
</table>

In particular, the research problem pertains to the void in the clinical assessment component for the Degree Programme which, in Table 1 is represented as a single question mark. The disparity in clinical assessment in the Degree Programme is a
significant problem as ABA no longer has the influence or safeguard that it formerly had with the Final Registration Examinations and the PAF, despite its faults. This problem has repercussions beyond the academic sphere as it raises questions, such as, ‘How will the profession be regulated?’, ‘Who will safeguard entry to the profession?’ and ‘Who will protect the public from unsuitable practitioners?’ These questions illustrate the need for an assessment strategy to be developed in tandem with the development of course aims and objectives and “…not..., as it so often is, an afterthought of the educational process” (Heywood, 2000, p. 62).

1.4 The Origins of the Present Study: Fusing Horizons.

Whilst the problem, as identified above, is significant, the origins of this study were based on the independent external evaluation of the Diploma Programme. The main findings of the Diploma Programme evaluation indicated that there was no planning on a national basis and that an effective collaborative working partnerships was lacking. The concern, as to who should have control and responsibility for nurse education, led to fundamental differences between health care institutions, third level institutions and ABA which resulted in tensions regarding the management and responsibility of maintaining professional and academic standards. In short, the struggle to control the content of the curriculum was occurring again and there was no concern with identifying the outcomes of a new curriculum from all perspectives. The essence of the present study lies in the discovery of a way to fuse the horizons of the three groups, that is, the educators, the clinicians and the regulator of the profession, in order to identify and define competence and develop an assessment strategy. In Table 1, this fusion is represented as a double question mark.

Therefore, in early 2000, ABA established a Working Group¹, led by the author of the present study, to address the issues of concern to them. The task of the Working Group consisted of three components: to define competence, to identify

¹ The working group consisted of representatives from Principal Nurse Tutors and Nurse Tutors from the Schools of Nursing, Lecturers from the Third Level Institutions, Clinical Nurse Managers, Clinical Placement Co-ordinators, Practice Development Co-ordinators and Practitioners from the hospitals drawn from each area in the country.
“competencies” and to develop an assessment strategy. In an effort to deflect the Working Group from identifying “competencies” in a reductionist manner and fuse the horizons of the disparate interest groups, a position paper was offered for discussion (Chapter two, of this thesis, contains the essence of this paper). Two central issues were identified in the position paper. First, the difficulties with the interpretation of competence and the limitations of competency-based education were outlined. In addition, an alternative was put forward for discussion, in the form of a holistic view of professional competence in a framework based on the four metaparadigms in nursing theory (Fawcett 1995, p. 7) (person, health, nurse and environment) and Shulman’s (1987) work on educating a professional. Second, in order to assess this construct of competence, its validity and reliability must first be determined “in practice”. Then, the validity and reliability of the assessment tool to assess the construct of competence can be established. Following months of discussion, the framework for competence was accepted, refined and put into operation in a pilot project, also led by the author of the present study. The Working Group suggested a portfolio as a possible solution to the assessment dilemma, however, the validity and reliability of portfolio assessments were not well established. Therefore, during the pilot project, the possibility of portfolio use was explored. In an effort to eliminate researcher bias and the possible Hawthorne effect on participants, the pilot project was extended to four demonstration sites outside of Dublin, where the independent evaluations from these researchers were presented to ABA. Following this process, minor adjustments were made and the Domains of Competence (see Appendix 2) were published (An Bord Altranais, 2000).

The Working Group accepted that it was not possible to design, implement and evaluate an assessment strategy in such a short time frame, therefore the group adjourned. From here on, the design, implementation and evaluation of an assessment strategy became the work of the author of this thesis. For now, ABA had a mechanism to regulate the profession and to safeguard the public. The third level institutions had a mechanism that incorporated both ‘education’ for the person and for clinical practice and the health care institutions had a mechanism to guide
students during clinical placements. But the problem remained ‘how do we assess competence’?

1.5 The Present Study.

From the experiences of working with ABA, it was established that it was not possible to design an assessment strategy, until clarity was brought to the situation. Three main issues from the pilot project were of concern to this research. Firstly, the confusion with the term competence remained. Secondly, the reductionist view of competence rather than a holistic view of competence led to an overemphasis on skills to the detriment of other essential ‘qualities’ of competence. Thirdly, the Working Group proposed ‘portfolios’ as an assessment strategy based on the recommendations of the Galway Model evaluation team, with little regard to the scanty literature on the reliability and validity of portfolios as an assessment tool. Once the aims, expressed in the Domains of Competence, were in place, it was possible to explore ways in which a portfolio may be used to assess the students’ competence to practice. Therefore, the ABA pilot project was extended, with permission from the hospital authorities, to continue to work with the students and staff to design a portfolio system of assessment.

The structure of the remaining chapters of the thesis are as follows. In Chapter Two competence is explored in order to understand and express with clarity the purpose of the portfolio assessment strategy. The empirical literature on portfolio use is reviewed in Chapter Three; this literature also fed into the design and pilot testing of instruments in order to assess the effectiveness of the portfolio assessment strategy. The methods used in this research are described in Chapter Four. In Chapter Five, the findings of the longitudinal study are presented and discussed. Based on the findings of the longitudinal study and in comparison with the literature reviews the conclusions are drawn and presented in Chapter Six.
1.6 Summary.

This chapter identified the significant factors that affected the changes in Pre-Registration nurse education and the implications that these alterations had for ABA, as regulator of the profession. In 1997, evidence of the inadequacy of the traditional method of assessment became evident in the independent evaluation of the Galway Model of Diploma level education. Thus, prior to the transition of nurse education into third level institutions in 2002, it was apparent that the traditional method of assessing student nurses’ clinical practice was invalid. Therefore, portfolios were suggested as an alternative form of assessment.

With the advent of the new Degree programmes, ABA, the regulatory body for professional nursing would no longer host, what was known as, the ‘state final examinations’. Until this time, decisions on whether or not to grant a licence to practice were based on success in these examinations and in clinical assessments. Consequently, ABA was faced with a series of problems, such as, determining how to grant a licence to practice to the graduands of the new Degree programme and deciding the basis on which they would make their decisions. A host of questions were raised at that time. Although the Degree curriculum development teams in third level institutions wanted autonomy, such diversity in the education of student nurses would not lend itself to a unified national standard for entry level practice and the granting of a licence to practice by ABA.

In January 2000, ABA established a Working Group, led by the author of the present study. The essence of the present study lies in the discovery of a way to fuse the horizons of the three groups (the educators, the clinicians and the regulator (ABA), in order to identify and define competence and develop an assessment strategy. The Working Group concluded its task with the publication of the Domains of Competence, but the problem remained as to how to assess students’ competence to practice. The Working Group suggested a portfolio approach, as a possible solution, but the validity and reliability of portfolio assessments were not well established. Therefore, in order to proceed with this task the notion of competence required clarity. The concept of competence will be explored in Chapter Two.
CHAPTER TWO

CLARIFYING THE CONCEPT OF COMPETENCE

Introduction.

Understanding professional competence brings clarity and expression to what this study is aiming to achieve, that is, to evaluate portfolio use as a mechanism for assessing the competence of undergraduate student nurses. In other words, it is not possible to design an assessment strategy until an understanding of competence and incompetence is articulated clearly. Therefore, in this chapter, the focus of the discussion is on clarifying the concept of competence.

The ambiguity, confusion, contradiction, and lack of consensus regarding the concept of competence is due to the competence vocabulary, for example, the interchangeable use of terms, inconsistencies in definitions and the lack of a definition. In addition to this confusion, performance and competence are used interchangeably without cognisance being given to the issue that performance does not always reflect competence. Therefore, the literature concerning competence is replete with controversy, particularly in regard to the distinction of 'being competent' and 'having competencies or competences'. Defining these terms has implications for teaching, learning and assessing and the granting of a licence to practice to medical and nursing practitioners. An Bord Altranais (2007) has a duty to protect the public against the deliberate wrongdoers and also the genially incompetent.

In this chapter, section one opens the discussion by exploring ways of knowing or being competent. The early conceptualisations of competence which range from a philosophical perspective to the scientific management perspective are discussed in section two. In section three, the differences between competency, competence, performance and expertise are explored. The inside outside dichotomy of competence is discussed in section four. A conscious habit and judicious use of a
certain skill set in daily practice has been defined as professional competence (Epstein and Hundert, 2002). Therefore, sections five and six will focus the discussion on the habitually unconscious professional at work, both from an individual and a collective perspective.

2.1. Clarifying Competence: Ways of Knowing or Being?

Although many nurse theorists, from the Nightingale era to the present day, have struggled to define nursing, today, we are no further along in achieving consensus. In her Inaugural Henderson Memorial Lecture, Clark (1997) urged nurses to question why they are continuing with the struggle to define nursing and cautioned that any attempt to justify or analyse nursing would risk reducing it to the sum of its parts and, in doing so, the power of its wholeness would be lost. She proposed that the solution to this paradox is in answering the questions of ‘why do nurses do what they do?’ and ‘what do nurses know?’ (Clark 1997, p. 151). These questions are not new, as argued by Carper (1978, p. 21), who is renowned for her work on ‘fundamental patterns of knowing’ (Meleis, 2012), the existing body of nursing knowledge serves as the rationale for practice and has patterns, forms and structure that “…serve as horizons of expectations and exemplify characteristic ways of thinking about phenomena.” Based on an analysis of the conceptual and syntactical structure of nursing knowledge Carper (1978, p. 14) identified four fundamental patterns of knowing: empirical, aesthetic, personal and ethical. According to Carper (1978, p. 22):

Nursing thus depends on scientific knowledge of human behavior in health and in illness, the [a]esthetic perception of significant human experiences, a personal understanding of the unique individuality of the self and the capacity to make choices within concrete situations involving particular moral judgements.

She proposed that each of the separate, but interrelated and interdependent, patterns of knowing:

...should be taught according to its distinctive logic, the restricted circumstances in which it is valid, the kinds of data it subsumes and the methods by which each particular kind of truth is distinguished and warranted (Carper, 1978, p. 22).
Carper (1978) recognised the need for critical attention to be given to the question of what it means to know and to what kinds of knowledge are held to be of most value in the nursing profession. These questions, and others, such as, "...what constitutes a competent nurse?" and "...how are they prepared for the professional role?" (Bradshaw, 1998, p. 103) are some of the fundamental issues for the nursing debate today. The contested meaning of competence fuels the debate as to whether competence should have a place in third level education.

Barnett (1994, p. 159) argues that it is the interpretation given to competence that is open to debate, not the notion of competence as an educational aim, after all, "we want our doctors, accountants and even philosophers to be competent." He proposes that there are two impoverished versions of competence in academe: an internal or academic form of competence built around the students' mastery of the discipline and an operational conceptualisation, which represents the wider societal interest in performance. Each of these ideologies of competence claims to be interested in knowledge but only on their own terms (Barnett 1994, p. 180). An alternative view of competence, offered by Barnett (1994, p. 178), locates the individual in the 'life-world' and proposes that what matters most in academe is the provision of an education for the world of human life; in the life world, 'becoming' is an epistemology orientated towards reflective knowing, as opposed to, the 'know-how' of operational competence and the 'know-that' of academic competence. In an effort to understand the world, this reflective knowing accepts all types of knowing and does not favour science or practical 'know-how' over other forms of knowing (Su, 2011). Barnett (1994) extends Carper's (1978) ways of knowing by including, for example, 'tacit knowing' (Polanyi, 1962) and 'knowledge-in-use' (Schön, 1987). Like Carper (1978), Barnett (1994, p. 180) accepts that, in reflective knowing, the individual "...knows that all forms of knowing are partial and keeps a jaundiced eye on them all."

However, it is important to note that standards of acceptable practice are defined by regulatory and professional bodies and, when practice is not acceptable, society holds practitioners fully accountable. The issue here, in regard to nursing
education, is that competence, however it is defined or derived, should be manifest at the point of Registration with the licensing authority (Sloan 2000, p. 2). Sutton and Arbon (1994) argue that developing competence is a means by which the nursing profession can self-evaluate and enhance its accountability to the public. Conversely, Girot (1993) fears that the nursing profession’s responsibility to produce a safe practitioner and the elusive nature of what competence means will continue to be a source of conflict until answers to such issues are found. However, as noted by Quinn and Hughes (2007, p. 249), safety is a necessary, but not a sufficient, condition for competence. Student nurses enrol in schools of nursing in third level institutions with the assumption that they will become competent practitioners. Employers of these graduants assume that the possession of a Baccalaureate degree in nursing from a third level institution and a license to practice from the Registration Authority certify competent practice. While, in the past twenty-five years, in many sectors, the development and assessment of competence has received considerable attention, in nursing, the implementation of competence assessment models has moved at a much slower pace. Those in nursing education face many challenges and have the difficult task of ensuring that academic rigour is applied to clinical assessment in the same manner as it is applied to theoretical assessment. The United Kingdom Central Council (UKCC) (1989) published a ‘list of competencies’ to be achieved for entry to the Register and was criticised for not having an accompanying assessment strategy. Bradshaw (1998, 2000) notes that whilst an assessment strategy is absent in the UKCC documentation, there are more important issues to consider such as, the question, is the ‘list of competencies’ sufficient for professional practice? She concludes that a void has emerged which relates directly to the educational ideology in nursing and that we cannot say, for certain, that student nurses “...have reached certain minimum standards of competence....” (Bradshaw, 1998, p. 110). However, Watson (2002, p. 479) observes that attaining the ‘minimum standard’ of competence may be a barrier to the higher education of nurses and that, if competence continues to influence nurse education, then serious efforts are necessary to “...find it, define it, and measure it” and argues that, until
then, there will be no clearly articulated understanding of what is meant by ‘a nurse is competent to practice’.

The social mandate for accountability and the expectation that health care professionals are competent to practice does not tolerate ambiguous assumptions or debate. Therefore, despite being a poorly defined concept, competence has currency amongst nurse educators and cannot be avoided in nurse education programmes (Watson, 2002). The competence vocabulary, the interchangeable use of terms, inconsistencies in the use of definitions or a lack of definition, undermines intellectual rigour and confuses the unwary (Young, 2002, p. 18).

Much of the confusion and misinterpretation resulting from using the competence vocabulary is a consequence of assuming competence to be a descriptive concept rather than a normative concept and its referral to a thing or an activity rather than to a quality or state of being (Short, 1984, p. 203). Therefore, defining what competence is, teaching students how to practice competently and assessing competence gives rise to many challenges. In an effort to provide a definition of what competence in nursing practice actually means, Cowan, Norman, and Coopamah (2007, p. 23) completed a focused review of the literature, confining their search to publications which, in their opinion, had relevance to the generalist hospital nurse. They concluded that this literature was “...found to lack consensus, being replete with controversy, ambiguity, confusion and contradiction.” Therefore, to clarify what constitutes competence, section 2.2 begins with the early conceptualisations of competence in order to identify its roots, ideology, and methodology.

2.2. Early Conceptualisations of Competence: From Philosophy to Science.

Competence was once thought of as a virtue, a general sense of excellence and goodness, and a relatively permanent quality of personality that was valued by

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1 The term ‘competence vocabulary’, first described by Short (1984), includes competency, competencies (USA spelling from McClelland’s (1973) competency movement), competences (UK spelling from the National Council for Vocational Qualifications (NCVQ) (1989) competence movement), competence’s, ability, capability and performance. In the literature, these terms are used inconsistently and often interchangeably.
the community to which a person belonged (Brezinka, 1988, p. 76). This view of
certainty stemmed from Aristotle's notion of *phronesis* where knowledge is
gained through reasoning and experience, judgement is exercised to 'fit' a particular
situation whilst maintaining the common 'good'. Practical judgement or *phronesis* is
influenced by *eidos*, a guiding principle which leads to *praxis* or practical action. The
guiding principle is the human disposition towards good; due to this disposition
towards good, *phronesis* involves a process of deliberation about how to achieve this
good, rather than, whether or not to do so. In the subsequent discourse around
competence, this philosophical notion of competence has become lost as emphasis
was placed on functionalism, largely as a consequence of the scientific approach of

The major concern of Frederick W. Taylor, regarded as the 'father' of
scientific management, was to increase efficiency in production, lower costs and
raise profits whilst, simultaneously, increasing pay for workers in return for their
higher productivity (Marquis and Huston, 2012, p. 33). Within this scientific
approach to management, Taylor proposed that managers had the responsibility to
design work systems so that workers would be helped to do their best. The
development of management thought was also influenced by industrial psychology
and social theory, for example, Hugo Munsterberg, a psychologist, was concerned
with discovering how to find people whose mental qualities best fit them for the
work that they do. Of the social theorists, the most notable was Elton Mayo, most
well known for the Hawthorne effect, in which it was found, that an increase in
productivity was due to social factors, such as, group morale, interpersonal
relationships, workers having a 'sense of belonging' due, in part, to managers paying
attention to the workers. These elements of scientific management thinking and the
concurrent psychological and social developments in management research are
associated with the growth of the competence movement in the workplace (Bates,
1998, p. 8). This scientific management way of thinking gave rise to a research
methodology, referred to as functional analysis, which is based on the analysis of job
functions and involves asking what job-holders do, that is, what are they competent
in? (Woodruffe, 1991, p. 32). In contrast, the analysis of high performers in the job
used a methodology based on behaviourism that proceeds in a direction opposite to functional analysis; the goal of the behavioural analysis is to cluster the behaviours and/or characteristics of a person into dimensions that differentiate the high performer from the average performer in the workplace (Woodruffe, 1991, p. 32). These opposing methodologies continue to influence the current discourse on competence and account for the difference in terminology favoured by some authors.

The current discourse on the origins of the contested meanings of competence and the differences in terminology can be traced back to the 1970s, where many authors adopted the American ‘competency’ model of McClelland (1973), which attempted to discover what made some people more successful at work than others. In contrast, some other authors favour the ‘competence’ approach made popular, in the United Kingdom, by the National Council for Vocational Qualifications (1989) movement, which aimed to document that an individual had achieved or could perform to a certain standard (Young, 2002, p. 11). Whilst, in these perspectives, competency and competence are two distinct concepts, with different vocabularies, many authors interpret these perspectives as the same or alternative approaches to the same concept. The differences between competency and competence are explored further in section 2.3.

2.3. The Difference between Competency and Competence.

In a paper entitled, “Testing for Competence rather than for Intelligence”, which provided the impetus that led to the ‘competency’ movement, McClelland (1973, p. 2) reviewed studies which indicated that traditional academic aptitudes and knowledge content tests did not predict job performance or success in life and were often biased against minorities, women, and persons from lower socio-economic groups. From there, McClelland and the McBer Company developed the job competence assessment methodology which focused primarily on the behavioural event interview and attempted to identify the characteristics of a person who did a job well. In this approach to competence, the analysis begins with the person in the
There are no prior assumptions as to what characteristics are needed to perform the job well. Thus, the emphasis is on criterion validity, that is, what actually causes superior performance. McClelland (1993) argued that the competencies identified by this methodology are context sensitive, in other words, they describe what a successful person does in his or her own organisation, rather than imposing a psychological or management theory of what a person ‘should do’ to be successful. McClelland’s methods are context sensitive, in that, they describe what a successful person does in the job. Therefore, Gonczi’s (1994, p. 29) argument is incorrect, at this level of objection to competency, as he stated that “…competencies are thought of as general attributes, ignoring the context in which they might be applied.”

During the same period, a number of challenges faced Great Britain, including demographic changes, increasing unemployment, coupled with skills shortages and falling standards of work. Political concern resulted in numerous investigations and reports. In 1981, the “New Training Initiative: An Agenda for Action” was published by the Manpower Services Commission (Burke, 1989, p. ix). This agenda for change called for educational strategies to provide comprehensive training and the development of new standards of occupational competence. The National Council for Vocational Qualifications (NCVQ), established in the 1980s, provided a framework, based on standards of competence required in employment, which sought to facilitate access, progression and continued learning. The NCVQ, concerned with certifying job performance, defined competence as “…the ability to perform the activities within an occupational area to the levels of performance expected in employment” (Jessup, 1989, p. 65). This NCVQ model of competence attracted many objections because it was interpreted in terms of discrete behaviours, associated with the completion of atomised tasks, which ignored the underlying attributes of the person and the complexity of performance in the real world, where judgement is necessary for intelligent performance (Gonczi, 1994). Similarly, the competency as an underlying characteristic model has also attracted many objections as there was no certainty that the underlying characteristic actually existed or whether it was transferable from one area of activity to another (Gonczi, 1994, p. 29).
Therefore, competency is a characteristic that is linked to effective and/or superior behaviour (Boyatzis, 1982, p. 56), in contrast, 'being competent' means performing to professional or occupational standards (Jessup, 1989, p. 67). However, a competent person is defined as someone who possesses the attributes necessary for job performance to the appropriate standard, which Gonczi (1999, p. 182) refers to as the integrated or holistic conceptualisation of competence, where both 'competency' and 'competence' are considered. Like Gonczi (1999), Young (2002) argues that the two concepts are discrete; however, they may be complementary, depending on how they are operationalised. If one accepts that competency is an underlying characteristic linked to effective and/or superior performance and that being competent means performing to professional or occupational standards, the essential difference between the two pertains to elements of the job at which the person is competent and aspects of the person that enable him/her to be competent in the job (Young 2002, p. 11). Figure 1, depicts the difference between 'competency' and 'competence' in a linear fashion.

![Figure 1. The Difference between Competency and Competence.](image)

In contrast, in Figure 2, illustrates the integration of both 'competency' and 'competence', where the differences are exposed more clearly in their application; the solid line of the box represents the expected standards of the 'job', where competence is "in" doing the job to these expected standards. The circle represents a person, "doing" the 'job' either to the expected standards (the solid box) or beyond the expected standards of the 'job' (signified by the broken line). 'Competency' resides "in" the person leading to effective and/or superior performance "in" the job.
Returning to Figure 1, the relationship between 'competency' and 'competence' is highlighted by a question mark, as this leads to the next question of, 'what is the nature of the relationship between competency and performance?' which is explored in the following section.

2.3.1. The Relationship between Competency and Performance.

Boyatzis (1982, p. 23) extended McClelland's (1973) definition of a competency as an underlying characteristic of an individual, by causally relating it to effective and/or superior performance. In clarifying causality, Boyatzis (1982, p. 192) states that the person's competency does not cause the effective behaviour but is 'a' cause: "The competency is necessary but not sufficient for effective behaviour." Effective performance of a job is defined as the "...attainment of specific results (i.e. outcomes) required by the job through specific actions while maintaining or being consistent with policies, procedures, and conditions of the organizational environment (Boyatzis, 1982, p. 12). In Boyatzis' model of effective performance, illustrated in Figure 3, three components are critical for effective action: the individual's competencies, the job's demands and the organisational environment. If one or two of these components are inconsistent or do not correspond with each other, then ineffective behaviour or inaction will result and vice versa (Boyatzis, 1982, p. 13). Boyatzis (1982) acknowledges that the individual's contributions and competencies represent the capabilities that he or she brings to the job situation. The individual draws on these inner resources to respond
and act in a certain way, when the responsibilities of the job to produce desired results require the demonstration of specific actions. All of this action occurs within the context of an organisation, which has policies and procedures that reflect the internal structure and systems of the organisation. The organisation has direction by way of its mission, purpose or strategy, in addition to its tradition and culture. Therefore, the organisational environment determines the value of the individuals’ actions or results (Boyatzis, 1982, p. 20). Over time, Boyatzis’ model has become overshadowed by the focus of research on an individual’s competencies, while other dimensions of the model have received less attention.

![Figure 3. The Boyatzis (1982) Model of Effective Job Performance](image)

The individual’s competencies, as a focus for research, was developed further by Spencer and Spencer (1993, p. 9), who extended Boyatzis’ (1982) definition of a competency by causally relating the individual’s underlying characteristics to criterion-referenced effective and/or superior performance, which implies that the possession of the characteristic precedes and leads to effective and/or superior performance. Five types of competency characteristics were identified: motives,
traits, self-concept, knowledge and skill. Motives drive, direct and select behaviour toward certain actions or goals; for example, a person motivated by achievement sets challenging goals, takes personal responsibility for accomplishing these goals and uses feedback to improve performance (Spencer and Spencer, 1993, p. 10). Traits include physical characteristics and responses to situations or information, an example of a trait is emotional self-control in stressful situations. Self-concept pertains to a person’s values, self-image and attitudes; a part of the person’s self-concept is self-confidence, that is, a person believes that she or he can be effective in a situation. However, confidence without competence is arrogance which, according to Mintzberg (2004, p. 74), is a dangerous commodity. Knowledge is a complex competency, which includes the information that a person has in specific content area, and predicts what a person can do, but not what they will actually do. Skill encompasses the ability to perform certain physical and mental tasks; mental or cognitive tasks include two types of thinking: analytical (processing knowledge and data, determining cause and effect, organising data and planning) and conceptual (recognising patterns in complex data) (Spencer and Spencer, 1993, p. 11).

Spencer and Spencer (1993) described the aforementioned characteristics in terms of an iceberg, depicted in Figure 4. Skill and knowledge, visible above the water line, on the surface, are more easily developed. Self-concept, attitudes and values lie below the water line; these factors can be developed, but will require more time. At the bottom of the iceberg are traits and motives, indicating that the development of the ‘core personality’ competencies are the most difficult to develop and assess (Spencer and Spencer, 1993, p. 12).

Visible: Skill; Knowledge

Hidden: Self-Concept;
Trait; Motive

Figure 4. Spencer and Spencer’s (1993) Iceberg Model.
In Spencer and Spencer's (1993), competency causal flow model, depicted in Figure 5, 'intent', 'action' and 'outcome' are essential ingredients in the causal relationships between underlying personal characteristics and effective/superior job performance.

Figure 5. Spencer and Spencer's (1993) Competency Causal Flow Model.

Spencer and Spencer (1993) argue that competencies always include an 'intent', that is, the motive or trait force that causes 'action' toward an outcome, for example, knowledge and skill competencies may include a motive, trait or self-concept competency that will provide the 'drive' or 'push' for the knowledge or skill competencies to be used. However, behaviour without intent does not define a competency, without knowing 'why' someone is doing something; one cannot identify which competency is being demonstrated. In the causal flow model, Spencer and Spencer include 'thought processes' in action behaviours, where thinking precedes and predicts behaviour, for example, motives may include thinking about ways to improve, planning or problem-solving thoughts. In their definition of competence, Spencer and Spencer (1993) state that a competency is not a competency, unless, it predicts something meaningful in the real world. A characteristic that makes no difference in performance is not a competency and should not be used to evaluate a person (Spencer and Spencer. 1993, p. 13). Also, these researchers distinguish statistically between superior and effective performance; superior performance is one standard deviation above average
performance and effective performance is the 'minimally acceptable' level of work, the lower cut-off point, below which, an employee would not be considered competent to do the job. Spencer and Spencer's explanation of competency expands on the earlier models due to the intent, action and outcome element. Intent or motive is an important element in competency models, as Boyatzis, et al. (1996, p. 35) found, in a longitudinal study of Master of Business Administration (MBA) students, real development of students' competencies is voluntary, in other words, the student must first want to develop the competencies, then, actively engage in the developmental programme to be successful.

In the management literature, the causal link between the competency and performance is central to most of the acknowledged definitions of competency (Young, 2002, p. 6). This means that there is evidence to indicate that the possession of the underlying characteristic both precedes and leads to effective and/or superior performance; these underlying characteristics, first described by Klemp (1979, p. 42), form a deep and enduring part of a person's personality. Such competencies can be motives, traits, attitudes, values, self-concept, knowledge, cognitive or behavioural skills (Spencer and Spencer, 1993, p. 11). These descriptions of competence are similar to Short's (1984) more philosophical notion of competence, in which, competence is a virtue, a general sense of excellence and goodness, and a relatively permanent quality of personality that is valued by the community to which a person belongs.

Woodruffe (1991, p. 31) emphasised that understanding competence is a minefield and argued that the 'competency' vocabulary was, nothing more than jargon, introduced, in the main, by Boyatzis (1982), in which, 'competency' is just a trendy name for "nothing more, nor less, than glorious human skills." Whilst the competency vocabulary may be 'jargon' to some, it offers clarity to the notion of competency and competence as is evident in the management literature. In contrast, the medical and nursing literature offers the reverse, for example, some authors separate performance from competence, whilst others argue that there is a direct relationship and others, still, use 'competence' when they mean 'competency' and vice versa (Talbot, 2004). Defining the terms is more than semantics as it has
implications for teaching, learning, assessing and the granting of a licence to practice to medical and nursing practitioners (Velde, 2001a, p. 2). In their professional lives, graduates will face a variety of situations and the effectiveness of their actions will vary from situation to situation, therefore competence cannot be specified just in terms of what a person can do. Both the world of work and the disciplines are dynamic and increasingly so (Bowden and Marton, 1998, p. 11). Competence and the way, in which, it is instituted, taught, and experienced can pose some profound and fundamental challenges to cherished educational values and the way learning experiences are assessed resulting in implications for policy and practice in education (Velde, 2001b, p. 2). Therefore, in the next section, the relationship between competence and performance is considered from a medical and a nursing perspective in order to establish how competence is instituted in those professions.

2.3.2. The Relationship between Competence and Performance.

In the medical profession, the relationship between competence and performance is more difficult to establish due to the varying interpretations given to competence and to the term ‘competent’ to practice. Fitzpatrick (2001, p. 214), amongst others, argued that competence and performance comprise knowledge, skills and attitudes, but competence focuses on what one knows and does under ideal circumstances, whereas, performance refers to actual situated practice. This view stems largely from Miller (1990), widely quoted in the medical and nursing literature, who attempted to put forward a comprehensive model for the clinical assessment of medical students (see Figure 6). The central tenets of Miller’s (1990) argument was that competence encompasses all of the pyramid but that university based examinations, at that time, only assessed competence from the ‘knows how’ perspective.

Miller (1990, p. S63) acknowledged that no single assessment method could provide all of the data required for judgement of anything as complex as the delivery
of professional services by a successful physician. Miller used the pyramid for illustrative purposes to show that university based examinations were, in the main, deficient at the top of the pyramid and abundant at the knowledge level, at the base of the pyramid. Tests of knowledge alone are insufficient, as there is more to the practice of medicine than just knowing the facts. To fulfil that broader objective, Miller described competence as knowing how to use the accumulated knowledge, how to acquire new knowledge from a variety of human and laboratory sources, how to analyse and interpret it and, finally, how to translate such findings into a rational diagnostic or management plan. Competence, in these terms, includes a cognitive process leading to action which Miller described as never ‘being assessed’. In contrast, in the clinical setting, the evaluation of performance allows the student to show how they do it. Here, Miller argued that the system of performance evaluation was limited, as it emphasised the product of the students’ interactions with the patients, that is, diagnosis. How the student reached the conclusion is not observed. The action component, at the top of the pyramid, is the most difficult to assess and Miller stressed that artificial examinations will not predict what the physician does or will do in every day practice. Miller also emphasised that measurement of knowledge and competence (as a cognitive process), in isolation from clinical practice, cannot predict fully, and with confidence, the achievement of the complex goals at the top of the pyramid. In other words, the demonstration of everyday

Figure 6. Miller’s (1990) Framework for Clinical Assessment.
competent performance or ‘action’ is not assessed. The action at the top of the pyramid is a combination of all of the other components and, according to Miller, this is what medical educators should strive to assess. Thus, for Miller professional competence was a combination of all of the facets in his pyramid, that is, knows, knows how, shows how and does.

The prevailing trend in the medical and nursing literature is, since the publication of Miller’s (1990) paper, that performance is what the practitioner does in every day practice, whereas, competence is what the practitioner is capable of doing. Critics of this distinction argue that success in an examination is not a good predictor of actual performance in real world practice (Yorke 2005, p. 14). The relationship between competence and performance has been examined by Rethans, et al (1990, p. 168), who proposed that performance and competence are two distinct concepts and argued that it is the assessment or examination that separates or establishes the relationship between competence and performance. More recently Rethans, et al (2002, p. 902) proposed the Cambridge Model, a new model for assessment in which, all assessment under examination-like settings are referred to as competence-based assessment and assessments in actual practice, that is, in the workplace, are referred to as performance-based assessment. The development of the Cambridge Model stemmed from a critique of Miller’s (1990) pyramid, in which, Rethans, et al (2002, p. 906) stated that the pyramid was no longer very helpful in terms of assessment in real practice. The Cambridge Model, illustrated in Figure 7, extends and refines Miller’s (1990) pyramid, by inverting the top two sections of the pyramid and classifying performance and competence into the ‘does’ section and the ‘shows how’ section of Miller’s pyramid. Figure 8 shows this reclassification by comparing Miller’s pyramid with the Cambridge Model. Rethans, et al. (2002) then identified performance as a product of competence. Thus, performance assessments are combinations of indicators of competence (university based examinations) taking cognisance of influences from factors related to the individual (such as health, relationships) and factors related to the system (for example, facilities and practice time).
The Cambridge Model, with its distinction between competence and performance led to a three-stage process for assessing doctors in practice. In the first stage there is a screening test of performance to identify doctors at risk. While those who pass the
screen test move on to a continuous quality improvement process aimed at raising their general level of performance, those who are found to be at risk undergo a more detailed assessment process focused on rigorous testing, with poor performers targeted for remedial action or removal from practice. Whilst the Cambridge Model builds on similar filtering approaches to assessment (Dauphinee, et al. 1994, p. 209), it may not align well with the formalised structure of assessment embedded in validated curricula for post-graduate education (Yorke, 2005, p. 15). The proposed methods for the initial screening of the doctors are fragmented, reductionist and lack the integration of knowledge both for and from practice. The examples proposed by Rethans, et al. (2002) bear no resemblance to a cohesive model for the assessment of either competence or performance. The validity and reliability of some of the methods would also need to be established in order to avoid instances where doctors are wrongly classified. However, Rethans, et al. (2002, p. 904) state that:

... [It] would be more acceptable to have doctors wrongly classified as being at risk in the first place, and then reclassified, after the next assessment stage....

The consequences for the doctor being assessed are great and may influence his or her career. Further to these criticisms, there is no mention, in their proposed screening tests, of where the doctor can engage in self-assessment and reflection for future development which is a necessary component of professional competence.

Miller’s (1990) pyramid continues to influence the literature, for example, Schuwirth, et al. (2002, p. 926) agree with Rethans, et al. (2002), that competence is a necessary but not a sufficient requirement for performance. However, Miller (1990) was referring to assessment types in which, at that time, competence as a cognitive process was assessed in isolation from clinical practice, normal day to day practice was not assessed, and where competence had to be demonstrated in daily performance. Therefore, although Schuwirth, et al.’s (2002, p. 926) conclusion that performance can be seen as a result of competence, combined with the conditions, which both enable and impose boundaries on the practitioner, is similar to that of
Rethans, et al. (2002), it does not include the assessment of everyday practice, where competence in that performance is expected. The competence performance divide continues in the literature (Boursicot et al, 2011) but not all medical and nursing performance is competent (Mills, 2007); therefore, performance is not synonymous with professional competence (Pock, 2002, p. 73). Moreover, the use of the term ‘competent’ has varied interpretations, which are discussed in the following section.

2.3.3. Competent: A Mediocre Point on a Continuum or a Dynamic Position on the Route to Expertise?

One indication of the problems associated with the concept of competence is that the word and its derivatives are used in a variety of ways (Brady, 1995, p. 5). A person may be competent in general or in regard to his or her performance in an occupational role. Competent is interpreted as an absolute, that is, a person is either competent or not competent, or in degrees of competence, for example, highly or fairly competent or totally incompetent (Brady, 1995, p. 5). Using competent to mean that a person is fully competent, in all aspects of their job, is problematic, as Ashworth (1992, p. 8) argues, there is a difference between ‘having’ NCVQ competences and ‘being’ competent. When defined in terms of ‘doing something’, competence remains at the level of lived-through experiences rather than at the level of reflected on understanding. Understanding is central to being competent, the “...more dimensions of the situation and surrounding circumstances the person can bring into consideration, the more understanding he or she has” (Ashworth, 1992, p. 10). When competent is used to denote outcomes, the focus is on the product and the underlying processes in the development of competence from experiences, while education and reflection receive less attention (Brady 1995, p. 15, Johns and Freshwater, 2005, p. ix).

There are some conflicting interpretations of the meaning of ‘competent’, in particular, those arising in the nursing literature, in which ‘competent’ has been used

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2 In his article, Ashworth also demonstrates the misuse of terms; he uses competencies in the title but refers to competences throughout the text of the article.
to denote a particular level of post-graduate practice to what is expected of a student at the end of an undergraduate programme, that is, ‘competent to practice’ (Milligan, 1998, p. 274). Firstly, competent, in regard to post-graduate practice, stems from Benner’s (1984) influential work into the attributes of effective nurses in which Benner uses competent to refer to the third of five stages in a situational model of skill acquisition (based on the work of Dreyfus and Dreyfus, 1982), commonly known as a ‘novice to expert continuum’. In Benner’s (1984, p. 27) model, a competent person is typified by considerable conscious, deliberate planning evidenced by an increasing level of efficiency. Benner (1984, p. 292) argues that ‘competent’ describes a stage in the model and is unrelated to competency, which is ‘...an interpretively defined area of skilled performance identified and described by its intent, function, and meanings (as in competency statement).’ Therefore, in Benner’s model, competent is based on how people approach their work and not on whether they should be judged as qualified to do it (Eraut, 1994, p. 126). Basing a conception of competence on Benner’s stages of skill acquisition leads to the interpretation of ‘competent’ as a mediocre concept, that is, the mid-point on the continuum from novice to expert, thus, competence and competent to practice have become associated with Benner’s mid-point on the continuum and subsequently deemed a mediocre concept (Watson, 2002, p. 479).

This problem of interpretation is confounded by the application of Benner’s (1984) model as a framework for assessment in nursing programmes. The novice to expert model becomes a tool to assess competence because of the readability of the model, which does not guarantee the tool’s reliability and validity (Sharp, et al., 1995, p. 27). Moreover, Benner’s linear model proposes that there is a clear distinction between novice, at one end, and expert, at the other end, of the continuum (Sheehan, 1995, p. 41). The terms used to describe the stages in Benner’s model are interchangeable, the expert is synonymous with proficient and proficient is synonymous with competent. Therefore, as argued by Sheehan (1995), if Benner’s stages are interchangeable and used for assessment purposes, how will the stages discriminate when it comes to assessing competence? According to Sheehan, the nature of learning also impacts on any continuum model because learning does not
occur in neat, incremental steps, as put forward by Benner (1984), instead, learning may be steep and, at other times, may be at a plateau and the amount of practice required varies with the individual.

Another interpretation of ‘competent’ in the novice to expert continuum, provided by Eraut (1994), leads to the second issue concerning the use of the term ‘competent’. Eraut argues that professional competence has two dimensions: scope and quality. Scope refers to what the person is competent in, that is, the range of roles, tasks and situations. Quality pertains to judgements about the person’s work on a continuum, from being a novice, one who is not yet competent, to being an expert, one who is acknowledged by colleagues as beyond competence (Eraut, 1994, p. 166). At the end of an educational programme, a student is regarded as competent to practice because she or he has fulfilled the requirements of the programme. The student has successfully negotiated his or her way through the scope, depth, and breadth of experiences and education, as set out by the curriculum. Using a binary scale, at the end of the programme, the student is either competent or not competent to practice. However, the danger of interpreting competence, from this perspective, is that competence is static and governed by time served, thus, the emphasis is on the product at a particular point in time and assumes that time served equates to success (Mallaber and Turner, 2006, p. 111). Experience does not necessarily lead to learning and competence (Epstein and Hundert, 2002, p. 227). Similarly, employers interpret the results of assessments for the initial granting of a licence to practice as having both summative and predictive validity (Yorke, 2005, p. 12). Competent to practice at a particular time does not guarantee continued competence. However, when competence is viewed as a dynamic and developmental concept, the quality of the educational programme, from both a process and product perspective, is considered. Therefore, the time the student spent actively engaging and learning in practice, coupled with the quality of the educational programme, becomes the boundary for the purpose of certification, or the issuing of a licence to practice, at a particular point in a person’s career and not just for time served. Therefore, from a static perspective, the use of the terms ‘expert’ and ‘competent’ may mean that
expert is also a mediocre term, whereas, the use of the term expertise, like competence, is dynamic and developmental (see Figure 9).

This view of competence and expertise as a dynamic process is evidenced in Sternberg’s (2005, p. 15) model, in which, ability, competence and expertise are also on a continuum. By integrating the study of ability and competence with the study of expertise, all three constructs are involved with the same mechanisms (See Figure 10). Sternberg (2005, p. 16) views ability, competence and expertise as regions along a continuum, and not as distinct concepts; thus, an individual moves along the continuum as he or she acquires a broader range of skills and a deeper level of the skills that are already possessed and an increased efficiency in the utilisation of these skills. At the heart of Sternberg’s (2005) model is the notion that, when working within a given domain, individuals, are constantly in a process of developing expertise. Individuals may differ in rate and asymptote of development, however, the main constraint in achieving expertise is a lack of access to purposeful engagement involving direct instruction, active participation, role modelling, and reward rather than a fixed, prior level of capacity (Sternberg, 2005, p. 17). Therefore, developing competence is defined as the ongoing process of the acquisition and consolidation of a set of skills needed for performance, in one or more of life domains, at the journeyman-level or above. In contrast, developing expertise is defined as the ongoing process of the acquisition and consolidation of a set of skills needed for a
high level of mastery in one or more domains of life performance (Sternberg, 2005, p. 15). In other words, competent individuals developed their abilities to a high level, whereas, experts have developed their competencies to a high level.

Sternberg’s developmental model contains five key elements, metacognitive skills, learning skills, thinking skills, knowledge and motivation, all of which are interactive characteristics of the learner that influence each other either directly or indirectly. The interactions of all five elements in the model are driven by motivation and allow the novice, through deliberate practice, to work towards competence and,
then, expertise (Sternberg, 2005, p. 19). In Figure 10, the interactive nature of the model is illustrated. Unlike other linear models of novice to expert development, Sternberg’s (2005, p. 19) model associates reflective practice with a certain level of expertise and acknowledges that, “...on the way to successively higher levels of expertise”, a person may cycle through the development process many times. Expertise also occurs at many levels, “...the expert first-year graduate is still a far cry from the expert professional” (Sternberg’s 2005, p. 19). Thus, both competence and expertise are dynamic and developmental processes.

2.4. Competence: The Inside-Outside Dichotomy.

A prevailing view of competence is that it can be located and measured in an individual in much the same way as measuring liquid in a container (Duchan, Maxwell, and Kovarsky, 1999, p. 18) and people are described as ‘having’ varying amounts of competence. Such models represent competence as innate individual properties and locate them firmly “inside” the person and, as these models become acceptable in everyday teaching and assessing, “...the search for the sources of competence...” focuses on the internal properties of the person (Plaut and Markus, 2005, p. 458). Some programmes, designed to enhance competence, are grounded in the container view of competence in which the goal of the programme is to increase or enhance a person’s competence level (Duchan, Maxwell, and Kovarsky, 1999, p. 20). The container metaphor fails to consider how situated selves, in situated contexts construct competence. Other perspectives suggest that competence is best understood by focusing on the “outside”, that is, on external, contextual, social, cultural, and historical factors (Plaut and Markus, 2005, p. 458).

In an effort to explain why the “inside” model of competence has prevailed in Western literature, Plaut and Markus (2005) examined the importance of cultural models to both scientific and lay understandings of competence. In examining these cultural models, they drew on the extensive cultural psychological literature which focuses on the interpretive structures of the world, within which the person is a participant. This analysis of cultural models of competence, as a significant feature
of cultural contexts, fashions the person’s experiences. Competence usually refers to intellectual competence, in which the focus is on the nature of the mind, thinking and knowledge. The competent person is quick, sharp, can express himself or herself, possesses much knowledge and can use this knowledge to make connections and to solve problems. This interpretation of competence as ‘intellectual’ ignores the social context, social skills, relationships, other people and their expectations. Therefore, Plaut and Markus (2005, p. 459) argue that most psychological concepts of competence are rooted in deeply entrenched cultural models of intelligence. Machine metaphors, common in Western conceptions of mind and thinking, also define what is involved in being a competent person. In many European and American cultural contexts, the person is represented and realised as a separate, bounded, autonomous entity, that is, an individual. Individual actions result from the attributes of the person that are activated and, then, cause behaviour. Accordingly competence is located “in” the individual, “in” the mind, “in” the brain. This view of competence is active, as in the machine metaphor, it cranks, works, churns and, then, out comes the solution to the problem (Plaut and Markus, 2005, p. 459). The person is powered by what is inside; what is inside is what matters and is distinctly separate from social and emotional expertise or ‘skill’ acquisition. Conversely, in East Asian cultural contexts, minds are viewed as clear and still as in the metaphor of ‘still water’ and not as ‘churning’ and having fixed boundaries marking inside and outside. The mind is clear and reflective as water is central for life:

...for it is accurate information, whether it is in the detection of an opponent’s next move in chess, or the anticipation of a subtle shift in consumer tastes that forms the basis for creative action” (Plaut and Markus, 2005, p. 460).

Plaut and Markus cite another example, from Korea, where the metaphor for mind and self is a white root; when a white root is planted in red soil it becomes red, when it is planted in green soil it becomes green. Once the mind is likened to a plant, rather than to a machine, the soil becomes the culture (viewed as ‘outside’ in the Western
world and 'inside' in the Eastern world), which is critical for development and growth.

Through these metaphors, the mind and competence are relational in nature and take form as a transaction between inside and outside. Some researchers, such as Minsky (1985), have challenged the distinction between cognitive and social activities of the mind in developing competence. For example, Bruner (1996) describes becoming competent as joining a conversation, whereas, learning to be competent involves engaging in a process of becoming a member of a sustained community of practice (Wenger, 1998). However, Plaut and Markus (2005, p. 460) argue that, if competence is located "inside" the person, there is the danger that it may be perceived as either relatively fixed (entity view) or that it can be developed (incremental view). The social and incremental view of competence emphasises the effort and persistence of the person to develop. In the social context of the development of competence, the role of others in encouraging such persistence is also recognised as competence develops through relations and interactions with others rather than within individuals (Plaut and Markus, 2005, p. 461). Thus, competence arises from complex, dynamic relationships between people and their social worlds. For example, in clinical practice, student nurses will not master the clinical environment independently, they will seek the social engagement of others to obtain feedback on whether they are meeting the expectations and standards of others in order to become members of that community. This form of learning involves real-life situations with other people in social settings. Plaut and Markus' (2005, p. 481) review of the literature reveals that the social nature of competence is obvious and natural in contexts where the person is regarded as an interdependent part of a social network. Similarly, Bandura (1986, p. xii), a social cognitive theorist, acknowledged the social origins of much of human thought and action, whilst also acknowledging the cognitive processes as a causal contribution to human motivation, affect and action. Thus, the social context is an important element in the development of competence, but is not considered when competence is perceived as an 'inside' entity. Inside theories of competence produce inside models of assessment with the emphasis on performance rather than competence per se.
2.5. Professional Competence: A Conscious Habit or A Habitually Unconscious Condition?

Professional competence is perceived as being more than the integrated competency and competence models, as discussed in section 2.3, therefore, more complex models of competence are introduced, in which, higher order skills and meta-competencies enter the competence vocabulary. In this literature, capability also features but requires a different paradigm to competence and expertise (Lester, 1999, p. 232, Lum, 2009). Again, the conceptualisation of competence influences the criticisms. Competence, as a functional occupational concept is insufficient to describe professional competence, as is the competency approach, with its reliance on superior and/or effective performance models. Gonczi's (1994, p. 29) integrated or holistic approach to competence sought to marry the general attribute approach to the context, in which, these attributes are employed. This integrated approach allows for the incorporation of ethics and values in competent performance and reflective practice and acknowledges the importance of the context in the development of competence (Gonczi's, 1994, p. 30). In Figure 11, the integrated view, with the addition of 'professional' features, is depicted.

![Figure 11. Professional Competence Beyond the Integrated Scheme of Both Competency and Competence.](image-url)
Cheetham and Chivers (1998, p. 269) also noted the absence of an ethical component in most of the competence models which made them unsuitable for professionals. Therefore, their research into how professionals acquire and maintain professional competence led to the development of a more comprehensive model, which sought to harmonise the reflective practitioner paradigm with competence-based approaches (see Figure 12). The key influences on Cheetham and Chivers' (1998) provisional model were the reflective practitioner approach (Schön, 1987), the functional competence approach (NCVQ, 1989), the personal competence approach (Boyatzis, 1982), meta-competencies and ethics. Meta-competencies were defined as generic, high level competencies that transcend other competencies. In some cases, these meta-competencies enable introspection or self-examination and, in other cases, may facilitate the acquisition of competencies. At the core of the provisional model, drawn from the various strands of the competence literature, were four components: knowledge/cognitive competence, functional competence, personal or behavioural competence, values/ethical competence. The dynamics of the model are based on the interaction of the core components and their constituents with the meta-competencies to produce outcomes.

Cheetham and Chivers' (1998) provisional model was tested as part of a programme of empirical work that spanned twenty different professions over a number of years. In light of the research results, their model was revised and changes were made in relation to the 'context of work', the 'environment', the 'meta-competence' definition, personality and motivation. The research findings indicated the importance of the context in which professional competence is being applied. The 'context of work' is defined as "...the particular working situation in which an individual is required to operate" (Cheetham and Chivers, 2005, p. 107). Citing examples from their research, Cheetham and Chivers (2005) argue that a possessed attribute, such as 'confidence', does not apply equally in all contexts. For example, an accountant described how he felt confident in his ability to add up figures quickly and accurately but had a definite lack of confidence when speaking in board meetings. Confidence, as noted earlier, is a poor indicator of competence as self-confidence may fluctuate markedly as a function of environmental conditions or
Figure 12. Cheetham and Chivers' Model of Professional Competence.
other external variables (for example, due to sleep-deprivation or stress, a person may present with lower self-confidence) (Kanfer and Ackerman, 2005, p. 342).

Cheetham and Chivers (2005, p. 108) defined the 'work environment' as "...the physical, cultural and social conditions that surround an individual at work." Again, citing examples from their research, they noted that changes in any of the three dimensions of the environment may affect a person's competence. Concerning the physical environment, an example was given in which a person became more 'confident' due to moving from a single office to an open plan office, as the new environment provided opportunities to interact with others which caused increased confidence. But as has been shown, confidence is a weak indicator of competence (Mintzberg, 2004, Kanfer and Ackerman, 2005, Roberts, 2009). Cultural change may also impact on a person's competence, for example, a move to a new organisation, or a change within one's existing organisation. Internal changes that do not attempt to make the best use of existing talent may render some people feeling less competent. These cultural effects are also confirmed in other studies, where employees who feel that their supervisor did not appreciate their efforts may find little reason to expend more than the minimal amount of effort on the job. This creates dissociation between competence and performance (Kanfer and Ackerman, 2005, p. 347). In Cheetham and Chivers' (2005, p. 109) research, although the effects of the social environment on competence were less obvious, some examples were given of the impact on performance of changes in interpersonal relations that resulted from individuals joining a different team or working for a new supervisor.

Cheetham and Chivers (2005, p. 109) adopted a narrower definition of a meta-competency, that is, "...a competency that is beyond other competencies, and which enables individuals to monitor and/or develop other competencies." For example, reflection occupies two positions in their model; firstly, as a meta- or trans-competency and, secondly, as a super-meta competency. Reflection, as a meta- or trans-competency spans other competencies, enhancing or mediating them; reflection as a super-meta competency, acts as a 'gate keeper' to certain kinds of development, although personality was regarded as static and not readily susceptible to change.
through reflection. Therefore, personality was included as an external factor in the model rather than as part of the model’s dynamics (Cheetham and Chivers, 2005, p. 110) and it was acknowledged that personality could impinge on any aspect of competence and, in some cases, may limit a person’s potential. Personality traits are innate in an individual, to a certain extent, but a growing body of opinion argues that even traits which may seem to be innate can be modified and developed (Lucia and Lepsinger, 1999, p. 6, Roberts et al. 2006). This perspective depends on how competence is perceived, for example, from a behaviourist viewpoint, these personality traits cannot be separated, as they are an integral component in any competency model. Motivation, like personality, was also shown deliberately as external to the dynamics within the model; it was included only because it could impact on any aspect of performance. Cheetham and Chivers (2005) regarded both personality and motivation as attributes that 'impact' on competence rather than as essential components of competence. In this model, motivation is not given centre stage; whereas, it lies at the heart of most models of competence, for example, in the models of Sternberg (2005), Spencer and Spencer (1993), and Boyatzis (1982, 1996), as discussed in section 2.3.

Although Cheetham and Chivers’ (2005) model offers some solutions to a number of shortcomings in the ‘occupational’ or ‘personal’ notions of competence, it does not go far enough in its explanation of the impact of the social factors, the environment and the context on the development and maintenance of competence. Epstein and Hundert’s (2002) research advances the definition of professional competence, whilst also noting some of the effects of the context on the practitioner; their research began in response to the Accreditation Council for Graduate Medical Education’s (ACGME) (1999) publication of six areas of competence for medical practitioners. Epstein and Hundert (2002, p. 226) expand on these six areas and, building on prior definitions of competence, proposed that professional competence is:

...the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being served.
In Epstein and Hundert’s (2002) explanation of professional competence, basic clinical skills, scientific knowledge and moral development form the bedrock of competence; they include a cognitive, an integrative, a relational and an affective/moral function to competence, which depends on habits of mind. The acquisition and use of knowledge (including tacit and personal) to solve real life problems, which are often ambiguous, requires a cognitive and emotional self-awareness to question, to seek new information and to adjust for biases. Experience does not necessarily lead to competence; therefore, the cognitive function of competence is key to further development (Epstein and Hundert, 2002, p. 227). The integrative function includes the use, for example, of biomedical and psychosocial data in clinical reasoning, and the integrative ability to think, feel and act like a physician who can tolerate uncertainty and make decisions with limited information. Clinical reasoning strategies are monitored through the use of reflection and competence develops over time, nurtured by reflection on experiences (Epstein and Hundert, 2002, p. 228). The relational function of competence includes the effectiveness of communication skills with patients and colleagues and also notes the occurrence of medical errors which “...are often due to the failure of health systems rather than individual deficiencies” (Epstein and Hundert, 2002, p. 228). Therefore, the assessment of teamwork and institutional self-assessment might effectively complement individual assessment. The affective/moral function of competence includes the willingness, patience and emotional awareness to use these skills judiciously and humanely. In clinical practice, recognising that emotions are central to all judgement and decision-making emphasises the need to assess emotional intelligence and self-awareness. Thus, competence depends on habits of the mind, including attentiveness, critical curiosity, self-awareness, presence, and a willingness to recognise and correct errors (Epstein and Hundert, 2002, p. 228).

Therefore, professional competence is developmental, impermanent and context-dependent as it is refined by the interaction of the task, the clinician’s abilities and the health system. In contrast to attribute theorists’ view, where knowledge, skills and attitudes serve all situations well, competence is a statement of the relationship between an ability (in the person), a task (in the world) and the
ecology (of the health systems and clinical contexts) in which those tasks occur (Epstein and Hundert, 2002, p. 228). Epstein and Hundert (2002) provide an example, in which, two patients with similar conditions, but different educational backgrounds, health insurance, and access to care, require the attending clinician to use different skills when treating the patients. Competence rests with the ability of clinicians to tailor their actions in response to the context and the task in hand, whilst, simultaneously, monitoring their ability to successfully complete the task. This suggests that the clinicians consciously monitor their competence, thus, highlighting the role of conscious awareness in learning and clinical practice.

Conscious awareness is a complex system, which has evolved in humans, for selecting, processing and storing information. In representing alternative courses of action in awareness, thereby, introducing the alternatives of rejecting rather than enacting them, conscious awareness provides a measure of control, thus, freeing the individual from complete subservience to the dictates of genes and culture, in other words, it “...serves as a clutch between programmed instructions and adaptive behaviours” (Csikszentmihalyi et al 2005, p. 605). It is through awareness that engaging or disengaging the clutch is a matter of choice and is often a matter of protection to fit in with the present environment, particularly, during times of rapid or radical change. In principle, people value, but seldom resort to, free choice, reflection and the weighing of alternatives; in order for consciousness to be used for positive effects, a person must learn to enjoy being conscious (Csikszentmihalyi et al 2005, p. 605); through consciousness, competence develops by being reflective and sensitive to context. An emphasis is placed on “...waking up, noticing, recognising, understanding and comprehending” (Plaut and Markus, 2005, p. 462).

A model of conscious/unconscious competence (see Figure 13), frequently cited in the management literature, demonstrates the progressive nature of competence and the integral role of conscious awareness (Anderson and Ackerman Andersen, 2001, p. 55). In this model, at the first stage of development, individuals are ‘unconsciously incompetent’ initially, they do not know what they do not know and assume that their current knowledge and skills will suffice. Then, through
increasing awareness, these individuals become 'consciously incompetent' and realise that they do not possess the knowledge and skill needed and commit to learning what is required to fill their competence gaps. Over time, individuals become 'consciously competent', that is, they are able to implement the learnt strategies, provided that they are consciously thinking about them and witnessing what they are doing. In doing so, individuals encounter the witness/autopilot phenomenon and begin to notice their 'automatic and unconscious' reactions; through conscious awareness they are able to witness times when they operate on autopilot by being introspective and reflective. In the final stage of the model, individuals become 'unconsciously competent' and are able to perform the learnt strategies without deliberate thought, however, they are consciously aware of the danger of falling back into the 'unconscious incompetent' stage, therefore, due to conscious reflection, the learning never stops. Individuals value the conscious approach and strengthen their capacity to witness their experiences consciously, in turn, this produces new insights for them and they continue to pursue competence from a conscious perspective.

Figure 13. Conscious/Unconscious Competence

The conscious/unconscious model has also been applied to organisations, where the organisation has an unconscious life comparable to that described in an individual (Mosse, 1994, p. 1). As noted earlier, in the research of Cheetham and
Chivers (1998, 2005), the organisational culture may influence an individual's expression of competence (Kanfer and Ackerman, 2005, p. 345, Beckett, 2008, 23). Similarly, Billett (2001, p. 62) uses cultural-historical activity theory to go beyond claiming that there is a social basis to knowing and to identify sources of knowledge and constructions of meaning within cultures and communities that impact on the practitioners' practice and the construction of competence within that practising community. The organisational culture influences the manner in which learning opportunities and support for development is provided and must precede work competence. Thus, a supportive culture precedes the development of individual and group (collective) competence and a work environment that supports continuing and life-long education is necessary for maximising the competence of employees over their work life (Kanfer and Ackerman, 2005, p. 350). Collective competence is the sum of the level and mix of the competence of individuals within an organisation and the extent to which the organisation manages to draw on and further develop the individual's competence by organising itself in such a way as to enhance the development of collective consciousness (Bowden and Marton, 1998, p. 204). In a symbiotic relationship, this collective consciousness feeds on the competence of individuals and the competence of individuals feeds on the collective consciousness. The richer and more interconnected the collective consciousness is in the organisation, the more likely it is that variation between and within individual competence increases (Bowden and Marton, 1998).

In organisational studies, central to the learning process, is the repeated discovery of the presence of irrational and unconscious processes that interfere with attempts to manage the self, the group, the task and the roles in a conscious and rational way (Obholzer, 1994, p. 46). Awareness of these unconscious processes opens up the possibility of choice, instead of denial; there is room for thoughtful and creative interest in the problems of the organisation, and for developing conscious strategies that support growth and development (Moylan, 1994, p. 59). Many areas of work are considered to be unthinking, based on assumptions, and become habits; when these practices are challenged and, despite the fact that no one is able to articulate the reason for them, the rules or habits persist. What is required of
professionals is a conscious effort of will to make space for reflection in a work life that is dominated by necessity, tradition and obedience and to ask the question ‘Why?’ of someone in authority (Dartington, 1994, p. 101). From an insider’s point of view, raising the consciousness of an individual or an organisation may be difficult, unless, the individual develops the skills of reflection for insight, however, the individual may also evaluate the organisation’s consciousness by remaining on the ‘outside’ (metaphorically speaking). For example, recall Barnett’s jaundiced eye in Section 2.1.

Organisations may also develop their capacity to think and solve problems by remaining conscious. Part of being professional is shouldering the burden of responsibility for appraising one’s own work and reflecting on it in order to learn from experiences (Leiper, 1994, p. 197, Jasper and Rolfe, 2011, p. 2-3). Another part of being professional is a sense of belonging to something, a community of practice (Wenger, 1998), where professional values are shared amongst community members. However, the unconscious individual, in an unconscious organisation, rarely refuses work on the grounds of professional values, over loyalty to the employer or the unconscious organisation (Cunningham, 1999, p. 211). It is much easier to act in terms of habit and convention, relying on the stagnant culture of the organisation to infiltrate the mind, rather than to decide in terms of one’s own experience, learning and professional competence (Csikszentmihalyi et al 2005, p. 605). Competence is a habit of mind, as defined by Epstein and Hundert (2002, p. 226), provided the mind is awake and the skills required for being conscious need to be cultivated (Csikszentmihalyi et al 2005, p. 605). A student on a practice placement will not necessarily develop competence, being there does not guarantee learning (Davis, 2005, p. 305, Cate et al 2010, p.674). Many authors, including Sloan (2000, p. 120) point to the need for ‘reflection’ to facilitate learning through practice. However, this reflection need not occur in a solitary and private manner, the need for reflective dialogue amongst practitioners and students in the workplace influences the understanding of that work and forms the basis for competence development (Ghaye, 2001, p. 194). In the workplace, competence is portrayed in relation to individuals and groups in contexts that are dynamic, unique, and have politico-economic, socio-
cultural and historical dimensions (Velde and Wood, 2001, p. 246, Antonacopoulou and Chiva, 2007, p. 286). Therefore, both the context and the organisational culture influence the development and expression of competence.

In Figure 14, below, this ‘outside’ model of professional competence is illustrated, transcending the boundaries of personal, occupational, performance, professional and organisational perspectives of competence and Plaut and Markus’ (2005) ‘inside/outside dichotomy’ (discussed in Section 2.4).
The inside/outside model of competence, as discussed in the previous section, may also be used to explain incompetence at multiple levels within healthcare organisations. Lay perspectives of competence (knowledge based, quick thinking) also gives rise to lay perspectives of incompetence. In particular, healthcare workers hold unarticulated mental constructs of incompetence, in which, ‘connoisseurship’ of this nature leads to attitudes of ‘we will recognise incompetence when we see it’ (McGaghie, 1991, p. 7). Therefore, incompetence is an uncertain term that could include a lack of knowledge and/or skill, various forms of impairment, temporary personal problems or burnout, and personality conflicts. All of these factors are perceived to imply defects of knowledge and/or skill, usually at the level of the individual practitioner (Rosenthal, 1995, p. 94). However, in the early 1990s, Ashworth (1992, p. 13) argued that the individualism of the NCVQ version of competence ignored the fact that much “...day-to-day work is thoroughly collective...” and, therefore, the “…individual contributions to the product cannot be separated out.” In addition, he argued that there was no need for an individual to have total competence in all aspects of a work role as the synergy of the team amounted to collective competence. Like many authors on the subject of competence, Ashworth failed to discuss incompetence at the level of the individual, the team, or the organisation and his confidence in collective competence is marred by the diffusion of responsibility amongst individuals working in teams. In health care settings, it is the responsibility of several providers to care for a patient; however, in the absence of standardised procedures, individual roles and responsibilities are frequently assumed rather than clearly written. Under conditions of diffused responsibility, some components of a patient’s care are often missed. Care providers, who are secure in their own roles, are more likely to transcend individual concerns and speak up regarding higher-order organisational concerns (Henriksen and Dayton, 2006, p. 1547). Within health care, professional, and educational organisations, incompetence is tolerated on many levels, as the discussions in the following sections will demonstrate. Incompetence and negligence
litigation is an adversarial process, the defence, of which, is often predicated on silence, denial and unhelpfulness (Mills, 2007, p. 176).

2.6.1 Incompetence and Organisations.

Historically, medical and aviation workers have been expected to function without error (Sexton et al, 2000, p. 747). In the aviation industry, in particular, fatigue, stress and error continue to be a focus for continuing professional development programmes which aim to reduce errors. Whereas, in medicine and nursing, pressures still exist to cover up mistakes, thereby, overlooking opportunities for improvement and continuing education at the level of the individual, the team and the organisation within health care delivery systems (Sexton et al, 2004, p. 747). Any effort to prevent injury due to medical care is complicated by the dead weight of a litigation system that induces secrecy and silence (Brennan, 2000, Mills, 2007).

2.6.1.1 The Health Care Organisation.

Henriksen and Dayton (2006) found that members of health care organisations will do things collectively that they would not do as individuals. The organisation’s structures and processes undermine the individuals’ ability to honestly communicate their concerns. A closed communication system leads to organisational silence which is interpreted as consent, consequently, the organisation either acts or fails to act in contradiction to what is intended (Henriksen and Dayton, 2006, p. 1540). In organisations, an unchallenged belief is that of bringing individuals with various levels of expertise together to solve problems and automatically expect good decisions to emerge; in collective efforts, groups sometimes fail to reach consensus as voices that should be heard are silenced. Such groups, insulated by directive leadership, show a strong confirmation bias in favour of the leader’s desires (Bolden et al, 2011, p. 100). Decision-makers often select alternatives that justify past decisions, despite the fact that mounting evidence demonstrates that past decisions can no longer be supported. In organisations, a major source of error is failure to seek disconfirming evidence; this allows consensus, loyalty and silence to be valued more than dissent and an open airing of alternative views (Henriksen and Dayton,
There is no doubting the existence of the strong work ethic, commitment, compassion and resourcefulness of some health care workers, particularly, in turbulent times. Individual practitioners take pride in their individual competence, autonomy and ability to problem-solve in difficult situations. However, these admirable qualities also have a dark, ironic side, particularly, in organisations where structures and processes impede the work of the individual practitioner, leading to incompetence.

Tucker and Edmondson’s (2003) study of hospital work process failures, for example, missing supplies, malfunctioning equipment, incomplete and/or inaccurate information, and unavailable personnel, revealed that ninety-three percent of the time nurses instituted ‘quick fixes’ but only reported the failures to someone in authority seven percent of the time. These ‘quick fix’ work processes are typical examples of first order problem solving techniques in large organisations. In large organisations, second order problem solving techniques (solving the cause of the problem and stopping problems from becoming perpetual) are rare as individuals are silenced into inaction.

Traditionally, managers covet practitioners who take initiative but also want practitioners to comply with the silence of the organisation. The organisational culture is determined by managers who, in turn, determine the value of the inputs from the practitioners, as is evidenced in Boyatzis’ (1982) model of competence (see Section 2.3). Although hospital policies, procedures and work processes provide practitioners with structures for the delivery of health care, an organisational and a professional culture with unrealistically high expectations of humans under stress and fatigue leads to errors. Data from medical and nursing incidents provide limited details; therefore, insights into how such incidents occur are not gleaned. The information requested when reporting incidents may also be at the operational level of the individual (for example, wrong drug given) and a contributing factor (for example, distraction). It is often the case, in such incidents, that no analysis is undertaken at the level of the organisation (for example, environmental factors or an examination of the drug administration policy). Under reporting of incidents is easy to understand where the organisational culture is punitive. Similarly, individuals or
organisations may express concerns over legal or disciplinary action, whereby, silence is an easier option.

In Fletcher, et al.’s (2002, p. 418) focused analysis of the literature on the role of non-technical skills in anaesthesia error, the non-technical skills of anaesthetists was divided into two sub-groups: cognitive skills (for example, planning, decision-making, situation awareness) and social or interpersonal skills (such as, team working, communication and leadership). From the literature, they identified that it was organisational factors which played a significant role in increasing uncertainty and task complexity in operating departments rather than skill deficits of individual anaesthetists. The literature also identified that anaesthetists, like all other health care providers, do not work independently of others, therefore, the individual cognitive processes, as identified in the literature, should function at the level of the individual, the team and the organisation (Fletcher, et al., 2002, p. p. 426). Fletcher, et al. (2002) proposed an error analysis model to integrate cognitive and team skills at all three levels (individual, team, organisation) and argued that this would allow for a higher level component within the model, generally not found in error analysis models, where the interactions with the external environment are accounted for on all three levels, that is, individual, team and organisation. They proposed that this model could then be used to analyse incidents in terms of active failures (human errors) and latent conditions (organisational systems) at each of the three levels within organisations (Fletcher, et al., 2002, p. 426). The results of such analyses could then be used for supporting continuing education programmes and correcting system errors. Evidence from an industrial psychology perspective supports Fletcher, et al.’s (2002) model, particularly in the high reliability domains of work, for example, aviation and nuclear power.

Investigators of the landmark Staines airline crash discovered that the first officer was ‘too afraid’ to challenge the captain and, therefore, failed to avert the crash. The resultant changes in organisational policy, due to this landmark crash, led to a culture change in the airline industry. An open communication policy led to training programmes, which focused on safety and communication, not just as a function of the captain, but of the captain using all available resources, including the
other officers. Sexton, et al. (2000) argue that the openness to discuss error, stress and fatigue amongst pilots and new training initiatives (for example, crew resource management), supported the culture change in the aviation industry from a situation in which the captain was the sole decision maker to a more participant style of decision making.

Sexton, et al. (2000) conducted a comparative, cross-sectional survey of 30,000 airline pilots from major world airlines, 1033 hospital based surgeons and nurses working in intensive care units from the United States and Europe regarding their attitudes to error, stress and teamwork. The pilots were least likely to deny the effects of fatigue on performance (26 percent of pilots compared to 70 percent of consultant surgeons). Most pilots (97 percent) and intensive care staff, who were all Registered nurses (94 percent) rejected steep hierarchies, in which, senior team members are not open to input from junior staff. However, only fifty-five percent of consultant surgeons rejected steep hierarchies. Steep hierarchies, particularly in healthcare, are created by a ‘knowledge differential’ between members of multidisciplinary teams. However, Sexton, et al. (2000) did not discuss the ‘knowledge differential’ factor in the variety of disciplines in their study. Technically, steep hierarchies amongst pilots on a particular flight do not exist because both the captain and the co-pilot are licensed to fly the aircraft. The difference between the captain and officers is in relation to time served either with a particular airline and/or number of flight hours on a particular aircraft. Therefore, in such situations, it is easier to facilitate a ‘flat’ hierarchy, where captains and officers are equal members of the team. Amongst health care providers, the reverse is evident, there is a variety of disciplines, for example, medicine, nursing, physiotherapy, and speech therapy, therefore, in health care settings, the ‘knowledge differential’ between disciplines encourages steep hierarchies.

In organisations, such as health care, individuals will adapt their judgements and beliefs to fit in with those around them in order to gain acceptance in the group and is particularly evident, in situations, where the group is considered by the individual to be more knowledgeable (Henriksen and Dayton, 2006, p. 1545). Henriksen and Dayton (2006) provide an example from acute health care settings,
where failure to rescue deteriorating patients characterises breakdowns in both physical and social realities. The social reality takes precedence, as the individual will look to others in the group for information and behavioural guidance. If no one is attending to the deteriorating condition or attempting to make sense of puzzling vital signs, then, doing nothing out of the ordinary becomes the social reality to which other care providers will conform. Conforming to what others are doing when they are doing nothing is due to failure at the level of the individual, the team and the organisation. Failure at the individual level results from the inability to break with conformity by articulating an alternative point of view. At the team level, failure results from the inability to share information and evaluate alternative views, thereby, reducing the pressure to avoid dissent. Failure, at the organisational level, is due to an inability to recognise conformity in groups as a major threat to patient safety. The common solution for the organisation is to establish rapid response teams rather than addressing the underlying issues.

2.6.1.2 The Professional Organisation.

Professional organisations tend to allow the ‘inside’ perspectives of competence to dominate, in which the container view of knowledge and skills focuses on the individual practitioner. Although professional organisations avoid the word incompetence and tend to use terms that are clearly defined in the legal sense, for example, ‘misconduct’ and ‘unfit to practice’, they have a duty to protect the public against the genially incompetent and the deliberate wrongdoers (An Bord Altranais, 2007, p. 3). In health care settings, where steep hierarchies and knowledge differentials exist, the professional socialisation of individuals into their professional groups plays a multidimensional role in identifying incompetent practitioners. High status professions, such as medicine, are granted by the state the legal right to regulate itself due to the degree of knowledge and skill involved in the practice of medicine (Mills, 2007, p. 17). Therefore, non-professionals are not equipped to evaluate or regulate medicine. Within health care settings, the medical profession occupies a dominant position because of its professional power and autonomy. Common to all professions or semi-professional groups is the inculcation of
appropriate norms of behaviour towards a colleague and as a professional, which are as important as the science and art of the particular discipline and are learned through a socialisation process rather than through classroom lectures. The disparagement of colleagues is frowned on, particularly in medicine, however, informal mechanisms exist; behind closed doors doctors or nurses attempt to cope with problem colleagues (Cooke, 2006, Stone et al, 2011).

In an ethnographic study of hospital consultant surgeons and senior general practitioners, Rosenthal (1995, p. 9) explored how practitioners define ‘mistakes’, ‘errors’, or ‘mishaps’. The participants were asked to define the boundaries of ‘avoidable’ and ‘unavoidable’ mistakes. An analysis of all of the responses from more than a hundred interviews revealed seven overarching themes: permanent uncertainty; necessary fallibility; shared personal vulnerability; understanding and forgiveness; a norm of non-criticism; the egregious error; and the exclusivity of professional judgement (Rosenthal, 1995, p. 16). When the doctors thought about accidents or mistakes in their practice, they emphasised the uncertainties in the practice of medicine, for example, mitigating circumstances, knowledge of risks, organisational problems, fatigue and personal problems, they accepted the inevitable variability in practice; “Necessary fallibility must be accepted as an intrinsic part of the practice of medicine” (Rosenthal, 1995, p. 19). Thus, in everyday medical practice, if there is permanent uncertainty, then there must be fallibility in what the doctor does. Common to all health care workers, is the unforgettable experience of doing something or failing to do something to a patient, with dire or minor consequences. Such experiences, shared by most practitioners, create a sense of empathy towards each other, consequently resulting in a sense of shared personal vulnerability, which highlights the uncertainty of practice (Rosenthal, 1995, p. 20). This shared understanding of a colleague’s distress when an error or mistake is made leads to quick ‘forgiveness’ (Rosenthal, 1995, p. 21), provided that the practitioner is honest, open, admits to the mistake and accepts corrective action for future practice (Rosenthal, 1995, p. 22). If the behaviour around the incident is appropriate, technical errors are forgiven (Rosenthal, 1995, p. 30), however, understanding and forgiveness is limited by the frequency and grossness of error, lack of insight,
inability to learn from mistakes and the quality of interpersonal relationships (Rosenthal, 1995, p. 22). Although the egregious error is difficult to accept, the culture of ‘non-criticism’ of a colleague leads to a conspiracy of tolerance (Rosenthal, 1995, p. 26). Within professions, this culture is fuelled by the fact that only those within the profession can pass judgement, however, it is constrained not to do so for a variety of confounding reasons. Rosenthal’s (1995) study highlights the following confounding reasons: peer collegiality does not allow for criticism; the practice of medicine is demanding and requires collegial support; and the uncertainty of practice leads to the questioning of the justification for the criticisms. Unjustified criticism could jeopardise a person’s career and human nature dictates that colleagues protect each other (Rosenthal, 1995, p. 29).

In Rosenthal’s (1995, p. 36) study, cases of suspected incompetence, and those that are accused of incompetence directly, display characteristics that aroused suspicion initially including: being disorganised, abrupt and difficult. Problem doctors and mistakes relate to four different categories of severity: mistakes made by someone who is professionally competent; mistakes made by someone who is professionally suspect; those with suspect characteristics; and those who demonstrate unprofessional behaviour (Rosenthal, 1995, p. 36). When there is no clear understanding of competence, there is no clear understanding of incompetence, the participants in Rosenthal’s study could not distinguish between accidents, mishaps, mistakes, and errors (p. 37). The informal mechanisms of the profession are not evoked until someone with responsibility or someone who cares is satisfied that there is a problem (Rosenthal, 1995, p. 54). The informal mechanisms were described by doctors who were directly involved in reported cases of incompetence and included the quiet chat; protective support; in the case of General Practitioners, being pushed out of the partnership; and in the case of hospital consultants, the Three Wise Men procedure (three external hospital consultants). These informal mechanisms are constrained by patterns of behaviour commonly found in professional groups, for example, inertia, protection, labelling and, finally, breaking the professional silence. “An enveloping inertia overcomes those with responsibility” because there is a persistent unwillingness to act (Rosenthal, 1995, p. 95). Delaying action is attributed
to complex mechanisms within organisations for dealing with problem employees. Protection is afforded to a colleague who is respected by all within the multidisciplinary team and/or where the problem is due to a selected illness, for example, alcoholism or a physical illness, members of the multidisciplinary team engage in solidarity through loyalty to the ailing colleague. In this manner, protective support is lost when the problems become too extreme for the team to deal with (Rosenthal, 1995, p. 95). The informal mechanisms of dealing with the colleague are not implemented when a colleague has a problem that is not easily labelled or recognised as an illness, abrasive personalities, mental illness and incompetence are harder to accept and deal with. Without a label, the problem is more ambiguous, therefore, informal mechanisms are not utilised and professional silence develops. Professional silence is broken only when someone breaks the veil of silence by ‘whistle-blowing’ (Harding Clark, 2006, Moore and McAuliffe, 2010).

The social environment of hospital units and wards is very much influenced by the leadership style of the nurse manager. Edmondson’s (2004) studies have shown a considerable variation in shared beliefs and consequences of speaking up on topics such as, problems, mistakes, medical and nursing errors. Whilst some teams engage in open acknowledgement of errors to avoid repetition of the error, other teams maintain silence with respect to errors. Henriksen and Dayton (2006) refer to the differences in teams as microclimates, where teams have acquired different shared beliefs as to how to perceive, think and feel about certain issues; these shared underlying assumptions become so accepted that they no longer require much thought, “...as might be evidenced by glib remarks such as “that’s the way we do things around here.” (Henriksen and Dayton, 2006, p. 1547). A key factor in shaping the microclimate is the leadership style of the ward or unit manager at the local level.

Hospital cultures, in short, are patchwork quilts rather than uniform, smooth fabrics where learning culture...is concerned. The variation is primarily driven by local leadership behaviour, which in both overt and subtle ways shapes the climate for learning. (Henriksen and Dayton, 2006 p. 1547).
2.6.1.3 The Third Level Institution.

Similarly, in nursing practice, there is evidence of the reluctance to fail students whose clinical practice is unsatisfactory (Hunt et al., 2011). The reluctance to fail students is procedurally and emotionally difficult and time consuming (Duffy, 2003, 2006); due to inadequate assessment tools, clinical assessors often have to build a case for referral or failure (Scholes and Albarran, 2005). The practice assessment tool sets "...out clinical competencies, that are so packaged in educational jargon..." that it is difficult for the assessor to link the actions of the failing student with the descriptors in the tool (Scholes and Albarran, 2005, p. 113). Therefore, students are not provided with explicit feedback and clear goals to redress the problems. In clinical practice, to fail a student may seem harsh and is contrary to the education goals of facilitation and development (Scholes and Albarran, 2005 p. 113). However, student nurses pass clinical assessments without demonstrating competence (Duffy, 2003, p.5). This disparity appears to support the view that clinical assessments are not always recognised by third level institutions as an important element of a nursing programme (Hunt et al., 2011, p. 4).

2.6.2. Incompetence and Individuals: The Paradox.

People tend to hold overly favourable views of their abilities in many social and intellectual domains. Kruger and Dunning (2009) suggest that such overestimation occurs because people who are unskilled in these domains suffer a dual burden: they make poor choices and erroneous conclusions and their incompetence robs them of the metacognitive ability to realise it. Similarly, Henriksen and Dayton (2006) identified that the many human errors are systematic and predictable and are not random. Many of the errors that occur are due to the uncritical use of heuristics and self-assessments that lead to biased decision making in everyday activities (Henriksen and Dayton, 2006, p. 1541). Individuals who rate themselves as 'above average' do not engage in discussions on how to improve their practice, as they believe that their practice is also 'above average'. This issue emphasises one of the main problems with self-report, that is, that people's accounts...
of their actions may not be related to what they actually do (Fletcher et al. 2002, p. 420). Self-bias in this manner, is particularly evident in clinical settings, where individuals are deeply engaged in an activity, when they are responsible for the outcome, and when they are visible in the activity. Individual practitioners perpetuate a falsehood when they minimise their role in adverse events and exaggerate their role in successful events. In adverse events, individual practitioners attribute causality to the many other caregivers or to factors beyond their control (Kruger and Dunning, 2009, p. 1130). Correcting self-serving biases fosters individual accountability for practice by removing the subjective lens through which the individual evaluates his or her practice. Replacement of the subjective lens requires the individual to receive prompt, objective feedback that is difficult to deny.

One of the ways people gain insight into their own competence is by observing the actions of others, assessing how competent those actions are, and then, calibrating their view of their own competence by comparison. However, Kruger and Dunning's (2009) study also demonstrated that incompetent individuals were unable to take advantage of feedback received through social comparison. Compared with their more clever peers, those considered to be incompetent were less able to spot competence when they saw it and, therefore, were less able to learn that their ability estimates were incorrect (Kruger and Dunning, 2009, p. 1130).

In a particular domain, the skills required for bringing about competence are often the very same skills necessary to evaluate competence in the same domain. Therefore, to evaluate one's own competence or the competence of someone else requires that one is competent in the particular domain in the first instance (Kruger and Dunning, 2009, p. 1121). Kruger and Dunning also argued that incompetence causes poor performance and also causes the inability to recognise that one's performance is poor. In their study, participants overestimated themselves and also thought that they were above average (Kruger and Dunning, 2009, p. 1129). Overestimation pointed to a lack of metacognitive skills among the less skilled participants, when the participants' metacognitive skills were improved through training, the results showed an improvement in the accuracy of their self-assessments. A paradox in Kruger and Dunning's (2009, p. 1129) findings was that
once the participants recognised their own incompetence, they were no longer incompetent. To err is human, but the grossness and frequency of error, lack of insight and ability to learn from a mistake is incompetence (Rosenthal, 1995, p. 22, Eva and Regehr, 2007, p. 581). Raising the consciousness of individuals is one method for improving practice (Titchen, 2000).

In Rosenthal’s (1995) study, professional silence was evident when a problem was not labelled or was difficult to deal with. Similarly, Henriksen and Dayton (2006) described individual silence, in which the individual remains silent to maintain the status quo; maintaining the status quo is comfortable and requires no further action. Taking an alternative course of action requires additional responsibilities, consequently, it is easier to find reasons to do nothing and to remain silent. Individual silence has another source, which Henriksen and Dayton (2006, p.1544) describes as ‘the sins of omission and commission’, in which individual practitioners will recall what they did do rather than what they did not do. In healthcare, the sins of commission carry a heavy penalty, therefore, individual silence is the easiest route to take. Adverse events that involve the omission of action are less likely to be recalled than events that involve a wrong action and, consequently, further silences discussions to improve practice. There are costs and missed opportunities associated with maintaining the status quo through individual, professional and organisational silence.

2.6.3 Incompetence and the Law.

Recall the discussion in section 2.6 where Ashworth (1992, p. 13) argued that there was no need for an individual to have total competence in all aspects of a work role as the synergy of the team amounted to collective competence. In professional practice and in law, team liability does not exist as a concept, therefore, each professional individual is accountable for his or her actions (Hunt and Wainwright, 1994b). When assessing the standard of care expected of a professional, the comparison is made with the practice and standards of the professional’s peers, rather than with what the courts think the reasonably careful person would have done in the circumstances (Mills, 2007, p. 146). To ascertain professional negligence,
there are four aspects to consider. First, it must be established that there is a duty of care (this is taken for granted in the medical and nursing professions). Second, it must be shown that the duty of care has been breached. Third, it must be shown that there was a causal link between the breach of duty and harm and, finally, the harm must not be too remote. In determining negligence, an individual's actions are subjected to the 'Bolam Test' to ascertain whether there has been a failure to achieve the required standard of care. The 'Bolam Test' was derived from an English tort law case, heard in 1957, *Bolam v Friern Hospital Management Committee*. Mr. Bolam sued the Friern Committee for injuries suffered due to electro-convulsive therapy because the hospital did not provide muscle relaxants and did not restrain him during the procedure. The judge stated that the standard of care expected is the standard of the ordinary skilled person exercising and professing to have that special skill and found that the defendant was not negligent. The judge held that what was common practice, in a particular profession, dictated the standard of care required. A professional doctor or nurse who falls below the appropriate standard is negligent if they fail to do what a reasonable skilled person would do in the circumstances. If Mr. Bolam's case occurred today, there would be no contesting the negligence of the Hospital Committee due to the improvements in the standards of care over time. The 'Bolam Test' changes as standards of care improve and it is applied against the approved standards of the profession at the time the act of the alleged negligence occurred (Mills, 2007, p. 146). Similarly, in Irish law, the most important case governing clinical negligence is *Dunne v National Maternity Hospital 1989*. In this case, the 'Bolam Test' was restated, by reasoning that there might be circumstances in which the 'professional standard' was obviously flawed. A course of action ordinarily followed by professionals might have inherent and obvious flaws and, if it does, the court may find a practitioner negligent for having followed it. In the Dunne case, for example, if a hospital's process for monitoring babies during labour ‘...has flaws detectable by anyone giving the system any thought, then a gynaecologist could not rely for her defence on the fact that she followed that protocol.’ (Mills, 2007, p. 148). Therefore, blindly following the standard course of action may, nonetheless, be negligent (Mills, 2007, p. 148).
Roe v Minister of Health 1954 is another significant English law of tort case, which continues to influence the practice of professionals. In this case, the patient was paralysed as a result of receiving a contaminated anaesthetic drug. At that time, ampoules of drugs were stored in liquid phenol. Unknown to staff, the glass ampoules had micro-cracks invisible to the naked eye, which allowed the phenol to diffuse through the glass. In the light of this case, the anaesthetists changed their practice by placing a dye in the phenol which allows the naked eye to see any contamination of the drug. The judge noted that the hospital was applying the best practice at the time and there was no negligence, but a failure of any other hospital to change their policy concerning the storage of the drug would, indeed, result in negligence. Therefore, a failure to keep abreast with current practice, policies or procedures may automatically result in a prima facie case of negligence. Therefore, the burden rests with the individual to provide a reasonable professional standard of care without flaws and to engage in life-long learning to assure continued competence assurance after initial qualification. Self-assessment and life-long learning are some of the treasured outcomes of an educational programme, but autonomy and self-regulation are incongruent when conformity to silence is expected. As there is to date no team negligence case the burden rests with the individual to break through the veil of organisational silence and unconsciousness by the conscientious use of consciousness in daily practice.

2.7 Summary.

This chapter identified the significant factors that affect the conceptualisation of competence. Early conceptualisations of competence from a philosophical perspective focus on an individual's disposition towards good which involves a process of deliberation about how to achieve this good, rather than, whether or not to do so. In the subsequent discourse around competence, this philosophical notion of competence was lost as an emphasis was placed on functionalism, largely as a consequence of the scientific application of management thinking and practice. This scientific management way of thinking and the concurrent psychological and social
developments in management research are associated with the growth of the competence movement in the workplace.

The current discourse on the origins of the contested meanings of competence and the differences in terminology can be traced back to 1970s, where many authors adopt the American 'competency' model (McClelland, 1973), which attempted to discover what made some people more successful at work than others. In contrast, some other authors favour the 'competence' approach made popular in the United Kingdom by the National Council for Vocational Qualifications (1989) movement, which aimed to document that an individual had achieved or could perform to a certain standard (Young, 2002). The difference between these two conceptualisations of competence leads to ambiguity and confusion resulting in competence being referred to as a mediocre point on a continuum on the route to expertise. When competence is viewed as a dynamic process it is defined as the ongoing acquisition and consolidation of a set of skills needed for performance where intrinsic motivation is the driver. Inside (innate individual properties) models of competence describe individuals as 'having' varying amounts of competence whereas outside models of competence focus on external contextual, social, cultural and historical factors which either hinder or contribute to the development of an individual's competence.

Those in nurse education face many challenges and have the difficult task of ensuring that academic rigour is applied to clinical assessment in the same manner as it is applied to theoretical assessments. How competence is conceptualised will therefore influence an associated assessment strategy. As team liability does not exist as a concept in law, individual professionals are accountable for their practice. Therefore, for the present study the implications are that, despite the assessment strategy, the goal of nursing education programmes is to prepare student nurses who are individually accountable for his or her practice at the point of registration with ABA. In Chapter One it was established that portfolio assessment may be a way to achieve the educational goal and to satisfy ABA requirements and standards. Therefore, in Chapter Three the empirical literature concerning portfolio assessment will be explored.
CHAPTER THREE

PORTFOLIOS: A REVIEW OF THE EMPIRICAL LITERATURE

Introduction.

The use of portfolios and their role in assessment is the focus of the discussion in this chapter. Overall, the literature on what portfolios should include and how to implement a portfolio system is abundant. However, research on the psychometric properties of portfolios as an assessment tool, on the long-term benefits of portfolios to students and to teachers, and on the use of portfolios to access professional competence is minimal. The purpose of this review is twofold. Firstly, to identify the theoretical perspectives and the methods that are used to research portfolios. Secondly, to examine the substance of this literature in order to establish what is known empirically about the nature of portfolios, bearing in mind the critique and suggestions for further research provided by Herman and Winters (1994) and Roberts, Newble, and O’Rourke (2002).

The initial reading of the substantive literature revealed that an overriding issue, that is causing considerable tension is in regard to how portfolios are conceptualised. The issue of debate pertains to how the portfolio is perceived, that is, the portfolio as a product versus the portfolio as a process. Therefore, approaches to the study of portfolios from these two perspectives are outlined in section 3.1. An integrated scheme or conceptual framework was developed from the approaches to the study of portfolios identified in section 3.1 in order to discuss the literature that represents this ‘process’ versus ‘product’ tension; this integrated scheme is elaborated on in section 3.2. In section 3.2, each sub-section relates directly to the integrated scheme and the empirical literature is presented according to this classification with an emphasis on the portfolio as a ‘process’. The discussion using the integrated scheme continues in section 3.3, where the literature concerning the assessment processes of a portfolio and the validity and reliability of a portfolio are presented.
3.1 Approaches to the Study of Portfolios.

In their 1994 critique of the empirical literature on portfolios, Herman and Winters reported that of eighty-nine studies on portfolio assessment only seven employed accepted research methods or reported technical data. While most of these articles explained the rationale for portfolio assessment, presented ideas or models of how a portfolio should be constituted and used, or shared details of how portfolios have been implemented, this literature did not give attention to the technical quality of the portfolio or to the indicators of the portfolio’s impact and did not involve the rigorous testing of assumptions (Herman and Winters, 1994, p. 48). In regard to the support that students receive in preparing a portfolio and the feasibility of portfolios for large-scale assessments, Herman and Winters (1994, pp. 54-55) called specifically for research into the technical qualities of portfolios and transparency and equity concerning the amount of support students receive. A systematic review of the evidence for portfolio based assessment in medical education, conducted by Roberts, Newble, and O’Rourke. (2002, p. 899) revealed that not much had changed as only two papers were located that provided data from small-scale research and reiterated Herman and Winters’ (1994, p. 48) call for portfolio research to focus on technical qualities, transparency and equity of student support. A recent systematic review of the evidence for portfolio based assessment of medical competence conducted by Driessen et al (2007) revealed that again not much has changed. A more recent systematic review also reveals that the strength and evidence base for the educational effects of portfolios in the undergraduate setting is limited (Buckley et al (2009). Therefore, to fulfil the first purpose of this review, fifty-seven research studies were located and classified according to the methods used. The details of this classification are contained in Appendix 3. In the process of this classification, a clear picture of the predominant methods used in portfolio research emerged; in particular, it revealed a paucity of action research and the absence of longitudinal evaluations of portfolios. In education and nursing, the predominant research paradigm involves inductive, exploratory and small-scale case studies. With the
increasing use of portfolios in medical education more ‘positivist’ approaches to the study of portfolios are emerging. Many of the evaluation type studies concentrate on the students’ early experiences of portfolio use, an exception is the evaluation of portfolio use in large-scale assessment at the elementary school level which was conducted by Koretz, et al. (1994b, p. 11). Since 1994, it appears that no new large-scale research studies have been conducted.

As noted above, the initial reading of the substantive literature revealed that an overriding issue, causing considerable tension, is in how portfolios are conceptualised. The issue of this debate pertains to how the portfolio is perceived, that is, the portfolio as a product versus the portfolio as a process. When a portfolio is viewed as a product, it is referred to as an object, for example, the portfolio’s form and psychometric properties are emphasised. When a portfolio is viewed as a process, it includes information on the procedures involved, such as, focusing on how a portfolio system is constructed and/or implemented and the processes involved in the assessment of the portfolio. Two groups of prominent authors, Zeichner and Wray (2001) and Paulson, Paulson, and Meyer (1991), identified in the classification process, represent the respective sides of the portfolio as product versus the portfolio as process debate. A fuller discussion of the authors’ interpretations is provided in section 3.2. For now, it is important to note that Zeichner and Wray (2001) focus their interpretations on the ‘portfolio as product’, while Paulson, Paulson and Meyer (1991), influenced by the constructivist theories of education, concentrate their interpretations on the ‘portfolio as process’. To aid this discussion, a scheme was developed that integrates Zeichner and Wray’s (2001) conceptual framework, which describes the conditions of portfolio use, with Paulson, Paulson and Meyer’s (1991) central ideas regarding portfolio use. This integrated scheme is used to fulfil the second purpose of this review, that is, to examine the substance of the literature in order to establish what is known empirically about the nature of portfolios and to identify areas for further research.
3.2 The Portfolio as Process and Product: A Scheme to Aid the Discussion.

How portfolios are conceptualised and implemented varies greatly, therefore, more clarity is needed about the different ways in which portfolios are used. Zeichner and Wray (2001) developed a conceptual framework that enables researchers to describe the conditions of portfolio use. Although their discussion focuses on using teaching portfolios in pre-service education programmes, the framework aids in the description of the types and purposes of portfolios used in other disciplines, such as nursing and medical education. Zeichner and Wray’s framework involves identifying the purpose of a portfolio, determining its contents, structure, and format, and how it is constructed; the types of artefacts and ‘social interactions’ permitted; the type of portfolio ‘presentations’, if any, and how the portfolio is to be assessed. As noted above, the emphasis of Zeichner and Wray’s (2001) framework is on the product, that is, on the portfolio itself.

In contrast, Paulson, Paulson, and Meyer (1991, pp. 61-62) focus on the process of portfolio development; they state that a portfolio is not a portfolio unless it contains eight elements. The power of the portfolio over other assessment methods is due to these eight essential elements which are elaborated on below and are as follows:

1. the student engages in self-reflection;
2. the student selects the materials;
3. the student’s other assessments are given new meaning;
4. the student’s activities are explicit in setting goals;
5. the portfolio can have a dual purpose;
6. the achievement of personal and programme goals is documented;
7. evidence of growth is provided; and
8. the student is supported in selecting materials and in reflecting on them.

Firstly, the student engages in self-reflection. The portfolio must contain evidence of self-reflection; otherwise, the portfolio is just a container for artefacts. Secondly, the student must be involved in the selection of the material for the portfolio; this element distinguishes the portfolio from other methods of assessment, in that, the portfolio is ‘done’ by the student and not ‘to’ the student. Thirdly, grades and other cumulative information held in central depositories may be included in the
portfolio only if they take on new meaning within the context of the other elements in the portfolio. The implication of this element is that the portfolio is separate from official school records. Fourthly, the portfolio must explicitly or implicitly indicate the students' activities and includes a clear statement of the purpose, the goals, the content, the standards and how the judgements are made. Fifthly, the purpose of the portfolio during the year may differ from the purpose it serves at the end of the year. For example, the student may want to keep some material for instructional purposes but may not necessarily select these items for the end of year presentation. Sixthly, a near universal element of all portfolio models is demonstrating progress in achieving the goals of the instructional programmes. Although the portfolio may have multiple purposes, these must not conflict with each other. Seventhly, the portfolio must provide evidence of growth, for example, in terms of skill improvement or changes in interests or in attitudes. The final element is support; portfolios do not happen by themselves, the students need support in the selection of the materials, in the setting of goals and in reflecting on the learning that has taken place. The important feature of portfolio development and assessment is that the students develop the abilities needed to become independent, self-directed learners, and participants in assessment rather than the objects of assessment. A completed portfolio provides a complex and comprehensive view of the student (Paulson, et al., 1991, pp. 61-62).

On the following page, in the scheme presented in Table 3.1, Paulson, Paulson, and Meyer's (1991) key elements of a portfolio and Zeichner and Wray's (2001) conditions of portfolio use are integrated, as mentioned earlier, this integrated framework will be used to aid the discussion.

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<tr>
<td>i Student engagement in learning, learn through self-reflection.</td>
<td>a Clear purpose.</td>
<td>1. (v &amp; a). Definition and purpose of a portfolio.</td>
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<tr>
<td>ii Student selection of materials.</td>
<td>b Explicit contents.</td>
<td>2. (vii &amp; b) + (vi &amp; c). The content &amp; structure of a portfolio: Standards and/or personal goals.</td>
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<tr>
<td>iii Portfolio: separate from school records.</td>
<td>c Clear structure with standards.</td>
<td>3. (iv &amp; e). The construction of a portfolio: growth/best work/met standards.</td>
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<td>v Dual purpose: formative and summative.</td>
<td>e Construction: best work or show growth over time.</td>
<td>5. (ii, f &amp; j). Quality of the evidence presented in portfolios and the nature of reflection.</td>
</tr>
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<td>vi Shows progress on the achievement of goals in the instructional programme.</td>
<td>f Types of artefacts: quality of the evidence and reflection.</td>
<td>6. (viii &amp; g). Support: Whose work is it?</td>
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<td>vii Evidence of ‘growth’.</td>
<td>g Social interactions: own work or with mentor support.</td>
<td>7. (h). Portfolio presentations: formal or informal.</td>
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<tr>
<td>viii Support in the selection of materials, setting goals and reflection on learning.</td>
<td>h Presentations: formal or informal.</td>
<td>8. (i). The assessment of the portfolio: process and product.</td>
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<td>j Assessment of the portfolio.</td>
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3.2.1 Definition and Purpose of a Portfolio.

In the empirical literature, a widely used definition of a portfolio is that of Paulson, Paulson, and Meyer (1991, p. 60), which states that a:

"...portfolio is a purposeful collection of student work that exhibits the student’s efforts, progress, and achievements in one or more areas. The collection must include student participation in selecting contents, the criteria for selection, the criteria for judging merit, and evidence of student self-reflection."

This comprehensive definition focuses on the individual student and includes self-reflection. For Simon and Forgette-Giroux's (2000, p. 87), assessment and competence are linked, as their definition states that a portfolio contains:

"...a cumulative and ongoing collection of entries that are selected and commented on by the student, the teacher and/or peers, to assess the students’ progress in the development of a competency."

Thus, the focus of their definition is on the assessment process, rather than on a definition of the portfolio itself, and also introduces a tripartite approach to assessment.

Currently, although the portfolios in use have diverse purposes, most fall into two basic types: process or product. A process portfolio implies formative assessment, that is, development or growth over time; a product portfolio entails a summative assessment or providing a showcase for employment purposes. For example, in the field of education, an educational portfolio is, as defined by Wyatt and Looper (2004, p. 2), "...a very personal collection of artefacts and reflection about one’s accomplishments, learning, strengths, and best works.” In education, a process portfolio is referred to as a developmental portfolio, while a product portfolio is known as a showcase portfolio. A developmental portfolio shows the growth and development of students as they progress from one learning stage to another (Wyatt and Looper, 2004, p. 13), in contrast, a showcase portfolio, as the name suggests, is a collection of the best works selected for display by the owner of the portfolio (Wyatt and Looper, 2004, p. 23).
Similarly, Zeichner and Wray (2001) describe three different purposes of portfolios: learning, credential, and showcase. The ‘learning portfolio’ documents growth over time, the ‘credential portfolio’ is used to determine whether student teachers have demonstrated a level of proficiency on a set of teaching standards and the ‘showcase portfolio’ is used for employment purposes. Another dimension to the purposes of a portfolio, introduced by Smith and Tillema (2001, p. 185; 2003), is mandated use versus voluntary use. In mandated use, programme leaders state that the student must provide a portfolio, in contrast, voluntary use of a portfolio is entirely at the student’s discretion. New portfolio titles, for example, the ‘clinical portfolio’, emerged as the popularity of portfolio use in medical and nursing education increased (Coffey, 2005). The purpose of the clinical portfolio, as described by Stockhausen (2001), is in the use of artefacts, reflections and reconstruction of knowledge in order to make explicit the active cognitive exploration of clinical nursing problems.

The literature clearly indicates that the title and the purpose of the portfolio must be explicit both to the developer of the portfolio system and to the user of the portfolio. Conflict in the purpose of the portfolio has been problematic, as demonstrated in the analysis of teaching portfolios at the University of Colorado (Borko, et al., 1997), in which student teachers focused on the ‘showcase’ aspects of the portfolio for future employment, while the teachers were more concerned with the development of the student teacher.

Breault (2004, p. 847) reported some of the consequences of conflict or confusion regarding the purpose of the portfolio. In a small qualitative study of ten student teachers, Breault (2004) specifically ‘looked at the roles of perception and assumption’ by identifying inconsistency in the expectations and use of portfolios between the university faculty and the student teachers. Because the faculty did not have a clear picture of the role of the portfolio in formative and/or summative assessment, a mixed message was conveyed to the students and this confusion in the portfolio’s purpose led to contradictions in developing and grading it. Conflicting messages from the faculty about the nature of the assessment gave rise to ‘...hypocrisy...’ in the assessment of the portfolios (Breault, 2004, p. 854).
some students were rewarded for showing growth, others were rewarded for showing achievement of goals. The grading process was also inconsistent due to the individual faculty member's perceptions of 'good teaching'. Breault (2004, p. 854) noted that the faculty staff had spent several semesters piloting and revising the portfolio assessment scheme perceiving it to be an authentic and valid tool to assess student teacher competence.

If dual purposes are clear, the difficulties described by Breault (2004) may be overcome. Paulson, Paulson, and Meyer (1991, pp. 60-63) suggest that the portfolio can contain elements of development that will inform the selection process in order to show achievement at the end of the programme. The use of portfolios, as an authentic form of assessment, has become popular because it includes the evaluation of learning activity and performance rather than the mere recall of memorised facts (Stader and Hill-Winstead, 2002, p. 1). In this context, authentic means resembling real-world challenges, that is, connecting the activities of the school or university to the world beyond. Portfolio assessment serves the interests of potential employers. However, successful achievement of these outcomes depends on the purposes, practices and structures that guide the implementation of the portfolio system.

Although portfolios have long been used to assess student performance in art and architecture, it is in the field of education that portfolios are used primarily for assessment and appraisal (Jones, 2010). Pre-service teachers have a long tradition of using portfolios to record their learning from classroom sessions (Klenowski, 2002, p. 5). Shulman (1988, in Wilson, 2004, p. 336) was one of the first to argue that the assessment of student teachers should occur over time in a wide range of settings with portfolios used as the main vehicle for tracking progress and influencing institutional norms.

In medical and nursing education, there is increasing evidence of portfolio use with the emphasis on student-centred professional development (Buckley, et al. 2009). Harden (2000, p. 440) predicts that by 2015 portfolio assessment in medical education will be well established. In some institutions, lecturers in higher education are expected to present portfolios for promotion and appraisal (Hafler and Lovejoy, 2000). Despite the expansion in the contexts and of purposes of portfolios, there is
little empirical data on the advantages and disadvantages of portfolio use in higher education (Heywood, 2000, p. 341). In the late 1990s, Lyons (1998b, p. 247) concluded that there was not yet a body of systematic data documenting portfolio use or their long-term consequences. Buckley et al (2009, p. 283) note that further research is required to strengthen the evidence base for portfolio use.

Portfolios can fulfill a range of assessment purposes including accountability, summative assessment, certification, selection, promotion, appraisal and formative assessment in support of the processes of teaching and learning (Klenowski, 2002, pp. 10-11). In turn, assessment fulfills a range of aims, however, as Brown (1999b, p. 11) notes, “...good assessment...” is not the sudden death approach of the final or end of the year examination. The fundamental issues in assessment design are “...fit for purpose...” and that the mode of assessment has a positive impact on teaching and learning (Klenowski, 2002, p. 10). As Heywood (1989, p. 96) states, “…unless there is a direct link between the objective, the assessment procedure used and the instructional strategy, it is unlikely that the objective will be obtained.” Heywood (1989, p. 340) notes that “[o]ne of the problems is to provide assessment systems that ensure attention is paid to instructional and learning quality as well as to psychometric integrity”; he argues that the portfolio aids the development of personal and professional capabilities and the advantages of portfolios outweigh their disadvantages (Heywood, 2000).

Evidence on the effects of portfolio assessment on instructional practice and the long-term effect on student achievement is ‘relatively scarce’ (Stecher, 1998, pp. 335-336). Most of the research on the use of portfolios has been conducted in the United States at the elementary school level; based on these investigations, the concept of portfolio and portfolio assessment is nebulous due to variations in both purpose and procedure (Buckley et al., 2009). Therefore, for the present study the definition and purpose of a portfolio must be clear.

3.2.1.1. Portfolios: The Impact on Student Learning.

In the general literature, it is widely reported that the construction and completion of a portfolio has numerous benefits for the student. Of the twelve
studies located, published since 1993, all report benefits to students. Four of the studies were excluded as not enough detail was reported to allow a thorough evaluation and the research was small in scale. Of the eight remaining studies, three reported specifically on the effect of portfolio construction on professional development. Despite three of the five remaining studies being small-scale research, they are discussed here as they provide insight regarding how portfolios are conceptualised and the effect that this conceptualisation has on the students' learning through portfolio use.

One of the most thorough evaluation studies, conducted in engineering by Ashworth, et al., (1995, p. 24), indicated that the two aims of the portfolio process had been met: to significantly assist the development of professional and personal capabilities and to integrate work-based learning into the degree. The rigorous nature of the evaluation gives this study high credibility, despite the fact that it was from the perspective of seventeen students. The data gathering and analysis, completed independently of the course team, revealed issues regarding the setting up process of the portfolio assessment in terms of the weighting of the elements within the degree and the timing of the assessment. Other issues included the precise level of tutorial assistance to be provided and some intrinsic dilemmas associated with the use of portfolios, such as, the tension between the personal nature of the portfolio and the need to apply general assessment criteria. While these findings are not new, they are useful when reviewing later research, particularly in terms of tutor support and in how portfolios are conceptualised.

Initially, an evaluation study by Dolan et al (2004) appeared promising in that a large number of student nurses responded to a questionnaire (n=219) concerning portfolio use. However, as the maintenance of the portfolio was voluntary, the students did not spend "much time on the portfolio", in addition, the respondents to the questionnaire were a captive audience, as the students were in a lecture theatre with the lecturer standing by (Dolan et al., 2004). Other than to question the purpose of voluntary use versus mandated use of portfolios, the results of this type of research do not further the understanding of the student benefits of portfolio construction.
Finlay, Maughan, and Webster (1998, pp. 172-176) found that the portfolio process benefits weaker students and increases the motivation to learn. In their randomised-controlled study of an undergraduate medical oncology programme in which one hundred and sixty four students were randomly assigned to a study (n=80) or control (n=79) group (five students are unaccounted for), each student was allocated a patient with cancer to follow for nine months. Students in the study group recorded key items and triggers to learning in a personal learning portfolio and received support through bimonthly tutorials. Although only twenty-one students submitted their portfolios for assessment, as the portfolio assessment did not contribute to the final degree mark, the quality of these portfolios was reported to be of a remarkably high standard with students showing evidence of active learning and understanding of factors in clinical decision making, ethics, palliative care and attitudes to death (Finlay et al., 1998, p. 174).

The final assessment for all of the students involved hidden questions in the Objective Structured Clinical Examinations (OSCE) final degree examination. The students in the study group showed higher marks in factual knowledge of oncology, particularly amongst the weaker students. Of the students in the study group, a comparison of the students who submitted their portfolios for formative assessment with those who did not submit, revealed that the students who did submit their portfolios had higher overall marks and represented the more motivated students. In addition, the whole study group’s knowledge of oncology showed a beneficial trend. While Finlay et al., (1998) concluded that the weaker students performed better after portfolio learning than those who did not have such an experience, it is not clear from this study whether the tutorials had a greater impact on learning than was reported. It may be that, as suggested in Herman and Winters’ (1994) critique of portfolios, in terms of transparency and equity of support, students who receive more support are unfairly advantaged. However, Finlay et al., (1998, p. 176) stressed that the tutorials for subsequent programmes were for helping the student to realise the full potential of the learning experience and were not for didactic oncology teaching.

Again, reflecting on Herman and Winters’ (1994) critique and call for specific research on the type and amount of support that students receive, it appears
that how portfolios are conceptualised influences the type of support that students receive. This 'type of support' influence is demonstrated in Tiwari and Tang's (2003) research that evaluated the effectiveness of portfolio assessment in enhancing student preparation for assessment in an undergraduate nursing degree programme. In contrast to Finlay et al's (1998) study, Tiwari and Tang (2003, p. 273) based their conception of portfolio construction and assessment on constructivist theories which propose that learning is created by the learners themselves rather than being imparted by the teachers. The students were required to provide, justify and reflect on evidence to show that learning relevant to the course objectives had taken place. While tutorial support was provided it was only for the selection of materials to be presented in the portfolio.

Tiwari and Tang's (2003) study involved a non-equivalent control group design. The 'treatment' group consisted of twenty-one second year students who opted for the portfolio assessment. The comparison group contained forty-nine third year students who took the traditional methods of assessment, that is, assignment and examination; both groups of students undertook a one-semester course in nursing theory. Students in the 'treatment' group compiled a portfolio that showed that the course objectives had been met and semi-structured interviews were conducted with twelve of the students who underwent the portfolio assessment and who met one of three inclusion criteria. The major themes that emerged from the inductive analysis of the transcripts were as follows: the students favoured the use of portfolio assessment and the process of preparing portfolios; portfolio assessment made some impact on the students' study strategies in preparing for the assessment; spontaneous collaborative learning occurred; and, for those students who lacked motivation, an apparent increased interest in learning during the process of preparing the portfolio was demonstrated. However, in the original report of the study's findings no significant difference was found between the 'treatment' and the 'comparison' group. The authors attributed this discrepancy to the fact that the assessment of the comparison group involved an assignment component; as the preparation of an assignment generally involves a deep approach to learning, both groups engaged in a deeper approach (Tiwari and Tang, 2001, p. 4).
In contrast to the previous studies, Darling’s (2001) discussion indicates that the construction of a portfolio in pre-service teacher education is a complex social practice with intentions, rules and standards. In teacher education, the construction of a portfolio occurs in a community where there is a shared understanding of this practice. In this context, practice has a dual meaning: the custom of constructing the portfolio and being part of the teacher community. The practice of constructing a portfolio involves documenting the quest to learn the teaching practice in order to become a professional teacher. Being part of the teacher community involves the students wanting to be accepted in the ‘world of qualified teachers’, where their accomplishments will be valued. Darling (2001) distinguishes ‘goods internal’ from ‘goods external’ and applies this thinking to the construction of the portfolio. Goods internal are intrinsic motivators, for example, learning for the sake of it rather than being required to do so. Goods external are extrinsic motivators, such as, rewards, grades and recognition. In this study, interviews were conducted with twelve students, four of whom were mainly concerned with goods external to the practice, that is, they were focused on grades. These students were less able to bring coherence or insight to their portfolio and were less inclined to see beyond the external criteria for procedures and grades. The remaining eight students were more concerned with goods internal to the practice, for them the portfolio represented growth and discovery; the construction of the portfolio became a practice in which the external goods (grades) were secondary. For the students concerned with goods internal to the practice, the internal goods associated with the construction of the portfolio mattered most, that is, a deeper understanding of oneself as both teacher and learner and the disposition to question and to examine assumptions and actions (Darling 2001, p. 120).

While the research of Ashworth, et al. (1995), Finlay, Maughan, and Webster (1998), and Darling (2001) demonstrates benefits to the students, it also highlights the importance of how portfolios are conceptualised and the impact that this conceptualisation may have on the benefits to the students. The student’s motivation to learn and to maintain a portfolio influences the construction of the portfolio and vice versa. The value that the portfolio holds for the student also has an impact on
the benefits to the student. In Dolan, Fairbairn, and Harris's (2004) study, the findings indicated that the voluntary use of portfolios, those not required for assessment purposes, was not maintained. In contrast, Finlay, Maughan, and Webster's (1998) study revealed that the more motivated students submitted the portfolios for both formative and summative assessment. Darling's (2001) study offers another dimension to the benefits of portfolio construction to the students in that intrinsic and extrinsic factors influence both the practice of the student and the quality of the learning.

The nebulous nature of portfolios and portfolio assessment is compounded by research from other disciplines, as the following studies show. In general, studies from other disciplines report that the portfolio aids professional development, however, these studies are not clear about what the portfolios assessed. Although it appears that awards were given based on the student's engagement in the process, rather than on the achievement of goals or standards, Snadden (1999, p. 478) questions this portfolio issue by asking "Is it sufficient to credit engagement in a process or must we strive to measure outcomes?"

In higher education, Jarvinen and Kohonen (1995) used portfolio assessment to evaluate the professional development of twenty new teachers. Portfolio assessment was introduced as a tool for putting together authentic documents for reflective learning and involved the concept of self-assessment (Jarvinen and Kohonen, 1995, p. 29). The teachers compiled portfolios during a year-long induction programme for new teachers. Development essays and interviews with the participants were based on their personal portfolios and qualitative methods were used to analyse data from these sources. The task of the analysis was to assess the extent to which novice teachers were progressing in their ability to learn from experience through systematic reflection. The researchers concluded that self-assessment using a personal portfolio is an important way to enhance the skills and professional identity of novice teachers (Jarvinen and Kohonen, 1995, p. 34). The teachers were personally committed to their professional growth and the personal
diaries, reflections and authentic documents, which extended over a period of time, facilitated professional development (Jarvinen and Kohonen, 1995, p. 34). However, it is not clear how these factors were measured.

A larger study, by Mathers, et al. (1999, p. 521), of thirty-two General Practitioners involved a cross-over comparison in which ‘traditional’ continuing medical education activities and portfolio-based learning were evaluated for a period of six months. The data in this study included questionnaires, interviews, participant observation and a review of the completed portfolios. The breadth of topics covered by the portfolio was extremely wide as compared to the submissions of the ‘traditional’ continuing medical education group, which had a much smaller spread of learning activities and fewer subjects of study. Evidence of the effectiveness of portfolio learning, with application to practice, was provided through the use of critical incidents and learning cycles based on Kolb (1984). The researchers concluded that portfolios can give learners control over what, how and when they learn and encourages active and peer-supported learning both of which build personal and professional confidence. Although the participants thought that portfolios, as compared to traditional methods were valid and reliable, statistical evidence to support this conclusion was not reported.

The sustained use of a portfolio instrument to support long-term development was examined by Smith and Tillema (2001, p. 185), who classified portfolios into four dimensions: mandated use, voluntary use, certification purposes, and developmental purposes. The researchers selected three types of professionals in different settings to gauge portfolio use. The professional groups were as follows: fifteen Israeli principals who, after a period of training, volunteered to maintain a portfolio; twenty-six nurse managers in a large hospital in the Netherlands, who were mandated to maintain a portfolio for self-evaluation purposes; and thirty-three nurses who were mandated to use the portfolio for learning and development. The findings revealed that all three professional groups valued the feedback that the portfolio provided and that the portfolio had four common direct benefits, in order of importance these were: documentation of evidence, reflection and awareness raising, opportunity for dialogue and communication about performance with peers, and
learning and development (Smith and Tillema, 2001, p. 199). Although the findings indicated that when portfolio use is voluntary it is less likely to be continued and that when voluntary portfolio use is continued it encourages self-assessment, which is conducive to professional development. In contrast, the mandatory use of portfolios was found to invite formal self-review, which is likely to encourage superficial professional development. Based on these findings, Smith and Tillema (2001, p. 200) concluded that although portfolios are used mainly for documentation, when issued with an instrument for self-evaluation and self-assessment they have a higher potential as mirrors of competence. These studies demonstrate that portfolios without some form of structure are a useless collection of artefacts.

3.2.2 Determining the Content and Structure of a Portfolio.

The content and structure of portfolios ranges from an idiosyncratic collection of materials by individuals to standardised presentations of particular kinds of evidence for credentialing purposes. In a case study of four higher education institutions in England purporting to use portfolios as an assessment strategy in nursing programmes, Endacott, et al., (2004) described four models of portfolio structure in use: the 'shopping trolley', the 'toast rack', the 'cake mix' and the 'spinal column'. The 'shopping trolley' model is used as a vehicle for the collection of artefacts; there is no strategy linking the components or linking the components to the programme goals. The 'toast rack' model has a number of slots for each theoretical module and clinical placement in the nursing programme; unlike the 'shopping trolley' model, the items are specified and formally assessed. However, with thirty-six modules in the entire programme, the 'toast rack' becomes cumbersome as there is no overall linking of items and no cohesive assessment of learning. The problem of the 'toast rack' model is similar to that of the National Vocational Qualification (NVQ) portfolio assessment schemes, as Wolf (1998, p. 420) describes it, there is no such thing as a 'slim portfolio'. The 'cake mix' model integrates the separate ingredients of the portfolio to form a 'cake'; this is achieved as students provide reflective commentaries on the evidence, which demonstrate how they achieved the pre-determined learning outcomes for a clinical placement. The
..."spinal column" model assesses "competency statements": the student collects evidence to demonstrate his or her achievement, often the same evidence is used for different "competency statements".

It is clear from these "models" of portfolio structures, currently in use, that there is no value in the individualised scrapbook or "shopping trolley" approach (Timmins and Dunne, 2009). Relating the purpose, contents and structure of the portfolio to some form of standards appears to be beneficial to the students (Reed, 2011). However, there is considerable variation in the literature in relation to the structure of the portfolio and who determines the standards. How the students organise the evidence in the portfolios varies from a theme determined by the students or by the programme goals to standards approved by licensing authorities (Buckley, et al., 2009).

3.2.3 The Construction of a Portfolio.

Another area of dissent in the literature pertains to the construction of a portfolio in relation to the standards; the issue of this debate is whether the portfolio will show growth over time or best work at the end of the programme. Therefore, defining the purpose of the portfolio is crucial in determining the nature of the contents, the structure and how the portfolio is to be constructed.

For the purpose of certification or selection, the portfolio is developed from an externally defined set of standards; in the case of teacher education the portfolio is usually considered with evidence from classroom observations (Klenowski, 2002, p. 19). However, as Heywood (2000, p. 342) argues, portfolios have not been aligned with a curriculum framework, explicit standards, or content. Although examples of portfolio use with explicit standards do exist within the literature, for example, Wenzel, Briggs, and Puryear’s (1998, p. 208) Integrated Proficiency-Criterion framework, which combines the National League for Nursing Educational Guidelines with Benner’s (1984) stages of proficiency to form guidelines for portfolio use, there is no reported empirical data on the effectiveness of this framework. Another example of portfolio use with explicit standards is the Regents
College Model. Regents College (Lettus et al., 2001) is a non-traditional assessment-based institution that requires nursing students to document their competence within cognitive and performance realms. Although feedback from students on the use of portfolios resulted in curricular change at Regents College (Lettus et al., 2001, pp. 74-79), no empirical evidence is reported, thus, making it difficult to evaluate the effectiveness of the assessment strategy or the quality of the change to the curriculum.

In medical education there are also examples of portfolios with frameworks and/or explicit criteria being used. In the United Kingdom, Wilkinson, et al. (2002, p. 918) developed guidelines for portfolio use for the revalidation of doctors in practice. In the United States of America, O'Sullivan and Greene (2002, p. 1305) linked portfolios to the American Council for General Medical Education’s (ACGME) core competencies for the development of accident and emergency residents. Pinsky and Fryer-Edwards (2004, p. 582) use the ACGME core competencies in an innovative way, in that, the focus of their portfolio is on reflection and includes a supporting programme, referred to as PERL (Portfolio of Evaluation for Reflection on Learning). As with the previous examples, at this time, no empirical evidence of the effectiveness of these strategies has been published.

3.2.4 The Format of a Portfolio: Paper or Digital.

Portfolios are presented in two formats, both of which, have practical problems: the traditional paper format and the digital format. The most notable shortcomings of the traditional paper portfolio are difficulties in the storage and distribution of information (Timmins and Dunne, 2009). Digital portfolios are problematic in terms of confidentiality and data security (Lammintakanen, et al., 2002, p. 327) and the issue of signatures, which are often required for legal purposes.

New developments in technology have resulted in the emergence of a web-based portfolio (SkillsBase) which has been tested in a medical undergraduate clinical skills programme in the United Kingdom (Dornan, et al., 2003, p. 500). In this case study, eleven third-year and two fifth-year students evaluated the usefulness of the SkillsBase system by comparing their progress with the school standards and
peer norms and recorded this progress in their digital learning portfolio. The students also had the option of selecting their competence 'level' by navigating the five rungs of a competence ladder that ranged from 'never performed or observed' to 'consistently performed successfully with patients'. The negative attitudes of the students to the reflective learning aspects of the digital portfolio led to the conclusion that not many students are intuitive reflective learners. It was also concluded that to establish reflective learning strong tutor support is necessary and that the portfolio component of 'SkillsBase' would not be used until considerable investment in staff development occurs and the institutional culture becomes more favourable to reflective learning (Dornan, et al., 2003, p. 506).

3.2.5 The Quality of the Evidence Presented in a Portfolio.

A recurrent theme in the literature pertains to issues concerning the quality of the evidence presented in the portfolio. The debate on the quality of the evidence is related to the fact that the student gathers evidence, to problems related to the level of reflection on the evidence and to how this reflection relates to the standards. Wolf (1998, p. 429) describes students in search of evidence for their portfolios as "...hunters and gatherers of information driven by the need to gain the qualification to the detriment of the learning". When the student or teacher misunderstands the purpose of the portfolio, which is to show development through reflection, the search for evidence may be counter-productive.

Although an essential component of the portfolio is deemed to be student accounts of reflection on practice for future action, the quality of the reflection is problematic due to the wide range of reflective accounts which vary from a superficial description of practice (Woodward, 1998, p. 417) to a deep understanding of practice with resulting positive changes in practice (Wong, et al, 1995). Therefore, as stressed by Zeichner and Wray (2001, p. 619), from a researcher's point of view, there is a need to learn more about the nature and quality of reflection that emerges under different conditions of portfolio use; they argue that reflection, in and of itself, is not necessarily a good thing and does not necessarily make one a better teacher.
3.2.5.1 Factors that Influence the Quality of the Evidence Presented in a Portfolio.

Six research studies were located that reported specifically on the quality of the evidence presented in portfolios or on the students' ability to reflect on experiences and document this in portfolios. Wade and Yarbrough (1996, p. 63) explored the students' efforts to think reflectively through the process of constructing a portfolio based on their experiences in a community service learning programme. This exploratory study of two hundred and twelve teacher education students involved multiple data sources including seven student interviews, one hundred and fifty one responses to a questionnaire and one hundred and thirty six student reflective essays that addressed the portfolio experience.

For some students, as found in previous research, the lack of clarity in the purpose of the portfolio led to confusion and frustration. The survey data revealed that fifty seven of the one hundred and fifty one students who completed the ten item, six-point Likert type scale indicated that the portfolio did not help with reflection about the community service learning experience (Wade and Yarbrough, 1996, p. 71). The researchers examined the survey data further to discover which items correlated with rating the portfolio as an aid to reflection. The students who rated the instructors' feedback as useful and who rated the portfolio to be a good reflection of their interests and experiences, also rated the portfolio as a help with reflection (r = 0.53 and 0.53 respectively) (Wade and Yarbrough, 1996, p. 72). Wade and Yarbrough (1996, p. 72) concluded that the usefulness of the portfolio, as a reflective tool in learning, is associated with the quality of the instructors' feedback to the students and the students' ability to capture their experiences well in the portfolio. The survey data also suggested that, when the portfolio helps the students to reflect about their learning experiences, the students are more likely to value and to enjoy the portfolio process (r = .65 and .60 respectively) (Wade and Yarbrough, 1996, p. 72). A reported limitation of this study pertains to the non-comparison of the reflective essays, which were not anonymous, with the anonymous survey data. Another limitation, embedded in the focus of the study, was that the students did not apply their reflective thinking abilities to teaching per se (Wade and Yarbrough, 1996, p. 75). Although the researchers addressed reflection on a community service
learning experience, the question remains as to whether students will transfer their reflective thinking skills to the teaching environment. However, Wade and Yarbrough's (1996) finding that the portfolio process motivates students is both important and consistent with those of Finlay, Maughan, and Webster (1998) and Darling (2001), as discussed in previous sections.

Stuessy and Naizer (1996, p. 171) explored the development of reflection in pre-service elementary teachers in relation to their solution of teaching problems. The analysis of data from thirty-five pre-service teachers' performance portfolios revealed patterns of change in reflections and problem-solving performance during one semester. The portfolios were assessment products designed to document the students' problem-solving performance. Each student completed four portfolios documenting a separate teaching problem with periodic reflections on each stage in the problem solution process and a final reflection piece (Stuessy and Naizer, 1996, p. 172).

A course instructor and a student in the class graded the portfolio using rubrics developed over a three-semester period. The reflections were assigned to one of four 'levels of reflection' in three categories in order to ascertain the dominant focus of a reflection. Table 3.2 shows the levels and categories.

<table>
<thead>
<tr>
<th>Reflection Category</th>
<th>Level I Emphasis</th>
<th>Level II Emphasis</th>
<th>Level III Emphasis</th>
<th>Level IV Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate Task</td>
<td>High</td>
<td>Absent or Low</td>
<td>Absent or Low</td>
<td>Absent or Low</td>
</tr>
<tr>
<td>Teaching</td>
<td>Absent or Low</td>
<td>Moderate or High</td>
<td>Moderate or High</td>
<td>Low or Moderate</td>
</tr>
<tr>
<td>Implications &amp; Consequences of Teaching</td>
<td>Absent</td>
<td>Absent</td>
<td>Absent or Low</td>
<td>Moderate or High</td>
</tr>
</tbody>
</table>

Level 'one' reflection was recorded as 'high on task', 'absent or low on teaching' and 'absent on implications and consequences'. Conversely, in level 'four', reflection was recorded as 'absent or low on task', 'low or moderate on teaching' and
'moderate or high on implications and consequences' (Stuessy and Naizer, 1996, p. 174). The three categories were 'knowledge about the immediate task', 'knowledge about teaching' and 'knowledge about the implications and consequences of teaching'. The researchers randomly selected twelve portfolios to check the reliability of the readers' assignment of reflection levels and found a ninety-percent agreement between the two readers.

Overall, the dominant change was positive in the level of reflection from portfolio number two to portfolio number four (9 negative changes, 7 neutral and 19 positive changes). The level of reflection from portfolio two to portfolio four did not correlate significantly with the cumulative problem-solving performance (r = -0.155, p = 0.23) (Stuessy and Naizer, 1996, p. 175). The nature of the problem in portfolio three was reported to have a high degree of novelty, as the domain knowledge in it was unfamiliar to the students, compared to the problems in portfolios two and four. Thus, due to unfamiliarity, the students' reflections may have focused on the immediate task rather than on the more global concerns of teaching as problem solving and the consequences and/or the implications for teaching (Stuessy and Naizer, 1996, p. 175). However, in one semester of portfolio use, the reflection levels of nineteen of the students changed from lower level reflection on task focused learning to higher level reflection on broader teaching applications.

In a qualitative inquiry of students' perspectives on portfolio development, Brown (2001) employed a case study design to describe and explain the students' perspectives on their professional lives before and after portfolio development. The setting for this study was a school for adult and continuing education students. Eight participants were selected purposively from a pool of twenty students who were representative of the larger student population; their ages ranged in years from the early thirties to the mid-fifties. The data consisted of a document review of the students' written portfolios, transcribed one to one interviews, and the researcher's field notes and reflective journal. The data were analysed using grounded theory procedures. For each data source, open coding produced eleven categories with forty-five sub-units. Axial coding, between the sources, where the categories and sub-units were connected and collapsed, led to four core findings which will be
elaborated on below, these were: increased recognition of their accomplishments; self-discovery and empowerment; mentors and mentoring and the importance of reflection to identify learning needs.

Firstly, in developing a portfolio, the students were able to step back, to reflect, and to write about their lives, this gave them the opportunity to see the patterns and the trends that explained their learning. On completion of the portfolio, the students had an increased awareness of their professional accomplishments (Brown, 2001, p. 5). Secondly, the students had a deeper realisation of their abilities, made clear through their feelings of self-discovery and personal empowerment (Brown, 2001, p. 6). Thirdly, all of the students noted, through the process of reflection, the profound influence that mentors in their family, work or community had on their lives and their roles as mentors to others (Brown, 2001, p. 7). Finally, the increased insights the students gained by reflecting on, analysing, evaluating and writing about their experiences helped them to assess their learning needs. The process also provided them with greater confidence to determine and to meet their professional goals (Brown, 2001, p. 9). Brown (2001) concluded that the construction of a portfolio requires that students use their cognitive skills to make connections between themselves, their professional lives and their college education. She argues that to do this the students must critically reflect, going below the surface of memory to identify learning derived from specific experiences and to articulate where, why, and when it was applied. The portfolio then serves as a reflective bridge connecting learning experiences of work and the academic knowledge of higher education, integrating what is best from both settings and promoting the application of practice to theory and theory to practice (Brown, 2001, p. 10). However, questions could be raised about this research regarding how the students’ age influenced the quality of the reflection as the students in the study were mature, ranging in age from early thirties to the middle fifties.

Delandshere and Arens (2003) present a different view on the quality of the reflective accounts in pre-service students’ portfolios. This case study involved three teacher education programmes in which students developed a portfolio in preparation for their initial licence. The researchers examined the quality of the evidence in
twelve pre-service teachers' portfolios (Delandshere and Arens, 2003, p. 57). Several
data strategies were used including focus groups and individual conversations with
the students and a survey of pre-service teachers who had completed portfolios.
However, statistical data were not reported. The researchers used the analysis of the
twelve student portfolios to construct a set of questions that focused on the specific
content of the portfolio and the claims that were made. In addition, interviews with
faculty members were conducted in order to gather information about the process
that they used to analyse the evidence in the students' portfolio (Delandshere and

Although, as in previous studies, the lack of clarity regarding the purpose of
the portfolio was an issue, three other important concerns emerged: the students' explanations of the evidence were poor; the reflection on the evidence in relation to the standards was descriptive and the conclusions that the faculty staff drew were problematic, based on the poor quality of the evidence in the portfolio. Firstly, in regard to the nature of the students' explanations of the evidence and the poor quality of the reflection, the researchers found that the students “...believed that the artefacts they included were self-evident and constituted meaningful and credible evidence of their teaching performance” (Delandshere and Arens, 2003, p. 65). The absence of reflection demonstrated that the presentation of artefacts alone is meaningless. In one programme, the faculty wanted the explanations to focus on how a particular artefact indicated that the student had met the standards rather than an explanation of the artefact in itself (Delandshere and Arens, 2003, p. 66). Secondly, the students were similar to Wolf's (1998) NVQ students, who were described as being hunters and gatherers of evidence in order to meet the standards and to gain the qualification; the standards were there to be achieved and did not invite critique or debate. Finally, the faculty staff reading of the portfolios was problematic as they relied on an extensive repertoire of information about the student, the programme, colleagues and the external accountability requirements. The inferences that the faculty staff drew from the portfolio related to whether the students met the standards or not and were based, only partially, on the portfolio, as the faculty staff relied more heavily on what they already knew about the students (Delandshere and Arens, 2003, p. 69). The data in
the portfolios were not sufficient to justify the conclusions drawn about the students and the reasoning process of the readers was difficult to study as it remained tacit or based on other sources of evidence (Delandshere and Arens, 2003).

Delandshere and Arens' (2003) findings are consistent with those of Quinlan's (2002, p. 1046) '...think aloud...' study that examined the reasoning processes of seven academics through a colleague's biochemistry course portfolio. An analysis of the interview transcripts revealed that the participants used a normative, case-based reasoning approach that involved comparing the reviewee's practices to their own experiences, to those of their colleagues and to prototypical or traditional practices (Quinlan, 2002, p. 1046). The reviewers also considered contextual factors and their pre-existing knowledge of the teacher and the context (Quinlan, 2002, p. 1047). Based on this research, one would have to ask 'What place did the portfolio have in this internal review of the colleague's work?'

A different dimension to the quality of the evidence debate is provided by two recent studies in medical education. The studies, described below, highlight the students' attitudes towards reflection; the second study demonstrates that reflection is problematic where portfolios and logbooks are used interchangeably.

Rees and Sheard (2004a) explored the views of pre-clinical, second year medical students about the reflective portfolio assessment of their communication skills. The Reflective Portfolio Questionnaire (RPQ), an eighteen item, five-point Likert scale was developed from the research literature; Cronbach's alpha was reported at 0.716 (Rees and Sheard, 2004a, p. 126). The questionnaire was completed by one hundred and seventy eight of the two hundred and six students invited to participate in the study. The findings indicated that students who rated their reflective skills as good were more likely to have positive views about the reflective portfolio than the students who rated their reflective skills more poorly. Students with more positive attitudes towards the process of reflection and the reflective portfolio had higher marks in their reflective portfolio assessment. Total scores on the RPQ ranged from 40-75 (mean 58.28, SD 7.08). Positive correlations were found between the RPQ score and the student ratings of their reflective skills (rs = 0.322, P < 0.001) and between the total RPQ score and the students' scores for their
reflective portfolio assessment \( (r_s = 0.167, \ P = 0.029) \) (Rees and Sheard, 2004a, p. 127). Thus, the student’s attitude towards the process of reflection and maintaining a portfolio appears to affect the outcome.

In an exploratory study by Pearson and Heywood (2004, p. 88), the use of educational portfolios in reflective learning by General Practitioner (GP) registrars was studied; the researchers selected Yorkshire as the research site because GP registrars had been using educational portfolios since 1995. A postal questionnaire was sent to ninety two registrars, of which, seventy one responded. Seven respondents were selected opportunistically and interviewed; during the interview, their responses to the questionnaire were checked against entries in the portfolios. Again, the lack of clarity in the purpose of the portfolio had an impact on the quality of the evidence. Although, the interchangeable use of ‘portfolio’ and ‘logbook’ was evident in the registrars’ literature, the researchers concluded that ‘newer’ students with a supportive trainer used portfolios more in reflection (chi-square 7.056; d.f. = 1; \( P = 0.008 \)) (Pearson and Heywood, 2004, p. 90) and that final year registrars used the portfolio the least to engage in reflection. The qualitative data revealed that the registrars kept ‘notes’ about patients and discussed them with colleagues or their trainers at daily feedback meetings; the portfolio was not relevant to this process. Many of the trainers were poorly motivated and did not encourage portfolio use; this was associated with the registrar’s poor use of reflection. The reflective components of a portfolio separates it from other forms of assessment; in general, logbooks simply note the number of times an activity has been undertaken and does not necessarily offer the possibility of reflection or commentary on any accompanying learning (Challis, 2001, p. 439).

These studies highlight a number of important issues which influence the quality of the evidence presented in portfolios. First, Wade and Yarbrough (1996) confirm Finlay, Maughan, and Webster’s (1998) and Darling’s (2001) conclusions (discussed in section 3.2.1.1) that engagement in the portfolio process motivates the student. However, the student’s attitude towards reflection and the portfolio process affects the overall outcome, as was evident in Rees and Sheard’s (2004a) study. Second, Wade and Yarbrough (1996) concluded that the usefulness of a portfolio, as
a reflective tool, is associated with the students’ ability to capture their experiences well in a portfolio. When students do critically reflect, the portfolio acts as a bridge promoting the application of practice to theory and theory to practice. This conclusion supports those of Brown (2001) and Stuessey and Naizer (1996). Third, the level of reflection that the students reach depends, to some degree, on the quality of the instructors’ feedback to the students as Wade and Yarbrough (1996) and Pearson and Heywood (2004) highlight. Finally, when the purpose of the portfolio is unclear and the standards to be achieved are interpreted by the students as obstacles to be overcome, the students’ accounts of reflection may be descriptive, as was evident in Delandshere and Arens’ (2003) study. A consequence of this lack of clarity in descriptive accounts of experiences is that the outcome of the assessment of the portfolio is jeopardised, as found in the research of Quinlan (2002) and Delandshere and Arens (2003), the assessors may add supportive information to that presented in the portfolio. In section 3.3.1.3, further consideration is given to these issues in the assessment process of a portfolio.

3.2.6 Support in Portfolio Construction: The Question of ‘Whose Work is It?’

The ‘social’ interactions permitted during the construction of a portfolio relate to who the student consults with in the building of their evidence. While some teachers prefer that the students create the portfolio on their own, others advocate that the students should involve peers in this process and some teachers think that a mentor should foster the development of the student. The issue of the degree of mentor involvement brings other arguments into play, for example, Herman and Winters (1994, p. 52) raised the question of “Whose work is it?” They argue that portfolios may overestimate the students’ capabilities, because students receive support from the teacher and, perhaps, from their family, in the planning, drafting and selecting of evidence for the purpose of assessment. As the amount of such support varies, some students may have an unfair advantage over others. However, Shulman (1998b, p. 28) dismisses this equity issue and argues that support is necessary for reflective learning and must be documented in the portfolio, as
indicated in the digital ‘SkillsBase’ project, discussed in section 3.2.4, reflective learning does not occur when support is absent. Although Breault (2004, p. 850) also reported variance in the amount of support that the students received, as discussed in section 3.2.1, he concluded that the students had done more directed reflection and received more peer and faculty response to their reflections than would have happened without the portfolio requirement.

In the literature, the amount of support that a student receives is an area of considerable dissent. The major disparities regarding support occur where educators differ in their overall educational philosophy and beliefs concerning the nature and purpose of teaching, learning and assessment. Despite their criticisms of portfolio research, Herman and Winters (1994, p. 54) state that portfolio assessment requires a ‘paradigmatic shift’ in assessment and in instructional strategies and roles, for example, encouraging co-operative group work, student self-refection and “...monitoring, coaching and facilitating students’ performance.” The need for preparation of teachers in these areas was emphasised by Herman and Winters (1994) and was also evident in the ‘SkillsBase’ project.

Portfolios do not fit into the traditional mode of lecture, test and grade, therefore, significant changes in the curriculum, methods of instruction and assessment techniques are required. Designing a portfolio assessment creates significant challenges as portfolios are notoriously difficult to assess, however, these difficulties can be surmounted if a change in teaching philosophy and methods occurs (Stader and Hill-Winstead, 2002, p. 2). Portfolios allow the student ownership of the assessment process in ways that the other approaches do not permit. Portfolio assessment requires that the student collects and reflects on examples of work, thus, providing both an instructional component to the curriculum and offering the opportunity for authentic assessment. “If carefully assembled, portfolios become an intersection between instruction and assessment: they are not just instruction or just assessment but both” (Paulson, Paulson, and Meyer, 1991, p. 61). Breault (2004, p. 850) summarised the essence of a portfolio as process and product in the context of pre-service teaching:
When done well, portfolio development is contextually situated, requires critical reflection on one’s actions, is mediated by the input of a mentor and serves as a transition from thinking like a student to thinking like a teacher.

According to Breault (2004, p. 850), the portfolio is an instrument, “...as much a process as a product and as much a learning activity as a final attainment” and there is no reason why a portfolio cannot have multiple purposes.

3.2.7 Portfolio Presentations: Formal or Informal.

Variations in the presentation of the completed portfolios arise because the public presentation associated with portfolio assessment ranges from a ‘show and tell’ type to an analytical discussion of the contents of the portfolio. There is also variance in the literature regarding the discussion part of the presentation which ranges from a discussion with the student’s mentor to more formal discussions with colleagues and may include a combination of different types (Zeichner and Wray, 2001, p. 618). In some instances, the students are expected to defend the contents of their portfolio for assessment purposes (Shulman, 1998b, p. 30).

The view that the presentation of the portfolio is a ‘defence’ of the contents also varies. For example, while some students are expected to attend an oral examination and receive marks for both the portfolio and the presentation, others may be required to attend an oral examination but are not necessarily awarded marks for it. It is, as if, the oral examination is a checking system to prove the veracity of the contents (Shulman, 1998b, p. 30).

In response to critics who say that students cheat with portfolios, Shulman (1998b) describes the portfolio defence interview as the ‘safety net’, likening the defence to the doctoral dissertation oral examination. After a review of their portfolios, students in the Stanford Teacher Assessment Project (TAP) were subject to two days of interviews, discussions and questioning. Thus, Shulman (1998b, p. 24) concluded that the evidence in the student’s portfolio was genuine and not a copy of another student’s work.
3.3 The Assessment of a Portfolio: Process and Product.

The limited research that exists on the technical quality of a portfolio is compounded by difficulties in the interpretation of the results due to variations among the "...portfolio models, models that differ in their specification for content, for rubrics, and for methods for applying the rubrics (Novak, Herman, and Gearhart, 1996, p. 2)." However, the initial reading of this literature revealed other issues that are causing considerable tension, at many levels, within the assessment process of a portfolio. Whilst it is reported that portfolios are difficult to grade due to their nebulous nature, there is also evidence to support the nebulous nature of the assessment process.

In an effort to interpret the available empirical evidence on the technical qualities of a portfolio, it was necessary to continue with the 'process' and 'product' concept in order to situate the substantive literature. The assessment process of a portfolio is complex and the literature revealed processes within processes; these process are the focus of the discussion in section 3.3.1, after which, in section 3.3.2, consideration is given to the technical qualities (reliability and validity) associated with a portfolio as 'product'.

3.3.1 The Assessment of a Portfolio: Processes within Processes.

The issues of debate identified in the literature concerning the assessment process were conceptualised at three different levels in order to aid discussion: macro, meso and micro. At the macro level, tensions are evident ranging from the ambiguity in the purpose of the portfolio to the 'interpretation' of the portfolio process; these tensions have a significant influence on the portfolio assessment process as a whole. The influence of two opposing assessment paradigms, the positivist (psychometric) and the hermeneutic philosophical (interpretive), alters the assessment process considerably and give rise to further tensions represented at the meso-level of the assessment process. Examples of tensions at the meso-level are analytical versus holistic grading of the portfolio, difficulties in developing rubrics and/or grading criteria for a portfolio, again, primarily because the purpose of the
portfolio is unclear. Within the development of the rubric more tensions emerge, such as, questions regarding whether the rubric developed to reflect the quality of the portfolio as product or whether standards are met both in the construction of the portfolio and/or externally derived standards. At the micro-level of the assessment process, questions pertain to how an individual portfolio reader interprets the grading criteria or rubric or whether the evidence in the portfolio has a bearing on how a portfolio is assessed.

3.3.1.1 Macro-level Processes: The Impact of Opposing 'Assessment' Paradigms.

From the discussions in section 3.2, it is evident that the tensions in the purpose of the portfolio have a bearing on both the 'process' and 'product' of portfolio construction. However, this 'process' versus 'product' tension continues to influence how the portfolio is assessed. Although the tension begins with how the portfolio is perceived, this perception is also influenced by different 'assessment' paradigms. An example of this tension is provided in the work of Paulson and Paulson (1994a, p. 7) who put forward the argument that portfolio activity including the assessment of the portfolio is influenced by either a positivist (psychometric) or hermeneutic philosophical (interpretive) approach. These two paradigms produce portfolio activities that are entirely different. When viewed from the positivist approach, the portfolio becomes a product in which the inclusion of items within the portfolio reflects outside standards. Therefore, psychometric standards of reliability, such as, inter-rater agreement are emphasised in the judgements made about the products. The hermeneutic approach uses holistic interpretations of collected performances that seek to understand the whole in light of its parts, thus, the items have meaning only in context and the context, itself, changes as it becomes an integral part of the processes that an assessor uses in making a judgement (Paulson and Paulson, 1994a, p. 10). This interpretive approach benefits portfolio assessors who are familiar with the context in which the portfolio was constructed; familiarity with the context grounds their interpretation of the portfolio 'in' the context and encourages debate amongst the community of interpreters (assessors). Therefore, in
the hermeneutic paradigm how consensus, negotiation or compromise is reached between assessors is considered of the utmost importance and high inter-rater agreement is not viewed as an indicator of a ‘good assessment’.

Paulson and Paulson (1994a, p. 3) demonstrated the opposing paradigms of positivism and interpretivism in their model of portfolio assembly, which was used to guide the assessment of a portfolio known as the Cognitive Model for Assessing Portfolios (CMAP). Paulson and Paulson’s model assumed that a portfolio is a purposeful integrated collection of student work that demonstrates the student’s effort, progress and achievement in one or more areas. The CMAP is an organising theory that acts as a lens through which one can view and think about portfolios and placed the processes of portfolios into three dimensions: stakeholder, process and history. The first dimension, stakeholder, concerns those with an interest in the portfolio, for example, students, teachers, parents and the school. Process, the second dimension, involves identifying what activities are involved in the construction of the portfolio. The third dimension, history, is the record of change the portfolio presents over time. Paulson and Paulson (1994a) tracked the use of their model in two different projects in elementary schools in the United States; one project was conducted in Atlanta, Georgia (GA), the other, in Wyoming, Michigan (MI) (Paulson and Paulson, 1994a, p. 3). The researchers found that the two districts interpreted CMAP in different ways which resulted in contrasting assessment paradigms: positivism and constructivism. The focus of the project in Atlanta was on student outcomes of instruction; these outcomes led to summarisation across individual students and across groups. In contrast, the focus of the Wyoming, MI project was more diverse, although outcomes were stipulated, they were more generally defined. Thus, the Wyoming approach was guided more by an instruction and learning philosophy than an assessment design. Paulson and Paulson (1994a) concluded that portfolio assessment is much better suited to the hermeneutic (interpretive) paradigm rather than to the positivist (psychometric) paradigm because portfolios are holistic by nature. They also concluded that portfolios are self-contained units; while the hermeneutic approach supports synthesis of the unit, the psychometric paradigm
supports analysis of components in the unit much better than synthesis (Paulson and Paulson, 1994a, p. 12).

The second macro-level issue identified in the literature relates to the development of qualitative criteria (developed from qualitative research methods) to assess a portfolio. Pitts, Coles, and Thomas (2001, p. 355) work will be elaborated on in section 3.3.2, for now, it is important to note that the recommendations from their studies on the inter-rater reliability of portfolio assessment in medical education, in particular, they called for research to develop qualitative criteria to assess a portfolio. They argued that the criteria to be used by an individual assessor in the grading of a portfolio (product), and for the purposes of this debate, should be representative of the meso-level process in the overall assessment process. However, some researchers in responding to Pitts, Coles, and Thomas's (2001) call may have intended to 'pitch' their efforts at the meso-level in the assessment process, but actually 'pitched' their efforts at the macro-level; this error is demonstrated in the following studies. In an attempt to progress ideas about the inappropriateness of 'traditional' evaluation criteria in the assessment of a portfolio, Webb, et al. (2003, p. 603) applied notions of rigour developed from qualitative research methods. Drawing on data from a case study that evaluated the use of portfolios in nursing education, they concluded that the use of qualitative criteria offers a way forward but also suggested that some aspects of the assessment process be tightened, such as, double marking, internal and external examining (Webb, et al., 2003, p. 600). Double marking, internal and external marking is considered to be at the macro level in the assessment process. In a similar study, Driessen, et al. (2005b, p. 214) argued that portfolio assessment inevitably involves some degree of subjectivity, in an effort to overcome this issue in the evaluation of portfolio assessment in medical education they used qualitative research criteria as opposed to reliability. These researchers employed five qualitative research strategies to achieve credibility and dependability of assessment: triangulation, prolonged engagement, member checking, audit trail and dependability audit. In their case study, mentors read the student's portfolio twice during the year providing feedback and guidance (prolonged engagement). The mentor's recommendation for the end of year grade was discussed with the student.
(member checking) and submitted to a member of the assessment committee, which consisted of thirteen mentors. The committee members did not grade the portfolios of the students they had mentored (Driessen, et al., 2005b, p. 217). In the first stage of their assessment procedure, a single committee member rated the portfolios on which the student and mentor agreed. This rater “...scanned the work of the student and mentor and checked whether all procedures had been followed correctly” (triangulation) (Driessen, et al., 2005b, p. 217). If the rater had doubts, the portfolio was examined further. At this first stage, when all agreed, the recommendation became the final decision. Where there was disagreement, a second rater judged the portfolio. If the two raters agreed, their recommendation became the final decision. If they disagreed, the portfolio was submitted to the full assessment committee. Nine portfolios were submitted for a final decision. The portfolios were reviewed individually, with mentors and raters presenting their arguments. The final decision was based on consensus among the committee members, excluding the student’s mentor (dependability audit). The assessment process was “…thoroughly documented” (audit trail) (Driessen, et al., 2005b, p. 214). In all, twenty-nine decisions differed from the original recommendation, nine students failed, one hundred and forty seven received a pass, and eighty one were given a distinction (Driessen, et al. 2005b, p. 219). Driessen, et al. (2005b) argued that their assessment procedure safeguards the characteristics of portfolio assessment, with credibility and dependability of assessment built into the judgement procedure. Whilst their study highlights the value of quality management mechanisms to enhance decision making perhaps they missed Pitts, Coles, and Thomas’s (2001) call for qualitative criteria to judge the actual portfolio, that is, the ‘product’ not the assessment process.

Although Webb, et al. (2003) and Driessen, et al., (2005b) report on similar assessment processes they do not refer to the works of Friedman Ben-David, et al. (2001, p. 14) who maintained that the central characteristics of authentic achievements, as judged in portfolio assessment, and provided explicit assessment processes in the evaluation of portfolio assessment in undergraduate medical education. Friedman Ben-David, et al. identified five steps in the assessment process: documentation, reflection, evaluation, defence and decision. To strengthen
the reliability of decisions reached by consensus, two phases as to how decisions are reached were employed (Friedman Ben-David, et al. 2001, p. 16). Each pair of examiners provided individual ratings and, then, following a twenty-minute oral review with the student, presented a consensus judgement.

3.3.1.2 Meso-level Processes: The Impact of Grading Criteria or Rubrics.

In the assessment process, decisions taken at the macro-level continue to influence activities at the meso- and micro-levels. The division in the ‘process’ versus ‘product’ debate is most evident at the meso-level in the assessment process of a portfolio. However, at the meso-level considerable variation exists in the way that grading criteria and/or rubrics are presented which, in turn, has an impact on the assessors’ judgement. Examples of the variations are provided in the following three studies: Johnson, McDaniel, and Willeke’s (2000) comparison of three types of portfolio scores: analytic, combined analytic and holistic; Paulson and Paulson’s (1994b) rubric with its emphasis on process; and Rees and Sheard’s (2004b) study of the reliability of criterion-referenced assessment. In addition to the previous variations, a final variation to be considered at the meso-level, as demonstrated in Novak, Herman and Gearhart’s (1996) study, is where the choice of rubric affects the technical quality of a portfolio and the results of the assessment.

The first variation concerns analytic versus holistic grading of a portfolio and the impact that these grading types have on inter-rater reliability. Johnson et al (2000, p. 65) investigated three types of portfolio scores in the context of family literacy portfolios: analytic, combined analytic (formed by summing across analytic scores) and holistic. Six family literacy goals developed by the staff at Early Start provided the framework for the development of the portfolios (Johnson et al., 2000, p. 70). The six literacy goals formed the evaluative criteria for the analytic rubric. Each criterion on the rubric was scored using a five-point scale, with descriptors at the midpoint and endpoints of each scale. Therefore, in the case of the analytic rubric, a portfolio received six scores (one for each criteria) that ranged from one to five (Johnson et al., 2000, p. 71). The holistic rubric demonstrated the portfolio
reader’s consideration of all six criteria from the analytic rubric in a single judgement. This single judgement related to four proficiency levels of family literacy: proficient (presence of most of the family literacy skills), developing (development of many but not all of the family literacy skills), emerging (uneven development of skills), and not yet (little or no evidence of the family literacy skills). Therefore, the holistic judgement was made where the portfolio reader awarded one score that reflected the overall level of family literacy (Johnson et al., 2000, p. 72).

Following some training, eight portfolio readers formed four rater teams. Each rater scored the portfolios independently, using a two-stage process. In stage one, the score was derived using the analytic rubric while, in stage two, the holistic score was derived from the consideration of the analytic review and the descriptions of the proficiency levels in the holistic rubric. The role of rater error was investigated using three indices of reliability: percent agreement, Spearman’s correlation and phi (an index of dependability). In terms of exact agreement, raters assigned the same holistic score sixty-eight percent of the time (Johnson et al., 2000, p. 73). For the purposes of their evaluation, the researchers averaged the two rater’s scores and applied the Spearman-Brown Prophecy formula. In terms of the analyses of the analytic, combined analytic and holistic scores, the inter-rater reliability estimate for the combined analytic score was the highest (Spearman = 0.86, phi = 0.86). The inter-rater reliability estimate for the holistic score was a little lower (Spearman = 0.82, phi 0.82). Johnson et al. (2000, p. 73) concluded that holistic scores were not as reliable as the combined analytic scores; their decision study indicated that three raters are required when using holistic scores. What this study does not show is the number of portfolios assessed, the authors refer to the small-scale evaluation, and therefore, the number of portfolios is assumed to be small. Johnson et al.’s (2000) holistic rubric bears some similarities to the second variation, that of Paulson and Paulson’s (1994b) rubric, however, the application is different.

Paulson and Paulson’s (1994b, p. 3) rubric was built on their CMAP concept, referred to earlier in section 3.3.1.1, the rubric was intended to be used as a guide for making judgements about a portfolio using some assumptions about the cognitive processes underlying portfolio development. They emphasised that the importance of
the processes involved in the creation of a portfolio has precedence over the portfolio content. Therefore, the rubric is a frame of reference for judgements to be made from inferences to underlying processes that the student used in creating the portfolio. The rubric reflects four stages of growth designed specifically for the assessment of a portfolio. The four stages, ‘off-track’, ‘emerging’, ‘on-track’, and ‘outstanding’ are representative of the development of a portfolio over time. The first stage, the ‘off-track’ portfolio, resembles a folder of material. In the second stage, the ‘emerging’ portfolio, begins to show substantial signs of becoming a ‘portfolio’ by being used as an instrument for instruction and assessment. The learner shows evidence of self-direction and self-assessment in the ‘on-track’ portfolio, in the third stage, as a definite story of learning is communicated. In the final stage, the ‘outstanding’ portfolio, presents a coherent story of the student as a reflective learner. All the parts of the portfolio bear a clear relationship to each other and to a central purpose.

In a pilot test of the rubric, Paulson and Paulson (1994b, p. 10) selected a sample of forty-two portfolios from a second grade math class. A team of three teachers, from the same district, studied the rubric, reviewed the portfolios and, then, placed them into the four judgement categories. The three teachers discussed any disagreements and reached consensus. A second judge, one of the authors, later rated the portfolios without referring to the team’s ratings. Numerical values were allocated to the categories from 1 (off-track) to 4 (outstanding). Complete agreement was reported at 52% and at 100% in the adjacent category with one point difference. The correlation coefficients showed that agreement on ranking was high, at 0.84, suggesting that the raters used the rubric in a similar manner, although, there were some disagreements in assigning the portfolios to specific categories (Paulson and Paulson 1994b, p. 11). The pilot study results indicated that raters might be able to use this rubric to produce consistent judgements of portfolio quality. However, the rubric is designed to infer process and to judge the quality of the portfolio itself (as product); however, it is built on assumptions about the cognitive processes occurring when students construct a portfolio, which takes precedence over portfolio content (Paulson and Paulson 1994b, p. 14).
In the literature concerning rubrics and/or grading criteria, a third variation is the criterion-referenced assessment criteria which offers many variations. For example, Rees and Sheard (2004b) provide criteria that primarily address issues of quality of the evidence in the portfolio, whereas, Jasper and Fulton (2005) provide criteria that are rooted to the nurses' practice. In a study of the reliability of portfolio assessment criteria, Rees and Sheard (2004b, p. 138) concluded that negotiation between independent assessors could enhance the reliability of the assessment criteria. Two independent analysts, using criterion-referenced assessment criteria, assessed a random sample of portfolios (n=100, 49.5%). The students' performances were examined against subjective items in five areas: portfolio structure, level of critical reflection, level of skills development, use of documentary evidence and use of relevant literature. Later, these subjective judgements were converted into a numerical scale ranging from 0 (poor) to 3 (excellent) in order to establish interrater agreement. Then, the scores were summed for the five areas, giving a total score of 0 to 15 (Rees and Sheard, 2004b, p. 140). The level of agreement between the two raters for the total percentage score was 0.771 (95% CI = 0.678, 0.840), as measured by an intraclass correlation coefficient. The level of agreement between the two raters, for the individual items of the assessment criteria, ranged from $k = 0.359$ for level of skill development and $k = 0.693$ for use of documentary evidence. In this study, the levels of agreement were higher than those reported in previous research. Several explanations for these differences were put forward by Rees and Sheard (2004b). Firstly, the assessment criteria were different than those found in previous medical research. Secondly, the interrater agreement was calculated between two raters, whereas, for example, Pitts et al (2002), eight raters were used. Finally, the levels of agreement may have been higher because the raters conferred ten times during the grading session at intervals of five to fifteen portfolios. Some methodological weaknesses are discussed including the quantification of qualitative information and the use of criterion-referenced criteria, which were influenced by a standards model of assessment rather than a measurement model of assessment (Rees and Sheard, 2004b, p. 141).
The work of Jasper and Fulton (2005, p. 377) provides another example in the development of grading criteria; they argued that the assessment processes and criteria for assessing portfolios were rudimentary and underdeveloped. Consequently, these researchers developed Masters' level grading criteria for a portfolio based on the Quality Assurance Agency for Higher Education (QAA). The QAA published outcomes expected at various levels of academic study, for example, diploma, degree and master level. Jasper and Fulton (2005) married the QAA outcomes to the practice of nurses at Master's level, where application of theory to practice, competence, capability and the impact of learning on practice were considered essential. Using the new criteria, thirty portfolios from two different universities were re-graded (Jasper and Fulton, 2005, p. 381). The criteria were revised and examples were provided from the students' portfolios as evidence of verification of the criteria. No statistical analyses were reported as, in the main, this qualitative study refers to the process for developing the assessment criteria for a portfolio.

The choice of rubric can have a substantial effect on both the technical quality and results of an assessment (Novak, Herman, and Gearhart, 2005, p. 28). As an alternative to field-based research and, in an effort to control for variation in contents and in grading methods, Novak et al., (2005) created a laboratory portfolio model. The laboratory study addressed two issues: the assessment of multiple versus single samples of writing and the technical quality of the rubrics. Two holistic rating scales were used: one developed for classroom use and an established rubric for large-scale writing assessment. Fifteen assessors graded fifty-two collections of elementary students' narrative writing. Comparisons of reliability of scores were made using three methods: percent agreement, correlations between rater pairs and generalizability studies. Comparisons of the evidence for validity of scores were based on three methods: correlation of scores with results from two other methods of writing assessment, developmental patterns across grade levels, and consistency of decisions made across methods of assessment. The researchers found that the various rubrics framed the raters' judgements in different ways and cautioned that, due to the small sample size, generalisations cannot be made.
3.3.1.3 Micro-level Processes: The Impact of the Individual Assessor.

At the micro level in the assessment process, the 'activities' of the individual assessor influences the final judgement of a portfolio. Four major issues were identified in the empirical literature: how the assessor reads the portfolio; whether the assessor knows the student or not; when the evidence in the portfolio is assessed 'out of context', it is reshaped in the mind of the assessor; and how the individual assessor interprets the grading criteria and whether the criteria are disregarded or not.

Firstly, how the individual assessor reads the portfolio is important, in particular, whether they follow a linear or a process model affects the outcome. Based on their consideration of raters' influence on score meaning, Heller, Sheingold, and Myford (1998, p. 6) developed a process model for rating a portfolio, in which they combined cognitive processes with psychometric analyses to build empirical and theoretical foundations for establishing and monitoring the validity and reliability of portfolio assessment. To evaluate the adequacy of their theoretical analysis, they examined think-aloud protocols of raters' reasoning and examined the relation between reasoning behaviours and psychometric measures of rating patterns (Heller et al., 1998, p. 6). Analyses of ten raters' reasoning during think-aloud interviews provided evidence supporting a model of the fundamental processes involved in rating standards-based, non-prescriptive portfolios. Raters cycled iteratively among component processes and among sub-processes within them, rather than following a linear sequence, as is often evident in the grading of essays. The process model for portfolio rating provided a framework within which to conceptualise sound rater reasoning and to distinguish between acceptable variations and those that distorted the meaning of the scores (Heller et al., 1998, p. 5). Score validity was threatened when raters omitted one of the major processes, evaluated portfolios without consideration of important criteria in the rating guide, or applied extraneous assessment criteria. The results of this research revealed that the qualitative information was informative in the interpretation of the quantitative data about rating quality because different cognitive behaviours can underlie identical psychometric results (Heller et al., 1998, p. 33). Four of the ten raters were deemed
to be inconsistent and unreliable on the basis of the psychometric results, however, the qualitative data provided an explanation for the inconsistencies. One rater used an idiosyncratic evaluative process, two others relied heavily on inappropriate assessment criteria and the fourth used a limited range of the rating scale. Heller, et al., (1998, p. 33) concluded that quantitative information, alone, will not explain such rater inconsistency.

Secondly, knowledge of the student influences the outcome in the assessment of their portfolio, as the following studies demonstrate. Baume and Yorke, with Coffey (2004, p. 451) employed a case study design to understand the assessment ‘process’ of a portfolio. Ten assessors each rated two portfolios drawn from a course archive; each assessor was asked to make written comments through an on-screen completion of a pro forma, item-by-item, on which they also recorded their assessment judgements. In the experimental marking of the portfolio, marks awarded were much lower than those given by the original marker (Baume and Yorke, with Coffey, 2004, p. 469). This discrepancy was attributed to the fact that the ‘real assessors’ knew the students and had already given the students feedback on their work. It was also suggested that this knowledge of the student might lead assessors to “...mentally add such supportive information to that manifested in the portfolio” Baume and Yorke, with Coffey, 2004, p. 470). This finding is consistent with those in Quinlan’s (2002) think-aloud study, as discussed in section 3.2.5.1, where normative case-based reasoning approaches were made.

Thirdly, how the assessor interprets and re-forms the evidence in the portfolio by taking it ‘out of context’ influences the outcome. Schutz and Moss (2004) demonstrated this aspect of the assessors’ cognitive processes concerning portfolio assessment. In two case studies, three pairs of portfolio readers, who independently evaluated the same portfolio, came to different conclusions; this difference in conclusions was attributed to the fact that the readers cannot avoid shaping the data in the portfolio into a pattern or story to evaluate it. The readers engaged in this shaping process, despite the fact that they held a shared vision of effective teaching and cited the same evidence to support their conclusions; they developed different ‘stories’ from the data in the portfolio. This finding supports Paulson and Paulson’s
view that the items in the portfolio have meaning 'only in context', and that
the context itself changes as part of the cognitive process an assessor uses in making
a judgement.

Finally, how an individual assessor interprets the grading criteria has an
impact on the final judgement. In a field trial, of a conceptual framework to guide
the selection of material across five dimensions to indicate that competence was
achieved at the elementary school level, Simon and Forposite-Giroux (2000, p. 98)
found the teachers' interpretation of the framework varied greatly. The content
selection framework was developed to increase the reliability and validity of
portfolio assessment; it attempted to measure 'competencies' that had not been
evaluated effectively using traditional approaches. "The framework proposed the
systematic collection of evidence of the cognitive, affective, behavioural, meta-
cognitive and developmental dimensions of students' mastery of a specific
competency" (Simon and Forposite-Giroux, 2000, p. 83). Taking problem solving, as
an example the framework, did not translate into the actual collection of evidence
within the five dimensions; only one of the eleven teachers involved in the trial
devised a checklist that included items that related to attitudes toward being an
effective communicator. Most teachers, regardless of their training or experience, did
not purposefully try to achieve a balance among the various learning dimensions
specified in the conceptual framework (Simon and Forposite-Giroux, 2000, p. 95).
The researchers attributed the variation in the teachers' interpretation of the
framework to a variety of reasons but stemming primarily from the differences in
their articulation of the general purpose behind the use of portfolios in the classroom.

3.3.2 The Assessment of a Portfolio: Product.

Twelve studies reported specific details concerning the reliability and/or
validity of a portfolio as an assessment tool; a summary of data from these studies is
presented in Table 3.3. The settings in which these studies were conducted vary from
medical (seven) to education (four), with one study concerned with management. In
each of the studies, the sample sizes, that is, the number of portfolios assessed, are
strikingly small. The average number of portfolios is twenty, with a range from
twelve to fifty-three, with the exception of one study where a sample of one hundred and twenty-six portfolios was reported. There is a considerable variation in the number of assessors, ranging from two to eight. In general, in each of the studies, there is an emphasis on inter-rater reliability and a variety of methods was used to calculate this coefficient, including percent agreement, Pearson coefficient, Spearman correlation and/or Cohen’s kappa. Three studies, in particular, address aspects of validity: Nazier (1997), Tillema (1998) and Gadbury-Amyot, et al. (2003). In seven of the twelve studies, comparisons of portfolio results to other measures are made. Typically, with the exception of Tillema (1998) and Melville, et al. (2004), who used different measures in their comparisons, the comparison measures are to other forms of examinations. Tillema (1998) compared the portfolio results to self and peer assessment measures, while Melville, et al. (2004) compared the portfolio results to the Annual Record of In-training Review (RITA).

Consideration is given first to the three studies where aspects of the validity of a portfolio are addressed, then, to the substantive medical literature, and finally, consideration is given to Baume and Yorke’s (2002) detailed analysis of the assessment judgements involved in the assessment of portfolios. Baume and Yorke’s recommendations from a theoretical and practical perspective are of particular relevance to the present study.
### Table 3.3 Summary of Data from Studies on Portfolio Assessment

<table>
<thead>
<tr>
<th>Author &amp; Year</th>
<th>Study Setting</th>
<th>Number of Portfolios</th>
<th>Number of Assessors</th>
<th>Statistical Methods</th>
<th>Comparisons to Other Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nazier (1997)</td>
<td>Education</td>
<td>40</td>
<td>3</td>
<td>% Agree Pearson</td>
<td>Other examinations &amp; other measures</td>
</tr>
<tr>
<td>Pitts et al (1999)</td>
<td>Medical</td>
<td>12</td>
<td>8</td>
<td>Cohen's k</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Medical</td>
<td>13</td>
<td>8</td>
<td>Cohen's k</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Medical</td>
<td>12</td>
<td>8</td>
<td>Cohen's k</td>
<td>No</td>
</tr>
<tr>
<td>Johnson et al (2000)</td>
<td>Family Literacy</td>
<td>Not stated</td>
<td>8</td>
<td>% Agree</td>
<td>No</td>
</tr>
<tr>
<td>Davis et al (2001)</td>
<td>Medical</td>
<td>126</td>
<td>2</td>
<td>% Agree</td>
<td>Other examinations</td>
</tr>
<tr>
<td>Baume &amp; Yorke (2002)</td>
<td>Higher Education</td>
<td>53</td>
<td>2</td>
<td>% Agree</td>
<td>No</td>
</tr>
<tr>
<td>O'Sullivan et al (2004)</td>
<td>Medical</td>
<td>18</td>
<td>2</td>
<td>% Agree</td>
<td>Other examinations</td>
</tr>
</tbody>
</table>

#### 3.3.2.1 The Validity and Reliability of a Portfolio.

First, considering aspects of validity, the results of Nazier's (1997, p. 1) study, on the validity and reliability of portfolios, support performance portfolios as a valid method of assessing desired abilities of pre-service teachers that can be graded with reliability. Traditional assessments were not able to provide an indication of the undergraduate students' performance in the classroom or to provide feedback on where problems might be occurring. Nazier's (1997) performance-portfolio presented evidence of the students' journey through the teaching problem-solving processes of planning, designing, executing, assessing and reflecting. The pre-service teachers were required to integrate their pedagogical and domain-specific knowledge about mathematics and science into the learning environment of the
elementary school classroom (Nazier, 1997, p. 2). Each of the thirty-five students in
the study kept four portfolios and, of these, ten were randomly selected; two lecturers
and one student graded the portfolios. Rater variance was small and sixty-nine per
cent of the students were classified correctly. However, using Generalizability theory
to detect variance in scoring due to individual persons (students), raters, individual
items (rubrics) and the interactions between all three; the results showed that, whilst
there was very little variance between different raters, there was some disagreement
about ranking the students’ portfolios. Nazier (1997, p. 7) suggested that this
disagreement might have been due to the “...somewhat unclear or imprecise...”
scoring criteria and that, in any grading system that relies on rater discretion, the
intermediate grades are often the hardest to classify, whilst the best and poorest
grades are easier to identify. Correlations between the final examination and the
portfolio were low (Pearson’s correlation = 0.22). Nazier (1997, p. 6) assumed that
this difference was due to the fact that the assessments were measuring different
knowledge and performance dimensions. The concurrent validation consisted of
choosing predictor variables to represent the underlying knowledge, skills and prior
experience being demonstrated in the presentation of the students’ performance
portfolios. Two modes of assessment, performance portfolios and a final
examination, were used as data sources along with two other research instruments:
“The Test of Logical Thinking (TOLT) and the Motivated Strategies for Learning
Questionnaire (MSLQ).” The potential predictor variables were used in a
discriminant analysis to predict groups of ‘A’, ‘B’ and ‘C’ grades. In the analysis,
Nazier (1997, p. 4) also included students’ self reports of the number of courses
attended and total hours of teaching experience. The Wilk’s Lambdas, generated by
the analysis, indicated the group differences and that the TOLT and the number of
courses attended were the most statistically significant (p = 0.08 and 0.001
respectively). However, the MSLQ and hours of teaching experience group
differences were not statistically significant (p = 0.85 and 0.37 respectively) (Nazier,
1997, p. 5). On the basis of these results, Nazier (1997) concluded that students with
more strategic knowledge and more pedagogical experience scored higher on the
performance portfolios. Therefore, Nazier (1997) established validity of the
performance portfolio in this instance, as the portfolio sought to measure problem-solving processes of teaching in domain-specific knowledge about mathematics and science. Nazier (1997) warns that these results cannot be applied to other portfolio systems as the performance portfolios in his study focused on specific teaching processes within a lesson peculiar to mathematics and science.

In the second study addressing aspects of validity, Tillema (1998, p. 267) correlated workplace performance ratings with the portfolio ratings of 27 trainee junior executive officers. Following a six-month training programme which was aimed at developing their teaching competence, three different rating ‘tools’ were used to rate the performance of trainees (Tillema, 1998, p. 269): a portfolio rating, a peer assessment rating and a self-assessment rating. For the portfolio rating, three independent ratings were combined into one score for areas of competence along two dimensions: the trainee’s use and deployment of ideas and the quality of the teaching based on evidence collected. For each of the two dimensions, the inter-rater reliability was high, with \( \kappa = 0.81 \) and 0.83 respectively (Tillema, 1998, p. 269). For the peer-assessment rating, trainees, who observed each other’s presentations, completed a short questionnaire relating to their colleague’s teaching performance. For the self-assessment rating, the trainees were also asked to rate their own performance on the questionnaire as above. The overall-assessment rating by the students’ mentor three months after completion of the training period was used as a validation criterion. Tillema (1998, p. 273) concluded that the portfolio rating was the best predictor of later work performance \((r = 0.77)\), the peer rating was also a reasonable predictor \((r = 0.69)\) and that the self-assessment rating was the poorest indicator \((r = 0.54)\). Whilst the sample was small, one would have expected the correlation of the self-assessment rating and the portfolio rating to be higher, as portfolios are expected to involve a high degree of self-assessment. Tillema’s (1998, p. 274) explanation for this finding is that the frame of reference for self-assessment was imposed on the participants, that is, the students were not free to select the criteria on which they were to be rated. Further to this, Tillema (1998, p. 275) concluded that self-assessment lacks corrective feedback and depends on ill-defined frames of reference.
In the third study addressing aspects of validity, Gadbury-Amyot, et al.'s (2003, p. 993) study confirms some of Nazier's (1997) results, in that, the greatest source of variance in portfolio assessment is due to the grading criteria and/or rubrics. Gadbury-Amyot, et al. (2003, p. 993) examined the validity and reliability of portfolio assessment in the context of a dental hygiene course using Messick's (1995) unified concept of validity as a framework to guide the study. However, theoretical arguments were used for some aspects of the framework, for example, in the content aspect of construct validity, "...all faculty participated in the development of the seven traits used for the evaluation of the portfolios." (Gadbury-Amyot, et al., 2003, p. 994), but this does not mean that these seven traits are the most suitable traits. From theoretical evidence, the researchers concluded that student engagement in self-reflection in the construction of a portfolio is evidence of the substantive aspect of Messick's framework.

Faculty believe that student involvement in the selection of portfolio content and subsequent self-reflection and self-evaluation of portfolio entries as they relate to attainment of program competencies serves to develop students' ability to assess and/or self-evaluate their competence (Gadbury-Amyot, et al., 2003, p. 994).

Based on an analysis of the literature on performance assessment, Gadbury-Amyot, et al. (2003) developed a rubric which described primary traits relevant for the dental hygiene course; they theorised that the rubric was evidence of the structural aspect of construct validity. However, seven faculty raters graded twenty student portfolios using the 'primary trait analysis' scoring rubric. The greatest source of variance was the scoring rubric, which accounted for seventy-eight percent of the total variance, despite having established the internal consistency of the seven traits in the subscales of the overall scoring rubric (Cronbach's alpha ranged from 0.81 to 0.95 on the subscales) (Gadbury-Amyot, et al., 2003, p. 994). Empirical evidence for the generalizability aspect of construct validity was provided by a decision study. Although the decision study illustrated that increasing the number of raters beyond three would contribute very little, then again, increasing the subscales from seven to fourteen would result in a phi of 0.86. However, increasing the
subscales within the rubric might be impractical and the small sample size (twenty portfolios) could be 'interfering' with the results, as a larger sample might show that additional subscales are unnecessary (Gadbury-Amyot, et al., 2003, p. 1000). Nevertheless, the researchers did find a significant relationship between the portfolio score and the students' Grade Point Average (GPA) \(r = 0.70; p < .01\) and the National Board Dental Hygiene Education (NBDHE) \(r = 0.60; p < .01\). Although, it is not clear from the study what the NBDHE is; it is assumed that the NBDHE was an examination. The relationship between the portfolio score and the Central Regional Dental Testing Service examination was both weak and insignificant \(r = 0.19; p < .05\). The weak empirical evidence, from this aspect of the study, is offered in support of the external aspect of construct validity.

Second, considering the substantive medical literature, three studies by Pitts and his colleagues (Pitts, Coles, and Thomas, 1999; 2001; Pitts, et al., 2002) have held a dominant position in this literature on portfolio assessment. In their first study on reliability of portfolios, Pitts, Coles, and Thomas (1999, p. 515) concluded that the inter-rater reliability did not reach a level that could support making a safe summative judgement; they attributed this problem in portfolio assessment to the variability of structure and content of the portfolios reviewed. Twelve portfolios were rated by eight experienced general practitioners; they suggested that a reduction in the number of raters might increase the reliability, as in Nazier's (1997) and Gadbury-Amyot, et al.'s (2003) studies, the number of raters need not exceed three. The assessors, using six criteria and a 'global' pass/refer rating, judged each portfolio. The overall level of agreement, above that expected by chance, between the eight assessors, in rating the portfolios as 'pass' or 'refer', was estimated using the \(kappa\) statistic. The inter-rater reliability for the 'global' rating was reported as 'fair' agreement \(k = 0.32\) and the intra-rater reliability was reported as 'moderate' agreement \(k = 0.54\) (Pitts, Coles, and Thomas, 1999, p. 519). In a follow up study, using the same portfolios as a data source but with revised grading criteria, Pitts, Coles, and Thomas (2001, p. 351) reached the same conclusions. Again, eight experienced general practitioners graded thirteen portfolios, on two occasions, one month apart. There was little change in the results. The inter-rater reliability for the
'global' rating was reported as $k = 0.38$ representing 'fair' agreement, while the intra-rater reliability was reported as $k = 0.54$ representing 'moderate' agreement (Pitts, Coles, and Thomas, 2001, p. 353). It may have been more beneficial to use the revised grading criteria with a smaller number of raters. However, in a third study, Pitts, et. al. (2002, p. 197) continued to use eight assessors, again grading the same twelve portfolios from the 1999 and 2001 studies. In the third study, Pitts, et al. (2002, p. 199) compared individual assessor results with results from random paired assessors' discussions two months later. Overall reliability of a global 'pass/refer' judgement improved from $k = 0.26$ (fair agreement) using individual assessment to $k = 0.5$ (moderate agreement) with paired discussants (Pitts, et al., 2002, p. 199).

However, Rees and Sheard's (2004b) identified several methodological weaknesses associated with the three studies conducted by Pitts et al. Firstly, reliability estimates were based on very small samples (twelve or thirteen portfolios). Secondly, the interval between the two assessments of the portfolio was one month in the 2001 study and two months in the 2002 study. Thirdly, in the 2002 study the discussant pairs enhanced the reliability even though three of the seven criteria underwent a reduction in the level of agreement with paired assessors. For example, the resources criteria, reported at the individual assessor level as $k = 0.36$, decreased to $k = 0.01$ for the discussant pairs. Fourthly, the same portfolios were used in all three studies. Finally, eight assessors were engaged in the assessment process, whilst there was research available at the time suggesting that the number of assessors need not exceed three.

Again, there is evidence that the grading criteria and/or the rubric has a bearing on the final grade in O'Sullivan, et al.'s (2004, p. 309) cross-sectional study of four years of psychiatry residents. The results of this study show that perfect agreement between two independent raters was good (75%) for some items and very low (7%) for others (O'Sullivan, et al., 2004, p. 316); this weakness was attributed to the scoring rubric (O'Sullivan, et al., 2004, p. 321). However, it was acknowledged that there were difficulties with the development of the rubric and that this development was ongoing. Again, the small sample size of eighteen portfolios limits the generalisations that can be made from the results. It is important to note that
issues concerning the grading criteria and/or rubrics were also found in the research of Nazier (1997) and Gadbury-Amyot, et al.'s (2003).

Continuing with studies in the medical setting, another cross-sectional study, this one by Melville, et al. (2004, p. 1117), concluded that portfolio assessment is insufficiently reliable as a sole method for high stakes assessment. In their study, a single rater assessed seventy six portfolios in year one; in year two, thirty portfolios were assessed by two independent raters. For year two, the inter-rater correlation coefficient of the portfolio assessment was reported at 0.52 and $k = 0.35$ compared to the inter-rater correlation coefficient of the Annual Record of In-training Assessment Interview (RITA) which was reported at 0.71 and $k = 0.38$ (Melville, et al., 2004, p. 1123). The portfolio reading for the assessment purpose took place during the RITA interview, with assessors glancing at the portfolios in a thirty to forty five minute period (Melville, et al., 2004, p. 1122). Melville, et al. (2004) made no reference to the small sample size of thirty portfolios in year two or to the fact that the kappa statistic results for both the portfolio 'assessment' and the RITA interview were similar.

In contrast to Melville, et al.'s (2004) study, in one of the largest studies in undergraduate medical education, Davis, et al. (2001, p. 357) evaluated the portfolio assessment procedure as a whole. The assessment of the portfolio was undertaken in three stages (Davis, et al., 2001, p. 358). In stage one, two pairs of examiners read each portfolio. Stage two was comprised of a portfolio review, which took place over two days; during the review each student discussed his or her portfolio with each pair of examiners. In the third stage, following discussions with all of the examiners, final grades were awarded for each student. Of the one hundred and twenty nine candidates eligible for portfolio assessment, one hundred and twenty six submitted a portfolio, of these students, five failed, thirteen received a conditional pass and one hundred and eight passed (Davis, et al., 2001, p. 359). Davis, et al. (2001) then assigned numeric values to the students' outcome grades, after which, the overall mark was correlated using Spearman correlation with the mark for each of the other components of the final examination. The results indicated a low to moderate correlation with three other examinations (Davis, et al., 2001, p. 360). First, a
multiple-choice paper of extended matched items (0.42), which was designed to assess knowledge and its application. Second, the constructed response paper (0.42), which was designed to assess higher-order thinking skills such as problem solving and critical analysis, as well as, knowledge. Finally, an Objective Structured Clinical Examination (0.47), designed to assess clinical skills. Davis, et al. (2001) concluded that the low to moderate correlations between the portfolio assessment and the other examinations indicated that the portfolio assessment was measuring common abilities and abilities that were different from those tested in the other examinations (Davis, et al., 2001, p. 363). These conclusions are similar to the conclusions that Nazier (1997) drew from his study.

Finally, in a detailed analysis of the assessment judgements involved in the assessment of fifty three portfolios, Baume and Yorke (2002, p. 7) demonstrate another dimension to the reliability and validity debate in the assessment of a portfolio. Based on their analysis, these researchers suggest areas for consideration in portfolio assessment, such as, measures of the reliability, the structure of the assessment and the rules for combining scores. Baume and Yorke (2002, p. 14) argue that the percentage agreement is a more appropriate measure than the inter-assessor correlation (they are considering agreement not the correctness of judgement) and suggest that the Pearson r statistic is probably inappropriately used in some studies, since the data are ordinal rather than interval in character, therefore, a non-parametric measure is preferable. Their study demonstrated a 90% agreement between assessors on individual outcomes, which dropped to 61% when combination rules were applied. The ambiguity in the assessment of a portfolio stems from the actors who are directly involved in the assessment process (Baume and Yorke, 2002, p. 22). They argue that, if these actors, namely the “...assessees and the assessors”, share a common understanding of the meaning of satisfactory work on a course, the reliability of the assessment ought to be high; they recommend a “...proper balance between components that must be passed and those regarding which a greater tolerance can be allowed” (Baume and Yorke, 2002, p. 24). If the judgements made concerning the assessment of a portfolio are to stand up to critical scrutiny, the

Baume and Yorke (2002) bring the debate concerning the curriculum back into play, arguing that "...reliable assessment requires shared knowledge on the part of the assessor and 'assessee' regarding the expectations laid down by the curriculum." However, within this relationship, reliability may be compromised because knowledge of the curriculum between the various 'actors' is not shared and understood. A lack of common understanding concerning portfolio use and assessment is evident in the discussions throughout this chapter but, in particular, relates to the point made in section 3.2.3, in which, Heywood (2000, p. 342) argues that portfolio assessment is nebulous, because they have not been aligned with a curriculum framework, explicit standards or content.

3.4 Summary.

This literature review indicates that the title and purpose of the portfolio must be explicit both to the developer of the portfolio system and to the user of the portfolio. Defining the purpose of the portfolio is crucial in determining the nature of the contents, the structure and how the portfolio is to be constructed. For the purpose of certification or selection the portfolio is developed from an externally defined set of standards. For the present study, which focused on granting a licence to practice to undergraduate student nurses, the ABA Domains of Competence, as discussed in Chapter One, were used as the externally defined standards. Portfolios without some form of structure are a useless collection of artefacts, therefore relating the purpose, contents and structure in an integrated fashion benefits the students.

An essential component of the portfolio is deemed to be student accounts of reflection on practice for future action. However, the reflective accounts vary from a superficial description of practice to a deep understanding of practice with resulting positive changes in practice. Therefore, for this study, the implications are that there is a need to learn more about the nature of reflection that emerges under different conditions of portfolio use. The level of support that the student receives in building a portfolio will also have a bearing on the present study.
The influence of two opposing assessment paradigms, the positivist (psychometric) and the hermeneutic philosophical (interpretive) alters the assessment process considerably. This study is concerned with 'high-stakes' assessment, therefore, it lends itself to the psychometric paradigm. A central concern to the assessment process is the issue of analytic versus holistic grading of the portfolio and the difficulties in developing rubrics. This difficulty arises because the purpose of the portfolio is unclear. In this study, the purpose of the portfolio is clear as the standards will have to be met at the point of registration with ABA. The central issue for this study is whether the portfolio assessment will adequately assess the concept of competence, as described in Chapter Two. The interactive model of competence is complex and will depend on the students' ability to portray that complexity in the writing of their portfolios. An additional issue is whether the portfolio raters will be able to decipher that complexity in the students' portfolios. In the following chapter, on research methodology, the aims and methods which were used to overcome some of the issues concerned with portfolio assessment are presented.
CHAPTER FOUR

RESEARCH METHODOLOGY

Introduction

In this chapter the discussion focuses on the philosophical basis for the research strategy and grounds the research methods within an accepted epistemological paradigm to conduct the longitudinal study of portfolio use to assess the competence of undergraduate student nurses. This discussion clarifies the rationale for the chosen methodology and the research design in order to ensure consistency in the application of the methods used to answer the research question and to integrate the analysis with the theoretical underpinnings which were presented in the previous chapters.

Section one considers the philosophical and methodological decisions taken for the purposes of this study and clarifies the links between the philosophy, methodology and the importance of consistency between the aim of the study, the research questions, the chosen methods and the personal philosophy of the researcher. Thus, the research question was framed in light of the literature reviewed in the previous chapters. In section two, the discussion focuses on the research design, the study setting, ethical approval and gaining consent; the demographic details of the participants are also presented in this section.

Section three focuses on how the data were gathered in keeping with the three research methodologies: interpretative phenomenology (interviews), ethnography (field work), and the positivist position (numerical data). In section four, a short summary of the data collection methods is presented and how the data were managed and stored is presented in section five. The discussion focuses on the qualitative data analyses and integration methods and the quantitative data analyses, respectively, in sections six and seven.
4.1. Philosophical Considerations

The dominant scientific paradigm in medical and nursing research sees the testing of hypotheses as the highest form of scientific research (Thorne 2008, p.235). Randomised controlled trials, in the positivist paradigm, are considered to produce the best external evidence for use in answering questions about therapeutic interventions; they have high internal validity but often dubious external validity and almost no information about context (Miller and Crabtree, 2000, p. 613). Three common qualitative approaches are put forward as an alternative to positivism, these interpretivist traditions are ethnography, phenomenology and grounded theory. In these traditions, the subject of the enquiry is the phenomenon and the ontological and epistemological views of the researcher dictate the methodology and methods. Postmodernists and anti-realists have criticised ethnography as a free for all and nothing more than journalistic writing (Brewer, 2000, p. 15). In defence of the ethnographic researcher, Brewer (2000, p. 15) argues that, in the ‘post post-modern’ era, ethnography can generate knowledge, build theory and be applied to evaluate interventions or policies. At the other extreme of the research paradigm, phenomenology is context specific and focuses on the individual’s lived experience of a particular phenomenon; meanings are embedded in the phenomenological text and cannot be generalised in that not all persons must experience this phenomenon (van Manen, 2002, p. 237). Grounded theory and methods are a widely used mode of carrying out qualitative research when generating theory is the researcher’s main aim (Strauss and Corbin, 1997).

At the philosophical level, the apparently clear distinctions that exist between paradigms, such as positivism or phenomenology, become less well defined at the social and technical level of research practice. Many researchers in the social sciences, including nursing, utilise techniques from a number of these paradigms or adopt strategies such as triangulation to address complex issues from a number of different perspectives (Proctor, 1998, p. 76). In order to determine the approach to be used for this study, it was important to acquire an understanding of the two extremes of the philosophical traditions. According to Proctor (1998, p. 76), these extremes “...reflect the positivist and phenomenologist positions”. Whilst acknowledging that
there are numerous other philosophical positions between these two extremes, Proctor (1998, p.76) recommends that an understanding of the “middle ground”, such as realism, is necessary.

Realism has been described as a “common sense ontology” that provides an alternative to positivism and phenomenology whilst retaining some features of both positions. In addition, realism refers to where the measurement or intervention of a study is to take place, focuses on the naturalness of the situation in which the assessment occurs (Tracey and Glidden-Tracey, 1999) and provides a guide to researchers about the need for participants to be observed in realistic settings. Realists accept the significance of some form of testing by emphasising the importance of models to understand and describe phenomena. For this research, the realist stance is more appropriate than either of the more extreme positions of positivism and phenomenology, although elements of both are incorporated within realism. Realists acknowledge the role of interpretivist approaches and recognise the importance of structure and organisation of the constructs through model development and testing. Hospital environments are complex, thus, neither positivism nor phenomenology are complete in themselves for this study. For example, a hospital is not a stable or value-free environment, as a positivist approach would demand and phenomenology, as a philosophical underpinning for the research, would not address the complexity of the psychometrics of the portfolio as an assessment tool. Therefore, as this study aimed to understand the students’ experiences of portfolio use and to investigate the psychometric properties of a portfolio as an assessment tool, a combination of research methods, rooted in the positivist and interpretive research paradigm was deemed the most appropriate research strategy.

A rapidly growing area of interest in research methodology is the study and use of mixed method and mixed model approaches. The aim of such approaches is to check information acquired by one method against information acquired by other methods in order to corroborate findings. The objections to a single method study are overcome by Weiss (1998) who suggests that a multi-method approach, for example, entailing survey instruments, interviews, observation and document analysis, is the
ultimate in triangulation and notes that if different approaches, methods and theoretical perspectives yield convergent stories, confidence in the validity of the results is increased (Weiss, 1998, p. 269). There is a growing body of literature, for example, in education, school effectiveness, evaluation, nursing, public health, sociology and clinical research, which report the use of mixed methods. Mixed methods combine qualitative and quantitative approaches in the methodology of a study (for example, in the data collection stage), whereas mixed model studies combine the two approaches across all phases of the research process (such as data collection, data analysis, and inference) (Tashakkori and Teddlie, 2003, p. 690). A multi-method approach and/or a multi-model approach to research are superior to mono-method research in that it provides grounds for data triangulation (Brewer & Hunter, 2006, p. 65).

However, Cuba and Lincoln (1989) argue that it is impossible to combine qualitative and quantitative approaches in research as the two methodologies rest on different epistemological and ontological principles. Quantitative research has a neopositivist or rationalist basis, whereas, qualitative methods rest on constructivist beliefs that each person constructs his/her own reality, thus, the latter paradigm can identify only the perceptions of participants and the meanings they ascribe to their experiences (Guba and Lincoln, 1989, p.19). The methodological debate regarding the mainstream quantitative tradition (the positivists and post-positivists) and the qualitative tradition (the constructivists) is losing ground to the mixed method or mixed model approach to research (Tashakkori and Teddlie, 2003, p. 690), due, in part, to the philosophical position that there is no one way of looking at the world. The philosophical position underpinning applied qualitative research, involves an acceptance of a person’s own interpretation of his/her experiences and the view that this reality for the individual can be captured at a certain point in time. In contrast, positivism holds that there is an external reality that is independent of people’s beliefs, which can be investigated in terms of hypotheses, causes and effects. It is important to note that qualitative research seeks to identify, map and explore the multiple perspectives held by individuals and groups within their social setting and does not seek to identify a single ‘truth’ and accepting that diverse perspectives exist.
does not negate the idea of an external reality that can be captured. This external reality is qualified by the recognition that there is no one way of looking at the world. Nevertheless, in studying portfolio use in order to assess the competence of undergraduate student nurses there is value in exploring individuals' perspectives on their experiences or attitudes which can yield reliable evidence for policy-makers. Mixed methods and/or mixed model approaches to research can enhance understanding by exploring and conveying a full picture of diverse and multifaceted reality and is achievable by investigating a range of perspectives and recognising that these are not static and are liable to change. It is exactly this premise of change which leads to the necessity and value of longitudinal research which seeks to capture and explain perspectives which change over time.

In the social sciences, longitudinal research approaches are well established (Tracey and Glidden-Tracey, 1999); they provide information about changes over time in the effects of, for example, an intervention, policy or programme. The impact of an intervention, policy or programme are rarely static and are subject to change and a longitudinal research design is the most illuminating method by which to explore this change (Molloy et al, 2002, p.16). In contrast, a cross sectional research design only captures the effects of an intervention at a specific juncture (Cohen et al, 2007, p. 174), when measuring change over time, whether in attitudes, behaviours or experiences, quantitative cohort or panel studies are commonly used (Molloy et al, 2002, p. 1). Similarly, in the fields of sociological research and ethnography, longitudinal qualitative approaches have been used to explore individuals' changing life experiences (Molloy et al, 2002, p.1). Longitudinal research, irrespective of the type and purpose, has certain key characteristics: principally it will always involve the collection and analysis of data on more than one occasion over a specified period of time (Molloy et al, 2002, p.5), and depending on the methodological approach chosen, seeks to describe, measure, explain or examine the implications of changes over time.

As in other research traditions, longitudinal research may differ in its objectives, be quantitative or qualitative, and in combination, can provide powerfully complementary data (Molloy et al, 2002, p.6). While quantitative studies aim to
measure the extent of change over time, qualitative studies aim to understand the ‘how’ and ‘why’ change occurs. Mixed model longitudinal research seeks to combine qualitative and quantitative data in a cumulative and integrated analysis. Although longitudinal qualitative and quantitative research approaches share much common ground, qualitative approaches are distinctive in that they can provide a unique insight into the factors underlying the impact, or lack of impact, of an intervention within the complex context of individuals’ lives (Molloy et al, 2002, p. 43). Detailed repeated interviewing makes it is possible for researchers to identify factors integral to, and outside of, interventions which can influence their success or failure. Longitudinal approaches can provide a detailed map of factors that occur during an intervention providing a holistic approach. The primary focus of this study was to investigate the psychometric properties of the portfolio as an assessment tool, in order to determine the students’ competence to practice at the point of registration with An Bord Altranais (ABA). To fulfil these aims and objectives, and with due consideration to the philosophical underpinnings of methodology and methods, a mixed model research design was chosen. This design utilised methods from ethnography, phenomenology and the positivist traditions, thus yielding a mixed model quantitative and qualitative prospective longitudinal design.

4.1.1. The Research Aim and Objectives.

Overall, the aim of the research was to investigate the validity of portfolio assessment scores as a measure of undergraduate student nurses’ competence to practice. To achieve this aim, a longitudinal analysis of a group of students participating in the portfolio system was compared with a group of students who were not taking part in the portfolio system. The specific objectives for the research were as follows:

1. To implement a portfolio system with one group of undergraduate student nurses and to compare the results with another group of similar students who were not using a portfolio system.
2. To evaluate the reliability of the portfolio assessment by comparing the results of the clinical assessors’ outcomes to four independent raters each using one of two rubrics.
3. To evaluate the effectiveness of the portfolio assessment.

While the purpose of the study determines the methodology, the design of the research is governed by the notion of ‘fitness of purpose’ (Cohen et al 2007, p. 73). Tracey and Glidden-Tracey (1999) advocate the use of a reasoned argument approach to the conceptualisation of the research process, where the different aspects of the study logically relate to each other and focus specifically on four separate aspects of a study where integration must occur for it to be deemed robust (Tracey and Glidden-Tracey, 1999, p. 299). These aspects are the substantive theory underpinning the study, the research design, measurement, and analysis.

For this study, the central question was to investigate the psychometric properties of the portfolio, as an assessment tool, in order to determine the students' competence to practice at the point of registration with ABA. Therefore, the theoretical underpinnings relate to the previous chapters on competence and portfolio use, Chapters 2 and 3, respectively. An Bord Altranais’ Domains of Competence (2000) provided the theoretical underpinning for the assessment of competence. In keeping with the central tensions in the literature, two conceptual frameworks provided the theoretical underpinning to investigate portfolio use. The portfolio process framework was guided by the integration of Paulson et al’s (1991) key elements of a portfolio and Zeichner and Wray’s (2001) conditions of portfolio use.

The research design was also influenced by what is already known empirically and the limitations of previous research. In particular, the chapters on competence and portfolio use indicated that there were few longitudinal studies on portfolio use to assess students’ competence to practice. Therefore, this deficit informed the decision to conduct a longitudinal study in order to provide a clearer picture of the unfolding individual and aggregate change over time (Mentkowski and Associates, 2000, p. 37). For the purposes of this study, maturation was expected as the students progressed through the four-year programme and developed their competence to practice.

In longitudinal studies, measurement effects are another disadvantage as participants become sensitised to research questions (Cohen et al, 2007). This
problem was overcome by adopting a phenomenological approach to the interview technique and by conducting fieldwork involving a number of observations on the same students over time and comparing the data from the interviews and observations to the content of the students’ portfolios. Although it is acknowledged that reflecting back on clinical experience is not the experience itself, in the telling of the story there is a tendency to interpret the clinical experience, to rationalise it and to make sense of it (Titchen, 2000, p. 53). Thus, in keeping with the holistic view of competence, the differences between separation and holism were acknowledged. For example, in the interview, each student was separated from his/her life world of clinical practice, whereas, observing a student’s actual clinical practice provided a holistic picture of a connected, involved student in that life world of clinical practices (Titchen, 2000, p. 66). The portfolio content was then examined to see whether it captured the essence of a student’s clinical experience as witnessed during the field work.

The research design involved a longitudinal study of two groups of students from the same cohort of BSc nursing students enrolled in one university and one of three affiliated hospitals. This longitudinal approach allowed for a time series design of data collection and for making comparisons between the two groups (Cohen et al, 2007). Details of the data collection points for each phase of the study are described in section 4.3.1. The research design is illustrated in Figure 15.
Are portfolio scores valid in determining undergraduate student nurses' competence to practice?

Research Question.

Defining Competence Chapter 1 and 2

Portfolio as 'Process' Chapter 3

Portfolio as 'Product' Chapter 3

Theoretical Underpinnings.


Conceptual Framework.

A single group of BSc undergraduate student nurses practising in two associated university hospitals.

Context of the Study.

Portfolio Group Hospital 1.

Comparison Group Hospital 2.

Research Design.

Longitudinal study of these students for the four year duration of the programme. Chapter 4

Data Collection Methods.


Data Analysis and Integration.

Interpretative Description. Content & Statistical Analysis.

Data Reduction into Conceptual Framework Groupings.

Data Reduction and Display. Chapter 5

Discussion, Conclusions and Limitations of the Study.

Drawing Conclusions. Chapter 6

Figure 15. A Schematic Representation of the Research Design.
4.2.1. The Study Setting and Sampling Strategy.

Access was negotiated and obtained from two sources. The main process of data gathering occurred in the students’ workplace, that is, the hospital environment. Therefore, permission was sought from students and the ‘gate-keepers’ which included the hospitals and the students’ preceptors. In the main study hospital (the portfolio group), the Directors of Nursing and the School of Education granted permission to conduct the research. In the comparison study hospital (the learning log group), the Director of Nursing also granted permission to conduct the research but with some limitations. One limitation was that the ‘learning logs’ could not be included in this study as the Practice Development team at that hospital was evaluating their use. Another limitation was that access to some wards/units was limited for the observation of students in practice due to the specialised nature of these particular areas.

The implementation of a portfolio approach to teaching, learning and assessment (the intervention) requires group effort and a range of different actors. In this study, the target population for the intervention was the student nurses and those involved in the delivery of the intervention included the clinical staff, the students’ preceptors and the Clinical Placement Co-ordinators (CPCs). Clinical nurse managers were primarily responsible for the students’ assessments in clinical practice and were instrumental in the portfolio assessment process. Secondary or wider groups of people affected by the intervention, for example, patients, medical staff, laboratory, pharmacy staff and ancillary hospital staff, were not directly targeted for the purposes of this study. However, conversations did take place with some of these ‘actors’ during the fieldwork. For this study, a single cohort of BSc undergraduate student nurses was recruited. Although all of the students were enrolled in one university, in this cohort, each student selected a hospital to practice in for the duration of the four year programme. Two of the three general hospitals affiliated with the university were selected because they had similar characteristics in terms of, for example, number of beds, patient turnover, staffing levels and patient acuity. For the observation studies, within each hospital four general comparable clinical areas were selected purposively: a general medical ward, a general surgical
ward, the accident and emergency department and a care of the elderly rehabilitation unit. For the focus group discussions throughout the study, the clinical nurse managers, associated CPCs and preceptors from these clinical areas were also selected purposively. For the duration of this study, all of the students participated in the usual clinical assessment process, however, in the main study or portfolio group (hospital 1) the students maintained a portfolio, whereas in the comparative group (hospital 2) the students maintained a 'learning log' of experiences.

All of the students from the main cohort were eligible to be included in the study. One month after course commencement, a presentation was made in class to the students in which the purpose of the study and what participation entailed were outlined; at this time, expressions of interest forms requesting name and e-mail address were also distributed. In an effort to ensure confidentiality, the participants sealed the completed expression of interest form in envelopes. Forty-one expressions of interest forms were returned to the researcher and those students received an e-mail invitation providing dates and times of the first round of interviews. In the first round of interviews, thirty-six students participated. Demographic details obtained during the interview process allowed for matching of students in each of the hospitals, in terms of age, education, work history and general demographics. In the second semester, all of these students continued to participate in the follow up interviews and field work. At the end of each year of the study, students were asked again for demographic information, such as contact details, as this information allowed for the follow-up of students who were continuing to participate in the study.

4.2.2. Ethical Approval and Special Considerations.

A number of ethical considerations required addressing at the beginning of the study. First, students in the main study hospital (the portfolio group) could be perceived as having an unfair advantage over the students in the comparison hospital. However, both of the hospitals were associated with the university, adhered to ABA's Requirements and Standards, framed their clinical assessment strategy on the Domains of Competence and provided further support in the form of the learning log
or the portfolio. All of the students had equal access to the same resources provided for them by both the hospital and the university. For example, each student was allocated to a preceptor in the clinical environment. In each hospital, the CPCs provided support as they normally did and each student had the same number of protected hours dedicated to reflective practice which was facilitated in the usual way by a university lecturer and the CPCs. Second, concerning the confidentiality of patients, students were not allowed to use patients’ real names in the portfolios. Third, concerning the formal university examinations and the researcher’s position as lecturer in the same university, for the duration of the study the researcher had no involvement in teaching and assessing this particular cohort. Finally, as the study was concerned primarily with ‘talking’ about and observing students’ practice, role conflict for the researcher could have become an issue. Thus, at the beginning of the study, a conscious decision was made to step ‘out of the role of researcher’ and act according to ABA’s Code of Professional Conduct (2000a) should such instances of role conflict occur. At all times, patients’ welfare took precedence over the research.

4.2.3. Informed Written Consent and Confidentiality.

The participants were informed in writing of the purposes of the research and of their right to withdraw from the study at any time, without prejudice. Written and verbal consent were obtained from all of the participants. The introductory letter and consent form are presented in Appendix 4.

Confidentiality was maintained throughout the study by giving each of the participants a numerical identifier in order to make their identity anonymous and, at the same time, to allow for follow-up studies of the students and to relate data analysis to individual students. All other identifying information was removed from transcripts, documents and the portfolios. Written informed consent to allow their portfolios to be analysed for the purposes of the research was again sought from and granted by each of the students (see Appendix 4).
4.2.4. The Profile of the Participants: The Student Nurses.

In the main cohort of BSc student nurses, 165 students were eligible to partake in the study. At the end of semester one, the demographic profile of this cohort indicated that their ages ranged from nineteen to thirty-two years of age; nine students were over twenty-three years of age. The vast majority of the students were female and five were male. The following table provides a summary of the students' demographic details for year one.

Table 4.1: Summary of the Student Demographic Details at Year One.

<table>
<thead>
<tr>
<th>Age Range in years.</th>
<th>19-32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 23 years of age.</td>
<td>9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>5</td>
</tr>
<tr>
<td>Female</td>
<td>160</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian</td>
<td>153</td>
</tr>
<tr>
<td>Asian</td>
<td>5</td>
</tr>
<tr>
<td>African</td>
<td>3</td>
</tr>
</tbody>
</table>

| Total Number of Students | 165 |

In year one, the portfolio group (hospital 1) consisted of eighty-seven students; by year four, seventy-four students submitted portfolios for assessment. For this group, the age in year one ranged from nineteen to thirty-two years. From this group, twenty-one students were observed during fieldwork and participated in the individual interviews; these individuals ranged in age from nineteen to thirty-two years.

The comparison group (hospital 2), in year one, consisted of seventy-eight students; by year four, sixty-seven students completed the programme. For this group, in year one, the age range was from nineteen to twenty-five years of age. From this group, fifteen students participated in individual interviews and were observed during fieldwork; they ranged in age from nineteen to twenty-two years. The following table provides a summary of the sub-group of students who participated in the individual interviews and were observed during fieldwork.
Table 4.2: Sub-group of Students Selected for Observation Studies and Individual Interviews.

<table>
<thead>
<tr>
<th></th>
<th>Hospital 1 Student Nurses</th>
<th>Hospital 2 Student Nurses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age Range in Years at Year 1 of the Study:</strong></td>
<td>19-32 Yrs.</td>
<td>19-25 Yrs.</td>
</tr>
<tr>
<td><strong>Observation Studies and Individual Interviews</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 (Yr. 1)</td>
<td></td>
<td>14 (Yr. 1)</td>
</tr>
<tr>
<td>11 (Yr. 2)</td>
<td></td>
<td>8 (Yr. 2)</td>
</tr>
<tr>
<td>16 (Yr. 3)</td>
<td></td>
<td>10 (Yr. 3)</td>
</tr>
<tr>
<td>15 (Yr. 4)</td>
<td></td>
<td>8 (Yr. 4)</td>
</tr>
<tr>
<td><strong>Number of portfolios Submitted.</strong></td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>86 (Yr. 1)</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>74 (Yr. 2)</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>74 (Yr. 3)</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>74 (Yr. 4)</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Total Number of Students at the End of Each Year.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>87 (Yr. 1)</td>
<td>78 (Yr. 1)</td>
<td></td>
</tr>
<tr>
<td>83 (Yr. 2)</td>
<td>72 (Yr. 2)</td>
<td></td>
</tr>
<tr>
<td>75 (Yr. 3)</td>
<td>67 (Yr. 3)</td>
<td></td>
</tr>
<tr>
<td>74 (Yr. 4)</td>
<td>67 (Yr. 4)</td>
<td></td>
</tr>
</tbody>
</table>

4.2.4.1. The Clinical Staff.

Clinical nurse managers, who were primarily responsible for the students' assessments in clinical practice, were sampled purposively as they had worked with the students directly and had completed their clinical assessments. Whilst the students rotate through different clinical placements throughout the programme, they encounter many clinical staff involved in their assessments, thus, it was not possible to include clinical staff from every clinical placement.

Therefore, for the purposes of this study, the profile of the clinical staff from the four key areas in each hospital (as discussed in section 4.2.1 of this chapter) is presented. In this study, thirty-five members of the clinical staff in the main study hospital (the portfolio group, hospital 1), participated, while in the comparison group (hospital 2) thirteen members of the clinical staff participated. Many of these staff were the students’ preceptors or the ward/unit clinical nurse manager. For the duration of the study, the clinical staff profile remained reasonably constant. In the presentation and discussion of the study’s findings, any changes that occurred are reported. The following table contains a summary of the clinical staff from both hospitals who participated in the study.
4.2.4.2. The Portfolio Raters.

Portfolio raters were selected purposively from a sample of seven experienced nurse teachers who were not involved in the ABA's Pilot Project and were working outside of the university and the main study hospital. From this group, four nurse teachers agreed to participate in the study, all of whom were Registered Nurses with over twenty-five years of experience. At the end of each year of the study, each of the raters evaluated the students' portfolios and worked independently of each other. Prior to the grading process, academic records and clinical assessment outcomes were removed from the students' portfolios for two reasons, to maintain confidentiality for the students and to eliminate bias, as these records could influence the rating process of the portfolio. The rubrics that the nurse teachers used for grading are contained in Appendix 5.
4.3. Obtaining Data.

Multiple methods of data collection are routinely a feature of ethnography and are used to assess social meanings, observe behaviour and work closely with participants. For this study, the major data collection strategies were annual interviews with the student nurses, fieldwork in the clinical sites and the assessment of the students’ portfolios. The following sections provide details of the time frames when data collection occurred, how the interviews were conducted, and details regarding the field work and documentary sources of data.

4.3.1. Data Gathering Time Frames.

At the beginning of the study, in September 2002, after receiving institutional approval, informal meetings were held with clinical nurse managers in order to discuss the data collection methods. In November 2002, the first student interviews took place. The reason that the field work and follow up individual student interviews coincided with the students’ clinical placements was because contacting them during the intervention is valuable, in that, such timing provides participants with the chance to assess their current experiences and minimises their retrospective bias. At the end of the academic year (in May 2003), the portfolios were submitted; these portfolios were assessed over the summer months. The same format and timings were used, for both groups of students, except that the comparison group did not submit portfolios. The following table contains details for the data gathering strategy and timings for each year of the programme.
Table 4.4: The Fieldwork Timetable.

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
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<tbody>
<tr>
<td>2002</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2003</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2004</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2005</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2006</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>2007</td>
<td>1</td>
<td>1</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

Key

1. Meetings with Clinical Nurse Managers.
2. Individual Student Nurse Interviews.
3. Field Work.

4.3.2. Interviewing.

Group discussions provide a more suitable forum in which to bring together participants or service providers to discuss, share and compare their experiences of a new intervention. The exchanges that occur between participants can highlight common experiences and views, identify differences within the group, and act as a stimulus to further thought among these respondents. In contrast, individual interviews are suited to exploring detailed personal experiences of interventions, allowing participants' to describe and evaluate their personal experiences of the interventions. Individual interviews are also the most appropriate forum for eliciting personal or sensitive information. Interviewing in qualitative research involves either a structured or unstructured schedule of questions and is based on two sets of assumptions: that the participants' verbal descriptions are a reliable indicator of behaviour, meanings, attitudes and feelings, and that the questions are a reliable indicator of the topic of the research (Brewer, 2000, p. 63).

Conducting longitudinal interviews requires a different strategy to once only interviews. An annual individual interview, with the same participants over a four year period, requires preparation and familiarisation with the previous interview transcripts and records prior to a follow-up interview. If some difference in activity, opinion or attitude is noticed, then this alteration must be followed by a series of
exploratory questions, which generate full details of this change and a full explanation as to why it occurred. However, repeated participation in the same study can increase the risk of the behaviour of participants becoming influenced. The danger of repeated exposure to the interview experience may result in participants reciting what they think interviewers want to hear rather than being reflective of their own experience. Therefore, a phenomenological approach to interview technique was taken which allowed the participants to focus on their experiences and differences over time. Phenomenological processes allow participants to constitute and reconstitute their interpretation of their environment and the events that occurred to them especially over time (Taris, 2000, p. 39). Seidman (1998, 2006) suggests three interviews, in close succession, with each participant as a phenomenological approach to collecting qualitative data. The focus in the first interview is on the person's life history, while in the second interview it is on the details of experiences relevant to the phenomenon under study. In the third interview the emphasis is on the participant's reflection on that experience. For the present study, as outlined below, this technique was modified to ensure consistency of interviewing between students and of the same students over time.

During the first year of the study, at the end of the first semester, the students were interviewed concerning their life history, they were asked 'How they came to be participating in the course?' During the second semester, the second and third interviews took place when the students were on clinical placements. The second interview sought details of the students' experience of clinical practice by asking them to reconstruct a day in their clinical practice. Where possible, the second interview took place after the fieldwork in clinical practice. The third interview concentrated on the students' reflection on the meaning of their experiences and how it relates to portfolio use. Following the interviews, the students' portfolios were read to see if there was congruence between the data sources. For the subsequent years of the study, the students were interviewed twice each year following the same format as the second and third interviews described for year one.
4.3.2.1. Individual Student Interviews.

Interviews were held either in the Nurse Education Centres of the hospitals or in the clinical nurse manager's office and lasted approximately forty to seventy minutes. Rooms were booked in advance to ensure a confidential setting. After the purpose of the study was, again, described, anonymity and confidentiality assured, participants signed their consent to participate in the interviews. All of the interviews were tape recorded; the tapes were transcribed verbatim. At the end of each interview, students' contact details were updated, as necessary, for tracking purposes.

4.3.2.2. Focus Group Discussions.

When students were not progressing satisfactorily, short focus group discussions were convened with key actors, for example, the Clinical Nurse Manager and the student's preceptor, to obtain further information concerning the circumstances and key issues particular to the individual student. The multiple perspectives of these key actors helped to build a detailed understanding of the experiences and outcomes for a specific student. Accounts of these discussions were recorded as field notes elaborated on below.

4.3.3. Fieldwork.

Participant observation is particularly associated with ethnographic research as it involves gathering data by means of participating in the daily life of informants in their natural setting, watching, observing and talking to them in order to discover their interpretations, social meanings and activities (Brewer, 2000, p. 59). The observation of students in practice provided a shared experience and a set of specific nursing episodes or events to discuss in subsequent interviews (Titchen, 2000, p. 65). These observations were also used as the basis of follow up discussions with students and clinical staff about what had happened during the period of observations. For the purposes of this study, the observations were overt from an observant participation perspective. This stance, according to Brewer (2000), is suitable when it involves the use of an existing role in an either familiar or unfamiliar environment.
The fieldwork comprised of visits to the clinical sites for four to seven hours per week whilst the students were on clinical placements. Typically during these visits the students were engaged in the following activities:

a) During hand-over, receiving and giving reports, communicating essential information.
b) Team discussions and allocation of duties.
c) Providing direct patient care.
d) Writing up care plans.
e) Case presentations.
f) Interactions with other professional and non-professional staff.

In addition, to the above situations, the more senior students (years three and four) were also observed in the following situations:

g) Admitting and discharging patients.
h) Doing medication rounds.
i) Managing the ward.
j) Doing ward rounds with medical staff.
k) Managing case loads.

To reduce measurement effect as a threat to external validity and to ensure consistency and objectivity of observations between students and observations of the same student over time, the observation studies were guided by the theoretical underpinnings of the metaparadigms of nursing. These metaparadigms are nurse, patient, health and environment and are the constructs and relationship statements that single out the concerns that are unique to the discipline. The concepts central to the discipline of nursing are interactions, the nursing client, environment, actual or anticipated transitions, the nursing process, nursing therapeutics and health (Meleis, 1991 and 2012, p. 101). These four metaparadigms form the basis of teaching, learning and assessment in Nurse Education Programmes where:

It is proposed that the nurse interacts (interaction) with a human being in a health/illness situation (nursing client) which is an integral part of his sociocultural context (environment) and who is in some sort of transition or is anticipating transition (transition); the nurse-patient interactions are organized around some purpose (nursing process, problem solving, or holistic assessment), and the nurse uses some actions (nursing therapeutics) to enhance, bring about, or facilitate health (health) (Meleis, 1991 and 2012, p. 101).
Thus, the central questions pertinent to the field work were:

- How does the student interact with a patient (who is in transition) in a particular environment?
- What processes does the student use (for example, problem solving, the nursing process, holistic assessment, reflection for, on, and in practice)?
- What action does the student take to enhance, bring about or facilitate health?

Once the fieldwork was completed, notes were written up immediately before leaving the hospital. Corroborating evidence was sought by informal discussions with the students' preceptor or clinical nurse manager and by reading the students' portfolios to see whether the evidence contained within it reflected the student's interactions.

4.3.4. Documentary Sources.

Documentary evidence plays a large part in ethnographic research and is classified as primary or secondary. Primary records are compiled by the researcher from field notes and informal discussions. Whereas, secondary sources are recorded by someone other than the researcher, for example, the students' official records of absenteeism and examination results. There were three main types of documentary evidence in this study: official records, field notes and the students' portfolios. All notes were clearly marked as to when they were compiled. From the students' perspective, the students' portfolios are primary documents, in that, they compiled them and can be either contemporary or retrospective. However, from the researcher's perspective, the students' portfolios are considered secondary.

4.3.4.1. Official Records.

Official records of the students' achievements for each year of the programme were obtained from the university. A numerical identifier that allowed for the anonymity of the students, but allowed for tracking of students over time was used; the students kept the same numerical identifier for the duration of the study.
Field Notes.

Field notes were maintained for each clinical site visit throughout the study. Observational notes were made as soon as possible after the encounter and labelled as contemporary. Contemporary accounts provided descriptions of the physical setting, participants, activities, interactions, and duration of an episode of care or event. In contrast, retrospective notes were made after leaving the field in the form of theoretical notes, methodological notes and personal notes. Theoretical notes were made to interpret meaning of the observations. Methodological notes were in the form of memos regarding subsequent observation periods, for example, to extend observation time in order to capture more of a student’s typical shift or to include more observation periods to correspond with the ward/unit’s busy times. Personal notes were maintained and served as reminders to check, for example, literature that may not have been considered at an earlier stage. The following section describes how the portfolios contributed to the qualitative data collection process.

The Purpose of the Portfolio.

Seven principles for action were derived from the evaluation of ABA’s extended pilot project. First, the portfolio as process and product. When the portfolio is used for formative assessment it is part of a ‘process’ in the development of a student’s competence. When the portfolio is used for summative assessment it becomes a ‘product’ to show that a student has developed competence. Therefore, the purpose of the portfolio was clear to students and clinical staff. Third, the contents of the portfolio were based on ABA’s Domains of Competence. The students were not ‘hunters and gatherers’ of artefacts to fulfil an endless list of competencies. Fourth, the construction of the portfolio embraced two traditions: the portfolio contained evidence of the students’ growth over time and best work at the end of each year of the programme. Fifth, whilst electronic portfolios are now in vogue, for the purposes of this study, the portfolios were limited to a paper format. Sixth, the quality of the evidence presented by students became an important principle. Students adhered to the university academic writing standards and the
‘evidence’ presented was based on best practice from the literature. The quality of the evidence included the nature of reflective practice and the students’ ability to write reflectively. Seven, the issue of support and ‘Whose work is it?’ was the most difficult principle to reach agreement on. For this study, in the student’s portfolio, the clinical staff and preceptors documented the exact level of support they had given.

The outcomes of the ABA Pilot Project guided the implementation of the portfolio process and the development of the scoring rubrics. The same rubrics were used for the duration of the study and consisted of an analytical rubric and a holistic rubric. Both of the rubrics were aligned with the Domains of Competence. Four external raters (working independently of each other) used these rubrics to score the students’ portfolios. Two raters used the holistic rubric, while two other raters used the analytic rubric.

For the present study, the empirical evidence was gathered by analysing the students’ portfolios on a yearly basis. The content analysis of the portfolios yielded evidence concerning content relevance, representativeness and technical quality. This analysis of the students’ portfolios allowed for the boundaries of the construct of competence to be separated from the evidence in the portfolios and this data was then compared to the ABA Domains of Competence. This analysis was completed in order to establish how many of the important parts of the domains were covered by the students.

Of special importance, for this study, is the criterion for granting a licence to practice, which is the clinical outcome grade. The outcome grade for each year of the programme is dichotomous (pass or fail), the statistical analysis was limited by this nominal level of data.


The following methods were adopted for both groups in the study:

- individual in-depth interviews with student nurses.
- fieldwork in the clinical sites.
• focus group discussions with clinical staff concerning the observed group of students.

For the portfolio group, the following methods were adopted:

• A qualitative content analysis of the students’ portfolio.

• A comparison of the clinical assessor’s results of the portfolio assessment with the results from independent portfolio raters.

• A comparison of the results of the portfolio assessment with other records of student achievement, such as examinations and assignments.

A comparison was also made of the overall results of the portfolio group of students with those of the non-portfolio group.

4.5. Managing the Data.

Field notes, transcripts, official examination results and the students’ portfolios were the mainstay of the analyses. Identification and the protection of confidentiality of all of the participants was crucial, therefore, each of the participants was given a numerical identifier which was maintained for the duration of the study. For reporting purposes, a pseudonym was substituted for the numerical identifier. Academic module codes were removed and each module was given a generic identifier. For example, Physics and Chemistry was labelled Biological Science (number) and the generic identifier was abbreviated (BS and number) to allow for the identification of variables in PASW (Predictive Analytics Software, SPSS Version 18.0) for the statistical analyses. Original notes and tape recordings that contained sensitive information were stored in a secure filing cabinet; sanitised copies of these files were used for the analysis. Backup copies of these files were made and stored on a home computer, which was not connected to the Internet, and on an external hard drive. Some of the portfolio content was scanned into Microsoft Word documents for analysis and reporting. The data were managed and organised by keeping individual and group files. Codebooks were kept to identify students and variables. All of the data were indexed so that tracking of data to students could be
managed. Microsoft Office (Excel and Word) and PASW were the main computer software systems for the analyses process.

4.6. The Qualitative Data Analysis and Integration.

The data collection and analysis were concurrent and sequential, which allowed for an extensive complex analysis of the student’s identity, motivation and achievement over time (Benzie, et al 2005, p. 183). “Interpretive phenomenology concentrates on the study of human consciousness by focusing on the world that the study participants subjectively experience” (Maggs-Rapport, 2000, p. 221). Therefore, the aim of the technique of using three interviews was to try to uncover concealed meaning in the students’ ‘thought and action processes’ embedded in the narrative that may not have been visible in their action in clinical practice. Whereas, the aim of the ethnographic study was to uncover the students’ ‘thought and action processes’ embedded in action. The content analysis of the portfolio provided a mechanism to capture the students’ experiences of both clinical practice and portfolio use; the aim of this content analysis (latent and manifest) was to weigh the students’ portrayal of self in the construction of the portfolio and to triangulate the findings from the three data sources. Each data source was analysed separately and was influenced by the work of Maggs-Rapport (2000) who outlined the stages of analysis and triangulation of data between ethnography and interpretive phenomenology. Brewer’s (2000) directions on the analysis of data from ethnographic research were followed, whilst Colaizzi’s (1978) method for analysing phenomenological data provided a template for the analysis of the interview transcripts.

In the qualitative research tradition, the analysis is inductive rather than deductive. The inductive process requires repeated immersion in the data prior to the coding process. Rigour was established by maintaining a reflective history of the analysis process; this history attempted to account for the influence of bias on the research findings. In addition, as advocated by Barnett (1994) and Brewer (2000), a ‘sceptical dialogue’ was written during the analyses so that the analytic reasoning processes were made explicit.
The data included field and theoretical notes from the clinical site visits, the interview transcripts and the students' portfolios. Initially, a general review of the data was undertaken in which similarities and differences in the analysis of the three data sources were revealed. Each source of data was read separately and re-read several times for tentative meanings on the student's 'thoughts and actions'. The coding process for each of the three sources followed a similar format. For each data source, content analysis involved first reading and re-reading the data in order to code and index the material. Indexing allowed for the management and retrieval of segments of data and for the longitudinal follow up of individual students. For example, reading through the ethnographic data led to the question of 'what did the student do?' Reading through the interview data led to questions such as, 'what is the student saying?', 'what is the essence of that meaning?', and 'what will capture it [that meaning]?' After each reading of the transcripts, interpretive notes were written. This reflective reading of the transcripts and the identification of tentative themes, within individual transcripts and, then, across all transcripts, allowed for the writing of descriptions of individual paradigm cases with exemplars from the groups.

Relating what the student said with how they acted allowed the data to be ordered into topic areas which were then labelled and classified as 'indicative' codes. After the initial indicative coding and content analysis of the data, a qualitative description was written in order to explain that which was observed in the field, told in the interviews and written in the portfolios. Key events in the field that were 'focal events' for the student under study contributed to the description. Searching through the data for patterns of student 'thought and action' which were repeated in various situations and with various players constituted coding and categorisation. Comparing, contrasting and sorting categories required an iterative process that continued until a discernible pattern of the student's 'thought and action' was identifiable. From these patterns, a classification system was used to explain the student's activities. This individual analysis allowed for the triangulation of data sources; the elements of the data, from the different sources, were compared and contrasted in order to generate categories and contributed to the coding and categorisation of the data. The thematic analysis was followed by searching for
alternative linkages within and between data sources in an effort to identify exceptional instances and contrary instances (Thorne, et al, 2004, p. 5). Thematic charts were developed for each student at year one for two reasons. Firstly, to allow for tracking of data to the original sources (indexing) and secondly, to explain any changes that occurred over the years. The concurrent analysis of earlier data, alongside fresh responses, allowed for the opportunity to consider ways in which students' views, attitudes and experiences changed over time. This individual level of analysis was repeated for each student for each year of the programme and allowed for a layering of data in which changes (for example, in views, attitudes, and/or events) could be identified and categorised.

At the end of each year, the thematic analysis for individual students and for the group of students, as a whole, was conducted in order to continue to search out alternative, exceptional and contrary cases and to describe the representative student. In the follow up interviews, the 'interpretative descriptions' of each student, obtained from the integration of the data from the various research methods, were confirmed with the individual student as these descriptions formed the basis of the next round of data collection. Similarly, the interpretative analyses of the student group, for each year of the programme, resulted in 'descriptions' of 'thoughts and actions' for the representative, sensitive, exceptional and contrary cases which were confirmed by the Clinical Nurse Managers involved in the clinical sites. The sharing of common realities in the descriptions of the students assured that the conceptualisations were grounded in the data and not an artefact of the research design or instrument (the researcher) bias or error. (See Appendix 6 which contains examples of the coding processes and reflections).

4.7. The Quantitative Data Analysis.

For each student, for each year of the four-year study, the quantitative data were tabulated and stored in Microsoft Excel Worksheets; this data was then uploaded to PASW for the statistical analyses. First, preliminary analyses were conducted to check the accuracy of data input, to identify missing values and to recode variables, as required. Second, descriptive statistics were computed to obtain
an overall profile of the sample (frequency analyses). Third, the exploratory data analyses, which included measures of central tendency and dispersion and normal distributions, were completed. Finally, a series of comparative analyses were conducted to compare scores by type of variable (clinical assessments, portfolio scores, academic examinations). These analyses consisted of correlation studies and simple linear regression, the details of which are presented with the research findings. The results of the statistical analyses are presented in the following chapter.

4.8. Summary.

In this chapter, the rationale for selecting the research design and methods was presented and an exploration of philosophical positions was used to justify this decision. The research aims and objectives were outlined and a detailed description of the mixed model (qualitative and quantitative) longitudinal design was provided. Details of the study's setting and sampling strategy were also presented. A discussion concerning ethical approval and the special considerations when researching in the clinical environment were outlined. Measures to ensure confidentiality throughout the study were outlined together with how informed written consent was obtained. A demographic profile of the participants, the student nurses, the clinical staff and the portfolio raters was presented. A detailed description of the data collection methods including individual student interviews, visits to the clinical sites and the analysis of the students' portfolios were also presented. A short summary of the data collection methods was presented in section 4.4. Finally, the last three sections of this chapter included a detailed description of the qualitative analyses and an overview of the analysis of the quantitative data. In the following chapter, the research findings are presented, beginning with the results of the statistical analyses.
CHAPTER FIVE

THE PRESENTATION AND DISCUSSION OF THE RESEARCH FINDINGS

Introduction.

In this chapter the research findings are presented together with a discussion of the major findings. In section one, details regarding the number of students in the portfolio and comparison group are provided. The concerns about the portfolio content analysis relative to the ABA Domains of Competence are presented in section two. In section three, estimates of reliability are presented, with each subsection dealing with different aspects of reliability. The students' portfolio scores are correlated with the students' other university assessments and clinical assessments in section four. In section five the results of the comparison of the non-portfolio group with the portfolio group university assessment results for each year of the programme are presented.

In section six, first, the qualitative data are presented with a brief review of the data analysis strategy to set the scene for the sections that follow and then continues with the disclosures from the first pre-clinical experience interviews. In addition, short student histories are also presented in order to set the scene for the remaining sections. In section seven, the disclosures from the integrated analyses of the data from the field notes, clinical site visits, the students' interview transcripts and portfolios are presented. The first year results are also presented in section seven. Years two to year four results are presented in sections eight, nine and ten respectively.
5.1 Numbers of Students in the Portfolio and Comparison Groups.

The numbers of students in the portfolio and comparison group who completed the programme are presented in Table 5.1. At the end of year one, eighty seven students were eligible for portfolio assessment. However, one student did not submit a portfolio due to illness and four students failed the end of year university examinations and did not progress to year two. At the end of year two, although eighty three students were eligible for portfolio assessment, eight students did not submit their portfolios: three students took leave of absence from the programme, three withdrew from the programme and two students repeated year two. In year three, one student withdrew from the programme. Therefore, in year four, seventy four students completed the programme and submitted a portfolio for assessment. The portfolio scores of the remaining seventy four students formed the basis of the statistical analyses from year one to year four.

Initially, the comparison group consisted of seventy nine. However, at the end of year one, two students withdrew from the programme and one student repeated year one. In year two, one student took leave of absence from the programme, two students withdrew and one student repeated year two, therefore, seventy two students progressed to year three. At the end of year three, two students repeated the year and three students took leave of absence. Thus, at the end of year four, sixty seven students completed the programme.

Table 5.1 Numbers of Students in the Portfolio and Comparison Groups Year One to Year Four.

<table>
<thead>
<tr>
<th>Portfolio Group</th>
<th>Year One</th>
<th>Year Two</th>
<th>Year Three</th>
<th>Year Four</th>
<th>Comparison Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning</td>
<td>End</td>
<td>Beginning</td>
<td>End</td>
<td>Beginning</td>
<td>End</td>
</tr>
<tr>
<td>Year One</td>
<td>87</td>
<td>83</td>
<td>Year One</td>
<td>79</td>
<td>76</td>
</tr>
<tr>
<td>Year Two</td>
<td>83</td>
<td>75</td>
<td>Year Two</td>
<td>76</td>
<td>72</td>
</tr>
<tr>
<td>Year Three</td>
<td>75</td>
<td>74</td>
<td>Year Three</td>
<td>72</td>
<td>67</td>
</tr>
<tr>
<td>Year Four</td>
<td>74</td>
<td>74</td>
<td>Year Four</td>
<td>67</td>
<td>67</td>
</tr>
</tbody>
</table>
5.2 Percent of Portfolio Content Related to each of the Domains of Competence.

At the end of each year, the portfolios were examined for domain coverage. In Figure 16, a bar chart depicts the differences in the percentage of content in each domain from year one to year four.

![Portfolio Content Year 1 to Year 4](image)

Figure 16. Percent of Portfolio Content Related to each Domain of Competence.

At the end of the first year, the emphasis of the portfolio evidence was predominantly on Domain two: 'Holistic Approaches to Care and the Integration of Knowledge'. The evidence in the portfolios related directly to procedural skills completed by the student, for example, 'doing Blood Pressures'. In the first year students' portfolios, Domains four and five were the least covered. Domain four concerned organisation and management of patient care and domain five pertained to personal and professional development. Of the seventy four portfolios analysed, nine
contained evidence to support developing competence in Domain five; these nine students related their evidence directly to their own self-assessment and action planning for learning.

In year two, students undertake specialist clinical placements outside of the main hospital, for example, in areas such as psychiatry, community, maternity and paediatrics. The evidence in these portfolios clustered around Domain three, which concerned interpersonal relationships and communication skills; compared to the first year portfolios, there was less emphasis on Domain two due to the specialist nature of the clinical placements.

In year three, the evidence in the portfolios changed considerably and involved a greater emphasis on Domains two, three and four; representing fifty five students or seventy five percent of the seventy four portfolios analysed. At this stage in the programme, the students had returned to their main parent hospital and the expectation of the clinical staff was that the students could take on an increasing patient case load. In year four, although the evidence in the portfolios increased in all five domains, the emphasis was on Domains two, three and four; Domains one and five contained more evidence than in all the previous years.

Overall, the results of the content analysis of the portfolios indicates that the cognitive processes underlying the portfolio evidence matched the processes implied in the Domains of Competence, in which the students were expected to assess, plan, implement, and evaluate nursing care provided (Meleis, 2012, p. 103). Competent professional practice requires complex thinking processes in addition to psychomotor and affective skills (Levett-Jones et al, 2010, p. 519). Reflection, clinical reasoning and critical thinking are processes by which nurses collect cues, process the information, prioritise the problems, plan and implement interventions and evaluate the outcomes (Levett-Jones et al, 2010, p. 515). In this study, the final year portfolios represented the students 'cognitive processes' that were inherent in the building of their portfolio and in the direct provision of nursing care. The students utilised the same processes to assess, plan, implement and evaluate their learning needs. The evidence in each domain increased as the students progressed through the programme.
5.3 Reliability Estimates.

In the context of educational assessment, reliability refers to the consistency or stability of assessment results (Reynolds, et al., 2010, p. 91). Reliability is considered to be a characteristic of scores or assessment results, not the tests themselves. For the validation of an assessment’s score, it must also be reliable, however, reliability does not ensure validity (Reynolds, et al., 2010, p. 144). Validity is a property of interpretations and uses of test scores and not a property of the test (Kane, 2009, p. 43). Therefore, validity is viewed as a unitary concept and the validation and interpretation of assessment scores requires evidence based on the assessment’s structure and content, the assessment’s relationship with other variables, evidence based on the students’ response processes and evidence concerning the consequences of the assessment. Each of these aspects of reliability and validity are considered in the following sections, starting with the internal consistency coefficients of the portfolio rubrics.

5.3.1 Internal Consistency Coefficients: Portfolio Rubrics and the Clinical Rating Scale Year One to Year Four.

Cronbach coefficient alpha, the preferred method for estimating the internal consistency of an instrument (Reynolds, et al., 2010, p. 101), examines the internal consistency of responses to all individual test items that are either scored dichotomously or that have multiple values (for example, 0, 1 or 2). Alpha coefficients yield a range of scores from a low of 0.00 to a high of 1.0. In assessing the reliability of an instrument for a given sample of respondents, the standard of 0.70 for a new instrument and 0.80 for an established one is used (Reynolds, et al., 2010, p. 101).

In this study, Cronbach coefficient alphas were calculated for the portfolio rubrics, analytic and holistic, and for the clinical rating scale, that is, the Domain of Competence Evidence Descriptor (DoCED). In Table 5.2 the total scale alpha coefficients for the portfolio holistic and analytic rubrics for year one to year four is
presented, while the total scale alpha coefficients for the clinical rating scale (DoCED) for year one to year four are presented in Table 5.3.

Table 5.2 Cronbach Alpha Coefficient’s for the Portfolio Rating Scales.

<table>
<thead>
<tr>
<th>Year</th>
<th>Portfolio: Holistic Rubric</th>
<th>Portfolio: Analytic Rubric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year One</td>
<td>0.760</td>
<td>0.750</td>
</tr>
<tr>
<td>Year Two</td>
<td>0.700</td>
<td>0.691</td>
</tr>
<tr>
<td>Year Three</td>
<td>0.812</td>
<td>0.793</td>
</tr>
<tr>
<td>Year Four</td>
<td>0.787</td>
<td>0.771</td>
</tr>
</tbody>
</table>

Table 5.3 Cronbach Alpha Coefficient’s for the Clinical Rating Scale (DoCED).

<table>
<thead>
<tr>
<th>Year</th>
<th>Clinical Rating Scale (DoCED)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year One</td>
<td>0.758</td>
</tr>
<tr>
<td>Year Two</td>
<td>0.698</td>
</tr>
<tr>
<td>Year Three (a)</td>
<td>0.777</td>
</tr>
<tr>
<td>Year Three (b)</td>
<td>0.803</td>
</tr>
<tr>
<td>Year Four</td>
<td>0.783</td>
</tr>
</tbody>
</table>

The alpha coefficients demonstrate, for each of the four years of the programme, that the holistic portfolio rubric had higher internal consistency as compared to the analytic portfolio rubric. However, for year two, the alpha coefficients are lower for both of the portfolio rubrics; the alpha coefficients of 0.700 (holistic rubric) and 0.691 (analytic rubric) are in the ‘just acceptable’ category for new instruments. For year two for the clinical rating scale (DoCED), a low alpha coefficient (0.698) was also obtained. For all of the instruments, the lower alpha coefficients in year two may be due to the type of student placement, in which the students practice outside of the main hospital and undertake specialist placements in psychiatry, maternity, paediatrics and community (public health). Apart from year two, the alpha coefficients demonstrate that the clinical rating scale (DoCED) had good internal consistency.
5.3.2 Summary Descriptive Statistics for the Portfolio Raters Scores Year One to Year Four.

A summary of the descriptive statistics for the four portfolio raters scores for each year of the programme is presented in Table 5.4.

Table 5.4 Portfolio Raters Scores Year 1 to Year 4.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>SD</th>
<th>Min.</th>
<th>Max.</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>55.36</td>
<td>56</td>
<td>10.524</td>
<td>30</td>
<td>75</td>
<td>86</td>
</tr>
<tr>
<td>Year 2</td>
<td>55.72</td>
<td>55</td>
<td>5.969</td>
<td>40</td>
<td>68</td>
<td>74</td>
</tr>
<tr>
<td>Year 3</td>
<td>54.70</td>
<td>55</td>
<td>6.235</td>
<td>40</td>
<td>70</td>
<td>74</td>
</tr>
<tr>
<td>Year 4</td>
<td>56.15</td>
<td>56</td>
<td>4.820</td>
<td>40</td>
<td>68</td>
<td>74</td>
</tr>
<tr>
<td>R2A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>57.15</td>
<td>58</td>
<td>9.227</td>
<td>25</td>
<td>74</td>
<td>86</td>
</tr>
<tr>
<td>Year 2</td>
<td>56.64</td>
<td>56</td>
<td>6.172</td>
<td>35</td>
<td>70</td>
<td>74</td>
</tr>
<tr>
<td>Year 3</td>
<td>56.22</td>
<td>57</td>
<td>5.929</td>
<td>38</td>
<td>68</td>
<td>74</td>
</tr>
<tr>
<td>Year 4</td>
<td>57.47</td>
<td>58</td>
<td>5.991</td>
<td>30</td>
<td>70</td>
<td>74</td>
</tr>
<tr>
<td>R3H</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>52.77</td>
<td>55</td>
<td>8.250</td>
<td>20</td>
<td>70</td>
<td>86</td>
</tr>
<tr>
<td>Year 2</td>
<td>55.61</td>
<td>55</td>
<td>6.027</td>
<td>30</td>
<td>68</td>
<td>74</td>
</tr>
<tr>
<td>Year 3</td>
<td>54.96</td>
<td>57</td>
<td>7.033</td>
<td>30</td>
<td>68</td>
<td>74</td>
</tr>
<tr>
<td>Year 4</td>
<td>56.20</td>
<td>56</td>
<td>5.840</td>
<td>25</td>
<td>69</td>
<td>74</td>
</tr>
<tr>
<td>R4H</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>54.24</td>
<td>55</td>
<td>8.079</td>
<td>30</td>
<td>68</td>
<td>86</td>
</tr>
<tr>
<td>Year 2</td>
<td>56.80</td>
<td>56</td>
<td>6.294</td>
<td>38</td>
<td>68</td>
<td>74</td>
</tr>
<tr>
<td>Year 3</td>
<td>56.14</td>
<td>58</td>
<td>7.327</td>
<td>35</td>
<td>67</td>
<td>74</td>
</tr>
<tr>
<td>Year 4</td>
<td>57.51</td>
<td>58</td>
<td>5.862</td>
<td>30</td>
<td>70</td>
<td>74</td>
</tr>
</tbody>
</table>


The longitudinal study allowed for an examination of changes to the students' portfolio scores over the four years of the programme. Paired t-tests were computed and the analyses shows that portfolio scores are resistant to change from year one to year four, p = 0.194 (p < 0.05, 2-tailed). The greatest change occurred from year three to year four, p = 0.053 (p < 0.05, 2-tailed).

On average, students received a slightly higher portfolio score in year two (M = 56.189, SE = 0.644, N = 74) than in year one (M = 55.66, SE = 0.877, t(73) = -0.562, p = 0.576 (p < 0.05, 2-tailed)). In year three, the reverse occurred where, on average, students received a slightly lower portfolio score (M = 55.5, SE = 0.691, N = 74) than in year two (M = 56.189, SE = 0.644, t(73) = -0.970, p = 0.335 (p < 0.05, 2-tailed)).
2-tailed)). Again, in year four, on average, students received a slightly higher portfolio score (M = 56.834, SE = 0.691, N = 74) than in year three (M = 55.5, SE = 0.691, t(73) = -1.967, p = 0.053 (p < 0.05, 2-tailed)). The differences in portfolio scores from year one to year four were small. On average, students received a slightly higher score in year four (M = 56.834, SE = 0.555, N = 74) than in year one (M = 55.66, SE = 0.877, t(73) = -1.312, p = 0.194 (p < 0.05, 2-tailed)).

5.3.3 Correlation Coefficients and Simple Linear Regression.

Simple linear regression allows for an exploration of the linear relationship between portfolio raters' scores. First, Pearson correlation coefficients are calculated in order to establish whether a linear relationship exists between the four portfolio raters before the exploration of the simple linear regression analyses. In Table 5.5, the correlation coefficient matrix for the four portfolio raters for each year of the programme are presented. All of the Pearson correlation coefficients are significant at the 0.01 level (2-tailed). In year one, the correlation coefficient for rater one and two (using the analytic rubric) is 0.937. However, in year four, the correlation coefficient for the same raters, using the same rubric, is 0.750. Conversely, in year one, the correlation coefficient for rater three and four (using the holistic rubric) is 0.918. By year four, the correlation coefficient for raters three and four (using the holistic rubric) is 0.801. This finding indicates that the holistic rubric provides a higher correlation between the portfolio raters.
Table 5.5 Correlation Coefficient Matrix Portfolio Raters Year One to Year Four.

<table>
<thead>
<tr>
<th></th>
<th>Yr 1</th>
<th>Yr 2</th>
<th>Yr 3</th>
<th>Yr 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yr 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R1A</td>
<td>.937</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R2A</td>
<td>.718</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R3H</td>
<td>.764</td>
<td>.879</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R4H</td>
<td>.700</td>
<td>.700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R2A</td>
<td>.633</td>
<td>.688</td>
<td>.910</td>
<td></td>
</tr>
<tr>
<td>R3H</td>
<td>.695</td>
<td>.695</td>
<td>.876</td>
<td></td>
</tr>
<tr>
<td>R4H</td>
<td>.585</td>
<td>.585</td>
<td>.585</td>
<td></td>
</tr>
<tr>
<td>R2A</td>
<td>.502</td>
<td>.502</td>
<td>.502</td>
<td>.750</td>
</tr>
<tr>
<td>R3H</td>
<td>.528</td>
<td>.528</td>
<td>.528</td>
<td>.528</td>
</tr>
<tr>
<td>R4H</td>
<td>.540</td>
<td>.540</td>
<td>.540</td>
<td>.540</td>
</tr>
</tbody>
</table>

All of the above Pearson Correlation Coefficients are significant at the 0.01 level (2-tailed).

R1A = Rater one using the Analytic Rubric. R2A = Rater two using the Analytic Rubric. R3H = Rater three using the Holistic Rubric. R4H = Rater four using the Holistic Rubric.

Whilst, in the analyses above, a relationship was established between the raters, simple linear regression was conducted in order to explore the significance of the linear relationship. In Table 5.6, a summary of the simple linear regression for year one portfolio raters is provided.
Table 5.6 Simple Linear Regression Analysis Year One Portfolio Raters.

<table>
<thead>
<tr>
<th>Raters</th>
<th>B (Slope)</th>
<th>$R^2$</th>
<th>SE</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1A &amp; R2A</td>
<td>1.121</td>
<td>0.879</td>
<td>3.391</td>
<td>22.858</td>
<td>0.000</td>
</tr>
<tr>
<td>R1A &amp; R3H</td>
<td>0.921</td>
<td>0.516</td>
<td>6.777</td>
<td>8.765</td>
<td>0.000</td>
</tr>
<tr>
<td>R1A &amp; R4H</td>
<td>1.000</td>
<td>0.583</td>
<td>6.291</td>
<td>10.035</td>
<td>0.000</td>
</tr>
<tr>
<td>R2A &amp; R3H</td>
<td>0.775</td>
<td>0.522</td>
<td>5.631</td>
<td>8.871</td>
<td>0.000</td>
</tr>
<tr>
<td>R2A &amp; R4H</td>
<td>0.819</td>
<td>0.559</td>
<td>5.410</td>
<td>9.553</td>
<td>0.000</td>
</tr>
<tr>
<td>R3H &amp; R4H</td>
<td>0.937</td>
<td>0.842</td>
<td>3.017</td>
<td>19.612</td>
<td>0.000</td>
</tr>
</tbody>
</table>

R1A = Rater one using the Analytic Rubric. R2A = Rater two using the Analytic Rubric. R3H = Rater three using the Holistic Rubric. R4H = Rater four using the Holistic Rubric.

In the first year, the relationship between R1A and R2A is positive (1.121) and based on the t-value (22.858) and p-value (0.000) the relationship is statistically significant. Therefore, there is a statistically significant positive linear relationship between R1A and R2A. ($R = 0.937, R^2 = 0.879, R^2_{Adj} = 0.877$, Standard Error of the Estimate = 3.391).

The relationship between R1A and R3H is positive (0.921) and based on the t-value (8.765) and p-value (0.000) the relationship is statistically significant. Therefore, there is a statistically significant positive linear relationship between R1A and R3H. ($R = 0.718, R^2 = 0.516, R^2_{Adj} = 0.509$, Standard Error of the Estimate = 5.631).

The relationship between R1A and R4H is positive (1.000) and based on the t-value (10.035) and p-value (0.000) the relationship is statistically significant. Therefore, there is a statistically significant positive linear relationship between R1A and R4H. ($R = 0.764, R^2 = 0.583, R^2_{Adj} = 0.577$, Standard Error of the Estimate = 6.291).

The relationship between R2A and R3H is positive (0.775) and based on the t-value (8.871) and p-value (0.000) the relationship is statistically significant. Therefore, there is a statistically significant positive linear relationship between R2A and R3H. ($R = 0.723, R^2 = 0.522, R^2_{Adj} = 0.516$, Standard Error of the Estimate = 5.631).

The relationship between R2A and R4H is positive (0.819) and based on the t-value (9.553) and p-value (0.000) the relationship is statistically significant. Therefore, there is a statistically significant positive linear relationship between R2A
and R4H. \(R = 0.748, R^2 = 0.559, R^2_{\text{Adj.}} = 0.553, \text{Standard Error of the Estimate} = 5.410\).

The relationship between R3H and R4H is positive (0.937) and based on the t-value (19.612) and p-value (0.000) the relationship is statistically significant. Therefore, there is a statistically significant positive linear relationship between R3H and R4H. \(R = 0.918, R^2 = 0.842, R^2_{\text{Adj.}} = 0.840, \text{Standard Error of the Estimate} = 3.017\).

The closer R is to 1 (also could be \(-1\)) the better the fit. For the first year, the raters who were using the holistic rubric (R3H and R4H) were closer to 1, with a Standard Error of the Estimate for these raters of 3.017. Therefore, the raters who used the holistic rubric provided a more reliable score for the sample of students in this study.

The positive relationship between the raters continued for years two, three and four. In Tables 5.7, 5.8, and 5.9, respectively, the results for years two, three, and four are presented.

Table 5.7 Simple Linear Regression Analysis Year Two Portfolio Raters.

<table>
<thead>
<tr>
<th>Year Two</th>
<th>Raters.</th>
<th>B (Slope)</th>
<th>(R^2)</th>
<th>SE</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R1A &amp; R2A</td>
<td>0.850</td>
<td>0.772</td>
<td>2.869</td>
<td>15.619</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>R1A &amp; R3H</td>
<td>0.693</td>
<td>0.490</td>
<td>4.291</td>
<td>8.321</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>R1A &amp; R4H</td>
<td>0.600</td>
<td>0.401</td>
<td>4.654</td>
<td>6.936</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>R2A &amp; R3H</td>
<td>0.793</td>
<td>0.600</td>
<td>3.931</td>
<td>10.391</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>R2A &amp; R4H</td>
<td>0.675</td>
<td>0.474</td>
<td>4.508</td>
<td>8.055</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>R3H &amp; R4H</td>
<td>0.872</td>
<td>0.829</td>
<td>2.511</td>
<td>18.674</td>
<td>0.000</td>
</tr>
</tbody>
</table>

R1A = Rater one using the Analytic Rubric. R2A = Rater two using the Analytic Rubric. R3H = Rater three using the Holistic Rubric. R4H = Rater four using the Holistic Rubric.
Table 5.8 Simple Linear Regression Analysis Year Three Portfolio Raters.

<table>
<thead>
<tr>
<th>Year Three</th>
<th>Raters.</th>
<th>B (Slope)</th>
<th>$R^2$</th>
<th>SE</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1A &amp; R2A</td>
<td>0.854</td>
<td>0.660</td>
<td>3.659</td>
<td>11.829</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>R1A &amp; R3H</td>
<td>0.616</td>
<td>0.483</td>
<td>4.513</td>
<td>8.205</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>R1A &amp; R4H</td>
<td>0.498</td>
<td>0.342</td>
<td>5.092</td>
<td>6.117</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>R2A &amp; R3H</td>
<td>0.667</td>
<td>0.626</td>
<td>3.651</td>
<td>10.978</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>R2A &amp; R4H</td>
<td>0.546</td>
<td>0.456</td>
<td>4.405</td>
<td>7.764</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>R3H &amp; R4H</td>
<td>0.841</td>
<td>0.768</td>
<td>3.411</td>
<td>15.436</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

R1A = Rater one using the Analytic Rubric. R2A = Rater two using the Analytic Rubric. R3H = Rater three using the Holistic Rubric. R4H = Rater four using the Holistic Rubric.

Table 5.9 Simple Linear Regression Analysis Year Four Portfolio Raters.

<table>
<thead>
<tr>
<th>Year Four</th>
<th>Raters.</th>
<th>B (Slope)</th>
<th>$R^2$</th>
<th>SE</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1A &amp; R2A</td>
<td>0.601</td>
<td>0.562</td>
<td>3.199</td>
<td>9.616</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>R1A &amp; R3H</td>
<td>0.44</td>
<td>0.279</td>
<td>4.107</td>
<td>5.274</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>R1A &amp; R4H</td>
<td>0.412</td>
<td>0.252</td>
<td>4.181</td>
<td>4.930</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>R2A &amp; R3H</td>
<td>0.644</td>
<td>0.394</td>
<td>4.697</td>
<td>6.839</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>R2A &amp; R4H</td>
<td>0.552</td>
<td>0.291</td>
<td>5.078</td>
<td>5.442</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>R3H &amp; R4H</td>
<td>0.798</td>
<td>0.642</td>
<td>3.519</td>
<td>11.360</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

R1A = Rater one using the Analytic Rubric. R2A = Rater two using the Analytic Rubric. R3H = Rater three using the Holistic Rubric. R4H = Rater four using the Holistic Rubric.

5.3.4 Intraclass Correlation Coefficient.

For each year of the programme, as an additional estimate of reliability, the intraclass correlation coefficients (ICC) for the four portfolio raters were calculated (McGraw and Wong, 1996a and 1996b). The ICC takes into account the variance between raters, in contrast to the inter-rater r (product-moment correlations), which takes no account of the variance between raters and, typically, is discouraged for assessing test-retest reliability (Weir, 2005). Product-moment correlations use standardised data which effectively removes the component of individual rater variability (Barrett, 2001, p. 6). To illustrate the differences between ICC and Pearson r, Barrett (2001) provides a hypothetical data set for ten patients and three raters. Rater one and two differ in scores awarded to each patient, whereas, rater three awards the same score as rater one. In the example, rater one awards patient one a score of 1.0, rater two awards patient one a score of 10.0, and rater three gives a score of 1.0 and, so forth, with each rater continuing on the same interval. Despite
the fact that the scores differ immensely, calculating the Pearson r for rater one and two yields a perfect correlation of 1.0. In contrast, calculating the ICC for the same data, results in a correlation of 0.056.

For calculating the ICC, the PASW offers a range of options (Nichols, 1998). In this study, a two-way mixed effects model (type = consistency) was used for calculating the ICC because the four portfolio raters were not randomly selected. The raters were treated as a fixed factor resulting in a two-way mixed model. Therefore, in the mixed model for this study, inferences are confined to the particular set of raters used for the assessment of the students’ portfolios (Nichols, 1998, p. 1, Barrett, 2001, p. 13).

The intraclass correlation coefficients for the four raters for each year of the programme are presented in Table 5.10. This study was concerned with consistency in how the raters scored the portfolios, particularly, over time. The average measure of ICC was high, as expected, given the previous statistical analyses and because averaging an individual portfolio raters score yields a higher reliability. However, the single measure ICCs yield a different picture. Overall, the consistency between raters is lower and, in year four, falls considerably to 0.622. However, for years one to three, the intraclass correlation coefficients are above 0.7 to 0.8, which is considered acceptable for applied tests (Barrett, 2001, p. 24).

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Measure ICC</th>
<th>Single Measure ICC</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>0.937</td>
<td>0.789</td>
</tr>
<tr>
<td>Two</td>
<td>0.928</td>
<td>0.764</td>
</tr>
<tr>
<td>Three</td>
<td>0.916</td>
<td>0.733</td>
</tr>
<tr>
<td>Four</td>
<td>0.868</td>
<td>0.622</td>
</tr>
</tbody>
</table>

In contrast, calculating the intraclass correlation coefficients for the four raters separated by rubric (analytic or holistic) for each year of the programme presents different reliability estimate figures (see Table 5.11). The average measures of ICC were high for both rubrics and for all four raters. The single measure ICCs
between raters is also high but, in year four, falls to 0.732 for the raters who were using the analytic rubric.

Table 5.11 Intraclass Correlation Coefficient’s Raters Separated by Rubric Year One to Year Four.

<table>
<thead>
<tr>
<th></th>
<th>Average Measure ICC:</th>
<th>Single Measure ICC:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Analytic</td>
<td>Holistic</td>
</tr>
<tr>
<td>Year One</td>
<td>0.960</td>
<td>0.957</td>
</tr>
<tr>
<td>Year Two</td>
<td>0.935</td>
<td>0.953</td>
</tr>
<tr>
<td>Year Three</td>
<td>0.896</td>
<td>0.934</td>
</tr>
<tr>
<td>Year Four</td>
<td>0.845</td>
<td>0.890</td>
</tr>
</tbody>
</table>

These results are consistent with those in previous research, where intra-class correlation coefficients were calculated (Rees and Sheard, 2004b). However, Rees and Sheard (2004b, p. 141) did not specify whether their figure of 0.771 was obtained from a single or average measure.

Overall, in the present research, the inter-rater reliability correlation coefficients were high and consistent between the four portfolio raters for the duration of the study. This finding ‘...begs the question... why?’ (Kane, 2009, p. 40). One answer to the question of why the scores are so high rests with the rubrics. In this study, the rubrics were based on the Domains of Competence to establish the portfolio assessment score. Unlike other research (e.g. Driessen et al, 2007, Sowter et al, 2011) that examined the reliability and validity of portfolio scores, where the rubrics or grading criteria were based on the qualitative components of the grading ‘process’. Previous research also indicated that portfolio raters do not use lengthy grading criteria (Heller, Sheingold and Myford, 1998, p. 33, Joosten-ten Brinke et al, 2010, p. 59). In this study, as recommended for validity studies by Kane (2009), the rubrics were based on the construct of competence and the processes involved in the display of that construct in clinical practice and in the construction of the evidence in the student’s portfolio. Specific outcomes, which match the professional practice to be assessed, are
essential to maximise portfolio use as an effective tool (McCready, 2007) and having a shared vision of what is to be assessed reduces ambiguity (Schutz and Moss, 2004, Baume and Yorke, 2002, p. 7). In this study, another explanation as to why the inter-rater reliability correlation coefficients were high is that the portfolio raters did not know the students and the other assessment results of the students were not available to them. Thus, the issue of the raters adding supportive information and inflating the score was avoided (Baume, Yorke with Coffey, 2004, p. 469).

A contrasting explanation as to why the correlation coefficients were high is related to the sample size (n=74) and precision; the larger the sample size, the less precision there is in the inter-rater reliability. In addition, a possible contributing factor to the high correlations was the limited range of the rubric utilised by the four raters. The descriptive statistics (see Table 5.4) shows the mean scores for all four raters, where the mean score for all four years is between 52 and 57 and the maximum for three of the four raters is 70. The limited use of the range of the rubric is discussed in more detail in section 5.5.

5.4. Comparing Students’ Portfolio Scores with Other University Assessments.

Once the estimates of reliability of the portfolio scores were established, the four portfolio raters’ scores were averaged to create one portfolio score for each student for each year of the programme. The average portfolio score could then be correlated with the students’ other university examinations and clinical assessments. In Table 5.12, the students’ average portfolio scores for year one to year four are presented. Overall, the low to moderate correlations between the portfolio assessment scores and other examinations held during the four years supports Davis et al’s, (2001, p. 363) conclusion that portfolio assessment is ‘...measuring common abilities as well as abilities that are different from those tested in the other examinations.’

Overall, supervisors’ workplace based assessments have poor reliability, according to McGill et al (2011, p. 405), and are not suitable for use in certification processes. In this study, the correlation coefficients between the portfolio scores and
the clinical assessments (using the DoCED rating scale) were moderate as the
following discussion will show.

Table 5.12 Portfolio Average Scores Year One to Year Four.

<table>
<thead>
<tr>
<th></th>
<th>Year One</th>
<th>Year Two</th>
<th>Year Three</th>
<th>Year Four</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>54.88</td>
<td>56.189</td>
<td>55.503</td>
<td>56.834</td>
</tr>
<tr>
<td>Median</td>
<td>55.5</td>
<td>55.5</td>
<td>56.125</td>
<td>57.125</td>
</tr>
<tr>
<td>SD</td>
<td>8.417</td>
<td>5.548</td>
<td>5.950</td>
<td>4.777</td>
</tr>
<tr>
<td>Minimum</td>
<td>28.75</td>
<td>35.75</td>
<td>37.75</td>
<td>31.25</td>
</tr>
<tr>
<td>Maximum</td>
<td>69.5</td>
<td>67.25</td>
<td>66.25</td>
<td>67.00</td>
</tr>
<tr>
<td>N</td>
<td>86</td>
<td>74</td>
<td>74</td>
<td>74</td>
</tr>
</tbody>
</table>

In year one, the students' average portfolio scores were correlated with the
students' other university examination results. In Table 5.13, the correlation
coefficients of the average portfolio score with the other university examinations in
year one are presented. For the four biological science subjects, the correlation
coefficients were moderate (Pearson’s Correlation = 0.659, 0.631, 0.655 and 0.340,
significant at the 0.01 level (2-tailed)). For the two social science subjects, the
correlation coefficients were also moderate (Pearson’s Correlation = 0.626 and
0.473, significant at the 0.01 level (2-tailed)). For the two nursing subjects, the
correlation coefficients were lower than the correlation coefficients in the biological
and social science subjects (Pearson’s Correlation = 0.375 and 0.373, significant at
the 0.01 level (2-tailed)). For the clinical assessment, using the DoCED Scale, the
correlation coefficient was moderate (Pearson’s Correlation = 0.625, significant at
the 0.01 level (2-tailed)).
Table 5.13 Year One: Correlation Coefficients Portfolio Average Score and Other University Examinations.

<table>
<thead>
<tr>
<th>Year 1 Port.</th>
<th>BS 1</th>
<th>BS 2</th>
<th>BS 3</th>
<th>BS 4</th>
<th>SS 1</th>
<th>SS 2</th>
<th>N 1</th>
<th>N 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ave. Score</td>
<td>0.659**</td>
<td>0.631**</td>
<td>0.655**</td>
<td>0.340**</td>
<td>0.626**</td>
<td>0.473**</td>
<td>0.375**</td>
<td>0.373**</td>
</tr>
</tbody>
</table>

** Pearson Correlation Coefficient is significant at the 0.01 level (2-tailed).
+ = p-value.
BS 1 to BS 4 = Biological Science Subjects. SS 1 and SS 2 = Social Science Subjects. N 1 and N 2 = Nursing Subjects.

In year two, the students’ average portfolio scores were correlated with the students’ other university examination results and with their clinical assessment. For the four nursing subjects, the correlation coefficients were varied as can be seen in Table 5.14. However, for the clinical assessment (DoCED Scale), the correlation coefficient was moderate (Pearson’s Correlation = 0.661, significant at the 0.01 level (2-tailed)).

Table 5.14 Year Two Correlation Coefficients Portfolio Average Score with Other University Examinations.

<table>
<thead>
<tr>
<th>Year 2 Portfolio Ave. Score</th>
<th>Nursing 3</th>
<th>Nursing 4</th>
<th>Nursing 5</th>
<th>Nursing 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.239*</td>
<td>0.316**</td>
<td>0.614**</td>
<td>0.369**</td>
</tr>
<tr>
<td></td>
<td>0.040*</td>
<td>0.006*</td>
<td>0.000*</td>
<td>0.001*</td>
</tr>
</tbody>
</table>

* Pearson Correlation Coefficient is significant at the 0.05 level (2-tailed).
** Pearson Correlation Coefficient is significant at the 0.01 level (2-tailed).
+ = p-value

In year three, again, the students’ average portfolio scores were correlated with their other university examinations and the clinical assessment (DoCED Scale). Although, for the nursing subjects, the correlation coefficients were weaker than in previous years, but remained moderate for the clinical assessments (see Table 5.15).
Table 5.15 Year Three: Correlation Coefficients Portfolio Average Score with Other University Examinations.

<table>
<thead>
<tr>
<th>N = 74 portfolio scores.</th>
<th>Nursing 7</th>
<th>Nursing 8</th>
<th>Clinical Assessment (a) and (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 3 Portfolio Average Score</td>
<td>0.329**</td>
<td>0.292*</td>
<td>(a) 0.682**</td>
</tr>
<tr>
<td></td>
<td>0.004*</td>
<td>0.012*</td>
<td>(b) 0.602**</td>
</tr>
</tbody>
</table>

* Pearson Correlation Coefficient is significant at the 0.05 level (2-tailed).
** Pearson Correlation Coefficient is significant at the 0.01 level (2-tailed).
+ = p-values.

In year four, while the correlation coefficients were better than year three, they still remained low (see Table 5.16).

Table 5.16 Year Four Correlation Coefficients Portfolio Average Score with Other University Examinations.

<table>
<thead>
<tr>
<th>N = 74 Portfolios</th>
<th>Nursing 9</th>
<th>Nursing 10</th>
<th>Nursing 11</th>
<th>Nursing 12</th>
<th>Clinical Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 4 Portfolio Average</td>
<td>0.489**</td>
<td>0.513**</td>
<td>0.512**</td>
<td>0.403**</td>
<td>0.426**</td>
</tr>
<tr>
<td></td>
<td>0.000*</td>
<td>0.000*</td>
<td>0.000*</td>
<td>0.000*</td>
<td>0.000*</td>
</tr>
</tbody>
</table>

** Pearson Correlation Coefficient is significant at the 0.01 level (2-tailed).
+ = p-values.

A summary of the correlation coefficients and simple linear regression for years one to year four portfolio scores and clinical assessments using the DoCED rating scale is provided in Table 5.17. There is a statistically significant positive relationship between the average portfolio scores and the DoCED scale.

Table 5.17 Correlation Coefficients and Simple Linear Regression Analysis Portfolio Average Scores with Clinical Assessment (DoCED Scale).

<table>
<thead>
<tr>
<th>Year</th>
<th>Pearson r</th>
<th>B (Slope)</th>
<th>R²</th>
<th>SE</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>0.625*</td>
<td>2.108</td>
<td>0.391</td>
<td>5.930</td>
<td>6.801</td>
<td>0.000</td>
</tr>
<tr>
<td>Year 2</td>
<td>0.661*</td>
<td>2.141</td>
<td>0.437</td>
<td>4.192</td>
<td>7.474</td>
<td>0.000</td>
</tr>
<tr>
<td>Year 3a</td>
<td>0.682*</td>
<td>1.847</td>
<td>0.458</td>
<td>4.380</td>
<td>7.919</td>
<td>0.000</td>
</tr>
<tr>
<td>Year 3b</td>
<td>0.607*</td>
<td>1.325</td>
<td>0.368</td>
<td>4.761</td>
<td>6.482</td>
<td>0.000</td>
</tr>
<tr>
<td>Year 4</td>
<td>0.426*</td>
<td>0.790</td>
<td>0.181</td>
<td>4.352</td>
<td>3.993</td>
<td>0.000</td>
</tr>
</tbody>
</table>

* Pearson Correlation Coefficient is significant at the 0.01 level (2-tailed) p-value 0.000.
The individual raters’ portfolio scores were then compared to the number of students who failed the ‘usual’ clinical assessments, which is presented in Table 5.18.

Table 5.18 Comparison ‘Usual’ Clinical Assessments with Portfolio Scores.

<table>
<thead>
<tr>
<th>End of Year 1</th>
<th>Usual Clinical Assessment</th>
<th>R1A</th>
<th>R2A</th>
<th>R3H</th>
<th>R4H</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Pass</td>
<td>40</td>
<td>50</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>15</td>
<td>Pass</td>
<td>50</td>
<td>55</td>
<td>30</td>
<td>35</td>
</tr>
<tr>
<td>128</td>
<td>Fail</td>
<td>30</td>
<td>35</td>
<td>20</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>End of Year 2</th>
<th>Student No.:</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1108</td>
<td>Fail</td>
<td>40</td>
<td>35</td>
<td>30</td>
<td>38</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>End of Year 3</th>
<th>Student No.:</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Fail</td>
<td>50</td>
<td>46</td>
<td>40</td>
<td>42</td>
</tr>
<tr>
<td>144</td>
<td>Fail</td>
<td>45</td>
<td>38</td>
<td>30</td>
<td>38</td>
</tr>
<tr>
<td>146</td>
<td>Fail</td>
<td>40</td>
<td>41</td>
<td>35</td>
<td>38</td>
</tr>
<tr>
<td>165</td>
<td>Fail</td>
<td>45</td>
<td>48</td>
<td>42</td>
<td>47</td>
</tr>
<tr>
<td>171</td>
<td>Fail</td>
<td>53</td>
<td>50</td>
<td>45</td>
<td>42</td>
</tr>
<tr>
<td>188</td>
<td>Fail</td>
<td>53</td>
<td>50</td>
<td>45</td>
<td>42</td>
</tr>
<tr>
<td>1114</td>
<td>Fail</td>
<td>40</td>
<td>45</td>
<td>42</td>
<td>38</td>
</tr>
<tr>
<td>1132</td>
<td>Fail</td>
<td>40</td>
<td>48</td>
<td>37</td>
<td>35</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>End of Year 4</th>
<th>Student No.:</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>171</td>
<td>Fail</td>
<td>40</td>
<td>30</td>
<td>25</td>
<td>30</td>
</tr>
</tbody>
</table>

R1A = Rater one using the Analytic Rubric. R2A = Rater two using the Analytic Rubric. R3H = Rater three using the Holistic Rubric. R4H = Rater four using the Holistic Rubric.

The students’ university examinations have a passing mark of 40, whereas, the ‘usual’ clinical placement assessments are dichotomous (pass or fail). For the purposes of this study, to allow for statistical analyses, a numerical score was allocated to each of the students’ portfolio. In contrast, Finlay, Maughan and Webster’s study (1998, p. 174), the students’ portfolio score did not contribute to the final degree mark. Therefore, as the portfolio raters were asked to grade the portfolios from 0-100, determining the ‘cut score’ for the portfolio assessment was arbitrary and was set at 50.

However, at the end of year one, one student received a fail grade from her clinical preceptor on the usual clinical assessment rather than for the portfolio. The same student was also failed by all four of the portfolio raters (see Table 5.18 above).
Two students passed the ‘usual’ clinical assessments but received a fail grade from the portfolio raters who were using the holistic rubric and from one of the portfolio raters who was using the analytic rubric.

In year two, one student received a fail grade in the ‘usual’ clinical assessment and a fail grade from all of the portfolio raters. In year three, where most of the ‘failing grades’ for the clinical assessments occurred, eight students failed the ‘usual’ clinical assessments. The portfolio raters, who were using the holistic rubric, failed eleven students in year three, including the eight students who failed the ‘usual’ clinical assessments. If the ‘cut score’ was set at forty, as in the other university examinations, only three students would have failed the portfolio assessment. Alternatively, if the ‘cut score’ was set at 80, as is often the case in mastery learning, where standards are either met or not, none of the students in this study would have passed the portfolio assessment. The standards and passing scores should be high enough to provide adequate protection for the public and not so high as to unnecessarily restrict the supply of qualified practitioners or to exclude competent students from practising (Kane et al, 1999, p. 195). Although determining the ‘cut score’ has consequences, particularly in high stakes assessments (Willemsen-Dunlop, 2004), there is also a need to balance the need of the student to practice with protecting the public from an incompetent practitioner.

Overall, the results are consistent with a recent study in the UK, where a very small proportion of students failed clinical assessments; failure rates for theory outstripped practice by a ratio of 5:1 (Hunt et al, 2011). However, in this study, when a student did fail their ‘usual’ clinical assessment, the portfolio was utilised as a means of documenting the reasons why the student failed, this detailed feedback provided the student with a platform from which to begin to improve on certain Domains of Competence. The comparison group of students did not have a detailed written record of why a particular student failed their ‘usual’ clinical assessment.
5.5 Comparing the Non-portfolio Group and the Portfolio Group Examination Results.

In Chapter Two, Spencer and Spencer's (1993) argument that the relationship between 'competency' and 'performance' could be expressed statistically was presented (see Section 2.3.1, p. 23). They argued that superior performance is where an individual is one standard deviation above the average. Therefore, the university examination results from the non-portfolio group were compared with the results from the portfolio group. In Tables 5.18 to 5.22, the results of the comparisons for each year of the programme are presented. As indicated in the tables, there is no difference between the groups. Thus, it can be argued that although both groups are from the same university cohort, they practice in two different hospitals. In year three, in contrast to expectations, the number of students who failed the usual clinical placements was larger in the portfolio group, where eight students failed, in comparison with the non-portfolio group where five students did not pass. These findings are consistent with Tiwari and Tang's (2001) study in which no difference was found between the portfolio and non-portfolio groups. The findings of the present study are consistent with the literature which indicates that clinicians are reluctant to fail students (Duffy, 2003, 2006); the university examination results were within an average range of 55 to 61. The portfolio raters were also consistent within this range.

Herman and Winters (1998) argued, in regard to transparency and equity of support, that students who received more support are unfairly advantaged. In the present study, there was no difference in the amount of support that the students received; on average, each student received two and half hours per week of support from their clinical preceptors and the Clinical Placement Co-ordinators. For this study, preceptorship was identified as a critical factor in stimulating reflection. A major finding was that, for students to learn how to reflect, as the qualitative data analyses will show, the students required coaching by their preceptors. This finding is consistent with previous studies on portfolio use and the nature of the reflections contained in the portfolios (Zeichner and Wray, 2001, Driessen et al, 2003, Delandshere and Arens, 2003).
Table 5.19 Non-portfolio Group and Portfolio Group Examination Results Comparisons Year One.

<table>
<thead>
<tr>
<th>NP B1</th>
<th>P B1</th>
<th>NP B2</th>
<th>P B2</th>
<th>NP B3</th>
<th>P B3</th>
<th>NP B4</th>
<th>P B4</th>
<th>NP SS1</th>
<th>P SS1</th>
<th>NP SS2</th>
<th>P SS2</th>
<th>NP N1</th>
<th>P N1</th>
<th>NP N2</th>
<th>P N2</th>
<th>NP Cl. A</th>
<th>P Cl. A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>59.21</td>
<td>58.63</td>
<td>55</td>
<td>57.49</td>
<td>62</td>
<td>60.75</td>
<td>55.64</td>
<td>54.76</td>
<td>62.51</td>
<td>63.14</td>
<td>52.39</td>
<td>50.75</td>
<td>58.52</td>
<td>58.64</td>
<td>57.94</td>
<td>55.37</td>
<td>1 Fail</td>
</tr>
<tr>
<td>Med</td>
<td>59</td>
<td>60</td>
<td>53</td>
<td>57</td>
<td>60</td>
<td>60</td>
<td>55</td>
<td>55</td>
<td>62</td>
<td>64</td>
<td>53</td>
<td>51</td>
<td>60</td>
<td>59</td>
<td>58</td>
<td>55</td>
<td>1 Fail</td>
</tr>
<tr>
<td>Min</td>
<td>28</td>
<td>35</td>
<td>24</td>
<td>22</td>
<td>38</td>
<td>31</td>
<td>25</td>
<td>31</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>30</td>
<td>38</td>
<td>41</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>92</td>
<td>86</td>
<td>88</td>
<td>82</td>
<td>92</td>
<td>92</td>
<td>91</td>
<td>91</td>
<td>86</td>
<td>90</td>
<td>70</td>
<td>75</td>
<td>82</td>
<td>85</td>
<td>74</td>
<td>71</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.20 Non-portfolio Group and Portfolio Group Examination Results Comparisons Year Two.

<table>
<thead>
<tr>
<th>NP N3</th>
<th>P N3</th>
<th>NP N4</th>
<th>P N4</th>
<th>NP N5</th>
<th>P N5</th>
<th>NP N6</th>
<th>P N6</th>
<th>NP Cl. A</th>
<th>P Cl. A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>56.12</td>
<td>56.87</td>
<td>57</td>
<td>57.06</td>
<td>59.16</td>
<td>59.25</td>
<td>55.51</td>
<td>56.87</td>
<td>1 Fail</td>
</tr>
<tr>
<td>Med</td>
<td>55</td>
<td>56</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>55</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>6.49</td>
<td>7.59</td>
<td>5.81</td>
<td>5.78</td>
<td>8.39</td>
<td>8.45</td>
<td>4.74</td>
<td>5.47</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>40</td>
<td>38</td>
<td>40</td>
<td>44</td>
<td>38</td>
<td>40</td>
<td>48</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>72</td>
<td>78</td>
<td>74</td>
<td>70</td>
<td>78</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.21 Non-portfolio Group and Portfolio Group Examination Results Comparisons Year Three.

<table>
<thead>
<tr>
<th>NP N7</th>
<th>P N7</th>
<th>NP N8</th>
<th>P N8</th>
<th>NP Cl. A (a)</th>
<th>P. Cl. A (a)</th>
<th>NP Cl. A (b)</th>
<th>P. Cl. A (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>56.28</td>
<td>58.88</td>
<td>58.82</td>
<td>56.39</td>
<td>2 Fail</td>
<td>5 Fail</td>
<td>8 Fail</td>
</tr>
<tr>
<td>Med</td>
<td>55</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>7.00</td>
<td>8.22</td>
<td>6.38</td>
<td>16.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>44</td>
<td>45</td>
<td>45</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>80</td>
<td>87</td>
<td>75</td>
<td>80</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5.22 Non-portfolio Group and Portfolio Group Examination Results Comparisons Year Four.

<table>
<thead>
<tr>
<th>NP N9</th>
<th>P N9</th>
<th>NP N10</th>
<th>P N10</th>
<th>NP N11</th>
<th>P N11</th>
<th>NP N12</th>
<th>P N12</th>
<th>NP Cl. A</th>
<th>P Cl. A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>57</td>
<td>55.67</td>
<td>57.70</td>
<td>57.27</td>
<td>56.48</td>
<td>55.99</td>
<td>55.73</td>
<td>55.96</td>
<td>2 Fail</td>
</tr>
<tr>
<td>Med</td>
<td>56</td>
<td>55.50</td>
<td>58</td>
<td>58</td>
<td>57</td>
<td>55</td>
<td>55</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>7.36</td>
<td>7.54</td>
<td>6.10</td>
<td>6.37</td>
<td>6.30</td>
<td>5.54</td>
<td>5.93</td>
<td>5.697</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>38</td>
<td>30</td>
<td>40</td>
<td>33</td>
<td>32</td>
<td>38</td>
<td>34</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>75</td>
<td>75</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend for all four tables on this page.

Med. = Median.
SD = Standard Deviation.
Min. = Minimum.
Max. = Maximum.

NP = Non Portfolio Group
P = Portfolio Group
B1 to B4 = Biological Science Subjects
SS 1 & 2 = Social Science Subjects
N 1 to 12 = Nursing Subjects
Cl. A = Clinical Assessment.
Overall, the results indicate that, from year one to year four, there is no significant change in students' portfolio scores. Students who score high in year one, continue to score highly throughout the years, from years one to four. This finding is consistent with the qualitative data (phenomenological interviews and field work) where students who were exceptional to the representative group in year one, remained exceptional throughout the programme. Conversely, students who received low portfolio scores in year one, continued to have low scores throughout the programme. This finding is consistent with the qualitative data which indicated that students who were contrary or sensitive (anecdotal) to the representative group in year one remained in the same category in year four.

In the following sections, six through ten, the results of the qualitative data analyses are presented. The analysis of longitudinal qualitative data is complex and presents a comprehensive picture of the students' development over time. In the next section, in order to bring clarity to the presentation of the qualitative data a summary of how the data were analysed is presented. In Chapter Four, the data analysis strategy was discussed in detail (see section 4.6, pp. 143-144).

5.6 Presentation of the Qualitative Data.

The qualitative data included field and theoretical notes from the clinical site visits, the interview transcripts and the students' portfolios. Following several readings of each data source, coding and categorisation began. Comparing, contrasting and sorting categories required an iterative process that continued until a discernible pattern was identifiable. From these patterns, a classification system was used to explain the students' activities and experiences of portfolio use and clinical practice. The triangulation of the different data sources were compared and contrasted and the thematic analysis continued by searching for alternative linkages within and between the data sources in order to identify representative, exceptional and contrary instances within a theme. At the end of each year, the thematic analysis for individual students and for the group of students, as a whole, was conducted in order to continue to search out alternative, exceptional and contrary cases and to describe the representative student (Thorne et al, 2004, p. 5). The analysis allows for
interpretative descriptions of the cases and for longitudinal studies, in particular, facilitates the tracing of student development over time.

Following examples of particular students throughout their journey to becoming a Registered Nurse reveals how, in the layering of the research, disclosures from the different methods altered the position of the student in terms of being representative of the group of students who were interviewed, contrary to the representative group, exceptional to the group or a sensitive (anecdotal) case. The qualitative findings begin with the pre-clinical practice interviews conducted in the first semester. Thirty five interviews were conducted; twenty one interviews with students from the portfolio group and fourteen interviews with students from the comparison (non-portfolio) group.

5.7 Year One: Students' Pre-clinical Practice Interviews.

In the first interviews, which sought to understand how students came to be in the nursing programme, two major themes emerged: decision making and anticipation.

5.7.1 Decision Making and Anticipation.

Within the decision making theme, there were four categories regarding how the students came to the decision to pursue a career in nursing: early decision, no decision, rational decision or forced to decide (by some life changing event). The 'early decision' makers (fourteen students) were representative of the group; these students were pre-socialised to nursing and all had some experience of working part-time as a health care assistant or in another health related activity, such as voluntary work or in the Red Cross. These students made an early decision to do nursing on the basis that they '...always wanted...' to be a nurse or that they were influenced by a family member who was a nurse. Three of these students experienced family illness (long, protracted) or deaths in the family. They were all focused, interested and motivated to succeed and their sense of anticipation and excitement concerning
‘...going on the wards...’ was palpable, yet, balanced by a sense of anxiety in case they did something wrong.

In contrast, the ‘no decision’ group were in the nursing programme by default, they did not make a first preference decision to do nursing. Two of the eight students in this group chose nursing as their second preference. For this group, the driver in the decision making process was their desire to be in college, irrespective of the course. In other words, which course they pursued was of no significant consequence. Six of these students, on the basis of their leaving certificate results, took whatever course was offered to them through the allocation of the points system. The ‘no decision’ group were, in the main indifferent, and did not share the same anticipation as the ‘early decision’ makers concerning the imminent first clinical placement.

The ‘rational decision’ makers, due to their ability to arrive at the decision to do nursing, were exceptional to the representative group. The extent to which these seven students went to, in terms of their prospects for the future, ranged from seeking advice from career guidance officers (in secondary and third level institutions) to looking to the long term implications of doing a particular course. Whilst these students were aware that they could travel abroad with a nursing qualification, this did not form the basis of their decision making processes. The opportunity to go to college was available to them and they sought to optimise that experience by gaining a second qualification, for example, Registered General Nurse), in addition to a Bachelor’s degree. In the main, these students also sought advice from family and friends. The rational decision makers held a balanced view of their anticipated first clinical placements, whilst they were looking forward to their placement and felt unsure, they rationalised the situation. For example, Louise said: “...I am really looking forward to going on the wards. I hope that I know what to do, but I am sure that we will be helped...it’s not like they expect us to manage the ward.”

Of the thirty-five students interviewed, six were sensitive cases, that is, they were ‘forced to decide’ due to a life changing event and were all were over twenty-three years of age. Two of these students had completed one to two years of college
and, then, realised that they had made the wrong decision and were starting again with a fresh course of study in nursing. The remaining four students were forced to decide on their future careers because of redundancy from work, the increased responsibility of parenthood or the realisation that that they had no future in the job that they were doing. Whatever the event, they were ‘forced to’ ‘...take stock...’ and change direction. Although they were forced to make a decision about their future career options, they also questioned their ability to cope with the demands of college. This balancing of wanting to move forward yet doubting their abilities to do so led to a forced, spur of the moment, decision (excerpts from Clara’s interview provides an example which is contained in Appendix 6). These students enjoyed being in college, their sense of anticipation of the first clinical placement was heightened by anxiety and fear. This ‘sensitive’ group of students expressed the most dread regarding the first clinical placement, particularly, in terms of not knowing what to expect and how the staff would relate to them as they were older than the other first year student nurses.

In the following section a short summary of individual histories of students is presented. These histories provide a fore-understanding of the students before they progressed to the next stage of the programme: the first clinical placements where the field work began with subsequent interviews and portfolio readings.

5.7.1.1 Niamh: A Representative Case.

In Niamh’s story, a description of the group of students classified as representative is evident. Niamh always wanted to be a nurse; her mother, who had died five years previous in a farm accident, had been a nurse. At nineteen years of age, Niamh was experienced in ‘caring’ for others due, in part, to her mother’s untimely death and the fact that her grandparents were residing in the family home; her caring nature was also evident in the manner in which Niamh spoke about her relationship with her grandfather. Niamh understood the professional role of the nurse as being ‘caring’ for the sick, in the interview she made little reference to college life and socialising. She was concerned with the idea that she would have to
work part-time to support herself and realised that, during clinical placement, it would not be possible to do so.

5.7.1.2 Louise: An Exceptional Case.

Louise, who had weighed up her options before deciding on a career, represents the exceptional case and contrasts with Niamh's story. At nineteen years of age, Louise displayed maturity in her decision-making processes; she sought advice from her parents, considered this advice carefully and, then, made further inquiries into types of colleges and courses. Louise did not stop there in her decision making process, she opted for a college course with dual qualifications, as this would provide her with future options in further study or specialisation. In addition, she worked part-time in a small chemist shop and, with the pharmacist's help, utilised the time to study common drugs which had helped Louise in her understanding of some of the science subjects under study.

5.7.1.3 Caroline: A Contrary Case.

Caroline's story is an example of the contrary category of students; it focused on college life, socialising, and sports clubs. She had a privileged background and did not need to work as she was in receipt of support from her parents. Caroline did not make the decision to 'do' nursing. After doing some personality tests, a secondary school career guidance teacher recommended that Caroline do something aligned to the health professions. Caroline had just turned nineteen years of age, her priority was the location of the college rather than the choice of course. Although Caroline's first choice was radiology, she was now doing her second choice, nursing. Caroline could not sit still for very long, she just wanted to go and live life. When asked about going on her first clinical placements, Caroline replied "OMG...haven't thought about that yet... you know Christmas is coming, shopping and everything..."
5.7.1.4 Jane: A Sensitive Case.

Jane’s history is sensitive, at the age of twenty-five, she was in a ‘...rut....’. Since leaving school, at age eighteen, Jane had worked as a care assistant in a nursing home, she was shocked into action because the nursing home was closing down. Jane was at a crossroad in her life, after pondering on her future she came to the slow realisation that she did enjoy nursing type of work. Although in mulling over the idea becoming a Registered nurse, Jane questioned her ability to complete the demands of a college course, she made the decision to go to college, applied for the course, and was successful in her application. In speaking about the professional role and responsibilities of the nurse, Jane acknowledged the differences between her ‘old’ role, as care assistant, and her future ‘new’ role of nurse. For the moment, Jane’s greatest fear was not passing examinations because she wanted to be with the group for the first round of clinical placements.

5.8 Year One Clinical Placements: The Portfolio is Experienced as ‘A Badge of Merit’.

Thirty five interviews were conducted; twenty one interviews with students from the portfolio group and fourteen interviews with students from the comparison (non-portfolio) group. The portfolio group and the comparison group of students did not differ in their reaction to the reality of clinical practice. All of the students who were interviewed commented on how they were “... bombarded by the speed of activity in the wards”. The students’ sense of anticipation soon gave way to fear and anxiety about being with real patients. The rapid action of clinical practice required a quick response and the students were not able to respond; they were constrained by their lack of knowledge, which deemed their actions ineffective. This vulnerability left the students incapacitated due to the fear of doing something wrong and they quickly became dependent on their preceptor or another member of staff. During the first six-week clinical placement the portfolio was used as a container to record the achievement of tasks. The interview data revealed how the students engaged in the chaotic and unfamiliar clinical environment and how they used the portfolios. Two
major themes were identified from the qualitative data: sensory overload and noticing.

5.8.1 Sensory Overload and Noticing.

First, concerning the sensory overload, students were bombarded with information that ranged from unfamiliar visual cues to unfamiliar auditory cues. The noises were unfamiliar and the language was different. The clinical staff spoke in a language that was not familiar to the students, it was mostly in abbreviated medical terms and the students did not understand this language. Therefore, the students' ability to communicate with the staff was constrained. However, although the students found some solace with the patients, they felt restricted to engaging in conversation with the patients due, in part, to their lack of knowledge concerning the patients' condition. In general, the students were afraid to touch anything in case they made a mistake, broke something, or contaminated something. They were almost powerless to act and this resulted in students concentrating on learning procedural skills, for example, following their preceptors' direction closely in doing a task. The clinical staff could be heard to say to one another 'take the student with you to do' or 'to see a certain procedure'. The students were a commodity to be taken here or there.

Of the thirty-five students who were interviewed, twenty-nine were representative of the group, four students were exceptional to the representative group and two students were contrary to the representative group. The representative students engaged in clinical practice with the help of their preceptors, they were ready to learn and followed their preceptors closely. These students did not have the ability to 'pick up cues' on their own initiative and depended heavily on their preceptors. The four exceptional students were able to 'pick up cues' more readily and were able to anticipate what they were supposed to be doing next. These students responded in a more fluid way and engaged more freely in conversation with their preceptors. The two contrary cases adopted a coping strategy in which they tended to hide or shy away from the rapid action events. These students tended to retreat into the background where the clinical staff almost forgot about them. The more the
Noticing, the second major theme in the qualitative data, concerned noticing what was happening during a particular care event. The preceptors who were better at talking with the students and pointing out certain details about nursing actions gave students a sense of security. In their portfolios, the representative students were better able to articulate a clear picture of what was happening concerning patient care. The exceptional students had a heightened awareness of what was happening during a care event due, in part, to their own perception of what was happening and to the involvement of their preceptor. The preceptors teaching style was most evident with the portfolio use. The preceptors who spent time in dialogue with the students and who raised the students’ consciousness of care events was reflected in the students’ writing in the portfolios. Although raising awareness amongst students also occurred in the comparison group of students, there was no documented evidence that this dialogue had taken place.

5.8.1.1 Niamh: A Representative Case.

Niamh did well in her clinical placements; she engaged in clinical practice and, with the help of her preceptor, managed to achieve the first year objectives.

I just loved being on the wards, it felt right for me, whilst I was afraid to do some things especially injections, dressings … my preceptor helped me. I know I have lots to learn and I will be able to do more next time on the wards, …there is a great sense of achievement when I look at my portfolio I did lots of different things and my clinical skills list is almost full. (Niamh Interview 3).

Niamh is representative of the group of students who presented their portfolio for assessment at the end of year one. For these students, the portfolio was experienced as a ‘badge of merit’; they wrote descriptions of the nursing care events that they were involved in without reflecting on the events in order to further their
understanding and learning about the event. The emphasis was on the achievement of tasks based on procedural knowledge and, in the portfolio, the focus of the evidence was on doing tasks.

5.8.1.2 Louise and Jane: Exceptional Cases.

Louise was an exceptional case to the representative group; she was confident in her encounters with patients and clinical staff. Whilst Louise anticipated some events, she checked with the clinical staff before proceeding. She had the ability to assess the situation before acting and communicated with the clinical staff with ease. Louise was well able to read a situation by picking up on cues, followed direction well and was engaged in practice with the clinical staff.

Jane was also an exceptional case as the clinical staff held her in high regard. She was fluid in her actions and communicated well with the patients; Jane ‘noticed’ what was going on around her and was well able to provide basic nursing care. Jane “…got stuck in…” was how the clinical staff described her actions. However, Jane tended to operate alone, her past clinical experience gave her more ‘confidence’ to engage in tasks which other first year student nurses would not dare to attempt to do alone.

Whilst Louise and Jane were exceptional cases from the perspective of the clinical staff, the evidence in the portfolios of these students differed considerably. Jane’s portfolio evidence consisted of documenting the repetitive performance of simple tasks, for example, bed baths completed, number of injections given. There was no evidence which indicated that she was engaging in the nursing process or reflecting on those activities. Jane did not reflect on how she was assessing a patient before she acted in some way.

Jane (Portfolio Extract): End of Year One.

Today, was a good day, I have finished my second clinical placement. I did well and the CNM was pleased and said that I was doing very well for this stage in the programme. I am looking back on all that I have done and it was good to have previous experience as this helped me in these clinical placements.
In contrast, Louise’s portfolio contained detailed accounts of how she was interpreting a particular situation, how she reflected on that situation and how she had to respond.

Louise (Portfolio Extract): End of Year One.

This last clinical placement was very busy, surgical wards are hectic. So much going on all at once. At least with my preceptor we could concentrate on a few patients at a time. I tried to hone in on just those six patients and understand them. I looked up their conditions when I did not understand something and checked it with the preceptor later. One particular patient worried me because... I discussed the case with my preceptor and the CPC. The outcome was...and I have learnt that some patients have complex medical and social histories...

The evidence in Louise’s portfolio demonstrated that she was engaging in clinical practice and learning how to use the nursing process tools to assess a patient. In her portfolio, Louise identified clearly how her experiences related to the Domains of Competence. In contrast, Clara’s interviews, presented in the following section, highlighted a different picture.

5.8.1.3 Clara: A Contrary Case.

In Clara’s story, how the student disengaged rather than engaged in clinical practice is highlighted. Clara did what was necessary to get through the placements and, then, retreated from the rapid action and the ‘busyness’ of practice. She remained detached from the other first year students and did not involve herself in conversations with clinical staff. Clara said that she felt that: “...she knew nothing, compared to them. I am just too nervous to speak to them and ask them questions. I’ll talk to the CPC when she comes along tomorrow.” Despite her maturity and previous clinical experience, Clara was extremely nervous. The new role that Clara had spoken about in previous interviews was not sitting well with her; she reverted to her ‘old’ care assistant role and melted into the background. Although Clara posed many questions about ‘why was this happening’ concerning a particular nursing care event, her questioning nature left her with a sense of not belonging to the team.
I thought things would be different, now that I am officially a student nurse. I see that the staff nurses treat us first year's as 'dangerous'. They do not leave us alone for a moment, they pull us here and there to see this and that. I do want to get involved, but we have no time to think. I just want to get on with the job. (Clara: Comparison Group, Interview 3, Line 1).

5.9 Year Two Clinical Placements: The Portfolio is Experienced as 'A Comrade'.

Nineteen interviews were conducted; eleven interviews with students from the portfolio group and eight interviews with students from the comparison (non-portfolio) group. The second year of the programme is difficult for students as they rotate through specialist clinical placements. The specialist clinical placements are outside of the parent hospital, for example, in day care centres, psychiatric, maternity and paediatric hospitals. The major theme that emerged from the qualitative data was a strong sense of 'Permanent Temporariness'. The portfolio became the '...only connection to the nursing programme...a comrade.'

5.9.1 Permanent Temporariness.

The students in the portfolio group and in the comparison group had a sense of 'drifting' through year two as the students rotated through various placements many of which were of short duration (two weeks). There was little opportunity for the students to belong to the team and, in the main, the students' attitude was 'get it done' and 'move on'. Whilst, many of the students enjoyed the varied experiences, they could not see the relevance of some of the placements.

Niamh's story is representative of the group of sixteen students, whilst Louise continued to be an exception to the group, and Clara continued to be contrary to the group (two students). The stories of these students are also presented in the following sections.

5.9.1.1 Niamh: A Representative Case.

During the year two specialist placements, Niamh's story is representative of the group of students who felt isolated from both the university and their parent
hospital. The sense of isolation led students to drift along with year two; they found it daunting to negotiate their way around the specialist placements. Meeting new people every two weeks, or so, was a source of stress for the students. Each student preferred one or more placements, for example, some students did not like maternity but liked paediatrics. The constant moving from one placement to another left students with a feeling of no sense of belonging as they were not members of a team and they were not in any clinical placement long enough to establish themselves or for the clinical staff to get to know them.

Niamh: Portfolio Extract, p. 23.

I really do not see the relevance of this placement. Out patient’s department is like a supermarket. In one door and out the other. I don’t know what I am supposed to be doing. I am assisting clerical staff to call patients in to a room to meet the doctors. The next minute I am assisting a staff nurse doing a dressing. This is all too disjointed, what am I supposed to be learning?

Niamh: Interview two, End of Year Two.

If it wasn’t for this portfolio, I don’t know what I was supposed to be doing. At least the portfolio kept me on track. I went through the domains and looked at them in a different way. Take communication for example, communicating in psychiatry is very different to communicating with children and their parents. I could not see that initially....(Line 74.)

On the other hand, Louise continued to be an exception to the group, as demonstrated in the following section.

5.9.1.2. Louise: An Exceptional Case.

Louise continued with her reflective approach to learning in the different clinical environments, she quickly picked up what was different between the placements and the groups of patients. Whilst Louise also felt a sense of isolation and the ‘temporariness’ of passing through various placements, she made the most of the learning to be achieved from the specialist placements. Louise engaged with
clinical staff in dialogue concerning what was different and, in her portfolio, reflected on her experiences.

Louise: Portfolio Extract, p. 37.

This morning I was shocked into action, a young girl in our ward had cut her legs. My immediate reaction was to call for help and to try to prevent the girl from doing more harm. My mind was racing, why was she doing this?...what was so wrong in her life?...what am I doing? Stop the bleeding? Remove the blade...I was in turmoil, will the staff ever hurry to help us.... Later that morning, after a debriefing meeting with the staff...I soon learned that the young girl had severe difficulties with.... Reflecting on the situation, could I have done anything different? I could have talked more with the girl. It did not matter that I knew very little about her condition, but we could have talked about normal 'girl' stuff.

5.9.1.3 Clara: A Contrary Case.

In year two, Clara was the most disenfranchised by the specialist rotations. Clara felt as though she was deprived of a right to be in the main teaching hospital and not '...out and about these placements all over the city'. Clara and one other student ‘...hated being outside of the main hospitals”, whilst they enjoyed some of the placement, they could not see the relevance of them. In the main, these students felt that year two was a waste of time.

Clara: Interview Two, End of Year Two.

Will somebody please tell me what has going to (name of organisation) to do with general nursing in a hospital? It was a waste of time, I followed this staff nurse around, did nothing, just watched from the sidelines... how was I supposed to get involved? We did not know the children, in fact I was petrified of getting involved. They needed so much care...I just did not know where to start, so I didn’t, I just watched.... Thank God, it was for just for two weeks...I could not have done more time there. That unit is too specialised for second year students. It was not fair to send us there. Why are we allocated to such high dependency units?
5.10. Year Three Clinical Placements: The Portfolio is Experienced as 'A Necessity'.

In year three, during clinical placements, twenty-six students were interviewed; sixteen from the portfolio group and ten from the comparison group. Eighteen students were representative of the group, one was a contrary case and there were seven sensitive cases. Three main themes emerged from the analysis of the qualitative data: preparedness, the balance of power and reality shock. The portfolio was experienced as a necessity to the students' survival on the wards as they had returned to the parent hospital.

5.10.1 Preparedness, the Balance of Power and Reality Shock.

The third year students were not prepared for their return to the main teaching hospitals and they, once again, experienced the reality shock of being in a busy clinical setting. The rapid action hit the third year students just as hard as it had hit them in the first year, however, this time, they were also hit by the additional cold reality that they were third year students and they were not prepared for this responsibility. The clinical staff had high expectations of what these third year students could do in the clinical setting. Therefore, there was disequilibrium in the expectations of the clinical staff and the students. While the clinical staff had forgotten that these students were out of the main hospital for over a year, the students had to learn, all over again, how to pick up cues in the clinical environment. In the third year, a difference emerged between the portfolio and the comparison groups. The portfolio group considered the portfolio as essential, in contrast, the comparison group completed their learning log which was not as detailed as a portfolio.

The third year students in the portfolio group considered the portfolio as an essential part of their learning; it provided important evidence of their prior learning and was now providing direction for their next stage of development. Although the portfolio group planned their learning needs in dialogue with their preceptor, implementing the learning plan was not as smooth as some students expected. The balance of power, inherent in hierarchical systems, soon became apparent to the...
students; the students were ‘...under siege to work as a member of staff...’, to the detriment of their learning needs. The students were powerless to speak out and they had to strike a balance between ‘learning to do’ something and actually doing the job. The high stakes experiential learning was overshadowed by the threat of their clinical assessments. At this stage, the students’ portfolio writing style changed; it became assessment focused and was to “…please the clinical staff rather than writing to learn from experiences”.

In year three, Louise who was exceptional to the group in years one and two, was now in the representative of the group category. Louise’s story is presented in the following section.

5.10.1.1 Louise: A Representative Case.

In the third year, with the increasing responsibility and workload, students felt overwhelmed. The balance of trying to learn and do the job simultaneously was challenging.

Louise: Portfolio Extract:

I am not coping today, the ward was too busy and my preceptor was off duty. I had five patients to look after with a new member of the staff. We were both out of our depth. The ward manager kept asking me to hurry up with duties. How could I hurry up... there was just so much to do. Thinking back on the day’s events has shown me that I need to prioritise what I am doing. It is difficult to plan what to do, when I am being given direction from too many people. My learning needs are being overrun by the necessities of the ward.

5.10.1.2 Jane: A Contrary Case.

In Jane’s story, in the pre-clinical interviews, Jane was at a crossroads in life as the nursing home in which she worked was closing down. In the first year, Jane did exceptionally well, ‘really getting stuck in’, as the clinical staff remarked. In the second year, Jane was representative of the group as she rotated through the various external specialist placements. For Jane, year three was difficult. Although the first clinical placement went reasonably well and she passed the assessments, Jane did not
do well in the second clinical placement as she could not take on the increasing responsibility and could not take direction from the clinical staff. Jane reverted to her nursing assistant role, although she was particularly good at providing direct basic patient care, she could not manage a complex set of problems and could not manage more than one or two patients at a time. Unlike other students in the same situation, Jane did not have the ability to recognise that she was not progressing.

**Jane: Interview Two:**

I met with the CPC today and we agreed an action plan so that I can progress from year three to year four. I must pass this last third year clinical placement. I do not know what all the fuss is about I am doing really well, I get on with the staff in this ward, I like the work and I like the patients...They keep harping on at me to do more. I just do not know what they want from me; I work really hard, I bomb around the ward making sure all my patients are comfortable and I make sure the relatives know what is happening....

No, I did not do a drug round yet, I'll do that next year, I have loads of time.

Two weeks after the last interview with Jane, an incident occurred on the ward in which she was reprimanded and she decided to leave the programme.

**Jane’s Final Portfolio Entry:**

This type of nursing is not for me after all,

**5.10.1.3 Niamh: A Sensitive Case.**

Niamh, unlike Jane, knew that she was experiencing problems with managing a caseload of patients and worked with her preceptor and the clinical staff to overcome her difficulties. Niamh used the portfolio to record her difficulties and worked on ways in which she could resolve her problems.

**Niamh: Portfolio Extract.**

My goal for today was to look after four patients. Memorise their details, prioritise their care, write up their care plan and give a verbal hand-over to the next shift.

The day went well, I managed four patients, I still needed
help to prioritise their care, I wrote up the plans in my portfolio and then when my preceptor said it was good, I transferred the details to the patient’s records. The hand-over did not go so well, so I need more practice. Some staff asked me questions that I could not answer. New goals are...

5.11 Year Four Clinical Placements: The Portfolio is Experienced as ‘A Departure’.

During year four clinical placements, twenty-three students were interviewed; fifteen from the portfolio group and eight from the comparison group. Eighteen students were representative of the group, three were exceptional cases and two were sensitive cases. Resignation, maintaining the status quo and urgency were the three main themes to emerge from the analysis of the qualitative data.

The portfolio group of students valued the experience of maintaining their portfolio during this time as it provided a focus for their learning. However, the students did not want to part with the portfolio but they also welcomed the completion of the nursing programme.

5.11.1 Resignation, Maintaining the Status Quo and Urgency.

As the end of the students’ four-year programme was in sight, the students were resigned to maintaining the status quo and acquiesced to ‘...buckling down...learning the ropes.’ The students in the portfolio group and the comparison group felt a sense of urgency in their need to learn, as they would be qualified soon and they realised that they had much to learn. The students were resigned to becoming qualified soon but feared the responsibility of being qualified.

There was a discrepancy between the interview data and the portfolio content for some students. Some students were more open during the interviews in comparison to the writings in the portfolios. The writing style in the portfolios had changed from previous years, it was more formal and it lacked the ‘personal reflective’ style of previous years.
5.11.1.1 Niamh: A Representative Case.

Niamh's concern in securing a job took precedence over all other issues, she maintained the status quo and her portfolio reflected this in comparison to her interview. In the interview she revealed how she feared being qualified and that she was not looking forward to the responsibility, in contrast, she portrayed herself in the portfolio as being in control and focused.

Niamh: Interview Two, Year Four.

"...at this stage of the game we have no choice but to tow the line if we are to get a job in this hospital." (Niamh: Interview two, L. 34).

I have to manage the ward next week and I am petrified. I'm not ready for that just yet, but I just have to do it. (Niamh Interview two, L. 67).

Niamh: Portfolio Extract:

I have met with my preceptor, we identified my learning needs for the next two weeks. My goal is to manage the ward for a morning shift. Today I gave the main hand-over for eight patients. It went well although I did forget some details. I will have to focus on the lab details as I could not remember those details today. Tomorrow I am doing a case presentation on Mr....I am nervous about doing a formal presentation, but my preceptor thinks that I am ready.

5.11.1.2 Louise: An Exceptional Case.

Louise was ready to be qualified, she was looking forward to losing her student status. Like many of the students in the portfolio group, she did not want to part with the portfolio, but she was glad that her student days were over. She was looking forward to her future career and as she had done in year one was investigating future courses of study.

Louise: Interview Two, Year Four.

My preceptor has signed the final assessment and I am really pleased that my clinical placements from a student perspective are over. I have enjoyed the experience and as I sit here with my portfolio,
I do not want to let it go. It is remarkable to look back now and to think it was just a blank when I started four years ago...It is even hard to remember all of the details here...just look at the first year entries...I feel so embarrassed now to think that I wrote that...it's learning the ropes really, minding your place and just getting on with it.

5.11.1.3 Clara: A Sensitive Case.

Clara did not maintain a portfolio, but her interview revealed that she was not looking forward to the responsibility of being qualified. She was also maintaining the status quo in the hope of securing a job. Unlike the other students Clara wanted the job to claim work experience so that she could move to a different hospital or go abroad. Her questioning nature did not diminish and she still did not feel that she fitted in to the team.

Clara: Interview Two, Year Four.
I really do want to get six months experience here to have under my belt, because without that experience it will be very difficult to get a job somewhere else...On the other hand I can't wait to get out of here...don't get me wrong, looking back now I have enjoyed the course, but I don't think I would do it if I had a choice to start over...it's all too rigid for me.


In this chapter the research findings were presented together with a discussion of the major findings. In section one, the details regarding the number of students in the portfolio and comparison group were provided. The concerns about the portfolio content relative to the ABA Domains of Competence were presented in section two. The estimates of reliability were presented in section three and the results of the correlation coefficients of the portfolio scores with the students' other university examinations and clinical assessments were presented in section four. In section five, the results of the comparison of the non-portfolio group with the
portfolio group university assessment results for each year of the programme were presented.

In section six the presentation of the qualitative data began with a brief summary of the data analysis strategy. After which the presentation of the disclosures from the integrated analyses of the data from the field notes, the clinical site visits, the students' interview transcripts and the students' portfolios were presented in section seven. The first year results were also presented in section seven. The results from year two to year four were presented in sections eight, nine and ten, respectively.

In the following chapter the conclusions are drawn, based on the research findings, the implications of the findings are discussed and the limitations of the study are also presented.
Summary.

For Registration as a Nurse, An Bord Altranais (ABA) requires student nurses to be assessed for pass/fail against five Domains of Competence. ABA wished to establish if a portfolio could be used for this purpose. The objective of this research was to evaluate a feasibility study to this end. Therefore, arrangements were made with two urban hospitals to implement a study of the validity of portfolio assessment scores as a measure of undergraduate student nurses’ competence to practice. In one hospital, the assessors were asked to rate the students’ portfolios against the five official Domains of Competence. In the other hospital, the assessors rated the students’ learning logs against the same five official Domains of Competence. A portfolio is a narrative submitted by the student of their clinical experiences with the intention of demonstrating their accomplishments in the five Domains of Competence. In contrast, the learning log is a checklist recorded by the students. It differs from the portfolio in that students do not include reflections on their clinical learning experiences.

The validation of the portfolio assessment was achieved by following two groups of students for four years. At the beginning of the study, eighty-seven students undertook portfolio work and seventy-eight students completed the learning log. At the end of the four-year study, seventy-four students completed the portfolios and sixty-seven students completed the learning logs. The data were subjected to quantitative and qualitative analyses. The primary task was to establish inter-rater reliability and the factors affecting the results. At the end of each year, four portfolio raters evaluated the students’ portfolios and worked independently of each other, using one of two rubrics, analytic or holistic.

Well-established methods were used to determine the inter-rater reliability. A Pearson Product Moment Correlation Coefficient and an intraclass correlation coefficient were used for this purpose and Regression Analyses. During the study
students were interviewed about their perceptions and reactions to the portfolio. The qualitative analyses also involved a detailed evaluation of all of the portfolios at the end of each year of the four-year programme.

6.1 Limitations of the Study.

The findings and conclusions are tempered by the limitations of the study. The students' learning styles were not evaluated at the beginning of the study, which in retrospect would have been useful. A non-random sample of students and portfolio raters was used which limits the generalisability of the findings. Large city hospitals with specialised units were used in this study, thus, the size of hospital may have affected the experiences of the students; in smaller hospitals the experience of students may have been different. Socio-cultural differences between the two hospitals were evident throughout the study and affected the students' ability to write freely in their portfolios, particularly in year four.

6.2 A Summary of the Major Research Findings.

- The statistical analyses showed that the holistic portfolio-scoring rubric provides a higher correlation between the four independent portfolio raters. The intraclass correlation coefficients (single measures) ranged from 0.810-0.918.

- The correlation coefficients between the students' portfolio average score and other university examinations were low to moderate; lowest 0.239 (p = 0.040), significant at the 0.05 level (2-tailed); highest 0.659 (p = 0.000) significant at the 0.01 level (2-tailed). There was no significant difference in the university examination results between the portfolio and the comparison group.

- Overall, the results indicate that, from year one to year four, there is no significant change in students' portfolio scores. Students who score high in year one, continue to score highly throughout the years, from year one to four. This finding is consistent with the qualitative data (phenomenological data and field work) where students who were
exceptional to the representative group in year one remained exceptional throughout the programme. Conversely, students who received low portfolio scores in year one continued to have low scores throughout the programme. This finding is also consistent with the qualitative data which indicated that students who were contrary or sensitive (anecdotal) to the representative group in year one remained in the same category in year four.

- The qualitative data analyses revealed that a portfolio fulfils a variety of purposes. The students' experience of portfolio use changes from year one to year four. In year one, the portfolio is experienced as a 'badge of merit' and by year three and four, it is experienced as an essential part of the students' professional development.

- The portfolios provided a rich source of evidence to demonstrate that when students engaged in clinical practice, they learned at a deeper level from practice.

- The results indicate that not all students engage in reflective practice at a deep or critical level; no significant difference was found between the portfolio and comparison group. Numerous factors, such as, preceptor availability, preceptor experience, preceptor student ratio, patient acuity, ward/unit learning climate and student motivation influence the effectiveness of the portfolio method for teaching, learning and assessment.

- The need to conform to secure employment affected the students' ability to write freely in the portfolios particularly in year four.

- There was considerable variation between individual clinician's ability to teach and assess students.

- The overall conclusion is that in the right circumstances portfolios can be used to assess student nurses' competence to practice.
6.3 Conclusions.

In this section, the conclusions are drawn from the research results and presented in the light of the literature and lessons learnt from conducting this longitudinal study.

6.3.1 The Purposes of a Portfolio: Product versus Process.

This study has demonstrated that a singular portfolio has many purposes and that this purpose changes with student usage. The first purpose of the portfolio is developmental, for formative and summative assessment. The ending of a developmental stage leads to the portfolio becoming a showcase portfolio (Zeichner and Wray, 2001, p. 613) and the final showcase portfolio leads to a new purpose. In the present study, an important finding is that, over time, the purpose of the portfolio changes from a showcase portfolio to a clinical portfolio. The purpose of a clinical portfolio, as defined by Stockhausen (2001), is to use artefacts, reflections, and the reconstruction of knowledge in order to make the active cognitive explorations of clinical nursing problems explicit. In terms of naming the type of portfolio (Klenowski, 2002, p. 10-11), the findings of this study are consistent with the literature in that the final purpose of the portfolio ‘process’ is more important than attributing a name to the type of portfolio as ‘product’.

In the present study, the students’ selected their ‘best work’ for the end of year portfolio assessment. The showcasing of best work may be a misrepresentation of the students’ typical work. Portfolios that contain isolated examples of best work may be so remote from the student’s typical work that they no longer serve the intended purpose (Shulman, 1998b, p. 35). Therefore, those wishing to implement a portfolio system of teaching, learning and assessment need to decide which purpose a portfolio will serve.

6.3.2 Cognitive Processes: Linking the Construction of a Portfolio with the Practice of Nursing.

In this study, cognitive processes were the common factor between the theory and practice of nursing and the practice of portfolio use (Beckett, 2004). The rubrics
were designed to infer ‘process’ and were built on assumptions about the cognitive processes that occur when a student builds a portfolio, thus, cognitive processes take precedence over content. The cognitive processes involve thinking, knowing, comprehending, application, analysis and synthesis, which are largely dependent on reasoned understanding and judgement. In the present study, the portfolio represented the ‘cognitive processes’ inherent in the direct provision of nursing care (Stockhausen, 2001, Meleis, 2012). Nursing practice is dependent largely on the student’s ability to analyse, reason, make decisions, and form judgements about nursing activities. Therefore, the cognitive processes derived from established nursing theory are explicit in the ‘tools’ that nurses use in everyday clinical practice; these same processes are applied when the students use a portfolio to self-assess. The students assess their learning (with and without the help of clinical staff), identify, plan, set goals concerning what they have to do to learn, implement the plan and evaluate it. However, students’ self-assessments may sometimes be wrong due to their unmediated perception of their abilities (Pronin et al, 2011) as shown in Chapter Five with Jane as the examplar. The learning process is a continuous cycle in which the students’ thinking processes are linked directly to action which can be action to learn or action to practice. As competence is acquired, a shift occurs in which the individual changes, to paraphrase Breault (2004, p. 43), from “...thinking like a student to thinking like a [nurse]...”. However, there are disadvantages with unmediated self-reflection and self-assessment, as the following section will show.

6.3.3 The Students’ Ability to Self-Assess and Reflect

An Bord Altranais requires that Registered Nurses reflect and self-assess in order to determine their scope of practice (2000b). The results of this study show that some students, for example Jane, were unable to mentally aggregate their clinical experiences and self-assess to progress through the programme. Self-assessment and self regulation are conceptually flawed (Eva and Regehr, 2011) because people are generally motivated to see themselves positively relative to their peers and adopt self-evaluation criteria that furthers that goal (Pronin et al, 2011). In this study a self-confident student meant that a preceptor was more likely to allow
the student to do more and doing more was seen by the student as evidence that they were learning (Roberts et al., 2011). Jane was overly confident in year one due to her unmediated perception of her ability (Pronin et al., 2011). Reflective dialogue rather than unmediated monologue may develop a student’s ability to self-assess (Kruger-Dunning, 2009).

Despite the recommendation of Buckley et al. (2009) that portfolios should be used for as long a duration as possible to allow reflective skills to improve over time, the results of the present longitudinal study indicate that not all students engage in reflective practice at a deep or critical level despite the prolonged use of the portfolio; no significant difference was found between the portfolio and comparison groups. Numerous factors, such as preceptor availability, preceptor experience, preceptor student ratios, patient acuity, and student motivation, influence the effectiveness of the portfolio method for teaching, learning and assessment (Luhanga et al., 2010, Butler et al., 2011). McMullan (2008) found that portfolios do not sufficiently address the assessment of students’ clinical skills and the integration of theory and practice and, in the present study, this was also the case, when students and preceptors did not engage in dialogue to develop the students’ skills at a practical or critical thinking level. The students who shared narratives on practice experiences with the clinical staff had a deeper understanding of their own thinking and practice (Beckett, 2004). Similar to Haugan et al.’s (2011) finding that the clinical reflection groups enhance the student experiences, in the present study, the evidence in the portfolios was indicative of the students who engaged in reflective dialogue rather than monologue. In addition, the reflective dialogue with clinical staff enhanced the students’ ability to self-assess. The evidence in the portfolios suggested that students who were more aware of the perspectives of other people also held a more realistic view of what they could accomplish in terms of setting learning goals.

The results of the study also show that particularly during the first clinical placements where the students were ‘bombarded’ with the speed of the ward activity, they lacked the language to engage with clinical staff and patients. The lack of interpersonal skills and the ‘medical/nursing’ language is at cross-purposes to a
common understanding of the interactions in clinical practice. When students and clinical staff perceive a genre differently, a gap is created in their interactions; valuable feedback from preceptors was lost. The portfolio was an advantage in instances such as this where the preceptor could write explicit feedback for the student to review. The comparison group did not have such a mechanism to receive written feedback. However, some students in the portfolio group were reluctant to share this work when it showed them in a poor light.

6.3.4 Having a Shared Vision: Fusing Horizons.

Having a shared vision of what is to be taught and assessed reduces ambiguity as discussed in Chapter Five, Section 5.3.4, p. 60. In the present study, the students, the clinical staff and the independent portfolio raters were clear concerning the purpose of the portfolio assessment because when there is no common understanding concerning what it is to be competent to practice, there cannot be a common understanding of the assessment of competence. Conversely, when there is no common understanding of portfolio use there cannot be a common understanding of portfolio assessment. As Baume and Yorke (2002) noted, reliable assessment requires shared knowledge on the part of the assessor and assessee.

Although the practice of grading portfolios, or any other type of student written work, is based on assumptions from scientific measurement theory, it is also a socially constructed activity, thus, the professional judgement of assessors must be given prominence (Yorke, 2011, p. 251). It is also important to recognise that, in making a judgement, the context may change as part of the cognitive process that an assessor uses (Paulson and Paulson, 1994 a and b). In the early 1990s, the difficulties in assessing professional competence were acknowledged by McGaghie (1991, p. 7), who proposed that the judgement model of wine or art connoisseurs, in which quality is recognised when they see it, be applied to the assessment of competence to practice. In Chapter Two, section 2.6, the connoisseurship approach was evident in health care workers who held an unarticulated mental construct of incompetence: 'we will know it when we see it' (Rosenthal, 1995). When incompetence is pervasive at the individual, group and organisational levels, what is the effect on professional
judgement? Unconsciousness will not allow ‘it’ [incompetence] to be ‘seen’ and the organisations’ structures and processes will undermine the individual’s ability to honestly communicate their concerns regarding incompetence (Henriksen and Dayton, 2006, p. 1540). Therefore, to avoid a giant leap of faith into an abyss, before an assessment strategy is developed competence and incompetence must be defined, made explicit and understood at both the individual and the organisational levels.

The present study highlighted another question if portfolio assessment is to be introduced, who should take responsibility for grading the portfolios? The clinical staff will not have the time to do so and the burden will fall on the lecturers in the Third Level Institutions. This stresses the importance of partnerships and sharing responsibilities for student nurse education.

6.3.5 Socio-Cultural Factors Affecting Portfolio Use.

In the present study socio-cultural factors affected the way a portfolio is used and fostered dependence rather than independent thinking on the part of the students which is incongruent with autonomous professionals. The ward/unit learning climate had an impact on the portfolio method of teaching, learning and assessment. Questions about power relations and the influence of the dominant culture of the health care system have been raised by Forneris (2007), who found that power within the hospital culture reinforced the novice nurse’s rule-governed behaviour initially. In the present study in years one and four, power relations were evident in the students’ interviews; no significant difference was found between the portfolio and the comparison groups. However, the evidence in the students’ portfolios was tempered by a need to conform; this finding is in contrast to a UK study that explored the empowerment of student nurses in clinical practice. In the UK study, interviews, conducted over a four year period, with thirteen undergraduate student nurses, indicated that, as the students progressed through the programme, they found their ‘voice’ (Bradbury-Jones et al, 2011, p. 630).

The discrepancy between the interview data and the portfolio content was largely due to the hospital culture (Hospital 1 portfolio group) which differed from the comparison hospital (Hospital 2 non-portfolio group). The students in both
hospitals were concerned with securing a job at the end of the programme, but for some students in Hospital 1 securing a job took precedence over all other issues, for example Niamh as discussed in Chapter Five. The need to conform to secure employment affected the students' ability to write freely in the portfolios.

6.3.6 Students' Intrinsic and Extrinsic Motivation.

The findings from the present study are consistent with Darling's (2001) study of student teachers as discussed in Chapter Three, section 3.2.1.1. Student nurses do not differ from student teachers, as they were also motivated by intrinsic and extrinsic motivators. In this study, the intrinsic motivators, self-directed learning, reflection on learning and preparing for practice was evident in the students' portfolios and manifest in their clinical practice. Although, in this respect, there was no difference between the portfolio and non-portfolio group. Students who were classified as exceptional to the representative group displayed the most desire to learn. Students who were classified as representative of the group were motivated by marks and scores as in Darling's research (2001). Although the portfolio scores in this study and the learning log scores (for the comparison group) did not contribute to the students' final degree mark, it raises two questions. Firstly, should students be awarded a score for engagement in the process as Snadden (1999) questioned, and secondly should portfolios designed to assess the competence of undergraduate student nurses receive a score? Subsequent questions arise such as how should the 'cut' score be determined, as discussed in Chapter Five, section 5.4, or should the standards be reached? (pass or fail).

6.3.7 The Validity of Portfolio Scores.

In this study, the quantitative data show that portfolios can be graded reliably but "Are portfolio scores valid in determining undergraduate student nurses' competence to practise?" The simple answer to this central question in 'no'. In the assessment of competence as a holistic dynamic concept, a score has no meaning with reference to determining whether a student is competent or not. As discussed in Chapter Two, if a holistic view of the concept of competence is accepted,
'competence' is similar to a mass or uncount noun, where numerical values have no value. When numerical values are attributed to competence and are also attributing value to sufficient quantity, the issue is 'what portfolio score is an appropriate indicator of competence?'. How do we decide what quantity of score values is sufficient to grant a license to practise? (see Chapter Two, section 2.3.3). If we take the quantity perspective, then, competence yields to the reductionist view, where competencies or competences are assessed in isolation (see Chapter Two, section 2.2). In the reductionist sense, competence, in terms of 'sufficiency' and 'quantities', is equated to 'having' 'competencies' rather than 'being' competent at a certain point in time. In the present study, the identification of the changing 'purposes' of a student's portfolio over time exposed the relationship between the particularism and holism in assessment (Baume and Yorke, 2002, p. 7). For example, in year one, the student portfolios were considered to be 'A Badge of Merit', in contrast, in years three and four, the portfolio was experienced as 'A Necessity' and as a welcome 'Departure', respectively.

In contrast, the answer to the question of "Are portfolio scores valid in determining undergraduate student nurses' competence to practise?" is 'yes' when the purpose of the portfolio changes, the interpretation of the score also changes. At the end of the four years, as in the present study, when the portfolio becomes a holistic assessment of the student, it is regarded as a record of achievement, that contains corroborated evidence from two sources: from the student and the clinical staff and from external portfolio raters and the results of the other examinations. The portfolio reflects the students' accomplishments over time and is the indicator in the final judgement of the student's competence to practise, that is, pass or fail or to be licensed to practise or not. The significance of this finding is that if a pass or a fail decision is to be made, the rubric must also change. The central issue for An Bord Altranais is whether a student has passed the five Domains of Competence or not. Therefore, it is not necessary to award a score to a student's portfolio when a pass/fail decision is required to grant a licence to practice. The student is either competent to practise or not.
6.3.8 Shifting Perspectives from ‘Testing’ to ‘Learning’.

Shifting perspectives from ‘testing’ to learning allows for an understanding of how professional learning not only arises from practice, but actually occurs in practice and is informed by practice (Regehr and Mylopoulos, 2008, S22). The portfolios provided a rich source of evidence to demonstrate that when the students engaged in clinical practice, they learned at a deeper level from practice. The portfolio helps the student to synthesise theoretical and experiential knowledge through understanding the context in which some focal events occurred. The increasing use of portfolios in the assessment of medical and nursing students’ competence to practise remains problematic due, in part, to the confusion in terms concerning competence (Cowan et al, 2008, O’Connor et al, 2009, Frank et al, 2010, Boursicot et al, 2011, Butler et al, 2011, Yanhua and Watson, 2011) and incompetence. The confusion also remains with portfolio assessment due to the lack of understanding between portfolio as process and portfolio as product. In reflecting on medical education and social accountability, Gibbs (2011) came to the realisation that:

...maybe all too often we describe our educational activities with the right words and we use the appropriate teaching, learning and assessment methodologies, but if we have one failing it is related to our inability to explore and evaluate the long-term effects [of the educational activities]. (p. 605).

The long-term effects of educational activities are rarely studied, therefore the institutions that design and deliver health care programmes “...need to be accountable to society for the products that they produce.” (Aretz, 2011). However, the burden of accountability concerning professional competence rests at the individual level in legal terms.
6.4 Recommendations.

- Creating a portfolio system for teaching, learning and assessment demands new skills and the commitment of each Third Level Institution and Health Care Institution to the system is necessary if the portfolio system is to succeed. Considerable investment in staff training will be required, but competing demands on existing scarce financial resources may hinder the development required.

- Defining the purpose of the portfolio is crucial in determining the nature of the contents, the structure and how the portfolio is to be constructed and assessed. Therefore, those wishing to implement a portfolio system of teaching, learning and assessment need to decide which purpose a portfolio will serve.

- The number of portfolio raters need not exceed two.

- It is not necessary to award a score to a student's portfolio when a pass/fail decision is required to grant a license to practice. The student is either competent to practise or not.

- Socio-cultural factors affect the way a portfolio is used and foster dependence rather than independent thinking on the part of the student which is incongruent with autonomous professionals. Therefore in teaching hospitals, clinical staff should be orientated towards teaching and assessment in general, and towards self-assessment and reflective dialogue in particular.

- Students should be provided with interpersonal skills training and to learn how to learn prior to clinical placements. Ideally, this should occur at the beginning of the education programme.

- Limit the use of external and clinical placements of short duration (two weeks).

- If portfolios continue to be a requirement for student nurses during clinical placements their supernumerary status should continue.

- If teaching and learning strategies are changed to portfolio assessment, a greater emphasis on self-assessment will be required in order to develop autonomous practitioners.

- The practicality of using e-portfolios in the clinical environment is attractive, as the storage of the portfolios on the ward, in this study, was problematic.
However, the feasibility of e-portfolios remains unclear due to the lack of computer resources and the competing demands on existing resources.

- Further research could include a factor analysis of the Domains of Competence.

- Reflecting on the methodology used for the present study, employing the mixed model (quantitative and qualitative) longitudinal study design illuminated changes in the ‘purpose’ of a portfolio that would not have been ‘uncovered by a mono-method or a cross-sectional research design. Therefore further research on portfolio use would benefit from a similar design but need not include a comparison group.


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APPENDIX

1

Proficiency Assessment Form (PAF)
Anord AlcrAHAis

PROFICIENCY ASSESSMENT IN CLINICAL NURSING SKILLS FORM

131488

Candidate's Surname (block capitals): ____________________________  Forename (block capitals): ____________________________

Date of entry in present training: ____________________________ Ward/Department: ____________________________ Specialty: ____________________________

Day/Night Day From: ____________________________ To: ____________________________ No. of weeks: ____________________________

Preliminary interview date: ____________________________ Intermediate interview date: ____________________________ Final interview date: ____________________________

Signed: Ward/Sister/Nursing Officer/designated person ____________________________

Signed: Ward/Sister/Nursing Officer/designated person ____________________________

Signed: Ward/Sister/Nursing Officer/designated person ____________________________

Signed: Ward/Sister/Nursing Officer/designated person ____________________________

Signed: Ward/Sister/Nursing Officer/designated person ____________________________

Signed: Ward/Sister/Nursing Officer/designated person ____________________________

PLEASE RATE SECTION BELOW BY PLACING "X" IN APPROPRIATE BOX 1 = VERY GOOD 2 = GOOD 3 = FAIR 4 = UNSATISFACTORY

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<tr>
<td>1. Uses all opportunities to increase knowledge and skills</td>
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<td>2. Has responsible attitude to attendance/security</td>
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<td>3. Works well without undue supervision ________________</td>
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<td>4. Shows adaptability, self-reliance and initiative</td>
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<tr>
<td>1. Is accurate in performing duties</td>
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<td>2. Adapts well to changed conditions</td>
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<td>3. Learns new duties well without undue repeated instructions</td>
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<td>4. Plans work effectively</td>
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<td>5. Has ability to cope with pressure</td>
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<td>6. Shows high degree of observation &amp; accurately reports all relevant information</td>
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<td>7. Maintains high standards when carrying out nursing procedures</td>
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<td>8. Applies theoretical knowledge to nursing practice</td>
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<td>1. Shows consideration, tolerance and tact</td>
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<td>2. Is approachable</td>
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<td>1. Upholds the generally accepted standards of the nursing profession</td>
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<td>2. Has responsible attitude to importance of confidentiality</td>
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<td>3. Has integrity of character</td>
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<tbody>
<tr>
<td>1. Demonstrates ability to assess, treat and evaluate patients' needs</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Develops good nurse/patient relationships</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Shows good understanding of patient as an individual</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. Gains confidence and co-operation of patient</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GENERAL RATING - ATTITUDE TO PATIENTS</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>RELATIONSHIP WITH CO-WORKERS</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1. Works well as a member of the team</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Has a positive attitude to direction and supervision</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Shows willingness to guide junior colleagues</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. Has ability to work with other disciplines</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. Is tactful in working relationships</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GENERAL RATING - RELATIONSHIP WITH CO-WORKERS</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABILITY TO COMMUNICATE IN WRITING</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1. Has ability to define essentials on which to plan and report</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Demonstrates ability to present clear and accurate reports</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Can always be relied upon to record clinical data accurately and promptly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GENERAL RATING - ABILITY TO COMMUNICATE IN WRITING</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL RATING - ABILITY TO COMMUNICATE VERBALLY</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1. Has ability to communicate well through verbal expression</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Is clear, accurate and positive when giving verbal reports</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GENERAL RATING - ABILITY TO COMMUNICATE VERBALLY</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>OVERALL PERFORMANCE RATING</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Very good (performs very well)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Good (performs moderately well without serious shortcomings)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Fair (does not function adequately without constant supervision)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. Unsatisfactory (does not function adequately even with constant supervision)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

I have discussed this completed form with the candidate.

Signed: Ward Sister/Nursing Officer/designated person ____________________________ Date: ____________________________

I have read this form and understand the contents.

Signed: Candidate: ____________________________ Date: ____________________________

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APPENDIX

2

Domains of Competence
A team and partnership approach will be applied when assessing the student nurse, as the assessor will consult with colleagues in determining the student nurses' competence. Clinical Nurse Managers, nurse tutors/lecturers and third-level institutions will agree on the assessment process.

Student nurses are deemed to be either competent or not and where competence has not been achieved the student nurse will be given opportunities to develop competence.

**Domain 1. Professional/Ethical Practice**

**Indicators:**

1. **Practices in accordance with legislation affecting nursing practice.**
   - Integrates accurate and comprehensive knowledge of ethical principles, the Code of Professional Conduct and within the scope of professional nursing practice in the delivery of nursing practice.
   - Fulfils the duty of care in the course of nursing practice.
   - Implements the philosophies, policies, protocols and clinical guidelines of the health care institution.
   - Responds appropriately to instances of unsafe or unprofessional practice.
   - Integrates knowledge of the rights of clients and groups in the health care setting.
   - Serves as an advocate for the rights of clients or groups.
   - Ensures confidentiality in respect to records and interactions.
   - Practices in a way that acknowledges the differences in beliefs and cultural practices of individuals/groups/communities.

1.2. **Practices within the limits of own competence and takes measures to develop own competence.**
   - Determines own scope of practice utilising the principles for determining scope of practice in the Scope of Nursing and Midwifery Practice Framework document.
   - Recognises own abilities and level of professional competence.
   - Accepts responsibility and accountability for consequences of own actions or omissions.
   - Consults with supervisors if allocated nursing assignments are beyond competence.
   - Clarifies unclear or inappropriate instructions.
   - Formulates decisions about care within the scope of professional nursing practice utilising the Decision-Making Framework in the Scope of Nursing and Midwifery Practice Framework document.
### Domain 2. Holistic Approaches to Care and the Integration of Knowledge

#### Indicators:

   - Uses an appropriate assessment framework safely and accurately.
   - Analyses data accurately and comprehensively leading to appropriate identification of findings.
   - Incorporates relevant research findings into nursing practice.
   - Promotes research designed to improve nursing practice.

2. Plans care in consultation with the client taking into consideration the therapeutic regimes of all members of the health care team.
   - Establishes priorities for resolution of identified health needs.
   - Identifies expected outcomes including a time frame for achievement.
   - Identifies criteria for the evaluation of the expected outcomes.
   - Plans for discharge and follow up care.

3. Implements planned nursing care/interventions to achieve the identified outcomes.
   - Delivers nursing care in accordance with the plan that is accurate, safe, comprehensive and effective.
   - Creates and maintains a physical, psychosocial, and spiritual environment that promotes safety, security and optimal health.
   - Provides for the comfort needs of individuals.
   - Acts to enhance the dignity and integrity of individuals/clients/groups/communities.

4. Evaluates client progress toward expected outcomes and reviews plans in accordance with evaluation data and in consultation with the client.
   - Assesses the effectiveness of nursing care in achieving the planned outcomes.
   - Determines further outcomes and nursing interventions in accordance with evaluation data and consultation with the client.

### Domain 3. Interpersonal Relationships

#### Indicators:

1. Establishes and maintains caring therapeutic interpersonal relationships with individuals/clients/groups/communities.
   - Reflects on the usefulness of personal communication techniques.
   - Conducts nursing care ensuring clients receive and understand relevant and current information concerning health care.
   - Assists clients/groups/communities to communicate needs and to make informed decisions.

2. Collaborates with all members of the health care team and documents relevant information.
   - Participates with all health care personnel in a collaborative effort directed toward decision making concerning clients.
   - Establishes and maintains accurate, clear and current client records within a legal and ethical framework.
Domain 4. Organisation and Management of Care

Indicators:

4.1. Effectively manages the nursing care of clients/groups/communities.

- Contributes to the overall goal/mission of the health care institution.
- Demonstrates the ability to work as a team member.
- Determines priorities for care based on need, acuity and optimal time for intervention.
- Selects and utilises resources effectively and efficiently.
- Utilise methods to demonstrate quality assurance and quality management.

4.2. Delegates to other nurses activities commensurate with their competence and within their scope of professional practice.

- When delegating a particular role/function account is taken of the principles outlined in the Scope of Nursing and Midwifery Practice Framework.

4.3. Facilitates the co-ordination of care.

- Works with all team members to ensure that client care is appropriate, effective, and consistent.

Domain 5. Personal and Professional Development

Indicators:

5.1. Acts to enhance the personal and professional development of self and others.

- Demonstrates a commitment to life long learning.
- Contributes to the learning experiences of colleagues through support, supervision and teaching.
- Educates clients/groups/communities to maintain and promote health.
APPENDIX

3

Classification Document
<table>
<thead>
<tr>
<th>Methodology</th>
<th>Year: Researcher's Name, &amp; Discipline:</th>
</tr>
</thead>
</table>
| **Evaluation Studies:** (17) | 1993: Gerrish (Nursing).  
1994: Koretz et al. (Education).  
   Jarvinen & Kohonen (Education).  
1997: Naizer (Education).  
2001: Smith & Tillena (Various).  
   Reid & Frid (Education).  
   Gallagher (Nursing).  
   Davis et al (Medical).  
   Dolan et al (Nursing).  
   Williams (Nursing).  
   Driessen (Medical).  
   Gordon (Medical).  
   Smith & Tillena (Various).  
   Breault (Education). |
| **Exploratory Studies:** (8) | 1994: Mitchell (Midwifery).  
1996: Wade & Yarbrough (Education).  
   Stuessy & Naizer (Education).  
2000: Rae & Cook (Nursing).  
2002: Quinlan (Education).  
   Chabell (Nursing).  
2004: Rees & Sheard (Medical).  
   Pearson & Heywood (Medical). |
| **Case Studies:** (9) | 2001: Brown (Education).  
   Darling (Education).  
2003: Delandshere & Arens (Education).  
   Webb et al (Nursing).  
2004: Schutz & Moss (Education).  
   Endacott et al (Nursing).  
   Rees & Sheard (Medical).  
2005: Driessen et al (Medical).  
   Jasper & Fulton (Nursing). |
| **Action Res.:** (2) | 1995: Cayne (Nursing).  
2004: Spence & El-Ansari (Nursing). |
| **RCT:** (1) | 1998: Finlay et al (Medical). |
| **Quasi Exper.:** (2) | 1999: Mathers et al (Medical).  
2004: O'Sullivan et al (Medical). |

<table>
<thead>
<tr>
<th>Year: Researcher's Name, &amp; Discipline:</th>
</tr>
</thead>
</table>
   Heller et al (Education).  
1999: Pitts et al (Medical).  
2001: Pitts et al (Medical).  
   Lonka et al (Medical).  
2002: Pitts et al (Medical).  
2004: Baume & Yorke with Coffey (Education). |
APPENDIX

4

Introductory Letter and Informed Consent
Study Title: A Longitudinal Study of Portfolio Use to Assess the Competence of Undergraduate Student Nurses.

Researcher: Catherine Griffin.

Dear........

I am a registered nurse teacher studying the suitability of portfolio use to assess the competence of undergraduate student nurses. Although the study will not benefit you directly, it will provide information that might enable nurse educators to identify student needs concerning portfolio use and to assist students with those needs.

The study and its procedures have been approved by the appropriate people and review boards at the School of Nursing, UCD and the associated University Teaching Hospitals. The procedures include: (1) completing a demographic data sheet, (2) participating in a series of interviews (three interviews in year one, and two interviews in years two, three and four, (3) allowing your portfolio to be analysed at the end of each year. Participation in an interview will take approximately sixty minutes. You are free to ask any questions about the study or about being a participant and you may telephone me at . . . . . if you have further questions.

Your participation in this study is voluntary; you are under no obligation to participate. You have the right to withdraw at any time and the assessment of your portfolio will not be affected.

The study data will be coded so they will not be linked to your name. Your identity will not be revealed while the study is being conducted or when the study is reported or published. All study data will be collected by me, stored in a secure place, and not shared with any other person without your permission.

I have read this consent form and voluntarily consent to participate in this study.

Participant's Signature Date

I have explained this study to the above participant and have sought his/her understanding for informed consent.

Researcher's Signature Date
APPENDIX

5

Rubrics
Portfolio Holistic Scoring Rubric:

<table>
<thead>
<tr>
<th>Overall Presentation</th>
<th>Required Items</th>
<th>Domains</th>
<th>Reflection/Critique</th>
<th>Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Items are clearly introduced, well organised, showing connection between items.</td>
<td>All required items are included, with a significant number of additions.</td>
<td>Items clearly demonstrate that the domains for the year have been achieved.</td>
<td>Reflections illustrate the ability to effectively critique work, and to suggest constructive practical alternatives.</td>
<td></td>
</tr>
<tr>
<td>Items are introduced, well organised, showing connection between items.</td>
<td>All required items are included, with a few additions.</td>
<td>Items clearly demonstrate that most of the domains for the year have been achieved.</td>
<td>Reflections illustrate the ability to critique work, and to suggest constructive practical alternatives.</td>
<td></td>
</tr>
<tr>
<td>Items are introduced, well organised, showing connection between items.</td>
<td>All required items are included.</td>
<td>Items demonstrate that some of the domains for the year have been achieved.</td>
<td>Reflections illustrate an attempt to critique work, and to suggest alternatives.</td>
<td></td>
</tr>
<tr>
<td>Items are not introduced and lack organisation.</td>
<td>A significant number of required items are missing.</td>
<td>Items do not demonstrate that the domains for the year have been achieved.</td>
<td>Reflections illustrate a minimal ability to critique work.</td>
<td></td>
</tr>
</tbody>
</table>

Portfolio Rater Signature:

Date: 

Outcome:

Score:
### Portfolio: Holistic Scoring Matrix.

<table>
<thead>
<tr>
<th>Standard Reached</th>
<th>Overall Presentation</th>
<th>Required Items.</th>
<th>Domains.</th>
<th>Reflection/ Critique.</th>
<th>Overall Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25 (Max.)</td>
<td>25 (Max.)</td>
<td>25 (Max.)</td>
<td>25 (Max.)</td>
<td>100</td>
</tr>
</tbody>
</table>

### Portfolio: Analytic Scoring Matrix.

<table>
<thead>
<tr>
<th>Standard Reached</th>
<th>Prof/ Ethical P.</th>
<th>Int. of K.</th>
<th>IP Sk.</th>
<th>Org &amp; Man.</th>
<th>Pers &amp; Prof Dev.</th>
<th>Overall Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20 (Max.)</td>
<td>20 (Max.)</td>
<td>20 (Max.)</td>
<td>20 (Max.)</td>
<td>20 (Max.)</td>
<td>100</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Professional/Ethical Practice</th>
<th>Integration of Knowledge</th>
<th>Interpersonal Skills</th>
<th>Organisation Management</th>
<th>Personal &amp; Professional Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Demonstrates excellence in practising in accordance with legislation affecting nursing practice and within the limits of own competence.</td>
<td>□ Demonstrates excellence in providing care according to the patient's care plan that is accurate, safe, competent and effective.</td>
<td>□ Demonstrates excellence in establishing and maintaining therapeutic relationships.</td>
<td>□ Demonstrates excellence in determining priorities for care based on need, acuity and optimal time for interventions.</td>
<td>□ Demonstrates excellence in showing insight into own practice through critical reflection.</td>
</tr>
<tr>
<td>□ Consistently demonstrates the ability to safeguard the patient when care and safety are compromised.</td>
<td>□ Consistently demonstrates the ability to analyse, synthesise and evaluate the patient's progress towards the expected outcomes.</td>
<td>□ Consistently demonstrates the ability to work effectively with all health care personnel in a collaborative effort directed at decision making.</td>
<td>□ Consistently demonstrates the ability to use individual competence as a criterion in accepting delegated responsibility and in delegating to others.</td>
<td>□ Consistently demonstrates the ability to identify learning needs and develop plans to meet these needs.</td>
</tr>
<tr>
<td>□ Demonstrates proficiency in practising in accordance with legislation affecting nursing practice and within the limits of own competence.</td>
<td>□ Demonstrates proficiency in providing care according to the patient's care plan that is accurate, safe, competent and effective.</td>
<td>□ Demonstrates proficiency in establishing and maintaining therapeutic relationships.</td>
<td>□ Demonstrates proficiency in determining priorities for care based on need, acuity and optimal time for interventions.</td>
<td>□ Demonstrates proficiency in showing insight into own practice through critical reflection.</td>
</tr>
<tr>
<td>□ Usually demonstrates the ability to safeguard the patient when care and safety are compromised.</td>
<td>□ Usually demonstrates the ability to analyse, synthesise and evaluate the patient's progress towards the expected outcomes.</td>
<td>□ Usually demonstrates the ability to work effectively with all health care personnel in a collaborative effort directed at decision making.</td>
<td>□ Usually demonstrates the ability to use individual competence as a criterion in accepting delegated responsibility and in delegating to others.</td>
<td>□ Usually demonstrates the ability to identify learning needs and develop plans to meet these needs.</td>
</tr>
<tr>
<td>Demonstrates adequacy in practising in accordance with legislation affecting nursing practice and within the limits of own competence.</td>
<td>Demonstrates adequacy in providing care according to the patient’s care plan that is accurate, safe, competent and effective.</td>
<td>Demonstrates adequacy in establishing and maintaining therapeutic relationships.</td>
<td>Demonstrates adequacy in determining priorities for care based on need, acuity and optimal time for interventions.</td>
<td>Demonstrates adequacy in showing insight into own practice through critical reflection.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Frequentl demonstrates the ability to safeguard the patient when care and safety are compromised.</td>
<td>Frequently demonstrates the ability to analyse, synthesise and evaluate the patient’s progress towards the expected outcomes.</td>
<td>Frequently demonstrates the ability to work effectively with all health care personnel in a collaborative effort directed at decision making.</td>
<td>Frequently demonstrates the ability to use individual competence as a criterion in accepting delegated responsibility and in delegating to others.</td>
<td>Frequently demonstrates the ability to identify learning needs and develop plans to meet these needs.</td>
</tr>
<tr>
<td>Demonstrates limitations in practising in accordance with legislation affecting nursing practice and within the limits of own competence.</td>
<td>Demonstrates limitations in providing care according to the patient’s care plan that is accurate, safe, competent and effective.</td>
<td>Demonstrates limitations in establishing and maintaining therapeutic relationships.</td>
<td>Demonstrates limitations in determining priorities for care based on need, acuity and optimal time for interventions.</td>
<td>Demonstrates limitations in showing insight into own practice through critical reflection.</td>
</tr>
<tr>
<td>Occasionally demonstrates the ability to safeguard the patient when care and safety are compromised.</td>
<td>Occasionally demonstrates the ability to analyse, synthesise and evaluate the patient’s progress towards the expected outcomes.</td>
<td>Occasionally demonstrates the ability to work effectively with all health care personnel in a collaborative effort directed at decision making.</td>
<td>Occasionally demonstrates the ability to use individual competence as a criterion in accepting delegated responsibility and in delegating to others.</td>
<td>Occasionally demonstrates the ability to identify learning needs and develop plans to meet these needs.</td>
</tr>
<tr>
<td>Demonstrates deficiency in practising in accordance with legislation affecting nursing practice and within the limits of own competence.</td>
<td>Demonstrates deficiency in providing care according to the patient’s care plan that is accurate, safe, competent and effective.</td>
<td>Demonstrates deficiency in establishing and maintaining therapeutic relationships.</td>
<td>Demonstrates deficiency in determining priorities for care based on need, acuity and optimal time for interventions.</td>
<td>Demonstrates deficiency in showing insight into own practice through critical reflection.</td>
</tr>
<tr>
<td>Rarely demonstrates the ability to safeguard the patient when care and safety are compromised.</td>
<td>Rarely demonstrates the ability to analyse, synthesise and evaluate the patient’s progress towards the expected outcomes.</td>
<td>Rarely demonstrates the ability to work effectively with all health care personnel in a collaborative effort directed at decision making.</td>
<td>Rarely demonstrates the ability to use individual competence as a criterion in accepting delegated responsibility and in delegating to others.</td>
<td>Rarely demonstrates the ability to identify learning needs and develop plans to meet these needs.</td>
</tr>
</tbody>
</table>
APPENDIX

6

Examples of the Coding Processes and Reflections
Biography Pre-Clinical: Aideen. (Age 27, Urban background).

History of 'becoming' a nurse:

I have tossed with the idea for years and I was waiting to reach the mature student age, because we could not afford to go to college, we all have to work...we are just ordinary workers...no college stuff for us, then other things happened*...like girlfriends, I settled down as such and we were happy.

I did lots of jobs after school, bar work, hotel work, nothing special just drifted from one thing to the other...then my partner and I had a baby...[he's four now] and then I really started to think about my future...so I did some night classes and I found it really interesting. I did various courses, from mechanics to psychology...to first aid and then that started me thinking about nursing...*** so then I did the health-care assist course...** and have been working at that for the last eighteen months...and while I was in the hospital...I was watching the students [nurses] and I thought I could do better than them at whatever they were doing at the time.

Anyway, I inquired about what was required ...left it for a time...because that's me all over...and then I just posted the application...I got a place...

Now that I am here I am not sure if I did the right thing, is this all too much for me? the group is fine and all that but I am older and have responsibilities...and I can't socialise with them...as I have to work part-time...

I am looking forward to going on the wards, I know what to expect, but I have a different role now...not the care assistant...and I am dreading it in a way...and looking forward to it in another way.

Yes, I am dreading it because I know what to expect, these youngsters do not, and I just hope that I can step up to the plate...the responsibility nurses have is different to being an assistant.
Extracts from the diary of the author of the present study entitled 'A Reflective Travelogue of the PhD Journey'6.

Friend: What are you doing Catherine?
Me: I am going on a journey, a hypothetical one, because ‘everyone’ calls the ‘PhD’ a ‘journey’.
Friend: Why are you doing your reflective journal this way?
Me: Well, Prof Cowan wrote letters to himself and published them in his book in 1998 called “On Becoming an Innovative University Teacher: Reflection in Action,” therefore, I can do it this way, it is my diary...my ‘portfolio’...and I can have fun in it if I want.
Foe: Do you honestly think that this humorous monologue will be of benefit?
Me: It is more than a monologue because I will be in ‘dialogue’ with my Professor...Ha! Ha! Ha!
Friend: Do you really need to take this journey?
Me: I’m afraid so because I have a problem that I need to solve.
Foe: That’s not a problem, it is a conundrum.
Me: It is more than that, it is a ‘Gordian’s Knot’.
Friend: What is that?
Me: Look it up...have you not heard of self-directed learning!!!!!
Foe: Your problem cannot be solved. There are too many unknowns.
Me: You are beginning to sound like the American....will start at the beginning.
Friend: Where is that? And how are we going to get there?
Me: I will do as the Professor advised and write a clear statement of the problem and we will hijack Prof Watson’s ‘Starship Enterprise’ as our mode of ‘transport’ because in 2002 that is what he called ‘clinical competence’.
Friend: Now our journey can begin, what fun....
Me: Not yet, we need a ‘map’, even Dora the Explorer had a map you must know that, therefore, we must establish what is already known about the subjects. First, I will review the literature on competence, then on portfolios, establish how other authors researched portfolio use, then design the study.....
Foe: You will learn nothing new from that.
Me: Well, I did. I now know that there is a lack of longitudinal studies on portfolio use and....
Friend: All aboard...we are off...
Me: Not so quickly, we need an anchor to the ground in case we cannot find our way back and we must pack our bags........
Foe: This is a ridiculous journey.
Friend: No, it is not, we will have great fun.
Me: I have anchored the ship to the Prof.’s book, ‘Assessment in Higher Education’ (2000), and packed a few things....now we are off....

Several weeks, months later.....
Me: There is something not right.....
Foe: I told you this was a ridiculous journey.
Friend: What are you going to do Catherine?
Me: I talked to the Prof. and he said keep on going. I am heading in the right direction, but I cannot ‘see’ everything clearly.
Foe: Should have gone to ‘Specsavers’ Ha! Ha! Ha!
Friend: Don’t be so smart...
Me: Stop interrupting me, I’m too busy.... I’m off to the Berkley for some peace...do not disturb me, I’m thinking as Lee Shulman says ‘it is better to be lost in thought rather than missing in action’...Ha! Ha! Ha!

Several weeks, months later.....
Me: I have had an ‘ah ha’ moment...as I sat on the bus...what links, competence, portfolios, nursing practice and the PhD methodology all together? PROCESS.
Friend: That’s great Catherine, but what does that mean?
Me: Read Chapters 2, 3, and 4.

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APPENDIX

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Regression Lines and Scatter Plots
The diagram shows a scatter plot with two axes: CLA Yr4 Total on the vertical axis and Yr4PAve on the horizontal axis. The data points are plotted and seem to follow a linear trend. The coefficient of determination, $R^2$ Linear, is given as 0.181.