Variation in Neonatal Nurses' Conceptions of Competence in Their Practice: Implications for the design of learning experiences

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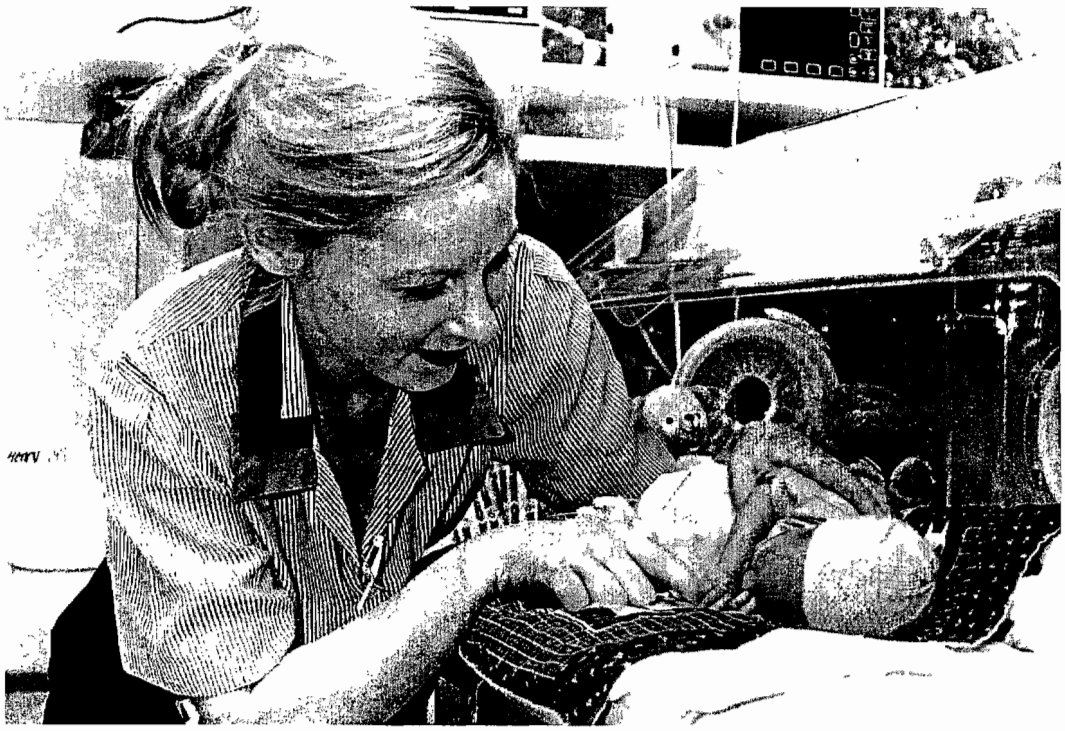

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Certificate of Authorship / Originality

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Jane Davey

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List of Abbreviations

ACORN	Australian Confederation of Operating Room Nurses
ACPCHN	Australian Confederation of Paediatric and Child Health Nurses
AEC	Australian Education Council
AIN	Assistant in Nursing
ANCI	Australian Nursing Council Incorporated
ANF	Australian Nursing Federation
ANN	Association of Neonatal Nurses (New South Wales) Inc
ANNA	Australian Neonatal Nurses Association
ANRAC	Australian Nurses Registering Authorities Conference
ASF	Australian Standards Framework
CACCN	Confederation of Australian Critical Care Nurses
CBE	Competency Based Education
CNC	Clinical Nurse Consultant
CNE	Clinical Nurse Educator
CNS	Clinical Nurse Specialist
CSAHS	Central Sydney Area Health Service
DEET	Department of Employment Education and Training
DOHRS	(NSW) Department of Health Reporting System
EN	Enrolled Nurse
ECMO	Extra Corporeal Membraneous Oxygenation
HECS	Higher Education Contribution Scheme
JSN	John Spence Nursery
KGV	King George the Fifth Memorial Hospital for Mothers and Babies
MVEET	Ministers of Vocational Education, Employment and Training
MCQ	Multiple Choice Question
NCVQ	National Council for Vocational Qualifications (Britain)
NE	Nurse Educator
NETS	Newborn and Paediatric Emergency Transport Service
NHMRC	National Health and Medical Research Council
NICU	Neonatal Intensive Care Unit
NNO	National Nursing Organisation
NOOSR	National Office of Overseas Skills Recognition

NRB	Nurses Registration Board (New South Wales)
NSWCON	New South Wales College of Nursing
NSWDH	New South Wales Department of Health
NTB	National Training Board
NUM	Nurse Unit Manager
OECD	Organisation for Economic Cooperation and Development
OPSCA	Orientation Program to Specialist Care Area
PSN	Pregnancy and Newborn Services Network (New South Wales)
PTS	Preliminary Training School
RCNA	Royal College of Nursing, Australia
RN	Registered Nurse
RPAH	Royal Prince Alfred Hospital

Abstract

This study has examined the nature of competence in neonatal nursing practice from the perspective of neonatal nurses. It has also explored the type of educational support needed to help new graduates develop more complex and inclusive conceptions of competence in their practice of neonatal nursing.

Ideas about being and becoming competent in nursing practice have been informed by conflicting knowledge perspectives. The dominance of traditional research methods that have an underlying dualist ontology and objective epistemology has resulted in educational practices within nursing that separate the worker from the context in which the work occurs. Nurses have made attempts to overcome the limitations of these traditional methods by shifting toward research approaches concerned with the life-world of individuals. Much of this newer research however, has not addressed educational practices within nursing.

This study is situated within the life-world of neonatal nurses. The non-dualist phenomenographic approach was used to capture and describe variation in the way 20 neonatal nurses conceived of competence in their practice. Analysis of descriptions generated from unstructured interviews revealed four distinctive conceptions of competence in neonatal nursing practice. These conceptions are expressed as hierarchical internally related categories of description, with category IV being the most complex and inclusive.

I Managing separate items within the NICU environment according to technology-based policy and procedural rules.

II Managing integrated clusters of items within the NICU environment according to technology-based policy and procedural rules.

III Managing a support system for the infant and family by using objective sensory observation of the infant to guide the use of policy and procedural rules according to priorities.

IV Managing a support system focused on the infant and family by using objective sensory observation of the infant and tacit feelings about the infant arising from

variation in the previous experiences of outcome for infant and family to guide and challenge the use of policy and procedural rules.

Located within this hierarchy is the critical dimension of individual infant and family response. This response is highly contextual and consists of numerical, sensory and tacit aspects. It is postulated that learning activities should be structured to help new graduates entering the specialty of neonatal nursing to discern and focus on individual infant and family response. As such a learning framework (CONSERVE), based on this critical dimension has been proposed. Structuring learning experiences in this way should enable the development of more complex and inclusive conceptions of competence about the practice of neonatal nursing.

Using conceptual variation about competence in neonatal nursing practice highlights the importance of the relationship between the worker and the work. Moreover, it offers an alternative educational approach for new graduates entering the specialty of neonatal nursing that is both relevant and meaningful.

Chapter 1

Variation in Neonatal Nurses' Conceptions of Competence in Their Practice: implications for the design of learning experiences

1.1 Introduction

Neonatal nursing is a dynamic and challenging area of specialty clinical practice. The need for this specialty area of nursing practice was recognised in the late 1960s and early 1970s when doctors introduced artificial ventilation as a treatment option for newborn babies (Henderson-Smart 1990). Since that time development of neonatal nursing practice, has, in many respects paralleled the development of neonatal medical practice.

Continuing advances in biomedical technology have resulted in the development of complex life-support systems designed specifically for newborn babies. A greater emphasis on basic and applied research has provided neonatologists and neonatal nurses with a greater understanding of how newborns adapt to life after birth. The net result of these activities has been the advent of highly specialised neonatal intensive care units (NICUs) and the capability to save smaller and/or sicker babies (Henderson-Smart 1990). To highlight this last point, statistics released from the *Australian and New Zealand Neonatal Network* show that in 1997, 93.4% of babies born at 28 weeks gestation survived (Donoghue 1999, p.49). This percentage increased slightly in 1999, with latest statistics showing that 94.3% of babies born at 28 weeks gestation survived (Donoghue & Cust 2001). Prior to the advent of NICUs most infants of this gestation perished (Henderson-Smart 1990).

The fragile clientele of these complex highly specialised NICUs require a clinically competent nursing workforce. What are the defining characteristics of a clinically competent neonatal nursing workforce? Clinical Nurse Consultants (CNCs) working within the specialty offer the following opinion.

> Neonatal nursing encompasses both the science and art of nursing and is concerned primarily with the care of the neonate and family. Inherent in neonatal nursing are the

> skills and knowledge to support the neonate and family in times of illness, and the ability to provide the caring, nurturing environment necessary to promote health and future development (Bredemeyer, Carney, Everson, Lee-Lindrea, Longobardi, Mann, Morley & Spence 1992, Forward)

The opinion of these CNCs is noticeably broad. Clinical competence is viewed as an inherent relationship between the neonate, the family, the nurse and the NICU environment. However, the inherent skills and knowledge contributing to clinical competence in neonatal nursing practice are not defined. Thus, the opinion provides no real understanding of the complexities associated with being or becoming a competent neonatal nurse.

There are pragmatic, theoretical and personal issues that have established a need for research concerned with being and becoming a competent neonatal nurse. Pragmatic issues concern the need for neonatal nurses who can provide clinically competent care. The context of neonatal nursing is changing. Technological advancement has created a more demanding and stressful work environment. There is a shortage of nurses working in the specialty area of neonatal nursing. New graduates, casual agency workers and enrolled nurses are being used to fill these shortages. The vast majority have no clinical experience or formal qualifications in neonatal nursing. Thus, informed and effective ways of educating nurses to work in this area and be clinically competent are urgently needed.

Theoretical issues arise from the fact that neonatal nursing is a relatively new and highly specialised area. Little is known about how nurses develop competence in this area, which compounds the pragmatic issues mentioned above. Existing programs for orientating and developing competence in clinical nursing practice of new recruits focus mainly on performance of tasks. Such programs often list decontextualised worker attributes, which separate the worker from the work and leads to a narrow reductionist view of competence.

In this thesis, I will argue that this narrow reductionist view of competence does not take into account how neonatal nurses conceive of being or becoming competent in their work. Neonatal nurses' conceptions of competence in their practice are important

because they constitute the foundation of human competence at work (Sandberg 1994), or meaning which engagement in the work has for the worker. Understanding that meaning enables the development of appropriate educational support. As there has been no previous research into neonatal nurses' conceptions of competence in their practice, the foundations upon which to base educational support for new graduates entering the specialty of neonatal nursing is not known.

My position as Nurse Educator (NE) in a large metropolitan NICU provides a personal motivation. Workforce issues within the specialty of neonatal nursing have raised a general concern that the quality of care provided to neonates and their families is being gradually eroded because the skill mix of registered nurses working in NICUs is undergoing a dilution. This dilution of skill mix may result in deleterious consequences for the future survival rates of smaller and/or sicker babies.

The Australian Association of Neonatal Nurses (ANNA) is aware of this general concern and has been working toward establishment of national competency standards for specialist neonatal nurses. The establishment of such standards raises questions about the nature of being competent as a neonatal nurse. It also raises questions about the sorts of educational support necessary for the development of competence in the clinical practice of neonatal nursing.

Thus, for a variety of reasons it is timely and important to:

1. Examine the nature of competence in neonatal nursing practice from the perspective of neonatal nurses.
2. Explore the type of educational support needed to help new graduates develop more complex and inclusive conceptions of competence in neonatal nursing practice.

The findings of this study may offer assistance to those responsible for designing education programs for new graduates entering the specialty of neonatal nursing that is both informed and effective. Moreover, the study will provide greater insight into the meaning competence in neonatal nursing practice has for neonatal nurses and contribute to discussion and debate about competency standards for specialist neonatal nurses.

1.2 Study objectives

This study has two major objectives. The *first* objective is to describe variation that exists in the way neonatal nurses conceive of competence in their practice and the strategies used to develop that competence. The *second* objective is to use the results from the first objective to explore the type of educational support needed to help new graduates develop more complex and inclusive conceptions of competence in neonatal nursing practice.

The interpretive methodology of phenomenography has been chosen to fulfill the objectives of this study because it offers a way to capture more complex notions about certain phenomena. Phenomenography employs an in-depth open ended interview to collect data which is subsequently transcribed and undergoes a rigorous analysis orientated toward discovering a range of qualitatively different ways that a group of people experience a phenomenon (Marton & Booth 1997). Understanding the phenomenon of workplace competence from the perspective of neonatal nurses is a positive step toward meeting the growing demands of providing clinically competent nursing care to neonates and their families, required for today's dynamic yet overburdened health care system.

1.3 Structure of the thesis

The literature review of this thesis is structured around the notions of being and becoming competent in neonatal nursing practice. Even though there are no studies looking specifically at being and becoming competent in neonatal nursing practice, there is a vast amount of general literature associated with competence in nursing practice. There is also a substantial amount of literature concerned with competence in other vocational and professional occupations, which is also important to consider here.

Being competent in nursing practice is linked to ideas about what it means to be a nurse. Attempts to define what it means to be a nurse have stimulated much debate and discussion for many decades and have been influenced by natural and human knowledge perspectives. The dominant discourse, influenced by objectivity, seeks to define the boundaries of nursing practice according to certain competency standards. Nurses have reacted against the dominance of this discourse by shifting research efforts

toward the life-world experiences of nurses and those cared for by nurses. A discussion of these conflicting knowledge perspectives is the focus of *Chapter 2*.

Assumptions about how nurses become competent in nursing practice are the focus of *Chapter 3*. The socio-historical traditions associated with the practice and education of nurses has been a major influence on how nurses develop or become competent in their practice. The transfer of nurse education into the tertiary sector has provided a new and different context for nurses to develop and explore their practice. Those differences however, can create substantial tensions for new graduates entering the workplace, tensions that may act as a barrier to the development of competence in nursing practice. Contemporary educational views, especially those related to experiential learning, student learning and development of expertise highlight the importance of context and the ability to reflect on and during an experience in developing competence at work. These views form the framework of this chapter and are discussed here in relation to the development of competence in nursing practice.

Given the important link between context and competence at work, *Chapter 4* is devoted to describing the context of neonatal nursing related to the present study. The chapter begins by discussing the development of neonatal intensive care services within New South Wales and the complex workforce issues currently faced by the speciality of neonatal nursing. Technical, political and social factors are seen to have a significant impact on being and becoming competent in neonatal nursing practice. These factors are discussed in relation to the context of the John Spence Nurseries (JSN), Royal Prince Alfred Hospital (RPAH), the site of the present study. The photographs in this chapter have been included so that the reader may have a greater appreciation of the context of an NICU.

Chapter 5 addresses the epistemological and ontological tenets of phenomenography. The development of phenomenography as a research approach is considered by looking at the main disciplinary areas of study. The chapter will show that phenomenographic research has evolved over time to include both descriptive and theoretical facets. The former is concerned with describing variation in peoples' experience of something and has been used to guide the first objective of the present study. The latter is concerned with how people come to experience something in a certain or particular way and has

been used to guide the second objective of the present study. Criticisms of the phenomenographic approach are considered, however, it is argued that the interpretive research approach of phenomenography offers the best way of understanding variation in what it means to be a competent neonatal nurse. The growing body of nursing research over the last decade or so reflects a shift toward the qualitative, interpretive paradigm. Thus, phenomenography offers an alternative approach to those already in evidence, when studying peoples' experience of certain phenomena.

Chapter 6 is devoted to methodological considerations associated with the conduct of phenomenographic research, as they relate to the present study. Major elements affecting the validity and reliability of the research process, such as formulation of the research questions, selecting study participants, generating descriptions about what and how neonatal nurses conceive of being competent in their practice and the analysis of those descriptions are considered.

Chapter 7 presents the outcome space or results of the phenomenographic study as outlined in the first objective. This study has found that competence in neonatal nursing practice is conceived of or experienced in four qualitatively different ways. The categories are hierarchal and internally related. The chapter uses quotes from interview transcripts to describe variation that exists between each of these categories in relation to being and becoming competent in neonatal nursing practice. Photographs have been used here to help the reader appreciate the focus of each category. However, it must be emphasised that these photographs, like quotes, can in no way describe the entire category.

Chapter 8 discusses the educational significance of the outcome space described in Chapter 7 and addresses the second objective of this study. A focus on individual infant and family response is constituted as a critical aspect of variation in the outcome space. It is argued that discernment of this aspect is critical or essential for the development of more complex and inclusive conceptions of competence in the practice of neonatal nursing. Thus, there is a need to focus educational support toward helping newly registered nurses entering the specialty of neonatal nursing to discern and focus on individual infant and family response.

A learning framework, CONSERVE (an acronym that encompasses conceptual variation, skills, educational context, reflection in and on experience, variation in individual infant and family response, and evaluation) is proposed for developing more complex and inclusive conceptions of competence in neonatal nursing practice. An example, *managing apnoea of prematurity* is provided to show how this framework can be used. The conclusions in this chapter draw on work from previous chapters and offer future directions for research.

Chapter 2

2 Being Competent in Clinical Nursing Practice

2.1 Introduction

Contemporary nursing scholars have been attempting to define the boundaries of nursing practice for many decades. The result of these scholarly activities is a collective consensus that the practice of nursing is distinct from the practice of medicine. From this point however, the diversity of nursing practice settings has led to widespread opinion about the meaning of the terms nurse and nursing as well as the sorts of theoretical and practical knowledge constituting competence in clinical nursing practice. A preoccupation with achieving professional status for nurses has produced a dominant discourse concerned with defining nursing practice according to certain competency standards. Conflicting issues surrounding the dominance of this discourse as a way to define competence in clinical nursing practice are the focus of this chapter.

2.2 Influence of knowledge perspectives on defining nursing work

2.2.1 Early beginnings

Nurses have been engaged in defining the boundaries of nursing work since the dawn of antiquity. Pomeroy (1994) in her writings about women in classical antiquity notes that child nurses and midwives were most likely found within the lower classes. Interestingly, in Roman society, midwives were placed alongside actresses and prostitutes with regard to the amount of education and training required.

Grecian society thought a little differently about the role of midwives. Here, midwives were responsible for conducting abortions, delivering babies, and then deciding which were healthy enough to continue the rearing process. As a consequence the majority of 'skilled' midwives were Greek, even in Roman society. Despite this apparent practice autonomy, problems outside the scope of the midwife's knowledge, not defined by Pomeroy (1994), were referred to a physician, provided the family could afford to pay for his (there were no female physicians in classical antiquity) services.

In the mid 1800s Florence Nightingale identified nursing practice as having both scientific and artistic knowledge dimensions in equal proportions. Moreover she contended that the knowledge contained within each of these dimensions was distinct to that of medicine (Cull-Wilby & Pepin 1987). It is important to note however that Nightingale was influenced by Victorian ideology where men and women moved in separate 'spheres' (Godden 1995).

As Godden (1995) explains, men moved in the 'public' sphere of politics, finance and employment. Women on the other hand, were concerned with the 'private' sphere of home and family. It was seen as right and proper for men and women to defer to one another on matters concerning their respective spheres. Nightingale defined nursing wholly within the woman's sphere so that it would not be seen as a challenge to male authority. It also allowed nurses to have control over nursing. Unfortunately, the trade off was that Nightingale insisted on obedience to (predominately male) doctors, which "paved the way for crippling medical domination" (p.249).

The dominance of medicine over nursing saw nurses "rely heavily on medical knowledge and medical directives for development" (Cull-Wilby & Pepin 1987, p.516). As medical knowledge was, and to a large extent still is, influenced by the traditional or scientific domain, development of nursing knowledge has tended to parallel those ideals (Cull-Wilby & Pepin 1987; Emden 1991).

2.2.2 Influence of the natural sciences on nursing knowledge development

The traditional or scientific approach is the domain of the natural sciences. In this domain, natural events, objects of nature and the way certain objects behave are studied (Van Manen 1990). Typically, research of this nature involves selecting a *specific* aspect of a *whole* phenomenon. Once the aspect is selected it must be expressed in quantitative terms. This allows the formation of a hypothesis about the aspect under study in relation to other observable quantities. Deductions are then made about possible consequences derived from the hypothesis. Experimental observation proceeds hypothesis formation, the results of which are measured in some form of numerical magnitude. Acceptance or rejection of the hypothesis is based upon whether or not numerical results reach statistical significance (Neyle & West 1991). Once these detached experiments have been carried out there is usually an attempt to taxonimise

natural phenomena or offer a causal explanation about the behaviour of certain objects (Van Manen 1990).

Knowledge obtained from the traditional or scientific approach is dualist in nature. That is, knowledge is about an object separated from the subject. When this dualist perspective is transferred to ideas about the phenomenon of competence at work, it is assumed that an objective, knowable work exists 'out there' beyond the worker. Thinking about competence in this way has led to descriptions of work activities and worker attributes that are independent of one another (Sandberg 1994).

This dualist ontology and objective epistemology has not been entirely useful in defining the boundaries of professional nursing practice. A preoccupation with objective observable truths has led nurses to construct aspects of clinical practice according to certain behavioural task analyses (Russell 1991). It has also led to a plethora of theory development (Marriner-Tomey 1989), many of which lack relevance to the clinical practice of nursing (Morse 1996; Sims 1991; Geanellos 1997; Holmes 1991; Crane 1991).

As for being competent in clinical practice, many nurses argue that this is an essential component of quality nursing care (Hogston 1995; Fitzpatrick, While & Roberts 1992; While 1994; Taylor 1995; Butterworth & Bishop 1995). However, objectivity and truth have narrowed notions of quality and hence competence in clinical practice to quality improvement activities, which seek to measure observable outcomes (Koch 1992; Kitson 1986; Redfern & Norman 1990). Examples of such activities include frequency data on medication errors or patient incident reports.

Dissatisfaction with traditional scientific ideals has caused the pendulum to swing in favour of nurses developing their own distinct body of knowledge that acknowledges artistic as well as scientific dimensions of clinical practice (Gray & Pratt 1991,1995; Hess 1995; Rose & Parker 1994). Scholars of nursing seem to agree that Carper's (1978) *Fundamental patterns of knowing in nursing,* which includes empiric, aesthetic, personal and moral forms of knowing started that vision. Thus, impetus was provided for nurses to refocus their research activities toward methodologies not constrained by

traditional dualist ideals (Cameron-Traub 1995; Lont 1995; Tolley 1995; Cull-Wilby & Pepin 1987).

2.2.3 Influence of the human sciences on nursing knowledge development

Research methodologies used in the human science domain contrast sharply with those of the natural sciences. Here, studies are concerned with human beings that have a conscious awareness and act purposefully within the world creating objects of meaning or phenomena. The task of the human scientist is to explicate and understand the meaning of these phenomena as they present themselves to consciousness. In other words, human science seeks to understand the life-world of human beings by studying the meaning or nature of everyday experiences (Van Manen 1990).

To reach such an understanding involves the methods of description, interpretation, reflection, critical analysis, verification and evaluation (Van Manen 1990; Peshkin 1993). The outcome of these methodological labours provides knowledge about people, relationships, behaviours, concepts, assumptions and practices in a manner not possible via the controlling, authoritarian and paternalistic natural or traditional scientific methods (Peshkin 1993; Morse 1994; Webb 1989; Schutz 1994).

Knowledge obtained from a human science approach repudiates the notion of dualism and places primacy on knowledge derived from practical and personal experiences. In relation to competence at work, knowledge is not an external representation of the world-of-work somewhere 'out there' in the worker's mind, but an internal relationship between the worker and the tasks they are engaged in at work (Sandberg 1994).

Traditional academic opinion is that knowledge from the human science domain is less valuable than knowledge from the natural science domain. Despite this opinion, there is a substantial amount of research to refute dualism and the notion that human action can be studied in the same manner as natural objects.

Carr and Kemmis (1986) caution against thinking of human action as overt physical movement that can be explained in the way a natural scientist would explain causal relationships between natural objects. Further, they argue that human action is not a response to some external force as, for example, when metal expands on heating. A

metal expands on heating because that is its causal behaviour. However, humans do not 'behave' they 'act'. That action is based on an interpretation or meaning that a particular situation has for an individual. In other words, the way an actor makes sense of their reality will determine their action. That reality is derived from past experience and present social order, which mesh together forming networks of meaning that can be used by the actor depending on the action required. Uncovering the meaning structures that determine human action is the only way to get an accurate understanding of why an individual is acting in a certain way.

Silverman (1970) has also criticised dualist approaches used in social science that tried to apply external logic in order to understand human action. In his opinion applying external logic to human action in the form of a stimulus-response investigation, where behaviour is observed in response to a specific task, is fraught with inaccuracies. Based on the argument that human action is determined by a meaningful interpretation, it is possible that different workers will respond to the same stimulus in a different manner. This led Silverman to argue that investigations concerned with human action should look at how individuals make sense of their work situations by focusing on the internal logic of human action. In other words, the relationship that exists *between* a worker and the work they are engaged in.

Sandberg (1994) concurs with Silverman (1970) and provides an excellent review of the literature concerned with human action in organisational management. Here, Sandberg (1994) details numerous studies that have used an interpretative approach to describe human action. The broad umbrella of organisational management is broken down into studies that look at strategic management, communication, worker relationships, teamwork and leadership. Without exception, each of the studies reviewed pointed to the fact "...that workers' accomplishment of work is based on their sense making of it..." (p.41).

Following this line of argument, Sandberg (1994) reasoned that to understand human competence at work it was vital "...to come as close as possible to the worker's own experience or sense making of their work." (pp.45-46). Moreover, he goes on to argue that an increased awareness about the way in which workers make sense of their work will assist managers to frame worker experiences that improve organisational viability.

Finally, Weber (1964) provides insight into what constitutes human action in the following quotation:

> ...In action is included all human behaviour when and in so far as the acting individual attaches a subjecting meaning to it. Action in this sense may be either overt or purely inward or subjective; it may consist of positive intervention in a situation, or deliberately acquiescing in the situation. Action is social in so far as, by virtue of the subjective meaning attached to it by the acting individual (or individuals), it takes account of the behaviour of others and is thereby oriented in its course (p.88).

Weber's quotation also implies that there is an internal relationship between the actor, the action and the social world they exist in. Further, the actor's world is never a world in itself it is an experienced world. Merleau-Ponty (1962 reprinted in Welton 1999) also subscribed to this opinion and used it to provide support for his argument that the mechanistic ideals of Cartesian duality and the object-body are in fact a *res extensa*, that is, they are seen to arise out of the experience of the lived-body. Further development of these ideas was undertaken by Schutz (1945,1953,1967), Berger and Luckman (1966), and more recently by Steinbock (1999) who elaborates on the relationship between intentionality, the body and the earth.

2.2.3.1 The importance of tacit knowledge

Practical knowledge obtained from human science research has a tacit dimension, which serves to shape personal experience in a way that integrates theoretical and practical knowledge. Schön (1983) building on the work of Polanyi (1966) refers to this tacit knowledge dimension as knowing-in-action. Both authors criticise theoretical knowledge traditions for neglecting this important aspect of how professionals think in action.

In attempting to define tacit knowledge Wood (1985, cited in Carroll 1988) states

> tacit information...is usually not given in texts but it is known by the experts in the discipline. However the experts are usually unaware of that knowledge and cannot easily describe it. Usually we acquire the tacit knowledge by 'experience' for example an experienced professional 'just knows' when a decision sounds wrong yet she/he cannot explain why. Alternatively they might intuitively know what to do in a complex situation yet when asked why they might answer 'experience' (p.141).

Schön (1987) echoes this sentiment when he refers to knowing-in-action as

> ...sorts of know-how we reveal in our intelligent action – publicly observable, physical performances like riding a bicycle and private operations like instant analysis of a balance sheet. In both cases the knowing is *in* the action. We reveal it by our spontaneous, skillful execution of the performance; and we are characteristically unable to make it verbally explicit (p.25).

The important issue to raise about tacit knowledge is its relationship to professional competence. In any professional practice sphere, situations do not present themselves to the practitioner as a series of well-defined problems with predictable outcomes. More often than not situations in practice are unique events, which require the practitioner to interact, interpret and problemise the situation into a pre-existing cognitive schema so they can then handle the situation at hand (Carroll 1988). Schön (1987) refers to this as 'naming' and 'framing' the problem. In this way, knowledge may be thought of as a relation between internal questions and answers and a context of meaning, which in action, leads to fulfillment of different human activities.

In order to gain insight or make sense of an action after it has occurred knowing-in-action requires a shift to reflection-on-action or as Brown and McCartney (1999) suggest reflection as meditation. The need to link thinking or knowing with doing in a practical sense has created a huge interest in the importance of reflection in all aspects of teaching, learning and competence in professional practice (see for example Boud, Keogh & Walker 1985; Boud & Garrick 1999; Boud & Miller 1996; O'Reilly, Cunningham & Lester 1999). Greater attention will be directed toward the use of reflective techniques in subsequent chapters of this thesis.

2.2.4 Conflicting knowledge interests in nursing practice

Lawler (1991) attributes the problem that nurses have in making sense or articulating knowledge about their work to 'the problem of the body'. This 'problem' comes from the fact that knowledge about the body was derived from traditional natural scientific laws, which, in favouring objectivity suppressed subjectivity resulting in epistemological fragmentation. The 'problem' also comes from cultural influences, which tended to view knowledge about the body as private. As nurses are in the day-to-

day business of caring for these 'private' bodies, much of their knowledge was, and still is to some extent, silenced or rendered invisible.

'The problem of the body' has created tensions within nursing. These tensions are concerned with the best way to "...render nursing known, knowable, and researchable..." (Lawler 1997, p.32). As Lawler (1997) explains, nurses have three major options open to them: the scientific discourse; the economic discourse; and practising nursing and reflecting on it. In the scientific discourse knowledge is pursued for its own sake, which is an admirable quality for a discipline, such as nursing, that is trying to make sense of its practice. However, it is the objectivity of the methods employed within this discourse that are not necessarily suited to nursing.

Nurses want and need to know about the subjective because it is the nature of their practice. They cannot stand apart from the body as a physical thing or object they are part of an integrated and intersubjective context. Therefore, the academic nature of third person prose used in scientific discourses "...removes reference to the personal and subjective, and disallows the articulation of matters at the core of nursing practice." (p.39). Despite these criticisms, Lawler (1997) is tolerant of the scientific discourse because she sees nursing sharing common areas such as anatomy, physiology and biochemistry.

However, in relation to the economic discourse, Lawler (1997) harbours no such tolerance. As she says

> ...economically derived discourses, which underlie nursing process, nursing diagnosis, casemix, DRG's [Diagnostic Related Groups] and much of the current thinking on quality in health care and outcome standards, are much more troublesome for nursing than the biomedical and social sciences. (p.41).

The reason they are more troublesome stems from the fact that they value measurable input-output models based on cost effectiveness and efficiency. Non-quantifiable human experience is difficult to factor, so is left out or considered unimportant. For example, when nurses talk to patients, they do so in a therapeutic sense, the economic discourse however, views this non-quantifiable activity as merely passing time or more probably, wasting time (Lawler 1997, 1999).

Lawler (1997) sees the third option of practising nursing and reflecting on it as a way to make silenced and invisible nursing knowledges voiced and seen. In this way, knowledge and understanding about the complexities of nursing practice, which involve the relationships between nurse, patient and context materialise in their true, temporality, spatiality and ontological sense.

The conflicting interests of these knowledge perspectives have led nurses down two distinct pathways in an attempt to define the boundaries of nurses' work and hence competence in clinical nursing practice. The first and most dominant is concerned with objectivity and professional accountability through the use of competency standards. The second is concerned with Lawler's (1997) notion of practicing nursing and reflecting on it. Discussion will now address each of these pathways in turn.

2.3 Competency standards: one pathway defining competence in professional nursing practice

Nursing began grappling with the notion of competency-based education in the mid 1980s in response to the transfer of pre-registration nurse education into the tertiary sector (Russell 1991; Reid 1994; Preston & Walker 1993). Setting competency standards for nursing practice was seen as an approach that nurses could use to demonstrate accountability to oneself, one's colleagues, the larger professional entity of nursing, employers, members of the health care team, the consumer and the community (Gray & Pratt 1989). As hospitals were no longer responsible for the education and training of nurses, registration boards in each state had to have some way of ensuring that each new registered and enrolled nurse met the minimum standard requirements.

> The reasons for registration and enrolment lie in the nature of the work: it is exacting and skilled and is related to life and death. Users of nursing services are not always in a position to judge the quality of the service they receive, hence the intervention to guarantee a minimal quality of service (DEET 1991, p.5).

This quotation has been included here because it shows the importance attached to nurses' work and a plausible rationale for the development of competency standards. Hidden in that rationale however, is a contradiction of terms found in the last four

words, 'minimal quality of service'. The contradiction comes from the expression of the words themselves. The adjective minimal has the connotation of being very small. The noun quality implies excellence. Why would nurses be concerned with defining the boundaries of a very small amount of excellence, required of a profession dealing in the exacting business of life and death? The following discussion attempts to provide an objective answer to this question by looking at the social and political context that fostered the development of competency standards for nurses.

2.3.1 The rise of competency-based education

The shift toward competency-based education can be traced back to the industrial revolution where technological advances were first introduced into the workplace. World War I and the depression of the 1930s followed by World War II and the cold war led to a rapid expansion of technology. This meant jobs in the workplace became increasingly more complex with fewer and fewer simple ones requiring little or no education (Harris, Gutherie, Hobart & Lundberg 1995). Young people in Australian society have become increasingly aware of these changes in the job market and have elected to continue past compulsory general education into years 11 and 12, which has had a flow-on effect in the vocational and higher education sectors (Carmichael 1993).

In essence there is more to know about life in general and a great deal more to know about the specialty one chooses to work in. When life in general and the specifics of work are combined a vast amount of new knowledge is produced which requires constant sifting (Harris et al. 1995). This constant sifting of knowledge has the potential to create a sense of unease within society because government policy makers, industry and economics are geared toward producing a quality product that is competitive in the marketplace (Collins 1993; Wheeler 1993; Carmichael 1993).

Competitiveness was the 'buzz' word of industry in the 1990s both within Australia and other OECD countries such as Germany, the United States of America, Canada, New Zealand and Sweden (Gonczi & Hager 1992; Harris et al. 1995). As Hayton (1992) explains, Australia's fragile economy has been the result of declining commodity prices since the 1980s, increased spending on foreign imports and problems with productivity. Australian industry has not been able to produce enough quality goods at the right price to satisfy domestic demand for imported goods.

To produce quality goods Hayton (1992) argues that workplaces should become flexible and innovative in their approach to organisational management. Traditional hierarchical workplace organisations foster efficiency at the expense of quality, flexibility and innovation. Decentralising such organisations would allow a more strategic management approach where emphasis is on participation in work teams and open communication among all workers (Carmichael 1993).

In addition to flexible and innovative workplaces, the production of quality goods relies on workers who know what they are doing and can demonstrate to others, usually superiors or those more senior to them, that they know what they are doing (Gonczi 1997a). Thus, competency-based education appealed to government policy makers and industry strongholds who asserted that Australia's economy could be improved significantly by reforming the vocational education sector. It was proposed that developing a set of outcome standards in the form of competencies for each occupation would improve competency in the workplace, thereby improving the quality of goods produced (Wheeler 1993; Carmichael 1993). Definitive competency standards would also provide a facility to recognise existing competence obtained from prior experience or overseas qualifications (Gonczi 1997b; Gonczi & Hager 1992).

2.3.2 Competency standards for the nursing profession

The transfer of pre-registration nurse education into the tertiary sector had created a sense of urgency about the need to articulate and define the nature of nursing. Not that this was a new activity, for as Russell (1991) points out, there is an abundance of literature available indicating the ways in which nurses have been defining, describing, discussing and examining the perennial question of 'what is nursing?' She suggests that the obsession nurses have with this question is related to the "idea of professionalism and...preoccupation with gaining professional status for nursing" (p.75).

This opinion also shared by Turkoski (1995) and Rutty (1998) who have each reviewed a vast amount of literature on professionalism. These authors conclude that nurses should exercise caution in their quest for professional status. From Turkoski's (1995) perspective the ideology of professionalism has the potential to destroy the altruistic nature of approaches to nursing services by supporting elitism, disenfranchisement and

subordination. Rutty (1998) is of the opinion that professionalism in nursing has yet to be attained because of fragmented and variable beliefs in practice.

Despite these concerns, a committee of prominent nurse leaders was established by the Australian Nurse Registering Authorities (ANRAC) in 1986 to once again (and for all), address the question of what is nursing? This time however, the Committee's aim was to develop a set of competencies that could be used by each state for the registering and enrolling of new nurses. Nurses took on this venture with much enthusiasm across each state and territory. Prior to the establishment of ANRAC states and territories had derived their regulatory procedures independently (Russell 1991; Reid 1994).

A wide consultative approach was undertaken by the ANRAC Committee in a bid to achieve a consensus about what should be contained within this new set of national competency standards (Russell 1991; Reid 1994). The end result was a document that outlined 18 competencies for the registered nurse. Some examples include: 'demonstrates a satisfactory knowledge base for safe practice'; 'functions in accordance with legislation and common law affecting nursing practice'; and 'maintains a physical and psychosocial environment which promotes safety, security and optimal health' (ANRAC 1990). These 18 competency standards contained subdivisions, which resulted in a total of 75 competencies for the registered nurse. The document was expressed in behavioural terms as the examples above demonstrate. Nevertheless, the competency standards were accepted at the 1988 ANRAC. When the Australian Nursing Council Incorporated (ANCI) was established in 1991 the ANRAC competencies became known as the ANCI competencies (Reid 1994).

Around this time, the competency-based education reform proposed for general and vocational education as discussed above was moving forward at a rapid pace. Australia had been able to use the advantage of international experiences to guide the development of a competency-based system for vocational education and training. There was a swift, unprecedented and systematic attempt by industry, government and unions to restructure the provision of education within Australia through the discourse of competency standards vis-à-vis skills training (DEET 1987). The development of post-compulsory school education 'key competencies' (AEC & MVEET 1992) linked to competency standards for all vocational occupations with a flow on effect to

professional occupations was seen by proponents of competency-based education and training as a way to unify industry and pull Australia out of its economic malaise (Borthwick 1993; Carmichael 1993; Gonczi & Hager 1992; Harris et al. 1995).

Thus, it was only a matter of time before the nursing profession became aware of the National Training Board (NTB) and the proposal of an Australian Standards Framework (ASF) (Gonczi, Hager & Oliver 1990). When this happened, Gonczi, Hager & Oliver (1990) were critical of the ANRAC (1990) competencies because of their overt behavioural focus. Moreover, these authors raised a concern that nurses were dealing with the professional practice of nursing at a superficial level only.

Gonczi, Hager & Oliver (1990) espoused the benefits of an integrated approach to the development of competency standards where knowledge, attitudes and skills are linked to the context in which they will be performed. Thus allowing the identification of key elements required for competent practice. It was argued that this integrated approach to development of competency standards would provide the means for meeting the NTB (1991) definition of competency. That is,

> The specification of knowledge and skill and the application of the knowledge and skill within an occupation or industry level to the standard of performance required in employment (p.18).

Moreover, the sorts of skills requiring detail according to the NTB guidelines (1991) include: task skills – concerned with necessary knowledge, skill and capability to accomplish a specific task; task management skills – the ability to group tasks together to achieve overall job function; contingency management skills – look at responses to irregularities and breakdown in routine; and job/role environment skills – deal with responsibilities and expectations of the work environment.

Nurses countered the Gonczi, Hager & Oliver (1990) argument by indicating that the development of competency standards was never intended to drive curriculum reform in a standardised or predetermined direction. Nurses favoured diversity among education programs. Nurses were also of the opinion that assessment of competency should be judged by experts against standard criteria (Reid 1994) as opposed to the criteria-

referenced measures used by proponents of competency-based education within the vocational sector (McCurry 1992; Hawke & Oliver 1992; Harris et al. 1995).

However, it can be argued that using 'experts' to judge competent nursing practice is not a problem free exercise. For example, in a study by Davey (1997), it was shown that the 'standard criteria' used by experts to judge competent practice were behavioural-focused task-based performance checklists, the anthesis of an integrated approach (Gonczi, Hager & Oliver 1990). Some of these performance checklists contained in excess of 50 items. The study found that nursing students painstakingly rote learned task statements on the checklists so they could 'parrot' them back to the expert who was examining them.

In the case of aseptic technique, students would recite the task statements, but had difficulty performing the skill in a simulated exercise. Of more concern, was that most students did not have a deep understanding of the principles underlying the skill of aseptic technique. Therefore, students had difficulty understanding the clinical practice implications associated with aseptic technique. Thus, the value of such a checklist used by the experts in this study to provide an adequate assessment of competence in clinical practice is open to conjecture.

These findings by (Davey 1997) are echoed by While (1994) who is particularly critical of researchers who have delimited and subsequently developed methods of evaluating or assessing competence in clinical practice. It is claimed that many of these so called assessments are concerned with a narrow range of 'ideal' clinical practice situations and do not take into account the complexities of real-life situations. In concluding arguments it is suggested that the focus of nurse education should be directed toward the student's ability to perform in real-life situations, as perceived clinical competence in ideal situations does not guarantee high quality performance once registered. Alspach (1992) presents similar arguments to While (1994) in his discussion about competence at the professional level. Greater attention will be directed toward the assessment of competence in clinical nursing practice in the following chapter.

2.3.3 Criticisms of competency-based education by educational scholars

The following discussion will centre on three major criticisms of competency-based education. Those criticisms are concerned with behaviourism, genericism, and issues of knowledge and power.

The first criticism is that competency-based education is inherently behaviourist in it approach (Cairns 1992; Carr 1993; Magnusson & Osborne 1990). The language of competency-based education with its 'element', 'unit of competency', 'competency standard' and 'performance criteria' are suggestive of an approach likely to "fragment learning into narrowly conceived categories of learning" (Tennant 1997, p.102) commonly associated with out of vogue behavioural objectives.

Unfortunately, during the late 1980s, prior to the establishment of the NTB, there was a rush to introduce competency standards as a 'quick-fix' way to solve industrial relations and market forces of the times. In particular, Beevers (1993) notes that the metal trades, building, textiles, clothing and footwear industries were among this initial surge. The behavioural approach offered simplicity and ease of understanding and had been used widely for many industries in the USA and UK (Harris et al. 1995).

While attractive for its ease of understanding, Tennant (1997) offers four reasons why a behavioural approach is a dangerous approach for proponents of competency-based education to follow. First, it is almost impossible to determine behavioural indicators of competence in advance. This is because determination of 'competence' is dependent on the context in which the behaviour occurs, a context that has the propensity toward unpredictability. Second, the behavioural emphasis on terminal learning outcomes with uniform, predetermined points of measurable progression underscores the complexities of the learning process. Third, the specific nature of the behavioural approach does not allow for development of more general or abstract notions such as 'self-concept'. Fourth, the behavioural approach does not take into account unplanned or incidental learning and may therefore fail to account for such learning with its focus on predetermined outcome measures.

The second criticism leveled at competency-based education is the generic nature of the competencies themselves. Porter, Rizvi, Knight & Lingard (1992) question the ability of

generic competencies operating meaningfully in a variety of contexts, or whether they actually have the same meaning in different contexts. These authors also question whether or not conmpetencies can be assessed independently of context. These questions are in line with Barrow's (1991) argument that it is simply not possible to engage in thinking critically without there being a context involved. To think critically is to be intentional. Using an discussion about art as an example, Barrow (1991) says that "...formal generic capacity has to be instantiated in a particular form...to be logical in a discussion about art it is not a matter of combining logical ability with information about art. It is a matter of understanding the logic of art, of being on the inside of aesthetic concepts and aesthetic theory" (p.12).

Context is also the issue in Carr's (1993) philosophical discussion about improving teacher competence. Carr points out that "philosophers of education have long been suspicious of so-called generic abilities and competences in educational discourse" (p.260). He makes a distinction between competence in the '*capacity*' sense verses that of a '*dispositional*' sense. In the capacity sense competence is viewed as holistic and deeply contextualised. Activities are 'knowledge-driven', voluntary and show a deliberate use of principled rational judgement. Conversely dispositional competence has a much narrower atomistic sense that is more causal in nature. Focus is on certain inherent tendencies enabling performance of specified routines. There is criticism of those who suggest that competence is achieved using a dispositional or generic approach. Rather, there is a suggestion that competence should be thought about and expressed in terms of capacity.

The third criticism is concerned with the wider social discourse on knowledge and power. In this sense competency-based education is seen as a means to enhance the economy of the state at the expense of individual development. Criticism from this perspective is fairly substantial and merits greater discussion.

Mangusson & Osborne (1990) frame their criticisms of competency-based education within left wing Critical Theory and right wing conservatism. They argue that both factions are concerned with reproduction and social order, the former through radical change and the latter as a desirable value. Social inertia, it is claimed, maintains the dominance of the conservative status quo because it is an easier path to tread than

effecting radical change. Drawing on the work of Foucault, knowledge and power are viewed as "inseparable and integral components of technology" (p.9). In this case, the technology referred to is competency-based education.

The argument goes on with the idea that knowledge to support the 'technology' has come from a melding of learning theories concerned specifically with behavioural objectives, programmed instruction, techniques associated with social learning and hierarchical knowledge acquisition. Overt power is supplied by a political ideology that demands a skilled labour force able to meet the demands of a changing market place. Fuel is added from populist sentiments demanding education that is relevant to the job market, accessible in terms of its recognition of prior learning, allows a self-paced progression through learning activities and above all is cost effective.

On a more covert level, but perhaps of even greater significance, is the fact that competency-based education 'technology' can be incorporated into existing educational structures without the need for radical change. This means that existing educational structures are reinforced rather than reformed which has the effect of maintaining the status quo. As a consequence of maintaining the status quo, there is a parting shot that competency-based education will always have greater success in securing funding (Mangusson & Osborne 1990).

In relation to funding, arguments put forward by Mangusson & Osborne (1990) have an element of truth if one considers the Australian situation where as substantial amount of human and economic resources have been poured into developing the NTB and ASF. One has only to look at the source material cited above and many more which have not been cited but are readily available as evidence for this argument. In addition there has been the imposition of a Training Guarantee Levy imposed on employers with payrolls greater than $200,000 (Gonczi & Hager 1992). This kind of structural reinforcement gives the appearance of radical reform but really it is veiled conservatism (Mangusson & Oborne 1990). Instead there is top down bureaucratic corporatism, a 'bandwagon' Jackson (1993) cautions against jumping onboard.

As a final point Mangusson & Osborne (1990) indicate that competency-based education has an interesting paradox. It is claimed that the goal of competency-based

education is one of product orientated normative rationality. However, there is a derivation from this norm, which allows the opportunity for anyone, provided they have sufficient time, to achieve specified content. This implies a shift in product from one of specific categories to a more general competence. The degree to which the latter occurs is dependent on a major shift in populist opinion, which is unlikely given the economic and political control surrounding competency-based education. Moreover, the author would add that the populist is, in general, too busy sifting through enormous amounts of day-to-day knowledge to affect any sort of shift.

Usher and Edwards (1994) also draw on the work of Foucault and add discipline to the knowledge power discourse. They claim that the establishment of the National Council for Vocational Qualifications (NCVQ) in Britain, similar to the NTB in Australia, and the introduction of a competency-based education and training system has created an instrumentalised learning environment that "marginalises knowledge and understanding unrelated to workplace performance" (p.105). They go on to argue that it is possible for a worker to have greater knowledge than the discourse of 'competent performance' allows which leads to a repressed state and the production of 'docile bodies' and 'obedient souls'.

Similarly, Mangusson & Osborne (1990) asserts that conservatism maintains the status quo. In this way, competence becomes a combination of performance, surveillance and control. The learner/worker must pass through a series of elements, units and levels with each step charted and progression documented, a process that supports a huge bureaucratic web (Usher & Edwards 1994; Jackson 1993).

The orientation toward surveillance and control without regard to incidental or unplanned learning (Tennant 1997) is suggestive of a behavioural approach. Usher & Edwards (1994) however are quick to point out that the discourse of competency-based education is not behavioural, rather, it is a seductive form of liberal humanitarianism. In this form, student-centred learning is embraced, individuals are encouraged to take control of their lives and ultimately become competent members of the workforce.

Mangusson & Osborne (1990) agree with the liberal humanitarianism argument and assert that significant power results from populist sentiment demanding education that is

relevant and accessible to the job market. Following on from this argument Usher & Edwards (1994) suggest that putting control with the individual reorganises direct control of the workplace. This is however, where the paradox suggested by Mangusson & Osborne (1990) about competency-based education is in direct line of thought with Usher & Edwards (1994). That is, competency-based education has the potential to evoke diversity in the learning process, although, predetermined outcomes dismiss, denigrate and silence more critical abstract thought thereby maintaining 'docile bodies' 'obedient souls' or the status quo whichever argument you wish to follow.

Usher & Edwards (1994) make an interesting comparison between Britain and Australia's competency-based system. They claim that the British system maintains the capitalist divisions of mental and manual labour consistent with a Fordist conception. In contrast, the Australian system organises people into work teams in a bid to integrate mental and manual labour. They concede that the Australian approach is definitely post-Fordist and may in fact be approaching a post-modern stance. Still, they are adamant that the post-Fordist approach to competency-based education does not escape the bondage of power, knowledge and discipline, rather, it provides a more systematic examination process of individual competence. An argument that is supported by Porter et al. (1992) who are of the opinion that such a uniform and standardised approach to education is nothing short of bureaucratic hegemony.

Continuing with the discussion on knowledge and power as it relates to competency-based education, focus is now shifted from the vocational sector to the higher education sector. Here Barnett (1994) has much to say about the power-laden discourse of skills-focused curricula. He claims that the discourse is ideological and threatens to reduce the emancipatory potential of higher education in favour of societal interests. Further, there is concern that the tenets of emancipatory learning in higher education such as understanding, critical thinking, interdisciplinarity and wisdom will be lost if universities take a radical shift toward what he terms an '*operational*' version of competence.

Barnett (1994) claims that two rival versions of competence competing for primacy within the higher education sector: *operational* and *academic*. An abridged version of his thinking is worthwhile presenting here. The notion of competence is divided into 10

major subcategories: epistemology, situation, focus, transferability, learning, communication, evaluation, value orientation, boundary conditions and critique.

Progressing logically through each of these subcategories, the *epistemology* of operational competence emphasises knowing how as opposed to the knowing that of academic competence. He admits that this polarity is crude, although, it does serve to show a purposeful distinction.

In operational competence *situations* are defined according to the interests of those in power within society, and accordingly become pragmatic in nature. On the other hand, academic competence is of a cognitive nature guided and defined by the intellect of academics in the field.

Outcomes and the ability to control them are the *focus* of operational competence. In contrast, academic competence is much more concerned with meaningful propositions.

With regard to *transferability* both ideologies view skills as resources that are used with discrimination on new or challenging situations. A distinction comes from interpretation of those skills. Operational competence is concerned with the ability to transfer skills across domains of performance, whereas academic competence is concerned with transferring intellectual skills, such as understanding, from one cognitive situation to another.

Learning in the operational sense is experiential. It is highlighted that 'experiential learning' has had a very public profile in higher education recently with proponents encouraging the higher education sector to see it as a valid form of learning equal to that of the prized propositional learning of academic competence.

It is apparent that Barnett (1994) is suspicious of experiential learning given his following comment.

> ...it is claimed that there is a correspondence between the two forms of learning [experiential and propositional], sufficient to allow a translation to be made between the two. If you can describe your experiential learning, I can tell you its equivalent in academic terms and so determine the appropriate amount of academic credit coming

> your way. Experiential learning is both different and the same. You can have your cake and eat it. (p.162).

Communication is also of vital importance to both ideologies. In operational competence communication is of a strategic nature designed to yield growth and success of the new corporate organisation within which it resides. Conversely, in academic competence, communication is for the discipline. There is an accepted tolerance, where mavericks and conformists can coexist on the same platform.

The stance of operational competence in relation to *evaluation* is efficiency, effectiveness and economics. Efficiency is a function of economy and effectiveness is measured against price. The more money made the greater the power to those who stand behind it. The primary evaluation concern of academic competence is truth. Although not absolute, claims of truth are assessed within disciplinary norms and values. Barnett does concede that both sets of standards are a narrow measure of competence.

The *value orientation* of operational competence is geared toward survival in the market place. Alternatively, academic competence is geared toward achieving truthfulness plagiarists and cheats are admonished.

Boundary conditions of operational competence are framed within local corporate organisational norms. On the other hand, boundary conditions of academic competence are much more universal where the individual can stand independently within the discipline's concepts, ideas, theories and genres without the imposition of corporate rules and regulations.

Lastly to *critique*, an area that both operational and academic competence favours. Critique in the operational sense is directly related to utility. It is also not valued as a worthwhile activity unless there is some sort of tangible reward within the organisation. In academic critique, there is an attempt at true understanding of concepts, ideas, evidence and theories independent of effectiveness or reward.

After outlining the differences between these two rival competences Barnett (1994) rightly concludes that the opposite polarities make both options a narrow and distorted

choice, each reflecting opposing sets of social interest. Despite this opinion, discussion of these two rival competences has not been a fruitless exercise. Rather it points to the need for a new look at competency in the workplace. A need that Barnett (1994) recognises in his idea of 'human being' competence, which is similar to that of Sandberg's (1994) notion of competence as a conception of the work.

2.3.4 Criticisms of competency-based education by nurse scholars

Nurses are also asking questions about the relevance of competency standards in actual clinical practice. Given the criticisms raised by educational scholars, there are grounds to suggest that the articulation of nursing practice in the form of competency standards is essentially facultative. That is, the specific characters or articulations contained within such standards may or may not be assumed by nurses in their day-to-day practice.

Given the important role ascribed to the ANRAC/ANCI competencies with regard to national regulation of the profession, it is interesting to note that Reid (1994) found that universities are either reluctant or have difficulty incorporating them into assessment of clinical practice. In her review of nurse education Reid (1994) found that a relatively small number of deans incorporate the Australian Nursing Council Incorporated (ANCI) competency standards into the assessment components of their respective curricula. Further, Russell (1994 cited in Reid 1994) in her capacity as Dean, Faculty of Nursing, University of Sydney, suggested a move away from competency standards altogether, arguing that they had become part of a larger political agenda.

Walker (1995) unashamedly attacks the ANRAC/ANCI competencies from a postmodern perspective using a 'radical hermeneutic' approach. His claim is that the competencies are "perilously self-referential, hopelessly ambiguous" "gobbledegook" (p.90). Walker (1995) is of the opinion that nurses have embraced the development of competency standards in an uncritical manner as a response to political agendas within the culture of nursing and health care generally. A response, he argues that was fuelled by the wider scope of general and vocational educational reform. His sentiments about nursing competency standards being instrumentalist, positivist and ideologically political are similar to those voiced by Usher & Edwards (1994), Magnusson & Osborne (1990) and Barnett (1994).

Carberry (1998) and Jackson (1995) challenge the competency standards approach from a cultural perspective. These authors question whether or not the ANCI competencies support Australia's multicultural ideologies or do they in fact reinforce dominant ethnocentrism.

The other major criticism that seems prevalent in the nursing literature is concerned with whether or not a competency-based approach meets the needs of undergraduate nursing students. There is a perception that competency standards in and of themselves do not provide the necessary scope to meet the complexities of clinical practice following graduation (Ashworth & Morrison 1991; Bechtel, Davidhizaro & Bradshaw 1999; Le Var 1996; Nicol, Fox-Hiley, Bavin & Shena 1996; O'Connor, Pearce, Smith, Vogeli and Walton 1999). What these authors seem to be suggesting is that the reductionist nature of the competency-based approach diminishes emancipatory learning potential associated with critical thinking and problem solving. Attributes, which they see as vital for, registered nurses working in today's dynamic health care system. Gonczi, Hager & Oliver (1990), Gonczi (1999), Hager (1995), Hager & Beckett (1995), Le Var (1996) and Hawke & Oliver (1992) have all argued that the integrated approach to competency standard development, teaching and learning activities and assessment, would counter these claims but nurse scholars remain doubtful.

Continuing in this vein, While (1994) in an extensive literature review suggests that the reason nurses are unable to agree on the constituents of competence in clinical nursing practice is because they have confused the constructs of competence with that of performance. Using evidence from that literature While (1994) sets up a convincing argument that competence is a subjective entity that is based on individual perception of what the job at hand requires. This is a perception that has been derived from formal education and clinical experiences, which are hard to measure or quantify. This argument supports Sandberg (1994) notion of competence at work.

2.3.5 Competency standards and the link to professional status

Despite issues and questions raised by educational and nursing scholars, leaders within the nursing profession have endorsed competency standards. The ANCI *National Competencies for the Registered and Enrolled Nurse* (1993) have been used as a basis

for development of a *Code of Professional Conduct for Nurses in Australia* (Cameron 1995). Formal adoption of the Code by the Nurses Registration Board (NRB) of New South Wales occurred in September 1995 (NRB 2000). Together they form the floor or **minimum** acceptable standards for professional nursing practice (White & Chiarella 2000) and are used to accredit pre-registration undergraduate nursing programs (Appel & Malcolm 1998). Moreover, it has been argued that the development of such standards enhances the professional status of nursing (White & Chiarella 2000). It is also consistent with the international community of nursing, many countries of which have developed standards for professional practice (White & Chiarella 2000).

2.3.6 Competency standards for specialist nurses

Many specialty areas of nursing practice have already, or are in the process of developing competency standards (see Conferation of Australian Critical Care Nurses (CACCN) 1996; Australian Confederation of Operating Room Nurses (ACORN) 1999; Australian Confederation of Paediatric and Child Health Nurses (ACPCHN) 2000). The minimum ANCI (1993) standards were not seen as relevant for specialist or advanced practice. Given that neonatal intensive care nursing is one such specialty area, it is worthwhile looking at the two sets of competency standards that have been developed and intended for use by nurses working in a critical or intensive care environment.

The first set comes from the CACCN Inc. (1996). These nurses sought to use a broad integrated approach in the development process (Gonczi, Hager & Athanasou 1993) and co-opted expert critical/intensive care nurses from each state and the National Office of Overseas Skills Recognition (NOOSR) to help with the project. The end-result was six broad practice domains of professional practice, enabling, reflective practice, clinical problem solving, teamwork and leadership. These broad domains were divided into 20 competencies. Each competency was further subdivided into a series of elements, which outlined the necessary performance criteria to achieve a given competency.

In all there are a total of 66 elements to achieve competency as a specialist nurse (These are in addition to the 75 required of an ordinary registered nurse.). The CACCN have tried to detail the integratedness or wholeness of each competency standard. However there is still a tendency toward behavioural expression, which demonstrates the performance construct associated with competency standards alluded to by While

(1994). The application of these standards to all critical/intensive care areas has yet to be fully implemented, discussed or researched by the profession.

Coming from another front are the *Competency Standards for the Advanced Nurse* (Australian Nursing Federation (ANF) 1997). Wide consultation within the nursing profession was also sought for the development of these standards. In all some 48 National Nursing Organisations (NNOs) participated in the project. There are 12 competency standards in this document. Each standard is broken down into a series of elements (58). Each element is then broken down yet again into performance criteria (293). The ANF analysed 142 narrative stories from nurses writing about nursing practice. From these stories 1,251 'behaviours' were identified, coded and reduced to obtain the standards, elements and performance criteria listed in the document. Even though there is a clear indication of a preoccupation with behaviours, the document itself does not express the competency standards in an overtly behavioural manner. However, the author would argue that in an attempt to achieve a broadly-based generic set of competency standards using the concepts of legitimacy, homogenicity and unit (ANF 1997), the relational link to context, so important to the clinical practice of nursing is overshadowed.

The specialty of neonatal nursing began the process of developing competency standards in New South Wales through the publication of *Standards for Neonatal Nursing Practice* (1992). It was agreed that this process should be extended to the national level via ANNA in 1995. Formal development began in March 2000 following the appointment of a national chairperson and formation of a national committee. The author received a personal copy of the ANNA *Competency Standards of Neonatal Nurses* (ANNA 2001) in February 2002. As these standards were released after the bulk of this thesis had been written, the author has decided to comment on these standards in relation to the present study in Chapter 8.

Perhaps a reason why specialist nurses do not see the ANCI (1993) standards as relevant to their practice is because the internal relationship between the worker and the work is not apparent. Developing competency standards for specialist nursing practice could be seen as an attempt to show the relational link between the nurse (worker) and the context of practice (work they are engaged in).

To summarise, discussion thus far has shown that nurses actually began their journey down the competency standards pathway just prior to the national competency-based education reform agenda. Since that time, nurses have been carried along on a wave of educational reform searching for professional identity. On the surface this activity looks like an overt attempt at radical reform but educational and nurse scholars see it as a covert attempt to maintain the conservative status quo. Despite professional endorsement of minimum competency standards for nursing practice the generic and decontexualised nature of these standards has reduced the meaningfulness of nursing work. Thus, these minimum competency standards can only provide an external representation of the world-of-work. In an attempt to add meaning, specialist nurses are attempting to recontextualise these minimum standards to suit their own area of practice. Success or otherwise of this venture will require future debate, discussion and research.

2.4 An alternate pathway: practising and reflecting on nursing practice

Nursing literature is now swelling with a collection of works that have taken the alternate pathway in defining the boundaries of clinical nursing practice, that is, practising nursing and reflecting on it. These works seek more than an external representation of the world-of-work, they explore the internal relationship between the worker and the tasks they are engaged in at work.

2.4.1 Lived experience of competence in nursing practice

Madjar (1997, 1999) describes patients' experiences of clinically inflicted pain, which she defines as "...pain that is created in the process of nursing interventions..." (Madjar 1999, p.145). Madjar studied clinically inflicted pain from two perspectives: burn injury patients requiring dressing changes and patients who were receiving intravenous chemotherapy for treatment of cancer. She explains that when a patient has extensive burns, dressing changes may take several hours to complete, which may be extremely painful for the patient. First, old dressings are usually soaked off in saline baths. Dead skin is then cut or debrided from wound edges before careful cleaning drying and topical application of soothing, healing ointments. Finally, the wound must be redressed and bandaged.

For the cancer patient, pain is not so acute as for the burn patient. Rather, it comes on slowly as the combination of disease and chemotherapy effects assault the body. Food looses its taste, so they stop eating, loose weight and inevitably their hair. As a result they also loose "...the sparkle in the eye and the springiness in their step..." (p.58, 1997). Both burn patients and cancer patients are trapped within their bodies and must as Madjar's (1997) analysis shows repeatedly endure 'the hurt and painfulness of inflicted pain', 'the wounding nature of inflicted pain', 'handing one's body over to others' and 'restraining the body and voice'. She emphasises that nurses need to recognise and understand what patients experiencing clinically inflicted pain endure, not assume it is an inseparable part of the treatment procedure over which they have no control.

Rudge (1997) complements Madjar's (1997,1999) work because it too is concerned with burn patients. In particular, the metaphors used by patients to explain how their skin felt following a burn and then after a skin graft. One patient explained that his full-thickness burn to the chest and abdomen felt like "...body armour – stiff and not attached to his body underneath..." (p.81).

With regard to how patients felt about their skin grafts, metaphors such as 'plastic' and 'rubber' were mentioned. Rudge (1997) argues that language assumes knowledge and power, particularly in debates about medical funding verses economic rationalism. Dominant discourses also prescribe what is said, how it is said, to whom it is said and who will be silenced and subsequently disempowered. Following this line of argument, she explains that patients have different discourses to nurses and doctors about independence.

Patients are concerned with how their bodies feel such as the restricted movements resulting from skin grafting. Patients talk about their 'new' body with absolute uncertainty, in so far as certainty prior to the burn incident will never return. During their treatment by nurses and doctors they are surrounded by the dominant discourses of certainty, which are rooted in the scientific and technical aspects of wound management. Thus, the patient's 'independence' is determined by the boundaries of bondedness. As the skin grafts take and healing is achieved the boundaries of bondedness are reduced. In other words, the patient's body is handed back to them piece

by piece. Great certainty is afforded to the scientific realities of wound management, which silence the uncertainties spoken about by the patient. Rudge (1997) is of the opinion that this unsatisfactory position of objective reality concerning the body, adopted by nurses and doctors can be displaced by poststructural analyses concerned with "...textual representations of bodies..." (p.91).

Short (1997) uses photographic images of nurses caring for sick bodies to construct meanings about nurse, patient and context relationships. Looking at Short's images, I am reminded of the old cliché, 'a picture tells a thousand words', some of which defy articulation. Nevertheless, as a nurse who has cared for patients similar to those depicted in Short's (1997) photographs, the images evoke stirring recollections of past experiences. Short's use of photographic images to aid descriptions of what nurses do has provided justification for the use of photographs throughout this thesis.

Some other areas of clinical practice which nurses have attempted to make sense of include: caring for critically ill patients (Walters 1995); use of technology in nursing and medical practice (Van der Reit 1997); women experiencing life threatening illness (Lumby 1997); early menopause (Boughton 1997); depression (Horsfall 1997); chronic pain (O'Loughlin 1999); schizophrenia (Walton 1999); breast cancer and mastectomy (Shin 1999); chronic leg ulcers (Bland 1999); patients' experiences of being in intensive care (Parker 1999); caring (Euswas & Chick 1999) and nurses experiences of their clinical practice (Sutton, Smith, Wright, Arbon, Eldredge, Forbes, Robbillard & Zeitz 1996). The work of these authors is only a sample of the many projects that have piqued nurses into action and focused their studies on the subjective nature of the internal relationship between the worker and the work.

These works also show that there has been a breadth and depth of studies conducted by nurses who are seeking to make sense of their practice by exploring the relationship between the nurse and the context in which nursing practice takes place. Each of these studies provides a rich description about certain aspects of lived experience, which in turn provides highly detailed aspects of how nurses can work toward achievement of competence in nursing practice. The problem however, is that it is difficult to tease out the critical aspects of competence in clinical nursing practice from these large interpretive works. Moreover, to do so could result in a fragmentation of the original

description, which would seem to devalue to study in question. This could explain why contemporary nurse leaders have seen fit to adopt the easier option of a competency standards approach to define the boundaries of clinical nursing practice.

2.5 Summary

This chapter has attempted to show that conflicting knowledge perspectives have influenced ideas about competence in clinical nursing practice. The dominant knowledge perspective, concerned with objective truths, has resulted in an external representation of the world-of-nursing as a collection of competency standards. Nurses have reacted against this dominant discourse by researching the subjective internal relationship between the nurse and the context in which nursing practice occurs. The problem is that there are inherent difficulties in teasing out critical aspects of competence in nursing practice from this type of research, which could explain the dominance of the competency standards discourse.

What does it mean to be a competent neonatal nurse? Discovering an answer to this perplexing question was the starting point for the present study. Moving forward from this point involved a conscious decision to reject the traditional scientific research paradigm.

The rationale for this decision came from a realisation that the type of knowledge I wished to discover about competence in neonatal nursing practice was of a personal and practical nature as described earlier. Hence, it was likely that this personal and practical knowledge would not present itself using traditional or scientific research approaches.

Thus, the way forward must be into the human science or qualitative paradigm. This means venturing "into the unknown, to the fringes of knowledge" where "everything seems mixed up and contradictory, illogical and incoherent" (Szent-Györgyi 1980 cited in Morse 1994, p.1). Although daunting at first, moving into the unknown will provide an opportunity to produce an outcome that is not constrained by theory, hypothesis testing or generalisation (Van Manen 1990, Peshkin 1993). Further, Morse (1994) argues that adopting a qualitative research approach 'smoothes over' contradictions and enables an image of reality to present itself as a coherent whole.

Chapter 3

3 Developing Competence in Clinical Nursing Practice

3.1 Introduction

The previous chapter has highlighted conflicting knowledge perspectives that have informed ideas about being competent in clinical nursing practice. The development of competency standards was seen as a way for nurses to define the boundaries of clinical nursing practice and enhance professional status. Endorsing minimum standards through the *Code of Professional Conduct for Nurses in Australia* (NRB 2000), and defining competence as " a construct referring to all the personal characteristics that enable competent performance" (Heywood, Gonczi & Hager 1992, cited in ANF 1997, p.58) suggests that contemporary nurse leaders view competence in clinical nursing practice as an ability to acquire and perform skills. If competence in clinical nursing practice is defined as a construct of performance, it is important to consider issues concerned with how nurses acquire the skills they need in order to practice nursing. This chapter intends to address those issues by exploring several avenues: the traditional Nightingale system of nurse education; assumptions about the development of expertise in nursing practice; contemporary educational ideas about the importance of context and critical reflection in the learning process; and development of clinical nursing skills since the transfer of nurse education into the tertiary sector.

3.2 Traditional Nightingale system of competence development in nursing practice

The education of nurses within Australia began at the Sydney Infirmary following the arrival of Lucy Osburn and five of her colleagues on 4 March 1868. Osburn and her colleagues had been prepared in the Nightingale system of training and had come to Sydney to establish training school for nurses. As the 'Matron' or 'Lady Superintendent', it was Osburn's role to supervise the management of all wards and female staff within the hospital. The position of 'matron' was central to the Nightingale system (Russell 1990; Reid 1994) because it was they who had sole responsibility for making decisions about who could become a nurse. Women most likely chosen by the

matron to commence training as a nurse were daughters of farmers or well-educated domestic servants. It was thought that these women possessed the intrinsic moral, intellectual and physical attributes necessary to become a nurse (Alavi & Cattoni 1995).

Thus, as far as the training of nurses was concerned, Russell (1990) says the following:

> Students were carefully selected by the matron on the basis of both their educational and their moral standards. Vocational training, board, lodging and uniforms were then provided without charge and the students received a minimum wage. In return for their training, students were expected to provide for the service needs of the hospital. Student nurses were rotated through specific clinical areas to gain experience under the direct supervision of the 'ward sister' in each area. It was considered essential that the ward sisters should themselves be trained nurses who were well qualified and both able and willing to teach and supervise the student nurses. This arrangement is similar to an apprenticeship system, in which the artisan or master craftsman teaches the apprentice a trade or craft (p.13).

In 1884 Lucy Osburn retired from her position as 'Lady Superintendent' of the Sydney Infirmary and left behind a legacy of nurses who had been trained in the Nightingale system. At the end of this 16-year period, Australian nursing had undergone a rapid expansion with many of Osburn's trained nurses and her five original colleagues taking up positions as matrons and establishing training schools at hospitals throughout Australia. This expansion continued and the Nightingale system became firmly entrenched as the method for training nurses. A system that remained relatively unchanged over the ensuing 100 years (Russell 1990; Reid 1994), which raises important educational and social issues about how nurses developed or became competent in their practice.

The main educational issue of the traditional Nightingale system was that service needs took preference over educational needs. The flow on effect of this system was a lack of consistency in educational programs. Moreover, the emphasis was on transmission of knowledge and 'learning by doing'. In this way, nurse education fostered a development of competence in clinical practice based on the acquisition and disciplined performance of nursing tasks, which Duffy (1995) claims is synonymous with Freires' (1973) 'banking' concept of education. Learning how to do those tasks involved a master-

apprentice form of education where the registered nurse passed on their skills to the trainee over a period of time (Reid 1994; Russell 1990).

Over time this disciplined performance of nursing tasks was translated into nursing curricula founded on a traditional Tylerian objectives-based model. In this type of model, development and assessment of competence is based on decontextualised task analyses with emphasis placed on measurable quantitative outcomes. In other words, *how much* a student learns (or 'banks'), which perpetuates behavioural didacticism (Entwistle 1981, cited in Beckwith1991). The vocational or product oriented nature of this model has been criticised for focusing on 'ideal' as opposed to 'real' facets of nursing practice, domination of content by the teacher, student passivity and fragmentation of learning experiences (Maclean 1992; Perry & Moss 1988; Bevis & Watson 1989; Sheehan 1986; Greaves 1987). Despite these criticisms, those responsible for the education of nurses have continued to use behaviouristic approaches based on taxonomies when teaching nursing skills (Bjørk 1997).

An example of this behavioural kind of teaching is found in Oermann's (1989) work on psychomotor skill development. In this work, discussion centers on the various movements associated with performing skills and suggests that the key to learning nursing skills is practice and feedback until movements become automatic. It can be argued however, that practice and feedback are of limited value if the student is unable to understand the main principles or ideas that the movements are derived from (Salomon & Perkins 1989).

Oermann (1989) makes a cursory reference to the fact that psychomotor skill development also has a cognitive or principle-based component as well as an affective or patient concern component, yet suggests that these components require different methods of teaching and are more pertinent in the clinical practice setting. However, if one considers the work carried out by Whelan (1988) and Eizenberg (1988) on clinical problem solving and learning anatomy in medicine respectively, separating the psychomotor from cognitive and affective components of learning nursing skills in the way Oermann suggests, is likely to result in learning that is inferior and highly technified.

Social issues are mostly concerned with nursing's Victorian legacy of being an occupation within the female sphere (Godden 1995). The result of this legacy being poor wages and working conditions, low occupational status, and sub ordinance to male dominated medical authority. Under this system nurses were not given the opportunity to question time honoured ritual practices or explore individual potential (Reid 1994; Russell 1990). Some would argue that this legacy continues to influence contemporary nursing practice (Clare, Jackson & Walker 2001; Speedy 2000).

3.3 A novice to expert view of competence development in nursing practice

Patricia Benner's (1984) work was a reaction against two prominent educational 'tools' used in traditional nursing schools: task analysis and the nursing process. Benner (1984) saw the task analyses used to teach new nurses as highly reductionist with their endless lists of objectified elemental behaviours, which often gave no guidelines as to which ones were most important. The nursing process with its over simplified linear assess, plan, implement and evaluate structure, was seen to obscure nursing knowledge because the context and content of nursing transactions were removed.

Benner (1984) thought it was more important to understand how nurses performed in actual clinical practice rather than the hypothetical situations common to task analysis and the nursing process. With this idea in mind Benner applied the Dreyfus and Dreyfus (1980) model of skill acquisition to nursing. This model was derived from the field of artificial intelligence and posits that the acquisition of skills involves a passage through five levels of proficiency: novice; advanced beginner; competent; proficient and expert. Progress through each of these levels depends on the individual's ability to use past concrete experience rather than relying on abstract principles, recognise whole situations rather than certain parts and movement from a "...detached observer to informed performer..." (p.13).

Benner (1984) wanted to understand the differences in assessment of a clinical situation and subsequent clinical performance in that situation, between new graduates and expert nurses. The study was conducted at three major teaching hospitals that had new graduate preceptor programs in place. A preceptor in this instance was a nurse judged

by their peers as 'expert' in their field of nursing with several years of clinical experience. In all, 21 new graduates were paired with a preceptor at their respective hospitals. Each pair was then interviewed about clinical situations they had experienced together. In addition to these paired interviews, another 67 singular interviews and/or participant observations were conducted to give a clearer picture of nurses' performances during different stages of skill acquisition. Data were interpreted from a Heideggerian phenomenological perspective.

In brief, a *novice* has no experience with the type of situations they will be expected to deal with. They need rules to guide their actions, such as policies and procedures lists. The problem with this rule-governed existence is that it is extremely limited, inflexible and does not tell the novice how to prioritise actions in a given situation. Thus, rules can in fact prevent successful performance (Benner 1984).

An *advanced beginner* has experienced enough recurring meaningful situations to demonstrate marginally acceptable performance. They still require assistance in setting priorities, but can practice independently in some areas of clinical practice provided that these areas have been identified through prior experience (Benner 1984).

A *competent* nurse is one who has been working in a clinical practice area for two to three years. This nurse is able to set priorities and achieve long-term goals. They are also able to apply previous experience from past situations to new situations in a deliberate, logical and efficient manner. They can also manage most complex patient care demands (Benner 1984).

The *proficient* nurse perceives situations as whole entities rather than separate aspects. They have experienced many similar or same situations and know what to expect in any given situation. As a consequence they can modify nursing practice in response to changing situations. Their practice is flexible, efficient and demonstrates an ability to 'hone in' on the important priorities of the situation after considering a few salient options (Benner 1984).

The *expert* nurse has a huge amount of background experience and a deep understanding of the total situation. They have an intuitive grasp of situations, which

enables them to 'hone in' on the problem without wasting time on considering options. They also demonstrate masterful problem-solving abilities, can anticipate problems and act as mentors for other staff members (Benner 1984).

Having defined the boundaries of each level of proficiency Benner (1984) analysed the interview transcripts from an extended Heideggarian perspective and found that 31 competencies emerged from the data. Benner argued that these competencies were describing *actual* as opposed to *hypothetical* performance and were *holistic* as opposed to *procedural* because the context in which the performance occurred was maintained.

Through an inductive process seven domains of clinical practice were derived from these 31 competencies: the helping role; the teaching coaching function; the diagnostic and patient monitoring function; effective management of rapidly changing situations; administering and maintaining therapeutic interventions and regimens; monitoring and ensuring the quality of health care practices; and organisational and work competencies. This work formed the basis for later work, which proposed that caring was central to nursing practice (see Benner & Wrubel 1989).

Benner's (1984) work is a cornerstone that has provided a way for nurses to frame studies concerned with the acquisition of skills. For example, the Australian Nursing Federation has used Benner's (1984) notion of exemplars from expert nurses to convey certain intentions, meanings or outcomes in developing *Competency Standards for the Advanced Nurse* (ANF 1997). Interestingly, Benner (1984) claimed that if attempts were made to decontextualise exemplars and reduce them to 'essential features' the minimum level of competency that would be left was contrary to the development of expertise. The homogenised nature of the ANF (1997) competency standards suggests a degree of decontextualisation. Thus, the use of these standards as a way for nurses to develop their level of expertise is open to conjecture because it is necessary to recontextualise them for each specialty area.

I support Benner's (1984) opinion that decontextualising and reducing clinical exemplars, limits development of expertise. However, decontextualising and reducing clinical exemplars as a part of a research process designed to identify critical differences as phenomenography does (Marton & Booth 1997), can offer something that other

research methods cannot. Discussions in Chapters 5 and 6 will address the merits and application of the phenomenographic research approach to this debate on competency.

Within the specialty of neonatal nursing, which is to the focus of the present study, two studies have been found which utilise Benner's (1984) work. Clancy and Maguire (1995) use the work to show that the expert clinical nurse specialist becomes a novice when changing role to a neonatal nurse practitioner. Gilfillian (1997) uses the work to develop a questionnaire for neonatal nurses to rate perception of their skill level. Interestingly, Gilfillian's (1997) study showed that nurses with experience in neonatal nursing in excess of 5 years, who would be considered proficient or expert according to Benner (1984), often under rated their level of skill. Both of these studies are descriptive in design and do not actually address neonatal nurses' understandings or development of competence in their practice.

Benner's (1984) work is not without criticism from both methodological and educational standpoints. From a methodological standpoint Koch (1995) argues that the application of Heidegger's hermeneutic circle has not been taken seriously. She makes this claim from the standpoint that the interpreter (Benner) has remained aloof during the research process rather than entering into the subject's situation as would be consistent with Heidegger's notion of being-in-the-world. Similar claims about flawed methodology come from Cash (1995) who argues that the use of critical incident technique is not necessarily hermeneutic. This means there is a potential for lost or incomplete text, which means descriptions provided are typical not critical.

From an educational standpoint, Sandberg (1994) argues that the approach used by Benner (1984) shows that variation exists in terms of skill acquisition. However, the problem as he sees it is that the descriptions of proficiency do not take into account the variation that may exist at any one level of proficiency, for example, among advanced beginners or competent practitioners. Sandberg (1994) argues that it is the variation among workers' conceptions of their work, which holds the key to unlocking understanding about competency in the workplace thereby enabling appropriate development of educational support. Moreover, in his opinion, it is necessary to use a methodology, which aims to identify and describe workers' experiences of competence as well as capture any variation. The methodology uniquely suited to understanding

variation in experiences is phenomenography. As mentioned earlier, situating the present study within that methodology is the focus of Chapters 5 and 6.

A further educational development criticism, similar to that from Sandberg (1994), comes from Bjørk (1995). In this paper Bjørk argues that Benner (1984) provides a description of an expert nurse but gives no real consideration to how nurses develop the 'intuitive' or tacit skills involved in expert practice.

Despite these criticisms Benner's work has stimulated much discussion and debate about the defining qualities of expertise in nursing practice (Jasper 1994; Adams, Pelletier, Duffield, Nagy, Crisp, Mitten-Lewis & Murphy 1997; Sutton & Smith 1995) and the use of intuition by expert nurses (Gerrity 1987; Young 1987; Schraeder & Fischer 1986, 1987. Even though opinions differ between these authors about the defining characteristics of an expert nurse and development of intuitive ability, there is consensus that development of expertise encompassing intuition can only occur within the context of practice. In other words, a nurse can only develop expertise in neonatal nursing from being in and experiencing the world of neonatal nursing, it is not something that can be taught or learned in a classroom. This consensus has seen nurses responsible for the education of nurses in these times embrace contemporary learning theories that value experience. For this reason, discussion will now move on to consider how experiential learning has been used as a possible framework for the development of competence in neonatal nursing.

3.4 Experiential learning

As mentioned earlier, the traditional education of nurses focused on learning by doing. However, learning in this sense was concerned with a quantitative measure of how many clinical practice activities a nurse could do or perform. Hence, the idea that competence in clinical nursing practice equates to an ability to perform. Reaching an understanding about why these activities were performed or effecting change in the way activities were performed was not recognised as a necessary component of the learning process. Thus, it has been argued that a rather large gap exists between nursing theory and nursing practice (Speedy 1989; Saylor 1990; Cook 1991; Holmes 1991; Davis 1991; Allmark 1995).

The transfer of nurse education into the tertiary sector gave nurses the opportunity to make sense of their clinical practice activities, think about ways to improve the learning process for students of nursing and reduce the gap between theory and practice. The tenets of adult learning, especially those related to experiential learning were seen by many nurse academics as a way to explore, clarify and understand the often-complex idiosyncratic activities associated with the clinical practice of nursing and become a competent practitioner (Hokanson Hawkes 1992; Burnard 1992(a); Laschinger 1990; Holbert & Thomas 1988; Burnard 1987; White & Ewan 1991). Moreover, these ideas were consistent with educational thinking and practice in other health care disciplines such as speech pathology (Mc Allister 1997), community mental health (Harris 1996) and psychology (Heron 1996).

The literature offers several ways to define experiential learning such as "learning from experience" (Boreham 1987, p.89), "learning by doing" (Burnard & Chapman 1990, p.77) and a "process of learning from life" (Burnard 1992(b), p.29). Learning in this way is concerned with individuals increasing their self-awareness by noticing and discerning what is happening in the world around them. Reflection plays a key role in increasing self-awareness and the ability to transform experience into knowledge and meaning (Burnard & Chapman 1990; Mezirow 1990).

Historically, experiential learning theory was derived from the work of philosopher John Dewey. Dewey claimed, that "all genuine education comes about through experience" (Dewey 1938, cited in Merriam & Caffarella 1999, p.223) but held the opinion that traditional educational practices did not provide quality learning experiences that could be recycled and used again in subsequent learning events (White & Ewan 1991).

For experience to educate, the principles of continuity and interaction must be present (Dewey 1938, cited in Merriam & Caffarella 1999). The principle of continuity involves learners connecting current experiences to previous as well as potential future experiences. The principle of interaction involves the transaction or relation between the learner and their environment at the time the experience took place (Merriam & Caffarella 1999). Because much of traditional educational experiences did not take

account of these principles, Dewey argued that, "not all experience educates". In fact "some experiences 'mis-educate' in that they actually distort growth..., narrow the field of further experiences..., [and land people] in a groove or rut" (Dewey 1938, cited in Merriam & Caffarella 1999, p.223). Given the educational and social issues mentioned above in **3.2**, it could be argued that the traditional Nightingale system of nurse education represents an example of perpetual mis-education.

Humanist psychologist Carl Rogers extended Dewey's ideas during the period from 1951-1983. Rogers was concerned with a student-centered approach that encouraged self-initiation and self-direction, which he argued gave a much-needed dimension of freedom in the learning process. In this way, the student was free to choose a way of learning that was meaningful for them, instead of an *en masse* approach germane to traditional education (Rogers 1983).

Freire (1993) [original version 1973] was in agreement with Rogers about the need to encourage freedom in the learning process. Taking a slightly different position, Freire argued that traditional education practices were oppressive and fostered 'banking' methods of teaching aimed at automation of society. Instead, Freire proposed that educational practices should involve problem posing based on praxis and critical reflection. He argued that this critical form of education would encourage liberation from oppressive methods of teaching and empowerment through the meaningful transformation of experience into knowledge.

More recently, prominent theorists in the area of experiential learning include Kolb (1984), Boud Keogh & Walker (1985), Boud & Walker (1992,1993). The following discussion in this section plans to address three major areas. The first area is concerned with the theoretical positions of these recent theorists in relation to experiential learning. The second area will look at epistemological considerations in relation to nurse education. The third area offers suggestions on how experiential learning can be incorporated into clinical nursing practice.

3.4.1 Recent experiential learning theorists

The experiential learning model developed by Kolb (1984) was influenced by the work of Dewey, Lewin, Piaget, Freire and Rogers. All of these theorists emphasise the

importance of the learner being actively involved in the learning process. Another critical element in the learning process was reflection-on-action within a given environment or context. Kolb (1984) was of the opinion that individuals constantly adapt by reflecting on interactions within the environment.

In Kolb's (1984) work learning is conceptualised as an ever-increasing learning spiral based on a four-stage model of concrete experience, reflective observation, abstract conceptualisation and active experimentation. *Concrete experience* is the immediate affective reaction to a situation or experience. Here the learner becomes immersed in the intensely personal nature of a human interaction. *Reflective observation* gives the learner an opportunity to reflect on the experience and determine if any relationships exist that would make the experience more meaningful. *Abstract conceptualisation* has an emphasis on a logical thinking approach where the learner develops concepts and explanations for what has been experienced. *Active experimentation* involves the learner testing hypotheses derived from the concepts in the previous stage by putting knowledge into practice. With each new experience the learning cycle becomes more spiral, as new knowledge is built on previous knowledge in a cumulative fashion.

There are two dimensions of learning within the learning cycle. The first dimension is *grasping*, which combines concrete experience with abstract conceptualisation. The second dimension is *transformation*, which joins reflective observation and active experimentation. Both the grasping and transformation dimensions are essential to the learning process. The intersection of these two dimensions yields four distinct learning styles referred to as diverger, assimilator, converger and accommodator, which correspond to the four stages of the learning cycle mentioned above.

An individual that learns from concrete experience and reflective observation is referred to as a *diverger*. A diverger is happy using imagination to generate ideas. An individual that learns from reflective observation and abstract conceptualisation is referred to as an *assimilator*. An assimilator is the ideal person for organising information into meaningful experiences that are often in the form of a theoretical model. An individual that learns from abstract conceptualisation and active experimentation is referred to as a *converger*. A converger likes to apply theory to practice in search of the elusive single correct answer. An individual that learns from active experimentation and concrete

experience is referred to as an *accommodator*. An accommodator carries out plans and finds new experiences to be involved in. The tendency of individuals to develop a greater proficiency in one learning style or another is largely due to socio-cultural, educational, vocational or familial influences that emphasise a particular style (Laschinger 1990; Hokanson Hawks 1992). It is interesting to note that research on student nurses' learning styles shows that the majority are either divergers or accommodators, indicating the importance of concrete experiences in nursing education and practice (Laschinger 1986).

Nurses may have espoused Kolb's model (Hokanson Hawks 1992; Holbert & Thomas 1988; Mander 1992; Laschinger 1990; Burnard 1989), but that does not mean it is without criticism. Jarvis (1988) points out that although the model raises pertinent issues concerning learning from experience, there is in fact an implied behavioural definition of learning, which may be attributed to the differences in individual learner's perceptions.

Barnett (1989, cited in Merriam & Caffarella 1999) adds a fifth component to Kolb's model, 'planning for implementation', which he inserts between abstract conceptualisation and active experimentation. Barnett sees this component as important for operationalising Kolb's model because it assumes problem solving and decision making skills necessary for the development of a specific plan of action.

Reflecting on one's experiences is not an easy task because of its challenging and critical nature. Boud, Keogh & Walker (1985) argued that Kolb did not provide enough details regarding the nature of the observation and reflection stage. By focusing on the reflective observation stage of Kolb's (1984) model, Boud, Keogh & Walker (1985) proposed a three stage model that involved 1) returning to the experience, 2) attending to feelings evoked by the experience and 3) re-evaluating the experience.

In the first stage activities associated with the experience are recalled. Feelings associated with those activities as well as relationships between activities are also recalled. In the second stage reactions to both positive and negative feelings become the focus. The third stage involves relating new experiences to previous ones. There are four steps in this process. *Association* – connecting ideas from the new experience to

that which is already know. *Integration* – processing associations to determine how meaningful they are. *Validation* – subjecting new ideas to reality testing. *Appropriation* – making the decision to incorporate new ideas into thoughts and actions. This model is recommended for use as a debriefing strategy when student nurses are undertaking clinical blocks (White & Ewan 1991).

Thus, the adequacy of the early Boud, Keogh & Walker (1985) model for the purposes of reflection after the experience has been demonstrated. However, the model has been questioned for not considering what the learner brings with them to any experience, or reflective processes that guide the learner during an experience itself. Continued development and refinement of this original model has led to a newer version (Boud & Walker 1992,1993). The new model has a *preparation* stage, which involves the learner focusing on themselves and working out what they intend to gain from the experience based on prior knowledge and skills. Reflective processes during the experience itself involve the learner *noticing* and *intervening*. Noticing is concerned with increasing self-awareness. Intervening is any action taken by the learner whilst performing a skill that influences the event. The inclusion of both reflection-in-action and reflection-on-action processes allows the learner to reflect backward and forward during and subsequent to the experience. Merriam & Caffarella (1999) argue that these current revisions align the model more closely with the original writings of Schön and Dewey.

Each of the models discussed above complement one other and share a degree of common ground. That is, they are essentially concerned with a continuous adaptation and autonomous approach toward learning. For this reason it would seem beneficial for those responsible for the education of nurses to consider these models in-tandem as a way to foster the development of clinical nursing skills.

3.4.2 Epistemological considerations for nurse education

Development of nursing knowledge associated with the natural and human science domains have been addressed in Chapter 2. The highly subjective and idiosyncratic nature of experiential knowledge (Burnard 1987) means that it belongs to the human science domain. It also means that attempts to write down or explain experiential knowledge may often result in a fragmentation or loss of vital information and a subsequent reduction to a prepositional form of knowledge (Burnard 1987).

Lumby (1991) agrees, and argues that the oral transmission of knowledge from the 'elders' to the new practitioners, often highly valued in other societies, is not valued in traditional western academic circles. Hence, the vital information lost when nurses try to write down experiential knowledge to conform to accepted academic standards is the *meaning* of the experience and intuitive responses happening that time. Thus, an important implication for the education of nurses is to explore ways of generating experiential knowledge from practice.

3.4.3 Incorporating experiential learning into clinical nursing practice

Boud (1989) offers three experiential educational approaches that foster autonomy and self-direction. Individual-centered, usually in the form of a learning contract; group-centered, where individuals pursue their own learning within a supportive community of peers; project-centered, with a group of students being given a problem to work on, which involves them working gainfully toward an outcome. Experiential learning methods that may be used within the context of the afore mentioned educational approaches include group discussions, one-to-one exercises, role play, psychodrama, co-counseling, simulation, meditation, relaxation activities, problem-solving activities, games, guided fantasy, encounter activities, structured activities, counseling exercises, group facilitation exercises, coaching, video, brainstorming and reflective writing (Burnard 1990). The aim of using these methods is to increase self-awareness through reflective processes.

Educational literature provides many examples of how experiential learning methods can be incorporated into a variety of contexts that cross academic and workplace settings (see Boud, Cohen & Walker 1993; Boud & Miller 1996; Boud & Garrick 1999) for further reading). Nursing literature is also replete with examples of how these experiential learning methods have been incorporated into academic and clinical settings (see Burnard 1988, 1990; 1991; Allcock 1992; Barber & Norman 1989; Merchant 1989; Hull 1992; Robotham 1991; White & Ewan 1991; Lyte & Thompson 1990; Horsfall 1990; Conway 1994; Johns 1995; Usher, Francis & Owens 1999).

Of particular interest is the work by Taylor (2000) who provides examples of how reflective processes associated with experiential learning can be used to help nurses and

midwives understand the complexities of clinical practice as well as develop and maintain professional competence. She claims that there is a substantial amount of rhetoric in nursing and midwifery literature about the value of reflecting on and during an experience as a means of reducing the gap between theory and practice. In spite of this, Taylor argues that nurses and midwives have difficulty with the practice of reflecting on and during an experience. An opinion supported by Johns (1999), Clinton (1998) and Jarvis (1992). Thus, Taylor's book *Reflective practice a guide for nurses and midwives* offers a timely explanation of how to engage in, and develop the skills of, reflective practice. The ability to use Taylor's 'kitbag of strategies', which includes writing, audio-taping, creating music, dancing, drawings, montage, painting, pottery, quilting, singing and videotaping are all seen as ways to record clinical practice experiences for later analysis. That analysis may be undertaken individually or with the help of a critical friend.

3.5 Contemporary ideas about learning clinical nursing skills

To acquire the skills necessary to practice as a registered nurse in Australia, students must successfully complete an accredited 3-year undergraduate degree program (Appel & Malcolm 1998). The wake of the transfer of nurse education into the tertiary sector has raised many issues about the 'competence' of graduates exiting nursing programs in Australia and created substantial tension between academic and service provider sectors (Chang & Daly 2001; Heath 2001).

Tensions reached flash point in April 2001, when it was announced that senate and federal inquiries into nurse education would take place concurrently (Kemp & Wooldridge 2001). McMillan (2001) argues that these reviews provide nurses with an opportunity to inform policy makers and the public about the problems faced by nurses in the current health care climate. Conversely, Lumby (2001) in her capacity as Executive Director of the NSW College of Nursing questioned the need for two Government inquires addressing the same issues. She argued that "the money would be better spent implementing the recommendations of the six inquires into nursing which have been undertaken over the past 10 years" (p.1). The fact that nurse education in Australia has warranted eight inquiries since full transfer to the tertiary sector in 1993 indicates the constant pressure and scrutiny faced by the profession.

Nurse academics argue from a positive perspective that the transfer of nurse education into the tertiary sector has achieved professional recognition and improved the status of what was traditionally a low status female occupation (Godden 1995). As a member of an academic community, nurses can engage in scholarly research activities, be creative and think critically about issues relevant to their practice (Gray & Pratt 1991, 1995). These activities were difficult, if not impossible for nurses to engage in under traditional service provider organisation authority. Nursing students, free from the pressures of service provision can be responsible for their own learning and realise their own potential, thereby fostering the ideals of life-long learning (White 2001).

Interestingly, a study of nurse academics reported by Sellers (2000) found that the majority perceived 'nursing' to lack professional identity and a disciplinary core. Contrary to earlier ideas about tertiary education for nurses, the report does not point to a promising future for nursing. In fact, Sellers asserts, "that without deliberate intention and planning nursing is prone to extinction" (p.17).

Service provider organisations argue from a negative perspective that new graduate nurses cannot 'do' as many things as nurses 'trained' in the traditional manner. This argument is fuelled by the lack of consistency among undergraduate nursing programs with regard to the amount and type of *actual* clinical experience as opposed to nursing skills laboratory experience offered to students, problems with supervision and assessment of students during clinical placements and a general lack of communication between academic and service provider sectors. When this argument is combined with chronic nursing staff shortages, the end result is an unrealistic expectation of what a contemporary nurse can 'do' when they graduate (NRB 1997; Chang & Daly 2001; Heath 2001).

3.5.1 The nursing skills laboratory

With the advent of tertiary education for nurses there was a need to provide a suitable environment for learning clinical nursing skills. In this instance, clinical nursing skills encompass a range of activities from simple to complex. Examples of simple skills are taking and recording the vital signs of temperature, pulse and respiration. Examples of more complex skills are removing chest drains, dressing large open wounds and urethral

catheterisation. The environment for learning these sorts of skills became known as the nursing skills laboratory.

Examining literature concerned with learning 'skills' associated with clinical nursing practice, one finds a consensus of opinion that the use of a nursing skills laboratory is advantageous because it allows the student to practise any number of clinical nursing skills in a risk-free environment with the aim of integrating theory and practice (Gomez & Gomez 1987; Alavi, Loh & Reilly 1991; Mc Adams, Rankin, Love & Patton 1989; Corder 1991; Cooke & Hill 1985; Taylor & Cleaveland 1984; Hanson 1993). Thus, it is argued by these authors, that the nursing skills laboratory constitutes an integral part of the nursing students' practicum. Many innovative strategies such as self-directed audiovisual or computer assisted techniques have been introduced to extend traditional behavioural approaches (Baldwin, Hill & Hanson 1991; Smith 1992; White & Ewan 1991).

Despite this positive opinion, debate over the most appropriate setting for teaching and learning clinical skills is becoming highly contentious (Garbet 1996; Heath 2001). I would argue however that the nursing skills laboratory cannot and should not replace *actual* clinical experience however tempting this may seem from an economic perspective. Support for this argument comes from a variety of sources.

The first source comes from Benner (1984), who warned against the use of teaching isolated skills and procedures in a context free environment. In Benner's (1984) opinion "the ability to judge the relative importance of aspects and attributes (i.e., salience) is overlooked in this process" (p.183). Moreover, placing emphasis on performance of skills at the expense of theory and principles does not provide the new graduate with the sort of background knowledge that is required to ask the right questions, solve problems correctly, anticipate care needs and learn from experience.

The second source is a study concerned with second year nursing students' understandings of aseptic technique (Davey 1994). In this study, the majority of students adopted a surface approach to learning the skill of aseptic technique because of a desire to pass timed, procedural examinations that used a performance checklist as the assessment tool. Students perceived superficial learning was the necessary, if not the

best way, to learn the skill of aseptic technique. The result was an outcome or understanding about the use of aseptic technique that was, from a clinical practice point of view, highly unsatisfactory.

Aseptic technique has been identified as an essential core skill necessary for clinical practice (Mulquiney, Finn, Dean, Janovsky, Denmead & Green 1991; Kieffer 1984), one that new graduates are likely to use often in the first six months of graduation (Somerville, McIllwrath, Johnson, Langdon & Jones 2000). However, when a comparison was made between new graduates' perceptions of their preparedness to undertake a simple dressing using aseptic technique and nurse unit managers' perceptions of new graduates' level of preparedness to undertake a simple dressing using aseptic technique, it was found that nurse unit managers rated new graduates level of preparedness to undertake this skill lower than new graduates themselves (Sommerville et al. 2000).

The findings of the studies by Davey (1994) and Sommerville et al. (2000) are of concern and raise questions about how well theory is integrated into practice in the nursing skills laboratory. It also questions the efficacy of counting programmed nursing skills laboratory hours as compulsory clinical practicum hours.

Another source raising similar questions to those above comes from Bjørk (1995, 1997, 1999). In her writings Bjørk has been arguing strongly that the transfer of nurse education into the tertiary sector has resulted in a steady decline of the graduating nurse's ability to perform practical or clinical nursing skills. She reasons that the technical and practical approach to nurse education has been replaced by a more theoretical and professional approach, which "has resulted in vague and unclear definitions of nursing competency" (Bjørk 1999, p.34).

With regard to teaching and learning practices, Bjørk (1999) argues that the focus on 'self-directed' learning espoused by modern nursing curricula has been wrongly implemented, particularly in the area of practical skill development. In her view "learning as the responsibility of the learner seems to result in the learner having to cope on his or her own" (pp.44-45). Bjørk uses Bandura's (1986) theory of social learning together with a situated learning perspective from Lave and Wenger (1991) to argue that

if students are left on their own in a nursing skills laboratory to work out how to perform practical nursing skills, it means appropriate support and feedback is not given, which is detrimental to skill development.

Bjørk (1999) substantiates her opinions with a longitudinal prospective study, which plotted the developmental performance trajectories of four new graduates undertaking the practical skills of helping a postoperative patient to ambulate over a period of 14 months. Using a combination of videotaping, observation and semi-structured interviews Bjørk used the criteria of substance and sequence, accuracy, fluency, integration and caring component to assess the development of each new graduate's ability to perform this skill. The same anchoring point was assumed for each of the four graduates. For two graduates, there was a decline in performance across all five criteria; it was 14 months before a noticeable improvement was seen. For another, fluency was unchanged; the only criterion to improve was integration; the criteria of substance and sequence, and caring component declined and did not improve; accuracy declined but returned to the anchoring point by the end of the study. For the final graduate all criteria remained stable at the level of the anchoring point with the exception of substance and sequence, which declined and remained so for the duration of the study.

The studies by Davey (1994) and Bjørk (1999) mentioned above, and even Benner (1984) to some extent, suggest that practical skills are not receiving as much attention as is needed in current nursing curricula. They also suggest that nursing skills laboratories do not prepare the new graduate for the contextual realities of nursing work. Moreover, it seems that new graduates are learning how to be a nurse after they graduate. These are serious concerns given the rhetoric about demands and expectations faced by new graduates in the clinical setting and the fact that many specialty area recruitment initiatives focus on attracting new graduates (Heath 2001). Hence, a study concerned with ways that neonatal nurses learn, and their experiences of competence in their practice is timely.

Interestingly, medical education is also experiencing similar problems to nursing education with regard to development of clinical competence. Preceeding discussion in this chapter as well as in Chapter 2 has indicated that the dominance of medicine over nursing has had a negative influence on the development of nursing as a discrete

discipline with its own body of knowledge. While there seems to be a certain amount of truth to this argument, there are some medical influences that are extremely positive, especially from a contemporary teaching and learning point of view. One such example is the SCORPIO system of medical teaching proposed by David Hill (1992).

The SCORPIO teaching system was developed at St Vincent's Hospital, Faculty of Medicine, University of New South Wales, Sydney, Australia, in response to deficiencies in medical education highlighted by the World Federation for Medical Education. The Federation was calling for a reform of medical education to ensure the clinical competency of graduates from medical programs. Of the many deficiencies cited "development of evaluation methods to assess competence rather than recall" (Hill 1992, p.37) was a major priority.

Essentially SCORPIO is an acronym for Structured, Clinical, Objective Referenced, Problem-based, Integrated and Organised. The SCORPIO is structured around a series of short supervised teaching stations that address theoretical and practical issues related to a clinical problem situation. "The principal goal of the system is to teach clinical competence" (Hill 1992, p.38). It is objective referenced because written learning objectives are displayed at each station so that both students and teachers have a clear idea of what needs to be accomplished.

The SCORPIO is founded on a problem-based learning philosophy. The integration of theoretical and practical issues related to a clinical problem situation is seen as a way to equip students with the necessary cognitive, psychomotor and attitudinal skills required of a medical officer. It is integrated because SCORPIO topics cross traditional disciplines and always seek to apply theory to practice. A committed course coordinator achieves organisation. There is continuous assessment throughout the system. Depending on the topic, that assessment may consist of a pre-and-post test MCQ examination or the substitution of teaching stations for Objective Structured Clinical Examination (OSCE) stations.

An example of a SCORPIO in current use by the medical faculty is that of a multi-trauma patient. In this clinical problem situation the patient may present with airway compromise, breathing difficulty, shock and neurological compromise all

simultaneously. By the end of the SCORPIO students will see how abnormal anatomy and physiology presents clinically in a multi-trauma patient. They will also have had the opportunity to practice procedural skills associated with airway maintenance, decompression of the pleural cavity and restoring intravascular fluid volume (Hill 1992; Hill, Stalley, Pennington, Besser & McCarthy 1997).

Evaluation of the SCORPIO system has been very positive. Post-test MCQ examinations have shown a 50% increase in knowledge when compared with baseline knowledge measured by MCQ pre-test (Hill 1992). More recently a neonatology training program for Macedonian doctors and nurses co-ordinated by Royal Prince Alfred Hospital, Sydney rated the use of the SCORPIO system very highly (Jeffery & Polverino 2002). So too, did a group of doctors and nurses in country Australia undertaking a workshop on neonatal abstinence syndrome (Jeffery 2001).

These positive responses to the SCORPIO teaching system do not mean that improvement or adaptation is out of the question. In fact, Hill (1992) indicates that the system could be adapted to suit nursing and other paramedical educational settings. I am of the opinion that the SCORPIO teaching system, with some adaptation, has much to offer contemporary nurse education. This is especially so in relation to the development of clinical nursing skills. I plan to pursue this last point further and provide an example to support my opinion in Chapter 8.

3.5.2 Influence of conception of learning and perception of the teaching/learning context on approach to learning and outcome of learning

Insight into why students in the study by Davey (1994) adopted surface approaches to learning the skill of aseptic technique is provided by research into students' perceptions of their teaching/learning context. This research may also help to explain why new graduates in Bjørk's (1999) study had difficulty with the skill of helping a postoperative patient to ambulate.

Students' perceptions of their teaching/learning context are strongly associated with variation in approaches to learning. These perceptions are related to characteristics the learner brings to a given situation and to their prior experience of previous situations.

Learner-related characteristics are relatively stable characteristics including interest in the task at hand, reason for undertaking tertiary study, age, previous knowledge and educational experience, a particular preference for the way academic tasks are tackled and ideas about 'learning'. The last component concerning ideas about 'learning' is worthy of expansion because these ideas are likely to influence the way students approach their academic work. Those interested in tertiary student learning, reason, that for the most part, ideas about learning are derived from secondary school (Säljö 1979; Watkins 1984; Svensson 1977).

The results of several studies exploring students' ideas about 'learning' have yielded what have been termed conceptions of learning. Early studies identified five qualitatively different categories of conceptions of learning, and further work has identified a sixth. Listed here in order of increasing complexity, they are: a quantitative increase in one's knowledge; memorising and reproducing; applying; understanding; seeing something a different way; and changing as a person (Säljö 1979; Van Rossum & Schenk 1984; Van Rossum, Deijkers & Hamer 1985; Marton, Dall'Alba & Beaty 1993).

Understanding conceptions of learning provides an insight into how students may approach a learning task. In the first two conceptions, a surface approach to learning is likely to be used. The third conception is seen as a transition approach, while the last three conceptions are likely to be associated with progressively deeper approaches to learning. Hence, those students who have a more complex conception of learning are likely to have a deeper approach to learning and a superior quality learning outcome (Van Rossum & Schenk 1984; Marton, Dall'Alba & Beaty 1993; Prosser & Trigwell 1999).

Conceptions of learning and learner related characteristics are thought to inform *students' perceptions of the teaching/learning context.* Perceptions found to be related to approaches to learning include teacher commitment and associated teaching methods, course content, curricular design, workload, assessment practices and educational ethos (Entwistle & Ramsden 1983; Ramsden 1992; Trigwell & Prosser 1991; Watkins & Hattie 1985).

Ramsden (1992, p.81) provides a concise summary of various aspects in the teaching/learning context, as perceived by the learner, which affect the quality of learning by encouraging surface and deep approaches. *Surface approaches* are encouraged by: assessment methods emphasising recall or the application of trivial procedural knowledge; assessment methods that create anxiety; cynical or conflicting messages about rewards; an excessive amount of material in the curriculum; and poor or absent feedback on progress. *Deep approaches* are encouraged by: teaching and assessment methods that foster active and long-term engagement with learning tasks; stimulating and considerate teaching, especially teaching which demonstrates the lecturer's personal commitment to the subject matter and stresses its meaning and relevance to students; clearly stated academic expectations; and opportunities to exercise responsible choice in method and content of study.

So, as far as the study by Davey (1994) is concerned the most plausible explanation for students adopting surface approaches to learning clinical nursing skills are anxiety provoking assessment practices that focus on recall and application of procedural knowledge only. With such a focus, it is unlikely that students will see laboratory sessions as relevant or meaningful.

This finding is similar to Stengelhofen's (1993, cited in Robertson, Rosenthal & Dawson 1997) study concerned with development of professional competence. In this study, Stengelhofen argues that professional competence develops from focusing on the interrelationship between the elements of knowledge, attitudes and skills. She argues that a focus on techniques and procedures associated with the 'skills' element encourages the student to develop a surface level clinical or technical competence. A focus on knowledge and attitudes in-context is necessary for the development of a first deep and second deep level respectively of professional competence.

3.5.2.1 A constitutionalist perspective

Further analysis of the experience of learning (Prosser & Trigwell 1999) using a constitutionalist or relational perspective has found that a student's perception of their situation within a given context is related to approach adopted and quality of learning outcome. According to the constitutionalist model of student learning, the students' prior experiences of learning, perceptions of the learning environment, approaches to

learning and learning outcomes are all simultaneously present in their awareness. "When a student enters a learning context the interaction between the student and this context constitutes a unique learning situation for this student" (Prosser & Trigwell 1999, p. 16). The crux of the issue is that even though students may enter the same context, the situation will be different for each student because "the situation is constituted in the interaction between the student and the learning context" (Prosser & Trigwell 1999, p. 16).

The learning context is thought about as the world external to the student consisting of other students studying the same subject, the teacher and the milieu (Prosser & Trigwell 1999). If the learning context for a new graduate entering the specialty of neonatal nursing is thought about in a similar way, then the external world consists of the following: other neonatal nurses doing the same job; other neonatal nurses doing different jobs (managers, educators, consultants); medical and allied health colleagues; support personnel (ward clerks and assistants); infants and their parents, family and friends; and the general milieu that is light filled, noisy and crowded with masses of technological equipment. So, when a new graduate enters this learning context a unique learning situation or potential for development of competence in neonatal nursing practice is constituted. Thus, in keeping with the constitutionalist model of student learning, each new graduate will have a perception of his or her situation in that context.

In an analysis of the experience of learning (Prosser & Trigwell 1999) it was found that a student's perception of their situation within a given context influenced approach adopted and quality of learning outcome. To use an example from this analysis, assume that the context shows signs that it would afford a deep approach to learning. That is, there are clear learning goals and students are encouraged to take an active role in their learning. If a students enters that context with conceptions of learning that are limited to a quantitative increase in knowledge and memorising (Marton, Dall'Alba & Beaty 1993; Marton & Booth 1997), which generally result in surface approaches to learning, then they may not perceive that the context affords a deep approach to learning. As a consequence they will continue to use surface approaches that ultimately result in lower quality outcomes.

Now assume the reverse is true. That is, the context is likely to afford a surface approach to learning where learning goals are not clear and students are not encouraged to take an active role in their learning. If a student enters this context with conceptions of learning that are more complete and geared toward abstraction of meaning, interpreting and developing as a person (Marton, Dall'Alba & Beaty 1993; Marton & Booth 1997), which generally result in deeper approaches to learning, they may perceive that the context affords a surface approach to learning and adopt that approach. But because of their more complete conceptions of learning, they may instead choose to adopt a deep approach to learning, which is likely to result in a higher outcome (Prosser & Trigwell 1999).

Using a constitutionalist perspective (Prosser & Trigwell 1999) in relation to the present study, it could be argued that variation will exist in the way new graduates entering the specialty of neonatal nursing perceive their learning situation. In other words, the potential for development of more complex and inclusive conceptions of competence in neonatal nursing practice will depend on the new graduate's perception of their situation within the neonatal nursing context. Hence, if the new graduate perceives their situation within the neonatal nursing context to afford surface approaches, then potential for development of higher levels of competence is limited. Conversely, if the new graduate perceives their situation in the neonatal nursing context to afford deep approaches, then potential for development of higher levels of competence is improved. Thus, it can be argued that changes to the neonatal nursing context have the potential to change the new graduate's perception of their situation within that context. These points provide further justification for undertaking the present study.

3.5.3 Professional socialisation and development of competence in clinical nursing practice

"The process of becoming a nurse is a social one" (White & Ewan 1991, p.189) and involves the student learning the shared meanings, symbols and customs that make up the culture of nursing and distinguish it from other professions. White & Ewan (1991) describe the process of professional socialisation as the 'hidden' part of nursing curricula that "is reflected in the unconscious but shared assumptions of its practitioners" (p.190). For students, the process occurs via verbal and non-verbal messages received from other nurses, doctors, patients, teachers and institutional norms.

This social interaction helps the student develop expectations of themselves and others within the clinical setting. In turn, those expectations help students learn how to respond in certain situations (Chang & Daly 2001; Öhlén & Segesten 1998; White & Ewan 1991).

Lincoln, Carmody & Maloney (1997) in their consideration of professional socialisation in speech pathology, argue that it is part of a process concerned with technical competence, professional interpersonal skills, knowledge of professional standards and ethical competence. These authors argue in a similar vein to White & Ewan (1991) that professional socialisation occurs over time and in response to certain situations. They also argue as White & Ewan (1991) does that professional socialisation is not about indoctrination or 'cloning' students in the ways of their teachers. Rather, professional socialisation is about developing individual potential.

Interestingly, in nursing, it is in developing individual potential that many problems arise in the professional socialisation process. Those problems begin when students realise that the messages they are receiving from the clinical setting are different to those espoused by the university curriculum (White & Ewan 1991) and in the majority of cases continues throughout the duration of study and beyond. These conflicting messages have been consistently identified as a major problem source for neophyte nurses (Chang & Daly 2001; Walker 1998; Kapborg & Fischbein 1998; White & Ewan 1991) often leading students to experience what has been termed 'reality shock' (Kramer 1974, White & Ewan 1991).

In a bid to help new graduates make the transition from student to registered nurse and cope with 'reality shock', many health care organisations have introduced a 12-month program that allows the new graduate to rotate through clinical areas of their choice. The value of such programs has been questioned by Bjørk (1997) who argues that the focus of such programs is more about hospital policy, ward routine and paper work, not about helping new graduates learn from their experiences and develop professional competence. A similar argument was presented in reviews of nursing education in Australia (NRB 1997; Heath 2001), which raises questions about why such programs continue.

Introducing a formalised mentoring program is an alternative to these new graduate programs and has been shown to have many professional and personal benefits for both the mentee and the mentor in the higher education sector. For the mentee there is the benefit of access to the mentor's accumulated knowledge and expertise, which can enhance self-esteem and reduce feelings of isolation. For the mentor there is the benefit of extending professional experience and hearing an alternative point of view, which can create a sense of purpose and shared values (McCormack 1996). There are moves by nurses in some quarters to consider mentoring as an option to help students make the transition to registered nurse (Madison, Watson & Knight 1994; Wright 1995; Chenoweth & Lo 2001). However, greater support is needed from nurses in both academic and clinical settings if this move is to have success.

A profession prone to the foibles of horizontal violence compounds the problem of 'reality shock'. Duffy (1995) describes horizontal violence as "intergroup conflict...manifested in overt and covert non-physical hostility such as sabotage, infighting, scapegoating and criticism" (p5). Nurses have described examples such as being humiliated by a colleague in front of a patient, being excluded from certain activities and having proposals ignored (Hockley 2000). This sort of behaviour is attributed to nursing's long history of subordination to medicine within the health care system, which has resulted in nursing forfeiting its own characteristics in favour of medicine. The resulting horizontal violence is a destructive way of venting built up frustrations and tensions arising from an inability to confront the oppressor (Duffy 1995; Hockley 2000).

Alavi & Cattoni (1995) use Canetti's metaphor of 'stings' to describe the process of horizontal violence that seems to be a constant in the way nurses become socialised into nursing. The following excerpt is a part of that description: "...when people are given commands and are subject to embarrassment, punishment or degradation, a 'sting' lodges within them. This sting embeds itself within the person and the only way to be rid of it is to pass it on to someone else" (p.346). A student nurse is likely to receive several stings by the time they become a registered nurse. Because of the hierarchy system within nursing the only way stings can be divested is to a subordinate, which means the most convenient way to rid one's self of stings once registered is to the next intake of student nurses. Hence, the cycle of horizontal violence is perpetuated.

There is however a caution in Duffy's (1995) arguments that nurses must not be seduced by oppression and lapse into self-pitying victimisation. Rather, nurses should increase their level of critical consciousness through emancipatory education. It is suggested that the political and transformative nature of emancipatory education offers an informed way of generating change within the clinical practice of nursing. The essential skill in this educative process is an ability to reflect on and during clinical experiences.

3.6 Summary

This chapter has explored educational and social issues contributing to the development and maintenance of the skills required to practice as a registered nurse within the current healthcare system of Australia. Achievement of tertiary education for nurses represented a milestone in the history of nurse education in this country. However, it seems that milestone is slowly transforming into a millstone because of a contentious debate between academic and service provider organisations concerning the competence of graduates exiting undergraduate programs. At the heart of this debate is the setting in which the learning of clinical nursing skills should take place. Theorists concerned with experiential learning, student learning and development of expertise highlight two essential components necessary for developing and maintaining clinical nursing skills: context and the ability to use reflective techniques. Therefore nurses from academic and clinical areas must collaborate and develop teaching/learning strategies that use the contextual realities of the clinical setting to a greater degree.

Chapter 4

4 The Context of Neonatal Nursing Practice

4.1 Introduction

The previous chapters have indicated that there is a relationship between the work context and competence at work. Therefore, in order to understand the nature of competence in neonatal nursing practice, the context in which the worker engages with the work must be addressed. In describing the context of neonatal nursing practice, the chapter begins with the wider perspective of neonatal services within the state of New South Wales, and then moves to the specific context of JSN.

4.2 Development of Neonatal Intensive Care Services within New South Wales since 1989

It is interesting to note that concern over issues related to women's health and what could be done to improve access to services came onto the NSW Health Department agenda at a time when the profession of nursing, a predominately female occupation, was struggling to achieve access to tertiary education.

4.2.1 Assessing the need for change

During the late 1980s a ministerial taskforce was established to examine and review obstetric services within NSW. The final report of this taskforce entitled *Maternity Services in New South Wales* also known as the Shearman Report was released on 1 February 1989. There is a very powerful statement in the preface of that report. "Of all life choices, none is more important to society, none has more far reaching consequences, none represents a more complete blending of social, biological, and emotional forces than bringing another life into the world" (Shearman 1989). In-keeping with this statement the Shearman Report outlined 105 recommendations together with proposals for the implementation of specific recommendations in the areas of maternity and neonatal service planning. Whilst it is acknowledged that maternity and neonatal services work together to assist another life into the world, the following discussion will focus on neonatal service delivery as this area is of most relevance to the present study.

The Shearman Report (1989) raised several issues in relation to neonatal services in NSW including the need for improved access to neonatal services by western and southwestern populations, a more cohesive and organised approach to perinatal services, and a recommendation that a separate review of neonatal services be undertaken. A working party was established shortly after the Shearman report (1989) had been released to address this recommendation. The terms of reference for the neonatal services working party were as follows: determining the optimal size for a neonatal intensive care unit (NICU); the number, priority and distribution of neonatal intensive care cots within NSW; transport and referral services; workforce planning and training issues; follow-up arrangements for sick newborns; review of level 1 and level 2 services; neonatal services co-ordination; neonatal services in Children's hospitals; research and quality assurance issues; and ethical and legal considerations associated with these services.

The working party's report *Neonatal Services in New South Wales* was released in June 1990. The report detailed 24 recommendations that would result in a more equitable access to neonatal intensive care facilities, consolidate expertise, allow better management of human and economic resources and above all provision of quality care to high-risk mothers, sick neonates and their families.

Since the release of *Neonatal Services in New South Wales* (1990) major changes have taken place to service provision. Most notable have been the provision of additional neonatal intensive care beds and units; establishment of level 2a facilities at selected hospitals; establishment of the NSW Perinatal Services Network (PSN); and consolidation, relocation and enhancement of the NSW Newborn and Paediatric Emergency Transport Service (NETS) (PSN 1998).

4.2.2 Advances in clinical medical practice

The changes to neonatal services have been necessary to meet the demands of advances in clinical medical practice. The PSN (1998) highlighted four major advances that have occurred in clinical practice since 1990. First, is an increase in the use of antenatal steroids. The administration of corticosteroids to women likely to experience a preterm birth (defined as less than 37 weeks gestation) has been shown to reduce the risk of respiratory distress syndrome by 50% and death by 40%. There is also a reduction in co-

morbidities such as intraventricular haemorrhage and necrotising enterocolitis (Crowley 1995, 1996 cited in National Health and Medical Research Council (NHMRC) guidelines 1996).

Second, is the administration of supplemental (exogenous) surfactant to newborns. Surfactant is a naturally occurring lipoprotein found in lung fluid. Preterm infants have a deficiency in surfactant, which causes increased stiffness within the lung making it difficult to inflate and maintain expansion of alveolar air spaces. Administration of exogenous surfactant has been shown to consistently reduce neonatal morbidity by 30-40% and pulmonary air leaks by 33-64% (Soll & McQueen 1992; Jobe 1993 cited in NHMRC guidelines 1996). Further, the administration of exogenous surfactant has increased the probability of survival for infants born less than 28 weeks gestation and weighing less than 1000g.

Third, are changes to assisted reproductive procedures. Assisted reproductive technology significantly increases the risk of preterm birth (Lancaster, Shafir & Huang 1995 cited in NHMRC guidelines 1996). In Australia, during the late 1980s and early 1990s, women on assisted reproduction programs often had three or more embryos implanted during a treatment cycle. Neonatologists were very concerned about this trend because of issues regarding mortality and morbidity and the demand multiple, often extremely premature births, placed on neonatal intensive care services. In line with these concerns the Reproductive Technology Accreditation Committee of the Fertility Society of Australia recommended in 1996 that no more than three embryos be transferred in any one cycle. However, the NHMRC guidelines (1996) recommend that only two embryos are transferred in any one cycle to reduce the incidence of preterm birth and the deleterious consequences associated with the perinatal health of triplets.

Fourth, is the use of high frequency ventilation techniques and nitric oxide therapy for infants who would have been previously treated with extra corporeal membraneous oxygenation (ECMO). ECMO was used to treat infants with reversible life threatening cardiorespiratory failure from the period August 1989 – April 1994. These newer ventilation and inhalation therapy options have replaced the use of ECMO.

4.3 Profile of neonatal intensive care nurses within NSW

The rapid advances in technology and clinical medical practice as mentioned above highlight the fact that NICUs need nurses who are competent in the clinical practice of neonatal nursing. However, according to a *Workforce Planning Study* (1998) the wastage rate within the specialty of neonatal intensive care nursing is 37% with 29.3% of the workforce being under qualified and under skilled. These figures have remained constant in a more recent report (Kent Biggs & Fischer 2000).

Nursing shortages are not restricted to neonatal nursing in NSW they are spread across all areas of nursing both nationally and internationally (Lumby 1999; Stainton 2000; McDonald 2000; Elson-Green 2000). However, neonatal intensive care areas have been identified as suffering from more serious staffing shortages than other intensive care areas (*Labour Force Report* 1998, cited in Lumby 1999).

What is happening to the specialty workforce of neonatal nursing? The Nursing, Workforce Planning, and Human Resources Management Branches of the NSW Department of Health, Association of Neonatal Nurses (ANN) of NSW and neonatal nursing representatives to PSN's have identified four major issues currently affecting the specialty workforce of neonatal nursing: the recruitment of skilled and experienced nurses; high turnover rates and retention of neonatal nurses; availability of accessible and appropriate education programs and opportunities for career development (PSN 1998). These issues are consistent with findings from other sources (Lumby 1999; Caphorn 1999; Borland 2000; Moait 2000) and the worldwide mismatch between health service provider demand and suitably prepared graduate nurse supply (McMillan 2001).

Information from the *Workforce Planning Study* (1998) gives a clearer profile of the neonatal intensive care nursing workforce. The neonatal intensive care workforce accounts for 1.3% of the total registered nurse workforce, which indicates that the specialty is relatively small compared with adult intensive care nursing which was estimated at 4.1% (NSWDH 1992 cited in Reid 1994). Looking at the neonatal intensive care workforce as whole 56.3% possess either a non-award certificate (majority) or an award graduate diploma/masters degree (minority) specialty neonatal qualification. The remaining 43.5% that do not possess a specialty qualification can be divided into two

groups: registered nurses that also possess a midwifery qualification and generalist nurses without further qualifications. The former group of midwives accounts for only 14.2%, which leaves the later group of unqualified generalist nurses accounting for the remaining 29.3%. These figures would suggest that there is indeed a variance among the skill mix of registered nurses working in NICUs. Again, these figures have remained constant in the Kent Biggs & Fischer (2000) report.

4.3.1 The effect of high turnover rates

It is interesting to look at these workforce profile figures in light of staffing turnover rates. The NSW Department of Health Reporting System (DOHRS) showed that the state average turnover rate for all registered nurses in 1996 was 1.6% (PSN 1998). In the specialty of neonatal nursing Spence (1996) reported that the turnover rate increased from 8.5% in 1994 to 21% in 1995. Worse still were the 1997 figures, which showed that the annual turnover rate for the specialty of neonatal nursing was 37% (NSW NRB data), which is amongst the highest of all specialties including adult intensive care. This trend has continued to worsen with Kent Biggs & Fischer (2000) indicating that turnover rates are approaching 40%.

Spence (1996) attributes the high turnover rate in neonatal nursing to the ongoing stress of working in an intensive care environment that is dealing with a unique clientele, the care of which can be emotionally draining. Added to this are shiftwork and the generally poor working conditions often associated with a public sector service (Personal Communication Spence 31August 1999). Kent Biggs & Fischer (2000) concur with Spence and highlight additional stressors such as lack of accessible and cost effective child care facilities and lack of educational support at work.

4.3.2 Recruitment issues

When neonatal nursing became an excepted specialty area in the 1970s, it was an accepted norm that registered nurses working in the specialty of neonatal nursing had also gained qualifications in midwifery as the majority of intensive care nurseries were, and still are, situated within a perinatal centre (PSN 1998). A Tertiary perinatal centre has the facilities to provide "specialised obstetric and neonatal care for women and babies at a high risk of complication" (NHMRC guidelines 1996, p.1). For the sake of definition, the perinatal period extends from 20 weeks of pregnancy and ends 28 days

after birth (NHMRC guidelines 1996, p.201). A high-risk complication covers a range of conditions that increase the likelihood of a preterm birth. Such conditions include hypertension, diabetes, multiple pregnancy or a previous history of a preterm birth (NHMRC guidelines 1996).

It was the general belief of senior neonatal nurse clinicians, educators and managers at that time that a qualification in midwifery grounded the neonatal nurse within the life-world of neonates and their families. In this way, neonates were not seen as separate entities, they had been conceived, nurtured, developed and undergone the experience of being born, none of which could be accomplished without a mother and father. Each parent was part of a family and larger social group that the neonatal nurse also needed to take into consideration. Undertaking the neonatal intensive care certificate provided an opportunity for the registered nurse and midwife to place the neonate together with the problems often experienced adapting to extrauterine life in the foreground. However, given the nature of a neonate's existence, parental and family issues were always in the immediate background.

These beliefs were reflected in the RPAH, Sydney post-registration *Certificate in Neonatal Intensive Care Nursing* that began officially in 1973. Successful applicants were required to have registration within New South Wales, possess a midwifery certificate and have a minimum of 12 months experience in a level 2 (special care/non-ventilated) or level 3 (intensive care/ventilated) neonatal unit (RPAH, Curriculum Document, *Certificate in Neonatal Intensive Care Nursing* 1973-1991).

The transfer of nurse education into the tertiary sector has had a significant influence on the recruitment of registered nurses and midwives into the specialty of neonatal nursing. This transfer has been enlivening for the development of nursing as a discipline but it has removed a traditional recruitment pathway used by neonatal nurseries. To work in the specialty of neonatal nursing "midwifery is a desirable prerequisite" (PSN 1998, p.93). However, the PSN (1998) report that enrolments in midwifery courses are decreasing, largely due to the prohibitive cost of AUS$10,000 to complete a two-year course. In addition the low wages of new graduates and shift work combined with study are significant disincentives to a career in neonatal nursing. These factors have been identified elsewhere as reasons why recruitment and retention of nurses in the

workplace is a growing problem (Lumby 1999; Caphorn 1999; Borland 2000; Moait 2000; Heath 2001).

The traditional recruitment pathway for neonatal nurseries prior to the transfer of nurse education into the tertiary sector was to run certificated neonatal nursing courses to meet service needs (Spence & Bredemeyer 1997). It was argued that these courses "ensured that adequately 'trained' nurses are available to provide a high level of care to the sick and recovering newborn". The tertiary sector although offering postgraduate programs in neonatal nursing does not seem able to attract students (Borland 1999; Teschendorff 2000). Spence & Bredemeyer (1997) argue that university competition for student numbers and courses in the postgraduate marketplace has resulted in a plethora of courses attracting small numbers of students, none of which are sensitive to the needs of the profession or the specialty.

ANN (NSW) Inc. explored the reasons for the tertiary sector's failure to attract students during 1996/97, which formed the basis of a discussion paper (Spence & Bredemeyer 1997). Association members indicated that the postgraduate programs offered in neonatal nursing at that time were often placed within the context of adult critical care or had too many hours devoted to 'soft' esoteric subjects as opposed to 'hard' clinical problems. Therefore, potential students could not see the relevance of enrolling in a program that was not entirely relevant to the specialty of neonatal nursing, particularly when such programs were subject to the Higher Education Contribution Scheme (HECS) along with other extraneous administrative charges.

Thus, for a variety of reasons, a situation has arisen where the tertiary sector does not seem able to supply the 120-240 specialist neonatal nurses estimated by the *Workforce Planning Study* (1998) necessary to cope with the demand of a 37% annual wastage rate. This mismatch between the supply of qualified and experienced registered nurses relative to specialty demands is a cause of concern for the existing neonatal intensive care nursing workforce.

4.3.3 Strategies to cope with supply and demand problems

In an attempt to cope with the demand created by the loss of traditional recruitment avenues and inability of the tertiary sector to provide appropriately qualified neonatal

nursing graduates, ANN (NSW) Inc. and service provider organisations have sought alternative strategies. Those strategies include a clinically based *Graduate Certificate in Neonatal Intensive Care Nursing* co-ordinated by the NSW College of Nursing and new graduate Orientation Program to Specialist Care Area (OPSCA).

In planning and developing the *Graduate Certificate in Neonatal Intensive Care Nursing* representation was sought from the ANN (NSW) Inc. membership and each of the 10 health care organisations responsible for neonatal intensive care services. Spence & Bredemeyer (1997) argued that including representation from all stakeholders, it would be possible to develop a course that was sensitive to the needs of the nursing profession as well as the specialty of neonatal nursing. Spence & Bredemeyer, together with the NSW College of Nursing, put a proposal to the Nursing Branch of the NSW Health Department on 13 March 1997. The proposal was approved one month later and funding was granted for course development and 25 student places.

In accordance with the original proposal each NICU including NETS would be allocated two student places, any places not filled by participating units could then be reallocated to other units, once again ensuring that student and service provider needs were being met. The first course commenced in February 1998 with students reporting that they found the course clinically relevant, that their employers (service providers) were supportive of their study block leave requirements and they were particularly grateful to have the course fully funded. Demand for the course rose sharply in 1999 with the College transferring an additional 5 unfilled places from another funded course to the *Graduate Certificate in Neonatal Intensive Care Nursing* (Personal communication, Brendan O'Connor, Course Co-ordinator February 1999). The success of this strategy has continued.

Although the *Graduate Certificate in Neonatal Intensive Care Nursing* offered by the College offers 25 funded places or 30 as was the case for the 1999 intake, this in no way meets the 37% wastage rate demand. Therefore another recruitment strategy popular at the moment is the OPSCA. The NSW Health Department currently provides funding to health service organisations so new graduates can participate in a specialty area skills program (PSN 1998; Kent Biggs & Fischer 2000).

Decisions by individual health service organisations about which specialties will be allocated funds are usually determined according to the greatest need for nursing staff. For example, RPAH allocated OPSCA funds to renal and neonatal intensive care specialties during 1997/98 because these were the areas of greatest need (Central Sydney Area Health Service Annual Report 1997-8). Once a decision about fund allocation has been made, it is left to the individual specialty unit to determine the educational content of the OPSCA.

Typically, an OPSCA involves targeting new graduates with varying months of post-registration experience. Participants undergo a limited 'skills-training' course over a period of 6 months whilst working full time in the area. The expectation is that participants will elect to stay in the specialty area after completing the program.

To use an example from the specialty of neonatal nursing, RPAH has allocated OPSCA funding to JSN on two separate occasions over the period 1996-1998. On both occasions six new graduates were employed who had post-registration experience ranging from 6 months to 3 years. Participants undergo a 2-week study block prior to becoming part of the specialty workforce.

This block period is highly intensive. Participants receive face-to-face lectures on some basic theoretical principles associated with neonatal adaptation after birth, oxygenation, thermoregulation and nutrition together with parental and family issues. Time is also spent explaining the complicated lexicon of neonatal nursing and midwifery. These lectures account for 30% of allocated time. A much larger proportion of time, some 65%, is allocated to learning technical skills associated with the vast amounts of monitoring and life support equipment found in the NICU. The remaining proportion of time is self-directed to enable participants to prepare for a short presentation of their choice. The greater proportion of time allocated to technology-based skills indicates the importance placed on performance of isolated tasks. This 2-week block is supplemented by a formal study day each month for 6 months during which other theoretical and practical content are introduced (OPSCA neonatal nursing course outline RPAH 1997).

In the first few weeks, OPSCA participants are 'buddied' with an educator, clinical nurse specialist or senior registered nurse. Staffing shortages among the senior nursing

staff ranks made the task of allocating six new staff members to appropriate 'buddies' an onerous task. As a result OPSCA participants often found themselves trying to cope with situations beyond their depth of expertise, which was highly unsatisfactory for all concerned. It also questions the effectiveness of such programs in encouraging development of competence in neonatal nursing. The PSN (1998) while acknowledging that specialty skills programs have been introduced into the majority of NICUs with the exception of NETS as a matter of necessity, there is concern about the consistency of such programs and ultimately whether or not a satisfactory level of clinical competency is achieved.

Because the emphasis of the OPSCAs offered in JSN was on the face-to-face lectures and practical skills-based sessions, transmission of knowledge was favoured over facilitating learning. Thus, valued educational tenets such as reflection, critical thinking, analytical problem solving, creative thinking and most importantly the encouragement of life-long learning were not really addressed to any extent.

These sorts of courses run counter to an extensive multidisciplinary body of research concerned with how students approach their learning, the learning outcomes they achieve and the relationships between students' learning and the teaching they experience. Evidence from these studies indicates that there is a relationship between individual students and how they perceive their learning situation. Teaching directed toward transmission of knowledge encourages students to adopt surface approaches to learning. Students who adopt surface approaches to learning are less likely to achieve desirable learning outcomes compared with those who adopt a deeper approach (Ramsden 1992; Marton, Hounsell & Entwistle 1997; Prosser & Trigwell 1999).

Neonatal nursing needs nurses who have been encouraged to approach learning about the specialty in a deeper sense. Reductionist teaching strategies, which encourage surface approaches to learning, do not prepare a new graduate for the rigors of working in a neonatal intensive care unit. If these short recruitment oriented courses are to continue, which seems likely given the current shortage of neonatal nurses, then the focus of such courses needs to change. That is, less of a focus on information transmission and more of a focus on facilitating learning so that the potential for high quality learning experiences is realised (McKenzie 1999). Refocusing teaching and

learning activities toward understanding more complex and inclusive conceptions of competence in neonatal nursing practice has the potential to improve the quality of nursing care provided to infants and their families.

In formal evaluations carried out following the two John Spence Nursery OPSCAs, all participants indicated that they enjoyed the program but were not prepared for the level of expertise required to work in the specialty of neonatal nursing. All participants indicated that the initial block period contained too much information and that more discussions rather than lectures would have been an improvement. All participants commented that they had found themselves in difficult situations, which they had not managed well and been 'in trouble' over. A majority of 60% indicated that their pre-registration degree had not addressed maternal and newborn care in any depth, which made transition into the specialty area difficult. Comments such as these probably account for the fact that 75% of OPSCA participants in both groups enrolled in postgraduate midwifery programs and left the nursery after 12 months to undertake the clinical year of that program (Davey & Bredemeyer 1997, 1999). Findings of these evaluations are consistent with the PSN (1998) review, which notes that new graduates form a highly mobile group across all NICUs, frequently moving on to acquire new qualifications.

Thus, at best, the neonatal nursing OPSCAs that were offered in John Spence Nursery afforded a short-term service provider solution to a now chronic long-term specialty nursing staff shortage. A solution which contributed to a further dilution of the skills mix of registered nurses working within the nursery and placed considerable pressures on existing staff to give the considerable support and encouragement that new staff need and should receive.

4.4 A closer look at the context of neonatal nursing

Looking at the development of neonatal services within NSW alongside the profile of neonatal nurses has shown that the general context of neonatal nursing is changing at a rapid pace due to advances in technology and clinical medical practice. It has also highlighted the pragmatic need for informed and effective educational programs in the area of neonatal nursing. The purpose of the following discussion is to take a closer look

at the specific technical, political and social context of neonatal nursing within the John Spence Nurseries. All neonatal nurses in this study worked within these nurseries; hence, conceptions of competence in their work will be influenced by these contextual factors.

4.4.1 Technical Factors

The technical aspect of context is important to consider in relation to the present study because the ability to use machinery and equipment has been linked to assumptions about being and becoming competent in nursing practice (Ray 1987; ANF 1997; ANCI 2000). Because of these assumptions, technology and its impact on contemporary nursing practice has been an area of much discussion and debate (Henderson 1980; Ray 1987; Cooper 1993; Walters 1995; Sandelowski 1997, 1999; Barnard & Gerber 1999; Fairman & D'Antonio 1999; Barnard 2000).

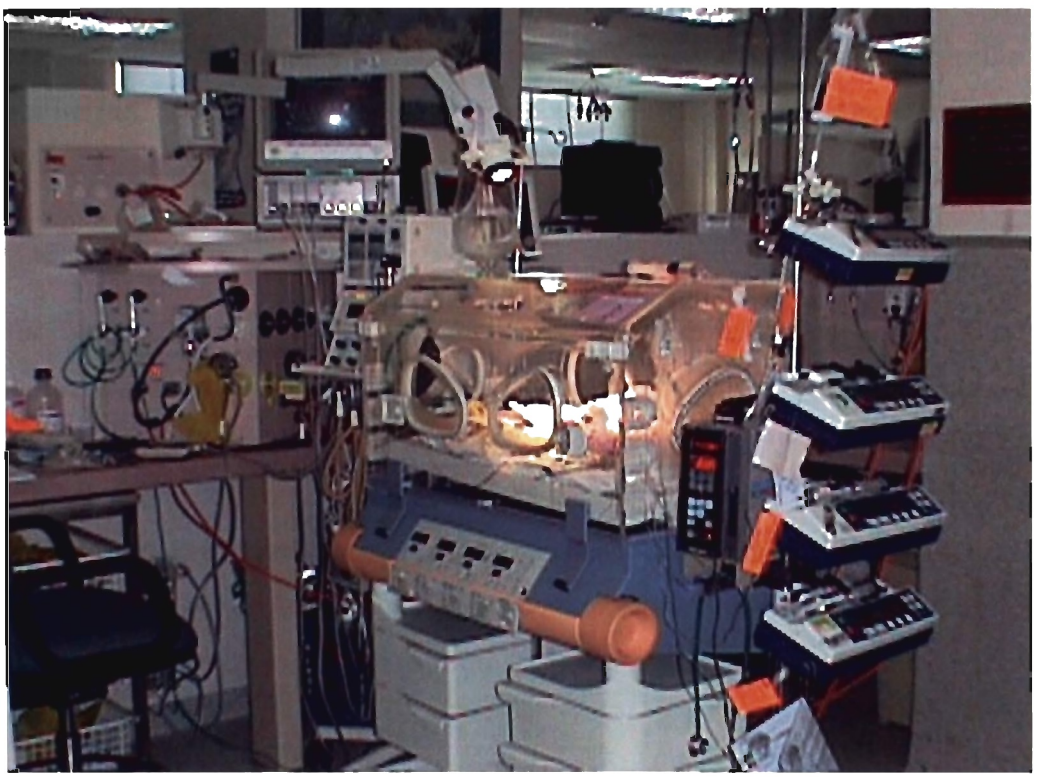
Sandelowski (1997) divides the impact of technology into two perspectives: technical optimism and technical romanticism. Nurses in favour of technical optimism embrace technology and see it as a way of reducing menial work. Mastering and assimilating a variety of science-based technologies into clinical practice is seen as a way to expand nursing knowledge as well as move closer socially and professionally to doctors. Conversely, nurses supporting technical romanticism see technology as antithetical to the 'hands on' caring culture of nursing. With its alignment to science, technology is seen as an expression of masculine culture that reinforces existing gender and social inequalities within nursing. Barnard (2000) acknowledges the existence of these two perspectives but takes the view that "in reality both perspectives contain elements of truth" (p.167). From this more moderate perspective Barnard (2000) argues that the most important issue for nurses and nursing to consider as far as technology is concerned, is "its potential, rationale and suitability for the person for whom we are caring" (p.167).

So, what is the impact of technology on the context of neonatal nursing practice? When the sights, sounds and smells of an NICU confront parents and families of sick newborns for the first time they have described feelings of being shocked and overwhelmed by the vast array technical equipment (Davey 1991; Kenner 1995; Sim 2000). New graduates entering the specialty of neonatal nursing via an OPCSA program

have described similar feelings. Feelings that are compounded by the focus on performance of technology based tasks and other neonatal nurses telling them how important technological knowledge is to their practice (Davey & Bredemeyer 1997, 1999).

The photographs displayed on the following page, taken with parental and nursery management permission provide some insight into the size and scope of technological devices that are a part of the JSN, NICU environment. In the first photograph (Fig. 1) an infant is lying inside an incubator, the largest item of equipment. A mass of smaller equipment items and copious amounts of tubing surround the incubator to support the infant's bodily functions.

Figure 1: **Supporting life in the NICU**



This image is repeated throughout the environment as shown in the photograph on the following page.

Figure 2: **John Spence Nursery Neonatal Intensive Care Unit**

These photographs can only show how the visual aspects of technology in the NICU might impact. When this visual impact is combined with other sensory information such as sound and smell it is possible to understand why the uninitiated might have feelings of being overwhelmed.

In the NICU, technology creates a barrier between the infant and their family that is both physical and psychological. Parents and family have restricted access to their infant because of the physical presence of machines and equipment as the photographs show. Loss of the hoped for well and healthy infant, fears that their infant may die, and an unwillingness to touch their infant in case they disturb the machinery or equipment that is supporting their infant's life, contribute to a psychological barrier that is difficult for parents and family to overcome (Sim 2000; Barnett 2000).

Neonatal nurses must some how help parents and family balance the physical and psychological aspects of a barrier created by an environment filled with technology. In a study by Walters (1995) it was found that critical care nurses working in adult intensive care balance the objective and subjective dimensions of their role in three ways: organising the bed area so that the patient is more visible, conceptualising technology as a necessary part of caring and preserving dignity by acting as a patient advocate in

decision-making processes. It is not known whether neonatal nurses balance their role in a similar way.

As with other facets of health care there has been a steady stream of increasingly complex technical devices entering intensive care nurseries over the last two decades. Each of these complex devices has a simple aim, to assist with the life saving treatment of sicker or smaller and more fragile infants (Henderson-Smart 1990). Admirable though this aim may be, it does not guarantee devices entering today's NICUs permanent residence. For example, in John Spence Nursery decisions about which devices will stay and which will be rejected are based on the following: potential benefit for infant; proven track record of success in other NICUs; data from clinical trials; product manufacturing specifications; ease of use; durability; and cost, both initial and from ongoing consumables.

Once a decision is made to instate a particular device, multidisciplinary policy and procedural guidelines are developed to govern its safe and effective use in clinical practice (see http://www.cs.nsw.gov.au/rpa/neonatal/). Onus is then on nursing and medical staff to learn about use and maintenance of this latest life saving device. In general it is the nursing staff who take a greater interest in using and maintaining technical devices, which suggests that neonatal nurses may be prone to Sandelowski's (1997) idea of a technical optimist.

Thus, the impact of technology on neonatal nursing practice within JSN is substantial. It begins with entry into the NICU and is sustained by a variety of educational, clinical and operational conditions. In fact, it is as Barnard (2000) argues, a phenomenon consisting of complex interrelationships between machinery and equipment, knowledge and skills required to use and maintain the machinery and equipment, and political bureaucracy within the organisation. With such a significant impact on neonatal nursing practice, it is anticipated that the phenomenon of technology will certainly influence the way in which neonatal nurses conceive of competence in their practice.

4.4.2 Political factors

Regardless of the setting all nurses work within an organisation. The goal of these organisations is to provide a range of health care services to the community. In order to

meet that goal organisations require people with specialist knowledge and skills (Crookes & Knight 2000). They also require money and equipment. The management of these three resources: people, money and equipment, creates an environment that turns health care organisations into political power-houses that have a tendency to marginalise their largest group of workers: nurses (Wicks 1999, cited in Lumby 2000). This type of culture can lead to role confusion, loss of control, lack of motivation and reduced job satisfaction (Lumby 2000; Clare, Jackson & Walker 2000). These factors impinge on the context of neonatal nursing practice, hence, they contribute to neonatal nurses' conceptions of competence in their work. Thus, it is important to look at the organisational culture surrounding JSN.

4.4.2.1 Organisational bureaucracy

Max Webber is credited with influencing the shape and function of organisations in the twentieth century through his notion of the 'bureaucratic organisation'. In a traditional bureaucratic organisation there is a hierarchy of authority with dependence on rules and regulations. Employees carrying out similar work are grouped together and are at the bottom of the hierarchy. Creativity and participation in decision-making activities are not encouraged at this level. Co-ordination of the work in each group is overseen and monitored by a person in authority, a middle manager. It is the middle manager that reports to the head of the organisation (Crookes & Knight 2000; Courtney, Yacopetti & Rickard 2000).

When the overall goal of an organisation is to provide a range of patient care services, co-ordination and integration of workers to achieve this goal is often problematic. This is largely due to the fact that each group of workers within a health service organisation interpret patient care according to their own knowledge and value system, which creates competition for legitimate authority and allocation of resources (Courtney, Yacopetti & Rickard 2000). Despite opinion that traditional bureaucratic organisations have reached their 'use by date' in current workplace environments (Handy 1991; Burns 1995), health service organisations have maintained traditional hierarchical ideals (Crookes & Knight 2000).

These traditional ideals are reflected in the 'divisionalised' matrix design of many large health service organisations. The vertical and horizontal integration of this design

allows certain sections to achieve semi-autonomous control on a horizontal interdepartmental level. On a vertical level however, hierarchical structures within the matrix retain most of the control, which makes it difficult for these sections to be innovative (Courtney, Yacopetti & Rickard 2000) or foster an environment conducive to learning (Burns 1995).

4.4.2.2 Placing JSN within the organisation of CSAHS

JSN is a part of the Department of Neonatal Medicine, RPAH. The Department of Neonatal Medicine is one of nine departments within the clinical division of Women's and Children's Health. A medical officer heads the clinical division and each of the nine departments (CSAHS Annual Report 1998). Nursing authority parallels medical authority within the clinical division. On paper this parallel authority may seem egalitarian but in reality many final decisions rest with the divisional head, particularly those to do with money and equipment. This has the tendency to marginalise nursing authority and perpetuate the power of doctors over nurses, which is consistent with the findings of a current study examining health care workplaces (Wick 1999, cited in Lumby 2000).

As a specialised unit within the Department of Neonatal Medicine, JSN acts fairly autonomously on a horizontal interdepartmental level within the division of Women's and Children's Health. A unit philosophy and objectives have been developed by nursing and medical staff, which reflects the Department's commitment to clinical care, research and education (JSN Orientation Program revised June 2000). Nursing and Medical authority work together in attempts to counter the top down coercive power of traditional organisational culture. Multidisplinary patient rounds provide an opportunity for mutual decision-making and problem solving in all aspects of clinical care. The Department's established research culture fosters medical, nursing and collaborative projects. The education of students in all disciplines, nurses, rotating residents, registrars and fellows is a joint nursing and medical responsibility.

4.4.2.3 Redeployment

Problems arise when planned Nursery activities collide with an unyielding higher authority. For example, a planned Nursery activity may be a workshop or seminar designed to foster knowledge and understanding of neonatal nursing practice. These

activities are often planned when bed occupancy is low. However, senior nursing management often redeploy staff during these times. In large health service organisations senior nursing management are responsible for ensuring that there are sufficient nurses to provide patient care across all divisions (Courtney, Yacopetti & Rickard 2000). Thus, senior nursing management reserves the right to redeploy nurses to areas of greatest need. This idea works well in theory but creates difficulties in practice.

Issues related to nursing staff shortages aside, the highly specialised nature of current health care combined with increased patient acuity makes it difficult for nurses to move from one area to another. Benner (1984) has described this situation as a nurse moving from being an expert in one field to a novice in another. It is also a situation that creates a series of losses. Loss of continuity and expertise in patient care, loss of control, autonomy and higher level needs for the nurse being redeployed.

Hathaway & Longobucco (1996) and Bradley (1998) understand senior nursing management's need for a flexible nursing workforce especially in these times of chronic staffing shortages. However, they argue that the practice of redeploying nurses to unfamiliar areas without appropriate 'cross-training' and 'buddy' support is not advantageous to patient care because the nurse is taken out of their comfort zone. These authors go on to argue that redeployment of nurses can be a positive experience for patients and nurses if senior nursing management support the development of structured educational programs. Examples of successful programs in women's health and paediatrics are presented to support their argument.

RPAH does not have a formal cross-training program in any division. Krejci & Malin (1997) assert that the increasing pressure to cut costs within health service provider organisations has resulted in a loss of education and staff development programs. This is certainly the case at RPAH, where the economic climate has resulted in a loss of designated clinically-based CNE / NE positions over the last decade.

A clinically-based CNE / NE position is supernumerary. In other words, individuals in these positions are not 'counted' in the day-to-day staffing requirements for direct patient care. Rather, the role of the CNE / NE is to provide educational support to those

responsible for delivering direct patient care. This may involve the CNE / NE working on a one-to-one basis with a direct care giver or planning educational sessions about aspects of clinical care for groups of direct care givers.

Within RPAH, intensive care units were the only ward areas to retain designated clinically based CNE / NE positions. The number of beds in these areas account for less than 20% of the total number of beds allocated to patient care (CSAHS 1997). This means the vast majority of ward areas are without a designated CNE / NE position. These changes to provision of clinically based education have had two major effects. First, inservice programs for staff development are fragmented and sporadic and depend on whether or not the ward area is busy. Second, when a neonatal nurse from JSN is redeployed to a ward area other than another intensive care unit, they are moving into unfamiliar territory without any educational support. Hathaway & Longobucco (1996) and Bradley (1998) argue that this type of situation is not advantageous to patient care.

The NSW Department of Health (Knowles 2000) and the latest review of nurse education (Heath 2001) suggest that the loss of these clinically based CNE / NE positions have had a negative impact on the professional development and socialisation of new graduates. This issue is discussed further in **4.4.3**. Each of these reports recommends the reinstatement of designated CNE / NE positions in all ward areas. If this recommendation were to be adopted by RPAH, a formal cross-training program could be instigated. Such a program would provide structured opportunities for nurses to gain knowledge and experience in a variety of clinical practice settings. The results of this study could be incorporated into such a program so that a more informed and effective way of developing complex and inclusive conceptions of competence in neonatal nursing practice is adopted.

4.4.2.4 Substitution

Substitution is actually more of a concern than redeployment because it is driven by economics. The process involves substituting less qualified for more qualified staff as a means of cost-containment. Gibbs, McCaughn & Griffiths (1991) describe the process as a 'thorny issue' because it represents a battle line between nurses and organisational authority. The former arguing that all aspects of nursing care should be provided by qualified professionals, the latter that qualified professionals are expensive and not cost

effective. These authors report that studies in the United Kingdom (UK) have shown a three-fold increase in the number of unqualified staff working in a variety of hospital settings. The net savings however, are reported as less than 5% of the total pay-bill because of narrow pay differentials.

In a large study undertaken by Redshaw & Harris (1994) 56 neonatal units in the UK were surveyed. Results of this survey found that 17% of the staff working as nurses were unqualified to do so. A further 24% had minimum qualifications of either a nursery nurse (15%) or enrolled nurse (9%). The remaining 59% were registered nurses or midwives with varying postgraduate non-award and award qualifications. These findings by Redshaw & Harris (1994) support those studies reported by Gibbs, McCaughn & Griffiths (1991) and explains why both groups of authors are concerned about skill-mix and standards of care provided by nurses working within health care organisations.

Unlike neonatal units surveyed by Redshaw & Harris (1994) in the UK, there are no unqualified staff working as nurses in JSN. However, there has been a change in skill-mix as a result of substitution in recent times. Gibbs, McCaughn & Griffiths (1991) make a useful distinction between 'grade-mix' and 'skill-mix', which I have reinterpreted to reflect the nomenclature used in Australian nursing. Grade-mix refers to the number of each of the following classifications: nurse unit manager (NUM), clinical nurse consultant (CNC), nurse educators (NE), clinical nurse educator (CNE), clinical nurse specialist (CNS), registered nurse (RN), enrolled nurse (EN) or assistants in nursing (AIN) required for a given area of clinical practice. Skill-mix is concerned with the type of qualifications, skills and experience of staff within those grades.

In JSN the grade mix is as follows NUM (2),CNC (1), NE (1), CNE (1), CNS (17), RN (61) and EN (5) listed as regular staff (JSN Review 1998). In addition to these regular staff, casual pool or agency RNs and ENs fill shortages on a shift-by-shift basis. Early in 2000 the CNE position was taken away without notice and an EN position was substituted for a RN position. Budgetary constraints within RPAH were the reason given by senior nursing management for this action. Effecting a reversal of this action has been an on-going issue for JSN nursing management.

Neonatal nursing is classified as a specialty area of clinical nursing practice. The PSN (1998) recommend that infants requiring assisted ventilation or total life support have a nurse to infant ratio of 1:1. Infants requiring specialist treatment have a nurse to infant ratio of 1:4. These high nurse infant ratios make neonatal intensive care areas a costly item on the wages budget.

The economic ethic of quality improvement, efficiency and cost containment is placing enormous pressures on the provision of nursing care. Changes to Government funding of health care over the last decade have resulted in tighter fiscal controls within health service provider institutions and increasing pressure to do more with less. Nurses constitute the largest number of personnel within a health service provider institution. As such, the budget required to employ them is under constant surveillance by institutional accountants. As Borbasi (1999) contends, institutional accountants have no real understanding of nurses or nursing, they see numbers on a balance sheet and a cost, in the form of wages that requires justification. Because there is a lack of clarification about what it is that nurses do especially those engaged in specialty bedside nursing practice, "...nursing costs are most inviting for the budget razor"(p.21).

A paucity of research justifying what it is that neonatal nurses do and why their contribution to the care of infants and their families is so important, is making it increasing difficult to justify the high nurse infant ratios mentioned above. It is also making it difficult to argue that these areas should be staffed with registered nurses only, despite evidence to suggest that adverse outcomes are reduced when registered nurse populations are high (87.5%) (Blegen, Goode & Reed 1998). Creating an awareness of what neonatal nurses do, in terms of being competent in their practice may assist institutional accountants understand why the maintenance of these nurse infant ratios are so important.

As far as enrolled nurses working in neonatal intensive care areas are concerned, two issues must be considered: erosion of the registered nurses' role and economics. Substituting enrolled nurses for registered nurses may be an attractive option for service provider accountants, especially in these times of economic restraint. It may also seem like a viable option for the specialty of neonatal nursing to consider (Kent Biggs & Fischer 2000). However, it must be emphasised that an enrolled nurse practices under

the supervision of a registered nurse (ANCI 1993). Undertaking activities for which they have not been educationally prepared is in direct contravention of state registering authority regulations (Jenkins 1989). The implications of implementing this purely economic strategy into a complex specialty area such as neonatal nursing could be catastrophic for a workforce already experiencing a significant skill-mix dilution. It could also threaten the viability of nursing's professional autonomy and remuneration (Cameron 1989; Jenkins 1989), not to mention the quality of nursing care (Hogston 1995) or degree of adverse outcomes (Blegen, Goode & Reed 1998).

4.4.2.5 Patients as commodities

Technological advances particularly in the area of computer assisted data management software have resulted in the increasing quantification of health care (Porter-O-Grady 1996). When individual aspects of nursing practice are separated from the context in which the nurse carries out these aspects, emphasis is placed on those aspects, which can be observed, such as giving an injection, dressing a wound or taking a temperature. These aspects or tasks can be specified as part of a service required for a certain group of patients and quantified according to cost of equipment used and average time taken to complete the task. The purpose being to measure the outcome of those specifications against the cost required to deliver the service.

The patient is now thought about as a consumer purchasing a health care commodity in a global supermarket (Parker 1999). Each commodity in this global supermarket is "...bar-coded, priced and quality controlled so as to ensure the most economical, high-quality care which results in an expected outcome" (Parker 1999, p.19). In this climate of accountability there is a very real concern that the contribution nurses make, as persons in the business of caring for other persons will be invalidated. The reason is that the current batch of data management software is unable to quantify feelings, needs, wants and unpredictable outcomes (Lawler 1999), which are a part of everyday clinical practice. Hence there is a very real and urgent need to describe nursing practice in a way that validates these person-to-person interactions.

The present study is exploring neonatal nurses' experiences of competence in their practice. As such it is assumed that these experiences will convey certain meanings about relationships between the infant, the family, the nurse and the NICU. Therefore

the results of this study may help to validate or contribute to a greater understanding of these person-to-person interactions.

4.4.2.6 Evidenced-based practice

Further pressure in this market driven economy is coming from the evidence-based practice ethic. The medical speciality of neonatology has embraced evidence-based practice and is keen for neonatal nurses to do the same. Evidence-based practice guidelines have been developed for complex treatment regimens using the best available clinically relevant research (Hutchinson 1998), easily accessible via electronic communication technologies (see for example the JSN protocols listed at http://www.cs.nsw.gov.au/rpa/neonatal/).

Neonatal nurses need to know more about evidence-based practice and how to evaluate their practices within such a framework (Roberts 1998). However, they also need to exercise caution because the 'best' research in an evidence-based framework according to the NHMRC is a double blind randomised-controlled trial or meta-analysis. The empiric and positivistic knowledge generated from such research is usually constructed in a way that negates or invalidates personal concerns, that are at the heart of nursing practice (Walker 2000) and "...only represents a partial picture of effective patient care" (Kitson 1997 cited in Walker 2000, p.20).

Neonatal nurses need to voice their opinions about the various contributions that they make to the quality of care provided to infants and their families. They also need to be proactive in working with their medical colleagues to ensure that evidence-based practice guidelines take into account scientific as well as qualitative data in a more balanced way. The present study may contribute to debate and discussion on these points.

4.4.2.7 Learning in an organisational environment

When the issues mentioned above are a part of organisational workplace culture it is difficult to create and maintain an environment that is conducive to learning. Burns (1995) compares Maslow's hierarchy of biological and social needs to bureaucratic authoritarian organisations. A familiar sight in educational psychology writings (Tennant 1997), the *physiological needs* of food, air, water and shelter fundamental in

maintaining human life are at the bottom of the hierarchy. Organisations meet these needs by factoring meal breaks into daily work activities.

Safety needs are the next level up in the hierarchy. Organisations provide these needs by including savings, health, superannuation and insurance plans into wage and salary agreements.

Social needs involving the desire to belong and gain acceptance are on the third level. Some organisations schedule sporting or social events either in work time or after hours to foster these needs. Others try to organise the work context into teams to enhance personal contact and acceptance.

Knowledge and understanding is on the fourth level and involves our life long need to search for meaning and personal identity. From an organisational perspective it involves extending knowledge and understanding of employees at all levels of the organisation.

Esteem needs related to self-confidence, competence and respect are on the fifth level. Many organisations try to foster these needs by offering awards such as 'employee of the month'. Such awards can be viewed with cynicism if the manager presenting the award does not know the recipient's name without prompting and has no knowledge of that worker as a person.

Self-realisation needs are at the top of the hierarchy and involve individuals fulfilling their own potentialities. The ability of an organisation to meet these needs is doubtful. In fact Burns (1995) argues that the majority of bureaucratic organisations are located on the border between safety and social needs, which is disturbing given that competence is seen as a higher level esteem need.

As far as JSN is concerned involvement of nursing, medical and allied health personnel in clinical decisions about patient care, research activities and educational development are attempts to meet higher level needs. The problem is that higher bureaucratic nursing authority often thwarts these attempts by redeploying staff. When these issues are combined with the economic ethic associated with substitution, commodification of health care and evidence-based practice there is an even greater potential for the needs

of workers to be thwarted. Burns (1995) argues that organisational bureaucracy does not acknowledge the value of self-actualised employees, which is why the attempts of those that try to achieve needs above the border between safety and social needs are often thwarted.

4.4.3 Social Factors

The horizontally violent ways in which nurses are socialised into nursing have been discussed previously in chapter 3. In relation to neonatal intensive care areas Kent Biggs & Fischer (2000) report that horizontal violence is very much a part of NICUs in NSW. Frustration due to the lack of support from senior hospital management, chronic lack of skilled staff working in NICUs, disillusionment with nursing and low moral is given as reasons for the prevalence of horizontally violent activities.

Information from formal evaluations of OPSCA programs (Davey & Bredemeyer 1997, 1999) indicates that members of the JSN nursing staff are horizontally violent toward these new and relatively unskilled members of staff. Comments such as "some nurses are more helpful than others when you ask them things", "some people treat you like you are stupid and you don't want to ask them for help" and "you soon get told if you've done something wrong" featured in these evaluations. When comments such as these appear in formal evaluations it suggests that the current context of the NICU does not provide the support necessary for new graduates to develop more complex and inclusive conceptions of competence in neonatal nursing practice.

4.5 Summary

This chapter has outlined the general context of neonatal nursing within NSW as well as the specific technical, political and social factors contributing to the context of neonatal nursing within JSN. The issues discussed in this chapter indicate that the specialty of neonatal nursing is struggling to meet the continued demand for clinically competent workforce. This suggests that a study concerned with the way in which competence in neonatal nursing practice is conceived of and developed would be of value to the profession.

Chapter 5

5 Method: theoretical tenets of phenomenography

5.1 Introduction

The decision to use phenomenography in the design of this study was not a neutral one. Phenomenography was chosen because of its association with student learning and educational development. A major focus of this type of research is on variation in the way specific course content is understood or experienced by a group of students The outcome of the research is a 'map' of the variation in understanding, the full range of which constitutes the meaning of a phenomenon. More recently, the focus of 'new phenomenography' has shifted to the experience of variation. The results of recent studies highlight two important factors. First, some aspects are more critical than others in determining whether or not specific course content is understood or experienced in a particular way. Second, students' understandings of specific course content are limited if critical aspects of that content have not been experienced. This chapter plans to address the theoretical tenets of phenomenography that have allowed me to frame the design of the present study and subsequent development of educational support for new graduates entering the specialty of neonatal nursing.

5.2 Situating phenomenography within the qualitative paradigm

The choice within the qualitative research paradigm is vast and includes the philosophies and methods of phenomenology, ethnography, grounded theory, life history, hermeneutics, critical theory, case study, feminist theory and action research (Morse 1994; Peshkin 1993; Van Manen 1990). Each of these methods seeks to describe, understand and explain certain aspects of the way humans interact with the world. This being said, it is worthwhile reiterating that the *first* objective of this study is to describe variation that exists in the way neonatal nurses conceive of competence in their practice and the strategies used to develop that competence. As it is the variation in understanding of competence in the workplace that is being explored here, phenomenography (Marton 1981) is the only appropriate choice.

5.3 Understanding Phenomenography

5.3.1 The early years

The phenomenographic approach was born out of a series of studies carried out by educational researchers at the University of Göteborg, Sweden during the 1970's that were a reaction against the dominant positivist quantitative educational research methods. Marton & Säljö (1976a) were interested in how university students processed the *same* information related to reading specific passages of academic text and whether the students understood the text as the original author had intended. They found a variation or qualitative difference amongst the students in their ability to grasp the intended meaning of the assigned text depending on whether they adopted a superficial surface approach or a more meaningful deep approach.

Using the principles of gestalt learning theory, Svensson (1977) expanded Marton & Säljö's (1976a) ideas about surface and deep approaches toward learning by focusing on the structural aspect of learning rather than the meaning aspect of learning. In Svensson's (1977) interpretation a surface approach meant that learning was structured in a linear, sequential fashion without a figure-ground relationship. That is, the learner focused on each aspect of the learning experience in isolation, without seeing the relationship between them. This unsophisticated way of structuring was termed *atomistic*. Conversely, a deep approach toward learning had a structure that was hierarchical, with preservation of the figure-ground relationship. Here, the learner was able to understand certain principles holding separate facts or aspects of the learning experience together, hence the term *holistic*. Interestingly, this study also found that the approach students used varied according to the student's perception of what the learning task involved, an issue, which became central to the phenomenographic approach.

The results of these and other early studies see for example Marton & Säljö (1976b), Marton & Svensson (1979) and Fransson (1977), paved the way for Marton to put forward his arguments concerning a new approach to educational research, which he termed phenomenography (Marton 1981).

5.3.2 The nature of phenomenography

In a seminal paper, Marton (1981) proposed that the aim of phenomenographic research was to describe, analyse and understand how people experience certain aspects of reality (phenomena).In other words,

> ...the object of phenomenographic research is the way (or different ways) in which we experience – or are aware of – the world around us. At the same time phenomenography does not aim at capturing the full richness of experience. Quite the contrary: phenomenography aims at a very specific level of description, corresponding to a level of experience believed to be critical as far as our capabilities for experiencing certain phenomena in certain ways are concerned. This level has to do with different phenomena are seen as, what they appear to be, what they appear to be, what their potentially different meanings are, how they are delimited from – and related to – their context, as well as other phenomena, how their parts are delimited and related to each other as well as to the whole; what is figural and what is ground, what is focused and what is not; from what point of view the phenomenon is seen, and so on. Although experience is dynamic, steadily in flux, this level refers to the anatomy of experience, the anatomy of awareness, through the two dialectically intertwined aspects: the structural and referential Marton (1994, p.7).

Given this stance, are there specific ontological arguments governing the phenomenographic approach? Svensson (1997) argues that phenomenography "...does not have an articulated metaphysical foundation..." (p.165) because it is an empirical research method not a system based on philosophical assumptions. However, Svensson (1997) does go on to argue that it is important to make assumptions about the nature of phenomena under study. These assumptions are made from considering the immediate nature of phenomena rather than that, which is unknown. Moreover, understanding about the nature of phenomena varies between researchers, which, in time, affect earlier assumptions.

5.3.2.1 Intentionality and the centrality of conceptions

As far as phenomenography is concerned, access to the immediate nature of a phenomenon occurs via individual conceptions of that phenomenon. Thus, it is important to appreciate assumptions that phenomenography makes about the nature of a conception.

Svensson (1997) explains that the nature of a conception is concerned with assumptions about the nature of knowledge. Knowledge is seen to be derived from and created through human thinking and activity. That thinking and activity has an intentional nature, that is, it is always directed toward something in the world external to the thinking and acting individual.

Intentionality is a term that phenomenography has borrowed from descriptive or pure phenomenology. Husserl, honoured as the founding father of descriptive or pure phenomenology (Van Mannen 1990; Ray 1994; Wilkes 1991), subscribed to Descartes [1596-1650] Cartesian approach where science was thought to be synonymous with mathematics. As a consequence of this approach, persons were viewed in a mechanistic fashion with parts that could be separated out or dissected for specific study (Van Maanen 1990; Welton 1999a). Separating mind from body in this classic Cartesian sense led Husserl to conclude that it was possible to study the essential nature of something as it presented itself to conscious awareness in its final completed state. Or as Welton (1999b) argues "his work is not to describe the sensuous texture of incarnate existence, but to establish the autonomy and efficacy of reason" (p.39.). Hence the term 'essence', which was used by Husserl to describe what it was that made something what it was (Koch 1995; Ray 1994; Van Manen 1990). In other words, what makes something unique, similar to, or different from something else (Lawler 1993).

The notion of intentionality began with Franz Brentano [1838-1917] who introduced the ideas of inner perception or an awareness of one's own psychic phenomena and intentionality where everything we consider to be psychic or of an intellectual nature can be referenced to a particular object (Wilkes 1991; Cohen 1987; Koch 1995). This means that all thoughts and actions are orientated or directed by that which orients it. Imagining or perceiving is always imagining or perceiving about something. In the jargon of phenomenology, the object to which we orientate ourselves is referred to as the *noema*. The act of directing thoughts or actions toward an intentional object, enabling interpretation of that object, is referred to as *noesis*. Mohanty (1997) describes Husserl's notion of essence as the correlation between a temporal act *noesis* and atemporal meaning *noema*. The bipolar nature of these conscious thoughts and actions imply a certain connectedness between a person and the world they inhabit.

This phenomenological premise of intentionality, that is knowledge derived or created through thinking and acting is dependent on the world, has provided a point of departure for phenomenography. That point is concerned with refuting the notion of Cartesian duality. In this way, knowledge and resultant conceptions are considered non-dualist or relational in nature. This relationship between knowledge and conception is seen to vary because of the uncertainty that exists between individual thought and aspects of reality, which "...cannot be expected to be absolutely true in any case..." (Svensson 1997, p.165).

Svensson (1997) provides a deeper exploration into the nature of a conception and makes several more assumptions about the relational nature of knowledge. The first assumption is that whatever enters the relationship between knowledge and conception has to be part of reality. Second, assuming that this part of reality is a whole, it is possible to delimit that whole from its surroundings, yet still maintain the characteristics from whence it was derived. Further, the uncertainty concerning absolute truth or knowledge about reality allows for the third assumption that it is possible to delimit parts from within the whole which retain some of the 'whole' characteristics yet vary in expression. The basis for these assumptions comes from an appreciation of our structure of awareness (Marton & Booth 1997).

5.3.2.2 The structure of awareness

Marton & Booth (1997) argue that the way individuals experience an aspect of reality is related to the figure-ground structure of their awareness. In this sense, certain aspects of an experience are in the fore or figural and constitute the internal horizon of an experience. These figural aspects are surrounded by other aspects, which are ground or tacit and constitute the external horizon of an experience.

It is the structure and organisation of the figural aspects which given meaning to an experience. That meaning is grounded by the external horizons of related or past experiences (Marton & Booth 1997). Following this line of argument it is possible that different individuals will have had different past or related experiences about a present aspect of reality. This implies that the meaning each individual ascribes to that aspect of reality will be different and may be qualitatively different. When individuals, taken as a group, are asked to consider a given aspect of reality, it is logical to assume that there

will be a qualitative difference in the thoughts and experiences about that aspect of reality within the group. Each of these individual thoughts and experiences form part of a whole way of thinking or conceiving of that aspect of reality. Phenomenography is concerned with the knowledge that is acquired from the "...differentiation of wholes..." (Svensson 1997, p.166).

In recent times, an individual's structure of awareness has received a significant amount of attention from this perspective. As a result, there has been a shift in focus of phenomenographic research. Marton & Pang (1999) refer to this shift as the second face of variation. Marton & Pang (1999) explain that the first face of variation involved studies that were descriptive and methodologically oriented. That is, these studies were concerned with describing the different ways of experiencing a phenomenon. Within the realm of student learning research there are numerous studies to cite. Some examples include Johansson, Marton & Svensson (1985) study of displacement, velocity and frame of reference, Lybeck Marton, Strömdahl & Tullberg (1988) study of the mole concept and Renström, Andersson & Marton (1990) study of the nature of matter.

In the second face of variation, methodological concerns give way to theoretical concerns. This means the focus of research is more concerned with how different ways of experiencing a phenomenon evolve. From this perspective it is the critical aspects of variation related to the ways of experiencing something that become the focus of investigation (Marton & Pang 1999). Pong's (1999) study concerned with students' understandings of the economic phenomena of price and trade is an example of this newer phenomenographic approach. In Pong's study the critical aspect of experiencing price was the concept of market.

Marton & Booth (1997) have applied Gurwitch's (1964) notion of 'field of consciousness' to learning and argue that the way a phenomenon is experienced by an individual originates from the way in which certain aspects of that phenomenon are simultaneously discerned and attended to. The theoretical premise supporting this argument is that it is not possible to experience a given phenomenon in its entirety. If that were so, everyone would experience all phenomena in exactly the same way. This would mean there would be no differences in the figure-ground structure of awareness

because everything related to a given phenomenon would be figural (Marton & Trigwell 2000).

In reality, the idea that all phenomena are experienced in exactly the same way is nonsense. Figural aspects have to be grounded to something. If the ground were absent, the world would be chaos because we would not be able to discern or experience anything. In actuality "we experience reality imbued with meaning, we experience it differently and we experience its figure-ground structure" (Marton & Trigwell 2000, p.386). In this way, individuals tend to discern partially overlapping sets of features related to a given situation or phenomenon. Within each individual's awareness about that situation or phenomenon, some features ascend from ground to become figural, other recede from figure to ground. Thus, "discerning means that a feature of the physical, cultural, symbolic or sensed world appears to the subject, and is seen or sensed by him or her against a background of his or her previous experiences of something more or less different" (Marton & Trigwell 2000. p.386).

In essence, discernment is concerned with the experience of difference. Those overlapping sets of features related to a given situation or phenomenon, represent different dimensions of variation. The ability to discern certain sets of features related to a given situation or phenomenon presupposes an experienced variation of those specific features. This notion is best explained by using an example.

As I am sitting at my desk writing this chapter two objects come into my focal awareness, a bright orange coffee mug and a striped green teacup. In order for me to discern the colours of the objects in front of me, I must have experienced variation in colours. That is, I must have experienced other colours like red, blue, yellow and so on. Just imagine for a moment, that blue is the only colour there is. This would mean that everything in the world around us would appear to us as blue. If this were so, the idea of blue as a colour would have no meaning because other colours have not been experienced. If colours others than blue have not been experienced, then 'colour' itself has no meaning.

Back to reality and the fact that I have experienced a variation of colours means that I can discern the orange and striped green colours of the objects in front of me. The

reason I can do this is because all the different colours I have experienced constitute a dimension of variation. The orange and green colours each represent an aspect within that dimension. At the same time that I discern the different colours of the objects in front of me, I also notice that the coffee mug has a different shape and is larger than the teacup. Shape and size are other dimensions of variation. I am able to discern these aspects of variation in the dimensions of shape and size because I have previously experienced that the shape and size of coffee mugs and teacups can vary. So, what is happening is that the aspects of colour, shape and size of the coffee mug and teacup have simultaneously become figural in my awareness and are seen against a background of possible variation that I have previously experienced.

If I take this example one step further and think about the critical aspect of variation that enables me to discern the coffee cup from the teacup, it would be shape. Coffee and teacups have distinctive shapes. My previous collective experiences of shopping in department stores and dinning out for example, contribute to my background knowledge of the shape of coffee and teacups. Colour and size feature in these expeditions as well but they are not as important as shape. So, in this example colour and size are irrelevant in discerning the objects in front of me, it is shape that is the critical aspect. Thus, discernment, simultaneity and variation presuppose one another, in order to experience a phenomenon a certain way.

Initial research contributing to an understanding of the structure of awareness (Marton & Booth 1997), and later work based on this structure (Bowden & Marton 1998; Marton & Pang 1999) has had a significant influence on the design of the present study.

I reasoned that if I was going to use the outcome space of the present study to propose an alternative educational program for new graduates entering the specialty of neonatal nursing, that would enable development of more complex and inclusive conceptions about competence in neonatal nursing practice, then I needed to look at possible areas of critical aspects of variation (Marton & Pang 1999). Thus, I concluded it was important to understand variation in the way competence in neonatal nursing practice is experienced (the first face of variation) as well as how one comes to experience competence in neonatal nursing practice in a certain or particular way (the second face of variation).

Confirmation that both faces of variation were important methodological considerations came from two major points that phenomenographic researchers have said about learning together with the more recent theoretical ideas about discernment, simultaneity and variation. The first point is that "learning is shifting from not being able to do something, to being able to do it as a result of some experience" (Booth 1994, p.3). This quotation highlights the centrality of experience in relation to learning. A notion shared by many other educational researchers (Boud, Keogh & Walker 1985; Boud, Cohen & Walker 1993; Boud & Miller 1996; Brown & McCartney 1999; Schön 1983, 1987; Barnett 1994). It also suggests that learning *per se*, involves a process of experiencing something in a certain or particular way.

5.3.2.3 Intentionality, awareness and the experience of learning

Those interested in what and how students learn are of the opinion that the notion of intentionality gives learning direction. This is because learning is the result of a desire, or if you like, some sort of psychic force driving us to learn about some object, or in the case of a student, particular course content (Johansson, Marton & Svensson 1985).

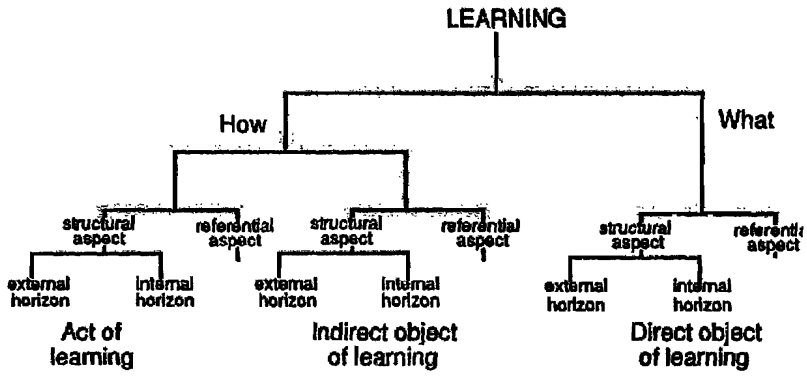
Marton & Booth (1997) argue that when the directional force of intentionality is applied to the structure of learning there are two objects to consider: **what** and **how**. The **what** is the direct object of learning, such as the content to be learned or problem to be solved. The **how** is the actual experience of the act of learning the content or solving the problem, which includes an indirect object of learning that is concerned with the quality of the act of learning.

Research over the last three decades has shown that it is possible (analytically) to isolate and describe qualitative differences or variation in the direct and indirect object of learning as well as the act of learning. This research has also emphasised the highly relational nature of the structure of learning. The reader is directed to the work of Ramsden (1992), Marton & Booth (1997), Marton, Hounsell & Entwistle (1997) and, Prosser & Trigwell (1999) who provide a more thorough discussion on the contribution of this research to our understanding of what and how students learn.

Variation in the direct and indirect object of learning as well as the act of learning arise from the way in which learning is experienced. Marton & Booth (1997) have analysed a

unit of experience and argue that it is composed of structural and referential (meaning) aspects. Both of these aspects are intertwined and presuppose one another. The structural aspect consists of an internal and external horizon, which allows the present experience to be simultaneously discerned against a background of related previous experiences. So, in this way meaning cannot be discerned without structure. Thus, when the *what* and *how* structure of learning is superimposed on a unit of experience, the 'experience of learning' becomes a complex interrelated structure. A structure where the direct and indirect object of learning as well as the act of learning, each have referential (meaning) and structural aspects as shown in Fig. 3.

Figure 3 The Experience of Learning



Marton & Booth (1997, p.91)

5.3.2.4 Outcome space: meaningful categories of descriptions

So, to reiterate, the phenomenographic approach aims to purposively look for the qualitative variation that exists in the way in which knowledge or conceptions about realities are expressed. That variation is most accessible through language. Hence the reason why a semi-structured interview is the best tool for data collecting purposes (Marton & Booth 1997; Svensson 1997), and the reason why discussion must now turn to the epistemological importance of description.

As conceptions are concerned with knowledge derived from thinking and acting within an external world, Svensson (1997) argues that the ontological assumptions of phenomenography "...become epistemological in a general sense..." (p.167). The

central epistemological assumption of phenomenography is that knowledge is derived from meaningful descriptions about an aspect of reality. These descriptions are obtained by adopting a second order perspective. A second order perspective involves the researcher bracketing their own experiences or judgements about specific aspects of reality and focussing on the ways other people experience aspects of reality. These descriptions are then described by the researcher "...regardless of their validity, skillfulness or functionality..." (Marton & Booth 1997, p.120). Adopting this perspective ensures that an internal relationship is maintained between the individual and reality. By contrast in a first order perspective the individual is seen as being separate from reality, which means that reality is 'out there' to be described by the researcher as the researchers themselves perceive it (Trigwell 2000).

The focus on variation used by the phenomenographic approach means that only differences in the way people experience an aspect of reality constitute the results or outcome space of the research. Similarities between categories within the descriptions are ignored in constituting the variation (Trigwell 2000). This results in "...a stripped description in which the structure and essential meaning of the differing ways of experiencing the phenomenon are retained, while the specific flavours, the scents, and the colours of the worlds of the individuals have been abandoned..." (Marton & Booth 1997, p.114). Moreover, as the phenomenographic approach has sought to purposively capture the variation in the way people experience an aspect of reality in its totality, there will be a limited number of qualitatively different, internally related, hierarchical categories of description (Marton & Booth 1997; Trigwell 2000).

As the categories of description constitute the outcome space of phenomenographic research, it is worthwhile explaining how they are achieved. Through a process of reduction and abstraction the researcher aims to assign a summary description which corresponds to each conception located within the data set. "These categories are considered to represent the content and form of conceptions of the phenomena together and to summarise a more extensive specific content." (Svensson 1997, p.168). As a rule these categories of description form a hierarchy of increasing complexity. The goal of abstracting categories from the data set is that they should be complete "...in the sense that nothing in the collective experience as manifested in the population under investigation is left unspoken..." (Marton & Booth 1997, p.125). Each category should

be distinct yet relate to the phenomenon under investigation. The categories should form a logical relationship with one another highlighting the increasing complexity within. Finally there should be parsimony within the hierarchy of categories, with only those necessary to capture the essential variation being explicated (Marton & Booth 1997).

An example demonstrating how variation is captured and reduced to a limited number of qualitatively different, internally related, hierarchical conceptions comes from Sandberg (1994). This study has been chosen because of its relevance to and influence on the present study. The impetus for Sandberg's (1994) study was centered on the need for managers to understand and improve the way educational development and training was carried out at Volvo's vocational training school in Sweden. The group of people Sandberg (1994) chose to study were all experienced technicians responsible for engine optimising. Engine optimisers develop engines and optimise them according to the qualities of driveability, fuel consumption, emissions and engine power depending on what's required. It is an area that is constantly changing because of the increasing use of microcomputers in the engine components for the purposes of controlling electronic fuel injection.

Essentially, as mentioned in previous chapters, Sandberg (1994) rejects the traditional rationalist research approach that is based on dualist ontology and objectivistic epistemology. He argues that this approach to competence places the worker outside the work, which leads to descriptions of work activities independent of the worker who is required to accomplish them. By turning to a phenomenographic approach Sandberg (1994) was able to differentiate and describe three qualitatively different ways engine optimisers conceived of competence in their work.

I Competence as accurately optimising separate qualities of the engine according to requirements.

II Competence as accurately optimising interacting qualities of the engine in the right order.

III Competence as optimising interacting qualities of the engine through a practical sense of the engine (p.95).

In Conception I optimisers organised their work into a series of separate steps which they completed one after the other until the stipulated requirements were met. In Conception II the optimisers considered their works as a series of separate steps. The difference was they saw the relationships between the steps. So, if one quality was optimised, they asked themselves what would happen to the remaining engine qualities.

In Conception III optimisers took into account all steps in the optimising process as they progressed through each single step. The difference was that these optimisers felt that it was necessary to consider the customer's experience of driving. So, they chose to drive the car on the road to test the engine and then go back to the training center and create computer simulations, not the other way around as expressed in Conceptions I and II.

Those optimisers expressing Conception III were of the opinion that you had to drive the car before you had a true sense of how the engine was performing and whether certain parts needed further optimising (Sandberg 1994). Thus the conceptions shown above form a hierarchy, with Conception I being least complex and Conception III the most complex. Furthermore, as all engine optimisers in the study had several years experience in engine optimising together with formal academic qualifications, Sandberg (1994) argued that it was the type of experience not the length of experience that was crucial in achieving the third more complex and inclusive conception of competence.

5.4 Influence of Sandberg's (1994) work on the present study

Coming to an understanding about what it means to be a competent neonatal nurse is fundamentally concerned with neonatal nurses' conceptions of competence in their work. The influence of Sandberg's (1994) work is apparent on three distinct fronts. First, both engine optimisers and neonatal nurses have to deal with an increasing amount of technology in their day-to-day practice and moreover, they rely on technology to perform well. In short, if engine optimisers or neonatal nurses do not harness technology efficiently and effectively, human life may be endangered either on the road or in the intensive care nursery.

Second, the high wastage rates and inability of the tertiary sector to provide enough qualified and experienced neonatal nurses as discussed in Chapter 4, have led to a

plethora of limited skills programs, all of which have a narrow behavioural focus. The inconsistency of such programs between service providers highlighted by the PSN (1998) suggests that the type of experiences offered to participants would not foster more complex and inclusive conceptions of competence in the clinical practice of neonatal nursing.

Third, in terms of educational development, Sandberg (1994) rejects Benner's (1984) linear developmental view of competence. He argues that "...there is a need to formulate new ways of developing competence that take deliberate action towards changing workers' conceptions of their work..." (p.148). This argument is in line with conceptual change as suggested by Marton, Dall'Alba &Beaty (1993) and the notion that learning is relational, interactive and inextricably linked to the student's conception of learning, perception of the learning context, approach and outcome of learning (Ramsden 1992; Marton, Hounsell & Entwistle 1997; Trigwell & Prosser 1997). Thus, if it is possible to describe the phenomenon of neonatal nurses' conceptions of competence in their work using the phenomenographic approach, then identify critical aspects of the phenomenon which enable it to be experienced in a particular way, it is logical to assume that it will be possible to develop appropriate educational support to meet the needs of new graduates entering the specialty of neonatal nursing.

5.5 Further exploration of the phenomenographic approach

It was mentioned at the outset of this discussion on phenomenography that the early work by Marton and his colleges was a reaction against dominant positivist first-order educational research. The phenomenographic approach offered educationalists a way to tap into what and how students learn. The hierarchical categories of description that were obtained about specific aspects of curricula content was seen as critical for further educational development (Marton & Booth 1997). This probably explains why the phenomenographic approach has gained a popular following among the academic community, who have a vested interest in providing the best possible educational support, an opinion also supported by Entwistle (1997a).

In recent times a collection of phenomenographic studies investigating the variation in understanding of specific curricula content have been amassing. Examples of curricula

content that have been studied include photosynthesis (Hazel, Prosser & Trigwell 1996), the mole concept (Lybeck, et al. 1988), states of matter (Renström, Andersson & Marton 1990), Newtonian motion (Johansson, Marton & Svensson 1985), displacement, velocity and frames of reference (Bowden et al. 1992), mathematics (Crawford, Gordon, Nicholas & Prosser 1994) and aseptic technique (Davey 1995).

There have also been other phenomenographic studies which have moved away from specific curricula content and investigated more general phenomena such as teaching and/or learning (Marton, Dall'Alba & Beaty 1993; Trigwell & Prosser 1997; Samuelowicz & Bain 1992; McKenzie 1999), professional competence in physiotherapy (Abrandt 1997), instrumental music (Reid 1997), technology in nursing (Barnard, McCosker & Gerber 1999), clinical decision making in nursing (Baker 1997) and quality of life following a stroke (Backe, Larsson & Fridlund 1996).

5.6 Critical remarks concerning the phenomenographic approach

The theoretical and methodological underpinnings of the phenomenographic approach have been subject to criticism from several quarters. Webb (1997) undertook a postmodern deconstruction of the original 'deep' and 'surface' approaches to learning (Marton & Säljö 1976a). Drawing on the work of Foucault Webb (1997) claims that the deep/surface metaphor has become a powerful canon for staff developers within higher education institutions. Webb (1997) argues that the theoretical and methodological foundations of phenomenography are underdeveloped and lack a proper account of the hermeneutic traditions associated with being/researching-in-the-world of another. He also questions the neutrality of the researcher in constructing representative categories of description. There is a further claim that the approaches used in phenomenography "...have more to do with the quest for positivist generalisation than the development of hermeneutic understanding..." (p.198).

Webb's (1997) claims are refuted by Entwistle (1997b) who defends the universality and simplicity of the deep/surface metaphor as a valid means of conveying complex pedagogical principles about the ways in which students learn. Entwistle (1997b) also argues that extremist postmodern interpretations are not really helpful to academic staff or educational developers. Ekeblad (1997) is also critical of Webb's (1997) extremist,

relativistic position and accuses Webb (1997) of treating phenomenography "...as an entity pre-existing his investigation of it rather than as a textual construction of his own..." (p.220-221).

Phenomenography's claim that its ontological and epistemological foundations are grounded in the object of research, that is, the variation in ways of experiencing a phenomenon (Marton & Booth 1997; Svensson 1997) have also come under fire. Hasselgren & Beach (1997) question how the categories of description are formed and what they represent. They are concerned that that data collected and construction of categories "...may be reflections of the researcher's own ideas, or products of interaction in the empirically productive situation (eg, interview)..." (p.192). They claim that the ideological foundations of phenomenography have led to different discursive contexts, which have affected "...the way data are produced and what data are produced about..." (p.195). From a review of phenomenographic work they identify five discursive contexts: experimental; discursive; naturalistic; hermeneutic and phenomenological. In their opinion these discursive contexts have arisen from the discourse of phenomenology because phenomenography lacks methodological reflexivity. They conclude that phenomenography is far from phenomenology, but may benefit from a clearer articulation with the older philosophy.

Following along the lines of Hasselgren & Beach (1997), Säljö (1997) is also concerned about the discursive contexts within phenomenographic research. Säljö, a member of the original Gothenberg group, has become critical of how 'talk' or 'utterance' become 'ways of experiencing'. He is of the opinion that the abstracted and reduced outcome spaces that a substantial proportion of recent phenomenographic studies have produced has paradoxically become positivistic, exactly that which the original research group reacted against. He argues that 'ways of experiencing' should in fact be viewed as "...communicating in situated practices..." (p.188), which he believes would give greater insight into social practices and human experience.

Another perspective, which covers similar ground to the above criticism, comes from Richardson (1999). In a rather extensive review of the phenomenographic approach, Richardson (1999) claims that despite attempts by prominent phenomenographic researchers to vicariously associate some conceptual and methodological aspects of

phenomenography to phenomenology, they still "...fall foul of the 'dilemma of qualitative method' in failing to reconcile the search for authentic understanding with the need for scientific rigor..." (p.53). In his opinion phenomenography should consider embracing the constructivist approach of grounded theory, which would allow researchers to progress in a more reflexive and critical manner. He claims that the idealist stance used in the conduct of phenomenographic research is at risk of producing outcome spaces that are nothing more than the self-fulfilling prophecies of the researcher. A concern that is to some extent echoed by Webb (1997), Hasselgren & Beach(1997) and Säljö (1997).

A final criticism comes from a feminist perspective (Hazel, Conrad & Martin 1997). These authors indicate that there is a gender bias within the conduct of phenomenographic research, which favours masculinity. They claim that man phenomenographic studies have been conducted within the traditional masculine disciplines of science and mathematics, by male researchers, which has excluded 'women's voices'. They also claim that the "...typically hierarchical outcome spaces are patriarchal..." (p.215), wholly cognitive and do not acknowledge the interrelation of feeling and thinking.

5.7 In defense of phenomenography

The criticisms outlined above suggest that phenomenography offers a limited approach toward understanding human experience. However, it is important to temper these criticisms with the original ideals of phenomenographic research, that is, it was intended as a specialised educational research method. Its focus was directed toward understanding the complex pedagogical principles governing the way students learn (Entwistle 1997b). Further, the results of such studies have served to focus the researcher's attention on the learner's experience of learning. As a consequence teachers have recognised their responsibility in guiding students toward more complex conceptualisations of curricula content (Booth 1997).

These phenomenographic ideals are important to the present study. As such, the criticisms mentioned above are countered by a rigourous study design. That design is the focus of the following chapter.

As mentioned earlier, the specialty of neonatal nursing is experiencing a staffing crisis and has been forced into adopting skills training programs to 'up skill' new graduates in the ways of specialist practice. These skills programs have been shown to have limited value when used as a retention strategy (Davey & Bredemeyer 1997,1998). Moreover, they do not encourage the development of more complex and inclusive conceptions of competence in neonatal nursing practice because of their poor design.

I am proposing that a better way to approach this problem is to develop educational support based on the first and second faces of variation in neonatal nurses experience of competence in their work. Such an approach would direct the focus of educational activities toward the new graduate's experience of learning about the specialty of neonatal nursing and encourage the development of more complex and inclusive conceptions of competence in the clinical practice of neonatal nursing.

5.8 Summary

This chapter has addressed the theoretical tenets of phenomenography that have been used as a framework for this study's design. It has explained that the approach was born out of a reaction to dominant positivist educational research methods. By adopting a qualitative, non-dualist, second order perspective the approach purposively seeks to capture variation in the way a phenomenon, usually specific course content, is experienced. Recent studies and developments in the phenomenographic approach have focused on identifying critical aspects of variation that lead to more complex and inclusive conceptions of phenomena under study. This new development is important in terms of meeting the present study's second objective.

Chapter 6

6 Study Design

6.1 Introduction

In the preceding chapter it was argued that a phenomenographic approach would provide the best description of the phenomenon of competence in neonatal nursing practice. It would also allow identification of certain critical aspects of the phenomenon that could be used as a framework for educational development. In defense of that position, this chapter intends to detail how the present study was designed. Major elements affecting the validity and reliability of the research process, such as formulation of the research question(s), selecting study participants, generating descriptions about how neonatal nurses conceive of competence in their work and the analysis of these descriptions are considered.

6.2 Formulating the research question

The importance of formulating a research question cannot be overstated because of the influence it has on all phases of the research process (Polit & Hungler 1991; Ray 1994; Sandberg 1994). With respect to the present study, the central research question is concerned with the variation in meaning registered nurses working within the specialty of neonatal nursing ascribe to being and becoming competent in their practice? Practical, theoretical and personal concerns as discussed previously formed the basis of this question.

6.3 The process of selecting the study participants

As mentioned earlier the present study has been greatly influenced by the work of Jörgen Sandberg (1994). In order to study the essential aspects of human competence at work Sandberg used three major criteria in his selection of a professional group and subsequent study participants. "First, the work selected should be complex and broad. Second, the workers should be selected to ensure the greatest possible variation concerning their formal education and length of time in the work. Third, the workers should carry out the same work" (p.71).

Sandberg (1994) used these criteria to form the basis of a strategy to achieve validity and reliability throughout his study. As the merits of these criteria have already been demonstrated, this study has chosen to adopt the same criteria. The following discussion intends to detail how these criteria were met.

As discussed in Chapter 4, major advances in technology and clinical medical practice within the sphere of perinatal services in New South Wales has created a need for a clinically competent nursing workforce. The neonatal nurse is at the forefront of these advances. They must not only harness the various technologies necessary to care for an infant requiring maximum life support, they must also be an empathic medium for parents and families. This role certainly has the depth and breadth suggested by Sandberg's (1994) first criterion.

Working on the premise that validity and reliability is enhanced by the selection of participants that maximises variation with respect to educational qualifications and experience as a neonatal nurse, the question arose of whom to select? Would maximum variation in this sense be achieved by selecting participants from the total 1.3% (Workforce Planning Study 1998) of all registered nurses working within the specialty of neonatal nursing in New South Wales? Selecting the appropriate course of action came from considering Sandberg's (1994) third criterion, that is, workers selected for the study should be carrying out the **same** work in-tandem with the premise of ensuring maximum variation.

6.3.1 Levels of neonatal nursing services within New South Wales

There is a technical point, which deserves clarification here because of its relevance to the selection of participants for the present study. The fact is, that not all RNs working within the specialty of neonatal nursing in New South Wales carry out the same work. The reason for this is that different workplaces have different responsibilities and clientele, which in turn affects the sort of work, carried out by the workers. This difference arises from the type of services that a given neonatal nursery can provide within its respective area health service. In New South Wales the Department of Health delimits neonatal services according to six specific levels (PSN 1998).

Level 1 neonatal services are mainly confined to rural and remote areas of New South Wales not accredited for births. Women travel to larger level 2 or 3 centres for delivery and then return to the level 1 centre where they are provided with continuing postnatal care. The emphasis is on parenting, bonding and breastfeeding. Basic life support is available for neonates. Midwives and/or mothercraft nurses provide care to families with support from general practitioners.

Level 2 neonatal services support small district hospitals that experience 20-70 births per year. A combination of RNs, midwives and mothercraft nurses provide care to women with normal-risk pregnancies and healthy infants greater that 36 weeks gestation. Some nurses have experience in neonatal or paediatric care and/or are undertaking relevant post registration qualifications. There is greater support from general practitioners accredited in obstetrics and newborn paediatrics. This means 24 hour access to a medical officer on site or available within 10 minutes. There are also clinical links with a higher-level unit.

A Level 3 center provides neonatal services at a district hospital experiencing 71-500 births per year. In addition to the services offered at a level 2 centre; a combination of RNs, midwives and mothercraft nurses provide care to women with moderate-risk pregnancies. A special care nursery is on site with facilities to provide pre-transfer assisted ventilation. The unit has many facilities including incubators and cardiorespiratory monitors enabling management of infants greater than 32 weeks gestation with minimal complications or convalescing infants returning from larger level 5 and 6 centres. The unit has a NUM and experienced RNs, some of which have neonatal or paediatric qualifications. Obstetricians and paediatricians and/or accredited general practitioners are on call 24 hours. A medical officer is on site to provide skilled resuscitation and stabilisation prior to an infant's transfer. There is also an established link with a level 5 centre.

A level 4 centre provides neonatal services to a large district hospital experiencing up to 2000 births per year. These centres are capable of delivering complex care to convalescing medical and surgical infants in consultation with the designated level 5 or 6 centre. In addition to the services outlined in level 3, the centre has a specialist neonatal paediatrician and a paediatric registrar on site 24 hours. At least one RN per

shift has neonatal or paediatric qualifications. There is also a CNS responsible for education in the clinical area and quality improvement programs.

Level 5 neonatal services are found in large metropolitan perinatal centres that experience greater than 3000 births per year. There are all the services outlined in level 4 centers plus involvement in the antenatal management of high-risk pregnancies. Care is provided for all aspects of neonatal care including intensive care for the critically ill infant. There are experienced RNs on all shifts, many have CNS status with formal qualifications in neonatal nursing. The unit has a neonatologist as director, with a supporting consultant team of qualified neonatologists. There is access to clinical and diagnostic paediatric subspecialties together with multidisciplinary follow-up services. The unit takes a formal role in the postgraduate education of nurses and medical officers. On-going clinical research is well established. There are supernumerary CNC, NE and/or CNE positions. The unit also participates in outreach education for nurses and medical officers practicing in centres from levels 1-4.

As for level 6, these centres have all the same services as level 5. There is however additional on-site clinical diagnostic subspecialty services together with paediatric surgical services.

Looking at each of these six levels the most obvious fact is that each level increases in its complexity of service provision. No less obvious is the interdependent nature existing within these levels. However, the argument put forward here is that each level of service provision, despite elements of sameness, has even greater elements of differentness. These unique differences change the scope of clinical nursing practice across the 1.3% of RNs working within the specialty of neonatal nursing in New South Wales. Therefore, selecting study participants from within all levels of neonatal service provision within New South Wales would violate Sandberg's (1994) third criterion, that insists study participants be performing the same work, thus jeopardising the validity and reliability of the research process in the present study.

The PSN (1998) and Workforce Planning Study (1998) have raised concerns about the skill-mix of RNs working in the specialty of neonatal nursing. Those concerns relate primarily to larger metropolitan perinatal centres with neonatal intensive care nurseries.

Across the metropolitan areas of Sydney and Canberra there are 7 level 5 units, 2 level 6 units and 1 mobile unit intensive care unit. However, one is still faced with inherent sameness and differentness across each of these 10 units, because each unit has its own clientele, policy, procedure and area health service politics to contend with.

6.3.2 King George the Fifth Memorial Hospital for Mothers and Babies (a part of Royal Prince Alfred Hospital, Sydney)

So then, how to achieve maximum variation within a group of workers carrying out the same broad and complex work? After giving this problem due consideration a solution presented itself that would satisfy the criteria outlined by Sandberg (1994). Rather than choose study participants from across all level 5 and 6 centres and risk jeopardising the validity and reliability of the present study, why not choose the largest perinatal centre with the largest birth rate in New South Wales. This would mean that there would be a large population of RNs from which to select study participants in order to maximise variation. Because study participants would be coming from **one** centre, they would essentially be carrying out the **same** broad and complex work, which would negate the problem of differentness that would be encountered if study participants were selected from all 10 centres.

According to PSN (1998) the largest Sydney metropolitan perinatal centre experiencing the most number of births per year is King George the Fifth Memorial Hospital for Mothers and Babies (KGV), a part of RPAH, Camperdown. KGV is a major tertiary referral center for women with high-risk pregnancies, both within New South Wales and in some cases overseas, from Fiji or Noumea, where specialist neonatal services are not available.

As discussed in Chapter 4, the majority of women who experience a high-risk pregnancy will deliver a preterm infant who may require specialist neonatal intensive care facilities. JSN, a part of KGV/RPAH, provides such facilities. JSN also accepts neonatal transfers from peripheral metropolitan and remote country hospitals that do not have intensive care facilities, via NETS. For example, in 1998, there were a total of 4,538 births at KGV, of these, 696 infants required admission to JSN for treatment. An additional 60 infants were transferred to JSN via NETS, which brought the total number of infants admitted that year to 756 (JSN, 1998 Review). This high rate of admission

makes JSN the ideal centre to conduct a study concerned with competence in neonatal nursing practice.

6.3.3 Ethical consideration: an important note on working and researching in your own area of clinical practice

There is an important ethical consideration that deserves mention here. Prior to undertaking the present study I was appointed to a supernumerary CNE position that was later upgraded to a NE position. This meant my role within JSN took a new direction. I was no longer working a rotating roster and counted as a 'number' on the unit floor. My new position demanded that I take on certain responsibilities for the clinical education of new staff members, co-ordinate inservice programs for existing staff members and accept a greater role in the clinical management of day-to-day nursing activities within the nurseries.

As the present study was concerned with the nature of competence in neonatal nursing practice, I was concerned that potential study participants may feel embarrassed or anxious about disclosing their clinical practice experiences. Such feelings could arise from concern that study participants would be required to talk about personal experiences and understandings of clinical competence rather than 'text-book' or generic understandings of competence. Given the constant scrutiny faced by the nursing profession with regard to 'competence' as discussed in Chapter 4, I was concerned that some study participants might think that their personal disclosures about their work, would in some way be used for purposes other than this study, such as in a staff appraisal.

To ascertain how the nursing staff felt about me undertaking the present study within JSN, the issue was raised at a routine monthly unit meeting. All nurses working in the Nurseries are invited to this meeting and minutes are taken for later dissemination. Those not in attendance at these meetings are obliged to read and then sign to confirm their reading in a space provided. At the meeting scheduled to discuss the present study, and later after the minutes were disseminated, there was overwhelming support from my colleagues for the study to take place within JSN. Such a positive response to the present study was heartening and probably reflects the frustrated needs of neonatal nurses, also discussed earlier in Chapter 4.

There is no doubt that an argument could be put forward that the present study be conducted elsewhere. However, that would mean establishing and conducting research at a smaller centre with fewer admissions and lower staffing numbers from which to select study participants. In view of the fact that my colleagues gave me overwhelming support and a strict ethics protocol was put in place to ensure the confidentiality of the study participants, it seemed most appropriate to conduct the present study within JSN.

Ethics approval was sought and granted from the University of Technology, Sydney (see appendix) and the RPAH Ethics Review Committee (see appendix). Participation in the study was voluntary, written informed consent was obtained (see appendix). Data was coded and stored in a locked filing cabinet and pseudonyms have been used in the result section of this thesis to assure the confidentiality of study participants. The Clinical Psychologist within the Department of Neonatal Medicine made herself available for debriefing of study participants, should this be required.

6.3.4 Bed numbers, patient ratios and nursing staff profile within the John Spence Nurseries

JSN has eight established intensive care or ventilator cots and twenty-eight special care or non-ventilator cots. The nursing staff to infant ratios are 1:1 for infants requiring intensive care and 1:4 for infants requiring special care for each 8 or 10 hour shift. Managing this number of cots on a shift-by-shift basis requires a large number of nursing staff, which is organised in the following manner.

Table 1: Organisation of Nursing Staff in JSN (JSN Review 1998, p.1)

Classification	**No.**
Clinical Nurse Consultant	1
Nurse Unit Manager (Level 3)	1
Nurse Unit Manager (Level 1)	1
Clinical Nurse Educator	2
Theatre Midwife (Clinical Nurse Specialist)	1
Family Support Nurse (Clinical Nurse Specialist)	3
Parenting & Lactation (Clinical Nurse Specialist)	1
Follow up Co-ordinator (Clinical Nurse Specialist)	1
Total Supernumerary	**11**
Clinical Nurse Specialist	11
Registered Nurse	61
Enrolled Nurse	5
Total Working on the Unit Floor	**77**

8.3.1 The study participants

Only Clinical Nurse Specialists and RNs were eligible for inclusion in the present study because they can be said to carry out the same work on the nursery floor. ENs and those classified as supernumerary have different roles and responsibilities and were thus not eligible for inclusion.

Of the 72 RNs and Clinical Nurse Specialists that were eligible for inclusion in the present study, 20 volunteers were selected to maximise variation. Descriptions of the way in which these 20 neonatal nurses conceived of their work were generated from interviews that were audiotaped and later transcribed verbatim. Looking at the educational qualifications and years of experience of the whole group a wide variation is seen. For the purpose of the following discussion this whole group will be divided into two groups A and B. Group A (n = 11) are those study participants who obtained their original nurse registration via a hospital-based general nurse certificate. In group B (n = 9) study participants have completed an undergraduate diploma or degree prior to obtaining registration. The purpose of having these two groups is to see whether or not the type of education and subsequent clinical experience relates to neonatal nurses conceptions of their work.

6.3.5.1 Group A

Considering those study participants in group A first, 10 of the 11 went on to complete a hospital-based midwifery certificate and 8 of the 11 completed a hospital-based neonatal intensive care nursing certificate. Eight study participants have additional hospital-based or NSWCON Certificates in paediatrics, family planning, administrative management, lactation and adult intensive care nursing. Two study participants have converted their hospital-based neonatal intensive care certificates into university graduate diplomas in neonatal studies. Two study participants waited several years until postgraduate nursing qualifications became available in the tertiary sector and opted to undertake a university diploma in neonatal studies rather than a hospital-based certificate.

As far as years of clinical experience are concerned, one has 1-2 years, one has 5-10 years and the remainder each have greater than 10 years experience in neonatal nursing. Of the two participants with less than 10 years clinical experience in neonatal nursing,

one came to the specialty seeking a change in career path after 8 years of adult surgical nursing; the other study participant came to neonatal nursing after 5 years nursing older children in a paediatric setting. In this group there were six Clinical Nurse Specialists and five RNs. The mean age of this group was 40 years.

6.3.5.2 Group B

Of the 9 study participants in group B, 5 have completed postgraduate qualifications in midwifery, 4 at graduate diploma level and 1 at master's level. These same 5 participants have also completed the NSWCON Graduate Certificate in Neonatal Intensive Care Nursing. From this, 2 enrolled at university, one completed a graduate diploma and the other a master's degree in neonatal studies. Of the remaining 4 study participants in this group one has undertaken a hospital-based neonatal intensive care certificate and another a graduate diploma in neonatal studies. The remaining two study participants entered neonatal nursing via a neonatal nursing OPSCA.

The years of clinical experience in neonatal nursing in this group is much lower than in group A. Here, two participants have 1-2 years experience, six participants have 2-5 years experience and only 1 participant has achieved 6 years of clinical experience. In this group there was one CNS and eight RNs. The mean age of this group is 27 years, which is much younger than group A.

The total study population equates to the current gender mix within JSN, there are 19 women and 1 man in this study. Of the 72 RNs within the John Spence Nurseries eligible to participate in the present study, 69 are women and 3 are men. This equates to a ratio of 23:1.Thus the gender mix in this study is appropriate and counters the Hazel, Conrad & Martin (1997) claims raised earlier about the exclusion of women's voices.

6.4 Generating descriptions of conceptions

6.4.1 Considering the options

As mentioned in Chapter 5, the phenomenographic approach seeks knowledge about a particular phenomenon by generating descriptions of conceptions about that particular phenomenon from a second-order perspective. How then are such descriptions obtained? Phenomenographic researchers have gathered information about particular

phenomena in a variety of ways including participant observation, drawings, solving problems, looking at the products of work such as buildings or interiors, written or verbal reports and video taping (Marton & Booth 1997; Marton 1988). Are any of these data gathering methods suitable for accessing information about how neonatal nurses conceive of competence in their work? Three look promising: participant observation, verbal reports and written reports.

6.4.1.1 Participant observation

At first glance, it may seem that participant observation would be an appropriate way to gather information about how neonatal nurses conceive of competence in their work. In this way individual participants could be observed as they undertake their daily clinical practice activities. Benner (1984) used this method of gathering and recording data in her own study of developing clinical expertise. The difficulty with this sort of activity is finding an effective way to observe the complex activities of neonatal nurses. What does one actually observe and subsequently record? Will the information recorded actually describe how neonatal nurses conceive of competence in their work?

The argument put forward here is that the notion of extensive time spent silently observing neonatal nurses going about their day-to-day work practices will not generate descriptions of how those nurses conceive of their work. The reason for adopting this position is that the researcher/observer is only privy to observed behaviour. The observer is not privy to how those particular observations were constructed or thought about by the observee (neonatal nurse) before they entered the present world of the observer. This position is consistent with Marton & Saljo (1984) who found that observing students engaged in studying activities was not particularly rewarding because the information gathered was not useful in generating descriptions of conceptions.

6.4.1.2 Verbal reports

If participant observation is not a suitable way to generate descriptions of how neonatal nurses conceive of competence in their work, what of verbal reports? Nurses have a strong and long tradition of passing down certain practices using oral communication (Lumby 1991). Verbal reports are a part of every nurse's day-to-day practice. The nursing handover is an example of a verbal report that nurses use to provide information

to the on-coming shift about the patient(s) they have been caring for. The handover contains information about the patient's reason for admission, diagnosis, treatment regimens, overall condition and family situation. It is a way to focus information about the patient in a concise and concrete manner. The handover is also acknowledged as a source of three forms of nursing practice knowledge: reconnoitre - the nursing scan; savoir - the nursing gaze; and connaissance - the nursing look (Parker & Wiltshire 1995). These concise handovers often form the basis of more formal written reports, which become a part of the patient's legal medical record.

Sandberg (1994) indicates that verbal reports have been used in the field of cognitive psychology as a way of describing the sequences of thought processes. In this way participants would be asked to talk aloud as they carried out their activities. This is not an uncommon practice for nurses working within JSN. As part of their role, nurses talk to parents and families about what they are doing, especially when they are providing support and assistance with parenting skills. Nurses also talk to each other about what they are doing, especially when a more senior nurse is teaching or coaching a junior colleague.

There are however, inherent impracticalities with the use of verbal reports as far as the present study is concerned. The neonatal intensive care unit is a busy and complex area. Nurses working in this area are not only responsible for sick infants but their parents and family as well. Moreover, there are times during a shift when it is neither practical nor appropriate for nurses to talk aloud as they carry out activities. Two examples spring to mind immediately. The first is in the case of an emergency resuscitation.

Resuscitating a sick infant involves a team of nurses and doctors working together to achieve a positive outcome. There is a chain of command between the nurses and doctors with instructions being passed up and down this chain. It is important that all members of the team remain focused on what they are doing. In some circumstances it may be possible for an experienced nurse to talk aloud about what they are doing, but in so doing, may distract other members of the team, which is not in the best interests of the infant.

The second example is in the case of an infant who is having treatment withdrawn. Withdrawing treatment is a time when nurses are unobtrusive yet sensitive to the final needs of an infant and the continuing needs of parents and family. The imminent death of an infant is not an appropriate time for the nurse to be talking aloud about what is being done. In the author's opinion, to do so would place further undue stress on parents and family. These sorts of situations create gaps in the reporting system, which ultimately mean that descriptions generated by verbal reports risk fragmentation, thus outweighing support for their use in the present study.

6.4.1.3 Written reports

In considering the use of written reports to generate neonatal nurses' conceptions of competence in their work, there are several advantages. Firstly, as a legal requirement, nurses are required to write a daily report about the patient(s) they have been caring for. This means that the idea of a written report is not an unfamiliar idea for nurses. Secondly, there is less of an opportunity for the researcher to influence what participants write (Sandberg 1994). Thirdly, written reports allow time for the participants to reflect on the questions being asked of them and write at their leisure (Bruce 1994).

Conversely, there are also disadvantages to the written report option. The fact that nurses are used to writing reports can also be a disadvantage because of the way in which such reports are documented. Typically, nursing reports summarise large amounts of information into a few lines. For example, what may have been a large and complicated wound dressing, requiring considerable time and effort as well as patient discomfort is often reported in written notes, as 'dressing attended, wound looks clean and dry'. There is often no comment as to how the patient felt or how the nurse actually performed the dressing. Nurses are often criticised for this type of fragmented reporting because the information lacks any real depth (Staunton & Whyburn 1989).

Bruce (1994) also points out that writing, as a strategy for gathering information is not suited to everyone, especially for those whose professions do not require extensive written communication. Nursing falls somewhere in the middle with respect to this last point. Traditionally, as discussed in earlier chapters, nurses entered the profession under an apprenticeship system. Under this system the development of writing skills was not a major priority. Having been through that system, I remember how intimidated I felt by

the prospect of having to write essays when I commenced studies at university. Many of my colleagues also shared this feeling.

The transfer of nurse education into the tertiary sector has meant that a greater focus is placed on writing skills, particularly reflective writing skills associated with Journaling (Greenwood 2001). This means that nurses are now looking at developing their writing skills to a greater degree. However, in a study by Davey (1994) where nursing students were asked to write about their understandings of aseptic technique, the writing styles were fragmented and mostly in point form. Once again typifying the shortened written nursing report style. Thus, unless study participants feel comfortable with the idea of expressing themselves through the written word, the information gathered offers a limited way of describing conceptions of competence in neonatal nursing practice.

6.4.1.4 The interview

Using an interview to gather information about how neonatal nurses conceive of competence in their work overcomes the limitations of participant observation, verbal reports and written reports. In fact, Marton & Booth (1997) recommend that other methods of gathering information such as those mentioned above are only supportive methods to the true research instrument of phenomenography: the interview.

In broad terms an interview is a face-to-face verbal interaction where one person, the interviewer, attempts to gather information of different kinds from another person or person(s), interviewee(s) about a particular subject (Minichello, Aroni, Timewell & Alexander 1990). An interview can take on many guises depending on what kind of information is sort. Therefore it is important that the phenomenographic interview is defined within the context of available interviewing methods as well as for use in the present study.

Interviewing methods can be placed on a continuum from structured moving to focused or semi-structured then on to unstructured. This continuum is explained below.

Structured interviews follow a standardised predetermined carefully constructed interview schedule where each person (study participant) is asked the same questions in the same order. Typically, the schedule contains closed-ended questions and requires

the participant to choose from predetermined options. For example, a question might be would you like to see all post-graduate nurse education in the university sector? The predetermined options for this question would be yes/no/unsure. The role of the interviewer is that of passive neutrality, they are simply asking questions and recording a response. The highly structured nature of the schedule formalises social interaction between interviewer and interviewee thereby enhancing objectivity and reliability. This type of interview may be useful for surveys or opinion polls, but has been criticised heavily for not providing an accurate picture of social reality. Largely due to the fact that the interviewer is prevented from finding out what is meaningful to the interviewee (Minichiello et al. 1990).

Semi-structured or focused interviews lie in the middle of the continuum. An interview schedule is developed from the broad topic of interest to the researcher. The difference is that there is no ordering of questions as in the structured interview. The researcher concentrates on focusing the interview on issues central to the research question. This allows for much greater flexibility and discussion of issues that are relevant and meaningful to the interviewee's perception of social reality (Minichiello et al. 1990).

An unstructured interview takes the notion of greater flexibility exhibited by a semi-structured interview to its ultimate by removing the interview schedule. In this way there is a sense of egalitarianism between the interviewer and the interviewee. A more recursive or conversational model of questioning is used, which allows the interviewer to guide the conversation toward the research interest under study. "The element of control is regarded as minimal, but nevertheless present in order to keep the informant relating experiences and attitudes that are relevant to the problem" (Minichiello et al. 1990, p.93).

This move away from the interrogative nature of the structured interview toward a more conversational process means that the focus is directed away from the interviewer toward the interviewee. Moreover, the interviewee is able to express "their perspective in a language that is natural to them", which " reduces the possible distorting effect of symbols and language which are not part of everyday life" (Minichiello et al. 1990, p.93).

6.4.2 The phenomenographic interview

On the continuum outlined above, the phenomenographic interview can be placed anywhere between semi-structured to unstructured depending on the nature of the research (Bruce 1994, Sandberg 1994, Marton & Booth 1997). In general terms the interviews "are centred in the interviewee's life world, seek to understand the meaning of the phenomenon in the interviewee's life world, are qualitative, descriptive, specific and presuppositionless, are focussed on certain themes, are open to ambiguities and change, take place in an interpersonal interaction, and may be a positive experience (for the interviewee)" (Kvale 1983).

In more specific terms the phenomenographic interview has a distinctive aim, that is, to look for variation in the way in which people experience or understand a certain phenomenon. The focus of the interview is not on the person (interviewee) or on the phenomenon under study but on the relation between the two. In other words how the phenomenon "appears to, or is experienced by, the person being interviewed" (Bruce 1994, p.50).

To achieve this distinctive aim the interviewer has to concentrate on seeing the phenomenon as it is seen or experienced by the interviewee. In the phenomenographic sense, this requires the interviewer to help the interviewee reach what Marton & Booth (1997) refer to as "a state of 'meta-awareness', being aware of his awareness of something" (pp.129-130). How does the interviewer help the interviewee reach such a state of meta-awareness about a phenomenon? As with any other research instrument there are rules to follow and the phenomenographic interview is no exception. In the following discussion arguments will be put forward to justify the rules that were followed in the present study.

6.4.2.1 The first rule of engagement

The first rule of engagement set down for the present study was that prospective study participants should feel at ease with the nature of the research and the role of the researcher. As a researcher carrying out research in one's own place of employment, I was acutely aware that I could face as many pitfalls as I could positives, a sentiment echoed by Hanson (1994) and Abrandt (1997), so I proceeded with relative caution.

In accordance with the ethics protocols from the University of Technology, Sydney and Royal Prince Alfred Hospital, the nature of the research was explained to all members of the JSN nursing team via inservice education sessions during the latter part of 1996 and on into 1997. To capture nurses across all shifts, I presented a total of eight one-hour education sessions about the present study. Each of these sessions were identical and gave neonatal nurses an opportunity to discuss the aim and objectives of the study along with how the data would be collected, analysed, stored, and presented. It was emphasised that participation in the study was voluntary not compulsory.

In addition to the inservice sessions I was required to present the proposed study at a departmental research meeting. These meetings occur on a weekly basis and are an opportunity for all members of the Department of Neonatal Medicine, of which JSN is a part, to present proposed work or work-in-progress for critical discussion. An invitation is also extended to all members of other metropolitan level 5 and 6 neonatal service providers. Thus, for a beginning researcher, this meeting produced considerable personal anxiety. The Department of Neonatal Medicine has a traditional scientific research culture. As such, I was concerned that a qualitative study looking at the meaning neonatal nurses ascribe to being and becoming competent in their practice, would not be seen as a credible or worthwhile project.

The unusual nature of the present study, for the Department of Neonatal Medicine that is, prompted a large gathering of nursing, medical and other allied personnel. I discovered that my medical colleagues shared the practical, theoretical and personal concerns that generated the research question for this study, as did other colleagues present. There was also agreement that looking for variation in the way, in which neonatal nurses conceived of competence in their work, would be useful in developing future educational programs. There was however, a degree of skepticism expressed by my medical colleagues about the reliability and validity of the phenomenographic interview and the generation of descriptive categories. However, it was decided to give me the benefit of doubt until there was further evidence to work on. Thus, with full nursing support and judicious medical support the present study 'Competency in Clinical Nursing Practice', later entitled *Variation in neonatal nurses' conceptions of competence in their practice: implications for the design of learning experiences*, was officially acknowledged by the Department of Neonatal Medicine.

6.4.2.2 The second rule of engagement: accounting for researcher bias

As for the role of the researcher, there were several issues to consider. For the most part these issues centred on the possibility of researcher bias due to familiarity with the research setting. In the social sciences Minichiello et al. (1990) highlight that researchers are constantly debating the issue of who should carry out research within a given setting: an insider or an outsider? Is it best to use an insider who is sensitive to the needs of the group under study, or, would greater objectivity result from using an outsider.

Health care professionals have also asked themselves the same questions. Hanson (1994) a nurse researching in her own area of expertise – radiation oncology, discusses the issues surrounding familiarity of the researcher with the research setting. In her literature review, Hanson (1994) cites several sources that claim researching in a familiar area creates significant researcher bias. Reasons given for such bias center on the fact that a researcher conducting research in a familiar setting is likely to have an established 'niche' within that area. Being a 'native' so to speak means it is also likely that the researcher will be operating from the same frame of reference as the study participants. The cumulative affect is that the researcher is not able to operate from a critical distance and see points of view that are different from their own. Further, Abrandt (1997) a physiotherapist also researching in her own area of expertise raised a concern that shared frames of reference could lead participants to leave out information that is implied or tacit in a given situation rather than being explicit.

Despite these obvious concerns about researcher bias both Hanson (1994) and Abrandt (1997) were of the opinion that their insider status benefited their research. The present author is also of this opinion, but is not naïve to the fact that it is necessary to confront the issues of researcher bias head on within the context of the present study, just as Hanson (1994) and Abrandt (1997) did for their respective studies.

In confronting the issues at hand, it was certainly true that I had developed a 'niche' within JSN. I have been a member of the nursing team for more than a decade and knew a majority of the potential study participants on both a personal and professional level. Needless to say, these shared frames of reference created a potential for researcher bias.

The first steps taken to reduce the potential for researcher bias was to present the proposed study to all members of the JSN nursing team and ask for comments. As mentioned earlier, the response was extremely favourable. Next, I emphasised that I was a graduate student, and as such I was the 'learner' in this situation, I was not in the 'teacher' or 'facilitator' role of my educator position within the Nurseries.

Seeing me as a 'learner' was not unfamiliar to potential study participants because the majority knew that I had been engaged in tertiary studies for some time. In fact my colleagues often refer to me as the perennial student. This gave me what Minichiello et al (1990) refer to as 'credentials'. In this sense, potential study participants knew me well in the role of a student. They, the JSN nursing team, had already evaluated my commitment to completing my studies based on my previous track record. They also knew that I would understand what they had to say and "would not misinterpret various practices and meanings attached to them" (p.217). From a nursing perspective, I was as Greenwood (1984) argues an 'insider' who understood the research setting and the conceptual frameworks from which the study participants were operating. Therefore, I was actually in an optimal position to direct study participants toward the specific objectives of the present study. Moreover, it was also an opportunity for 'giving back to the ward" and to "make an active contribution to nursing practice" (Hanson 1994, p.942).

6.4.2.3 The third rule of engagement: conduct of interviews

Having countered the arguments suggesting that researching in a familiar setting created researcher bias, the next challenge in addressing the role of the researcher was how to conduct the interviews. Previous phenomenographic research and discussion indicates that the interview process requires the interviewer / researcher to direct the interviewee toward the phenomenon under study and then purposively look for variation in the relational experience between the interviewee and the phenomenon under study (Marton 1981; Bowden 1986; Bowden & Walsh 1994). However, explanations of the actual interview process used were varied and often obscure, even in more recent editions (Marton & Booth 1997), which could potentially render knowledge claims indefensible.

Sandberg (1994) acknowledges the problems associated with the conduct of phenomenographic interviews. He argues that the most important issue is that "the

researcher must demonstrate that the interpretations of the research object are defensible" (Sandberg 1994). Therefore, strategies must be put in place to ensure that the interviewer / researcher continually checks and cross checks interpretations or knowledge claims about the phenomenon under study.

Sandberg (1994) established strategies for the conduct of interviews in his study around two dimensions: object and confidence. The strategies were designed to ensure the defensibility of knowledge claims. The following discussion will describe how Sandberg's strategies in conjunction with other phenomenographic or qualitative research strategies have been used in the present study to ensure that the interpretations of neonatal nurses' experience of competence in their work were represented faithfully.

There are four components in the object dimension. The first component is concerned with *establishing a community of interpretation.* This began with meeting the workers who where going to participate in the study, spending a week learning about their work, conducting seminars about the study and reiterating study aims before commencement of interview.

The second component involves *taking social praxis as the point of departure.* This component acknowledges that meaning is bounded to particular social contexts. Thus, concrete situations identified by the interviewees were used as starting points for further elaboration.

The third component involved *asking what and how questions* rather than why questions. The reason for this was that why questions tended to encourage the interviewee to explain why they did something a particular way instead of describing what doing the particular something means to the interviewee.

The fourth component is concerned with *dialectics as interview tools.* Here the concrete situations identified by the interviewee were reflected on and expanded until a 'deadlock' in the conversation was reached. At this point, an interpretation of the interviewee's descriptions was feed back. This was done to establish pragmatic validity, an aspect that is discussed further below.

The confidence dimension is concerned with the social relation between the interviewer and the interviewee. Social relations between the interviewer and interviewee can have a strong influence on the generation of descriptions. Thus, *genuine respect* and attending to *defenses and resistances* are important factors that must be addressed.

Use of these dimensions is reflected in earlier points (see **6.3.3** and **6.4.2.1**). Further application of these strategies saw the present study dispense with the notion of an interview schedule and use an unstructured approach when interviewing study participants. The interview was constructed around two broad questions.

1.What do you understand a competent neonatal nurse to be?

2. How have you achieved competence in your practice?

Asking the interviewee to respond to one or two broad key questions is fairly typical in phenomenographic interviews (Bruce 1994). In this way the interviewee can "choose the dimension for his or her answer" (Marton 1988, p.197). The idea of the broad key questions is to start the interviewee thinking about the phenomenon under study in general terms (Minichiello et al. 1990) and perhaps identify elements of the phenomenon that enter the interviewee's immediate awareness (Marton & Booth 1997). It is also consistent with *taking social praxis as the point of departure* (Sandberg 1994).

Once the interviewee has chosen the initial direction for the interview, the interviewer can then begin to funnel the conversation toward articulation of the phenomenon under study (Minichiello et al. 1990). In a phenomenographic interview, the interviewee is asked to reflect on and recount their experiences of the phenomenon under study. The interviewer then uses a variety of probing 'what' and 'how' questions to elicit a description of that phenomenon (Marton & Booth 1997; Abrandt 1997; Bruce 1994; Sandberg 1994). Probing questions are used because they allow the interviewer to gain more detail and clarify meanings that interviewees attach to a given phenomenon. Minichiello et al. (1990) outline six types of probing questions: devil's advocate question, hypothetical question, posing the ideal, nudging probe, reflective probe and summary question.

The Minichiello et al. (1990) probing strategies are similar to those espoused by phenomenographic researchers. However, this study has favoured the use of four

probing strategies outlined by Abrandt (1997). The first strategy of *repeating* involves the interviewer repeating the last utterances of the interviewee in a questioning tone followed by silence. The purpose of this strategy is to prompt the interviewee to elaborate further on whatever experience they have been recounting.

If this first probing strategy is unsuccessful, it can be followed by the second probing strategy a *request for clarification*. Here, the interviewer can ask for clarification by simply asking the interviewee 'what do you mean by that?'

If the first and second probing strategies continue to elicit an insufficient response, the third probing strategy, *request for elaboration* is useful. With this strategy the interviewer makes an explicit request by asking the interviewee 'can you tell me more about that?'

The final strategy is a *request for confirmation*. This strategy involves the interviewer summarising what the interviewee has said and returning that summary to the interviewee in a questioning tone. The interviewee can then confirm what the interviewer has said or elaborate on deficient areas.

A pilot study was undertaken to test suitability of the broad opening questions as well as efficacy of the probing strategies. I asked for three volunteers from the 11 supernumerary nursing staff detailed in **6.3.4**. My supervisor and other members of a research group interested in phenomenography reviewed the transcript of the first interview. There was general consensus that the two broad opening questions directed the interviewee toward the phenomenon under study. The probing strategies seemed to work well, although I was cautioned about the use of 'leading' questions, which was attributed to inexperience at interviewing. During conduct of the next two pilot interviews I concentrated on the probing strategies. The research group reviewed the transcripts and noted an improvement in my interview technique.

The research group continued to review the early transcripts once the main study started and offered suggestions. In general the first probing strategy worked as well during the conduct of interviews for the present study as it did for Abrandt (1997). I also found the fourth probing strategy particularly useful. During the conduct of many interviews my

summarising at what I often presumed was toward the end of an interview often prompted substantial elaboration by study participants. In many cases the length of the elaboration necessitated a change of the audiotape. This did give me cause to think that my earlier probing strategies had not been successful. However, in light of Sandberg's (1994) notion of *dialectics as interview tools*, I decided that I was probably on the right track and gave myself the benefit of being a beginning researcher.

Communicative and pragmatic validity (Sandberg 1994) as well as accounting for the presence of self during the generation of descriptions are important in making defensible knowledge claims. Sandberg explains that *communicative validity* involves a three-stage process. First, the generation of verbal descriptions must involve a conversational dialogue between the interviewer and the interviewee. One-sided communication where the interviewee answers the interviewer's questions without elaboration does not demonstrate a high degree of communicative validity. The second stage occurs during the process of analysing descriptions generated at interview. This stage involves the researcher immersing themselves in and communicating with the transcripts so that faithful interpretations of the object of study, in this case, neonatal nurses experiences of competence in their practice is achieved. The third stage of achieving communicative validity is through dialogue with other researchers and professionals in the field of practice being investigated.

Pragmatic validity involves testing knowledge produced in action. This means that the interviewer cannot accept statements made by the interviewee during the interview at face value. Sandberg (1994) asserts that the interviewee must be able to "embed the statement in concrete work situations" (p.63). In other words, as the interviewer, it was my responsibility to ensure that the interviewee provided sufficient examples demonstrating the meaning of particular statements within the context of a work situation.

The use of strategies by Abrandt (1997) and Sandberg (1994) during the conduct of interviews in the present study allowed achievement of both communicative and pragmatic validity. Confronting the possibility of researcher bias head-on as mentioned in **6.4.2.2** accounted for the presence of self. Moreover, the review of opening interview questions, pilot interviews and early study interviews by the phenomenography research

group served two purposes. The first purpose was to aid the development of my interviewing skills. The second purpose was to make sure that I was following through with interviewee responses and not dominating the interview with my own presuppositions about competence in neonatal nursing practice. Ashworth & Lucas (2000) argue that these sorts of activities achieve empathy with the interviewee and greatly assist with the bracketing of presuppositions.

6.4.2.4 Avoiding problems with transcription

Sandberg (1994) argues that the transformation from interview to transcript is not unproblematic. This argument is based on the fact that an audiotape recording cannot display non-verbal cues such as body language that may reflect tensions between the interviewer and the interviewee when particular situations are being recounted. Thus, it is possible that the true interpretation of the meaning may be distorted.

Another problem that may happen during the transcription process is that some words or whole chunks of words may not be heard. Careless mistakes in the transcription process that result in fragmentation of responses can significantly distort interpretation of meaning. Moreover the written transcript cannot show tone of voice or expressive pauses.

To avoid these problems I undertook the interview and transcription process myself. By carrying out the interviews myself, I could ensure consistency and focus toward the object of research. I also took short notes during the interview, which served two purposes. The first was to help me summarise interpretations that would be feed back to the interviewee. The second was to record non-verbal cues and voice expressions corresponding to the counter on the audiotape, which I thought would help with later analysis.

I agree with Sandberg (1994) that the entire interviewing and transcription process was extremely time consuming. However, it did increase my familiarity with the transcripts and gave me the opportunity to check for any transcription errors.

6.5 Data analysis

As mentioned above, communicative and pragmatic validity extends into the data analysis (Sandberg 1994), which means that in many respects the collection and analysis of data are inseparable (Marton & Booth 1997). "The main task...is to discern the internal structure and the intertwined meaning of the object of research" (Marton & Booth 1997, p.133). In order to construct the internal relations that exist within the whole data pool the phenomenographic approach involves the use of contextual analysis. This means that statements expressed by the interviewee must be interpreted in relation to the context in which they are embedded. Sandberg (1994) argues that the analysis should also be intentional. That is, differences between what is conceived as the work and how the worker conceives of the work must be taken into account.

I found the steps described by Dahlgren & Fallsberg (1991) provided me with the prescriptive framework I needed as a beginning researcher to undertake the process of analysis. I will use these steps to describe how the analysis was undertaken in the present study.

Step 1: *Familiarisation.* This is where the researcher carefully reads and re-reads the transcripts so that details within the text become familiar. Having transcribed the interviews myself aided this process. However, I found that I needed to read the transcripts in 'batches' of five because of the large amount of information to think about and sift through.

Step 2: *Condensation.* This involves finding core statements that characterise boundaries of the phenomenon under study. In isolating these core statements the researcher has to bracket their own preconceptions, so that focus is directed toward what is expressed by the interviewee. This step was aided by the strategies mentioned in **6.4.2.3** that ensured communicative and pragmatic validity. In general those statements, which characterised boundaries of the phenomenon under study were: expressed early in the interview, repeated several times and explicitly expressed, features which were also described by Abrandt (1997).

Once I was familiar with each 'batch' of transcripts I went through the process of isolating core statements. To ensure that I was undertaking the process correctly, the phenomenography research group worked through a batch of transcripts with me. By the time I had worked my way through the whole data set I had isolated in excess of 200 core statements used by interviewees to characterise the boundaries of the way competence in neonatal nursing practice is experienced.

Step 3: *Comparison.* Core statements are then compared to find sources of shared and varied meaning. This is a careful process of determining what aspects of the phenomenon under study are expressed in the communicative dialogue and how those descriptions may vary within the context of a specific situation. As these situations are grounded in life-world experiences, there will be variation in the way certain aspects of the description are thematised and which recede into the background. Identifying variation in these thematised aspects allows the researcher to gain a clearer understanding of the different ways of experiencing the phenomenon under study.

Keeping the core statements in their original batches, I re-read the sections of the transcripts that contained the core statements. During these readings I particularly focused on how the relation between the core statement and the situation expressed by the interviewee. This process enabled me to see that core statements were thematised around two distinct foci: the infant and family, and the NICU environment. This represented the first major source of variation in the way competence in neonatal nursing practice is experienced.

Step 4: *Grouping.* In this step core statements, which appear to have similarities, are grouped together. This is a highly iterative process and had begun naturally as a part of step 3. Further re-reading of the transcripts and discussion with the phenomenography research group distilled four major groups, loosely referred to at this stage as categories of description. Two had a distinct infant and family focus and two had a focus directed toward the NICU environment. It was at this point that I identified possible areas of critical aspects of variation, which I discussed further with the research group.

Step 5: *Articulating.* This step involves describing the essence of similarities within each group. This step also involved much thinking, discussion and revision before the

categories were considered to be a satisfactory reflection of the ways in which neonatal nurses' conceived of or experienced competence in their practice.

The essence of Category I was concerned with separate items in the NICU environment. In Category II, the essence was concerned with the integration of items in the NICU. In Category III the essence was concerned with objective prioritising of infant and family response. In Category IV the essence was concerned with focusing on tacit variation in infant and family response and outcome for the infant and family. Having distilled the essence of each of these four categories, the possible areas of critical aspects of variation identified in step 4 became more clearly focused between Category II and III and between Category III and IV.

Step 6: *Labelling*. This step involves the construction of a linguistic expression that captures articulation of the descriptive essences. These linguistic expressions are the phenomenographic categories of description that constitute variation in the way the phenomenon is experienced. The phenomenographic term used here is outcome space.

After much deliberation the outcome space constituting variation in the way neonatal nurses conceived of or experienced competence in their practice has been labeled as follows. Competence is:

I Managing separate items within the NICU environment according to technology-based policy and procedural rules.

II Managing integrated clusters of items within the NICU environment according to technology-based policy and procedural rules.

III Managing a support system for the infant and family by using objective sensory observation of the infant to guide the use of policy and procedural rules according to priorities.

IV Managing a support system focused on the infant and family by using objective sensory observation of the infant and tacit feelings about the infant arising from variation in the previous experiences of outcome for infant and family to guide and challenge the use of policy and procedural rules.

The next chapter uses excerpts from the transcripts to describe the categories in more detail, including the internal relations that exist within each category as well as between

each category. Greater discussion is also devoted to clarifying possible areas of critical aspects of variation identified above.

Step 7: *Contrasting.* In this step similarities and differences within the categories of description are compared at a meta level. Abrandt (1997) achieved this by recontextualising the outcome of the empirical analysis through a discussion of theoretical and educational perspectives in the professional discourse of physiotherapy. This study has used a similar technique and is addressed further in Chapter 8.

6.6 Problems encountered during the study

Sometimes it was easy for the interviewees to express their experience of competence in neonatal nursing. At other times it was not, particularly if describing a distressing or painful experience. Marton & Booth (1997) and Sandberg (1994) emphasise the importance of preparing and maintaining the interviewee / interviewer relationship if painful defenses are to be broken down and a phenomenon described in its most complete sense.

Sometimes however, I found myself entering a therapeutic or helping relationship (Nelson-Jones 1988) with an interviewee because they wanted to debrief about a particular situation that recounting experiences about competence in their practice had evoked. The situations prompting this type of relationship were usually catastrophic for the interviewee, involving the sudden demise or death of an infant. Interviewees would recount the situation in detail, often including time, date, members of nursing and medical staff present and the actions undertaken by each during the situation. Then they would ask for my opinion on whether they had acted in the right manner or did I think they had missed cues from the infant that may have prevented the demise.

From this point, I had to proceed with extreme caution during the interview process because I had two important issues to consider: the emotional state of the interviewee and the defensibility of knowledge claims. This is where descriptions of the interview process provided by those who have conducted phenomenographic research were of no real assistance. Sandberg (1994) and Marton & Booth (1997) mention that as an interviewer / researcher it is important to work through resistances however painful by

being sensitive to interviewee responses. At best Sandberg (1994) says, "we must be prepared to modify our way of interacting with the worker" (p.82), but gives no discussion on what those modifications might be. Marton & Booth (1997) indicate that the interviewee may terminate the interview at any time, but do not indicate how they would deal with the emotional distress of an interviewee during or post interview.

Perhaps the reason for this particular inadequacy in the phenomenographic interview process is that much of the research is concerned with student learning. That is, the main focus of the research lies in how particular course content is apprehended and understood. Such content is unlikely to arouse feelings of guilt or anguish within the interviewee. Conversely, an interviewee who has experienced the death of an infant in their care and is being asked to reflect on experiences of being competent in their clinical practice is very likely to have such feelings come to the surface.

Thus, responsibility for ensuring the emotional well-being of colleagues I would be working with after the interview was a very real issue in this study. With this in mind, I worked out a strategy with the clinical psychologist attached to the Department of Neonatal Medicine to deal with interviewees who experienced overwhelming emotions during the interview process.

I would ask the interviewee if they wanted to continue with the interview. If the answer were no, I would ask them if they wanted to talk further with me about the experience or would they prefer to talk with the Department's clinical psychologist. Termination of an interview due to overwhelming emotion happened on one occasion during this study and resulted in the need for two debriefing sessions with a senior nursing colleague and myself. The offer of further consultation with the Department's clinical psychologist was refused. Data collected prior to the termination was destroyed. This same participant however, volunteered to participate in another study interview some weeks later, which proceeded without incident.

If an interviewee decided to continue with the interview, I would stop the audiotape and give them time to collect themselves. When the interviewee was ready to progress, I would ask them if they wanted to return to the experience that had caused the emotions to surface or did they want to move in another direction. If the interviewee wanted to

return and reflect on the experience, I would replay the last few minutes of the audiotape to refocus the interview, and then use a *repeating* probe followed by silence. If the interviewee did not want to return to the experience, I would use a *request for confirmation* probe followed by silence.

There were two more occasions where interviewees were overwhelmed by emotion during the interview. In both of these instances interviewees elected to continue with the interview and return to the experience. By using *repeating* probes I was able to refocus the interview toward the object of study. I did not offer any opinions about what had happened during the experience, I just let the interviewee talk through the experience. Once thoughts, actions and feelings related to the experience had been reflected on, both interviewees were satisfied that they had done their best for the infant. Thus, I managed to ensure the emotional well-being of the interviewees as well as knowledge claims about the object of study.

6.7 Limitations of the study

The design of this study is the source of both its strengths and weaknesses. The strengths of this study come from two major design features inspired by Sandberg (1994). The first feature is an adherence to the principles for the selection of study participants. The second feature relates to the rigour necessary to ensure defensibility of knowledge claims through communicative and pragmatic validity.

The weaknesses come from issues raised in **6.3.1** that are concerned with the fact that neonatal nurses work in a variety of contexts other than the one from which this study's participants were drawn. No attempt has been made to explore to what extent the results of this study are transferable to these other contexts. As such, it will be interesting to see whether or not the results can withstand the scrutiny of neonatal nurses working in rural areas or those in busy surgical NICUs.

6.8 Summary

This chapter has discussed the design considerations of the present study. Particular consideration has been given to the processes used in this study to defend knowledge claims. Adherence to those processes has produced an outcome space consisting of four

qualitatively different ways of experiencing competence in neonatal nursing practice, which are detailed in the following chapter.

Chapter 7

7 Results: Ways of Experiencing Competence in Neonatal Nursing Practice

7.1 Introduction

This study has chosen to explore variation in how neonatal nurses conceive of or experience competence in their practice by asking the following questions.

1. What do you understand a competent neonatal nurse to be?
2. How have you achieved competence in your practice?

Analysis of answers to the first question has revealed that neonatal nurses conceive of competence in their practice in four qualitatively different ways. These conceptions or ways of experiencing competence in neonatal nursing practice have been distinguished according to the following descriptive categories. Competence is:

I Managing separate items within the NICU environment according to technology-based policy and procedural rules.

II Managing integrated clusters of items within the NICU environment according to technology-based policy and procedural rules.

III Managing a support system for the infant and family by using objective sensory observation of the infant to guide the use of policy and procedural rules according to priorities.

IV Managing a support system focused on the infant and family by using objective sensory observation of the infant and tacit feelings about the infant arising from variation in the previous experiences of outcome for infant and family to guide and challenge the use of policy and procedural rules.

Each way of experiencing competence in neonatal nursing is characterised by a distinctive structure of essential aspects, which become apparent when neonatal nurses describe examples of carrying out their work. When analysis of answers to the second question was conducted, direct links were found between the strategies neonatal nurses

used to achieve competence in their practice, and the ways in which competence in neonatal nursing practice is experienced.

This chapter intends to describe in detail the distinctive structure of essential aspects that constitute each conception or way of experiencing competence in neonatal nursing practice. Strategies used by neonatal nurses to achieve competence in their practice will be addressed accordingly so that direct links are seen. Extracts from the interview transcripts will appear in a different font to the main body of text and will be used to exemplify distinctive aspects of the ways in which competence in neonatal nursing practice is experienced. Those statements, which, in my interpretation most clearly express the meaning of a particular aspect, are underlined.

7.2 A note on use of the word 'managing'

I have used the word managing in each of the four descriptions of competence. It is generally accepted that every subject, class or field has its own particular vocabulary of words. Nursing is no exception.

The *Macquarie Dictionary* (1987) defines the word 'manage' in nine (9) different ways.

> **Manage**...1.to bring about; succeed in accomplishing.... 2.to take charge or care of.... 3.to dominate or influence (a person) by tact, address or artifice. 4.to handle direct, govern, or control in action or use. 5.to wield (a weapon, tool, etc). 6.to succeed in accomplishing a task, purpose etc. 7.to contrive to get along. 8.to handle or train (a horse) in the exercises of the manège. 9.to conduct affairs. (p.1047).

Each of these dictionary definitions pertains to a specific situation or context in which the word 'manage' is framed. Any of these definitions could be applied to situations described by neonatal nurses within the context of being competent in their practice. For example the second definition could be used to describe what caring for an infant means. The fourth definition could be used to describe issues involved when taking control in an emergency situation. As far as the eighth definition is concerned, it is the training aspect that is applicable. In this context, neonatal nursing has always relied on a system that uses a more senior neonatal nurse to coach or train a junior in the ways of neonatal nursing.

Neonatal nurses in the present study have used the word 'manage' in many of the examples given in answer to the aforementioned questions. In many cases it is used in an all-encompassing sense to describe a particular aspect of being competent in neonatal nursing practice. As such, the different ways in which the word 'manage' was expressed became pivotal in constituting the essential aspects distinguishing the different ways in which competence as a neonatal nurse was conceived of or experienced.

In the categories of description, the word managing is used to preface the focus of each category. As the focus of each category is qualitatively different, so to is the understanding of what is managed in relation to being and becoming competent in neonatal nursing practice, hence the importance of the word managing.

7.3 Outcome space of the experience of competence in neonatal nursing practice

Table 2: Outcome space of the experience of competence in neonatal nursing practice

Structural	**Referential** Competence in neonatal nursing practice seen as...		
	The management of a technological environment which if components are managed procedurally will care for infant and family	The management of a technologically integrated environment which will care for infant and family if clusters of items are managed correctly	The management of a support system for infant and family
Follow technology-based rules (instrument observation)	I	II	
Use objective sensory observation of infant as guide to rules			III
Use Tacit feelings about infant to focus sensory observation of infant and to guide and challenge rules			IV

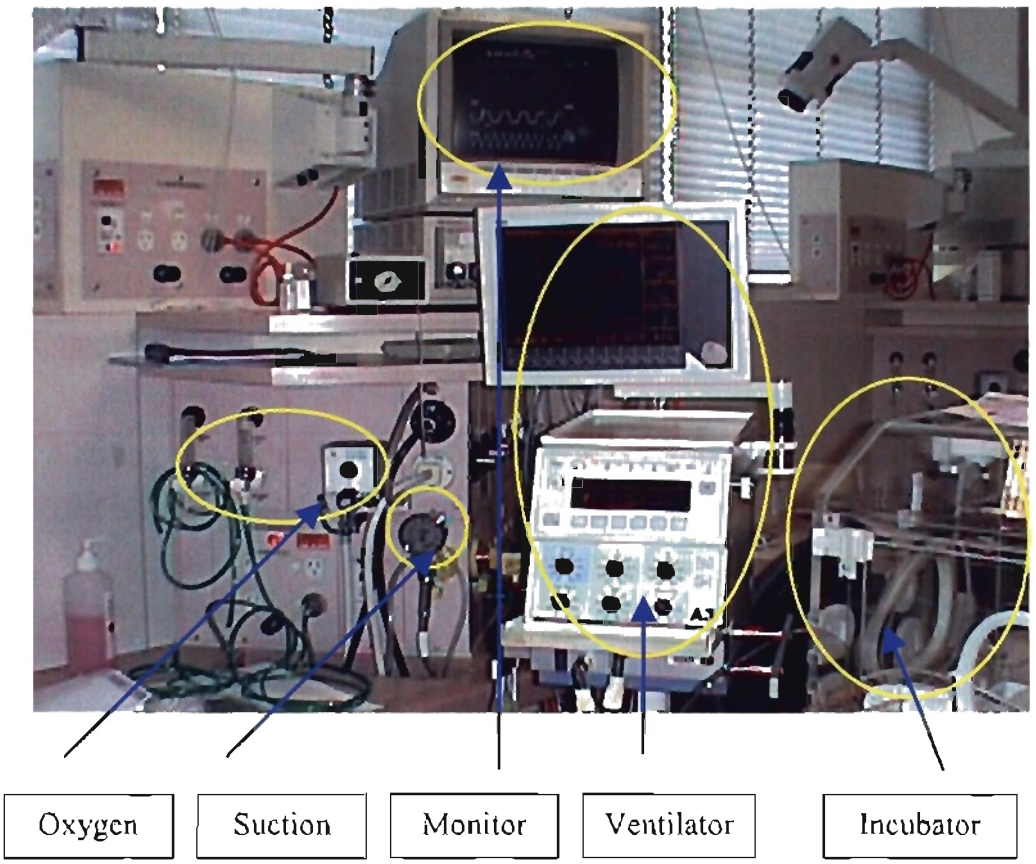
Table 2 shows the differing referential (meaning) and structural aspects constituting the outcome space of the phenomenon - experience of competence in neonatal nursing practice. Variation in the relationship between the neonatal nurse (subject) and experience of competence in neonatal nursing practice (object), or the worker and the work, is represented by the four numerical (I – IV) categories of description.

The categories of description have a logical, internally related hierarchy. As with any hierarchy of this nature, categories are ordered and distinguished by their degree of

complexity. Thus, Category I - Managing separate items within the NICU environment according to technology-based policy and procedural rules expresses the least complex conception of competence in neonatal nursing practice. The most complex conception of competence in neonatal nursing practice is expressed by Category IV - Managing a support system focused on the infant and family by using objective sensory observation of the infant and tacit feelings about the infant arising from variation in the previous experiences of outcome for infant and family to guide and challenge the use of policy and procedural rules. Thus, the table shows how the whole way of conceiving of, or experiencing competence in neonatal nursing practice, has been delimited from and related to the context of contemporary neonatal nursing practice.

The remainder of this chapter is devoted to describing the outcome space of the experience of competence in neonatal nursing practice by addressing each category description in order of complexity. A rigorous adherence to the tenets of phenomenography as discussed in Chapter 5 and the research design as discussed in Chapter 6 establish the quality and defensibility of knowledge claims presented here.

Figure 4 **Focusing Category I**



Managing separate items within the NICU environment according to technology-based policy and procedural rules

The purpose of this photograph is to show that the main focus of this category is directed toward the NICU environment. Yellow circles have been drawn around separate items within the NICU environment. The names of the items appear in text boxes. In this category, each of these items is thought about and managed separately according to policy and procedural rules.

7.4 Category I

Managing separate items within the NICU environment according to technology-based policy and procedural rules

7.4.1 Being a competent neonatal nurse

Table 3: Competence as following technology-based rules

Competence as:	Referential Aspect (meaning)	Structural Aspect
Following technology-based rules	Neonatal nurses describe competence as managing separate items within the NICU environment according to policy and procedural guidelines.	Focus on rules together with objective evidence from monitoring and life support equipment.

In this category being a competent neonatal nurse is seen as an ability to 'manage' separate items of the NICU environment. Those separate items of the NICU environment referred to here, that require managing, include the myriad of technical and life support equipment shown in Fig. 4 and procedural activities peculiar to the specialty of neonatal nursing. Each of those items has a set of rules or guidelines detailing how activities relating to those items should be carried out in order to provide a safe level of care to the infant and family.

There is a sense that the infant and family have many needs that require attention. Meeting those needs is achieved by placing separate items of the NICU environment in the foreground and attending to them one at a time throughout the course of a shift. Thus, focus on the infant and family recedes into the background of awareness. Safety of the infant and family is, in this sense, taken for granted because the rules detailing how certain activities should be carried out are always followed.

There are three critical aspects of following the rules constituting the meaning of being competent as a neonatal nurse. These aspects are seen as ability to:

1. Manage nursing activities according to specified safety requirements found in NICU policy and procedural guidelines.
2. Record information from technology assisted monitoring parameters accurately and methodically.
3 Understand single or separate items of the NICU environment.

The following excerpt shows how one neonatal nurse (NN) describes these elements to the researcher (R).

(EMILY)

R Can you tell me what you understand being a competent neonatal nurse to be?

NN Um...It's doing what you have to do to look after the baby and the family I suppose as well ... Um... but in a safe manner. Making sure that you can meet the needs of the baby without going beyond your role of what you can and cannot do.

R Ok. What do you mean by looking after the baby in a safe manner?

NN Maintaining a safe environment as far as the baby's concerned. Not doing anything that you're not qualified to do but doing what you are qualified to do, like making sure that you maintain an airway and all the safety checks that you go through constantly throughout the shift. Like making sure if you're looking after a ventilated baby that the tube hasn't travelled, like measuring the tube, listening for air entry, chest movement, making sure that the ventilator tubing is ok. Um... making sure that the baby is not lying on anything harmful or that there's nothing harmful in the cot. These are things that I think

are pretty important. Then you have to make sure that the baby's environment is safe by making sure that it's not too hot, not too cold, the right neutral thermal zone. You give the correct feed, give the right breast milk, give the right medications at the right time, check the doses and make sure that it's the right order. Then you have to make sure that people wash their hands before they put them in the crib. Um... Just trying to follow the policies and protocols when you're doing anything to make sure that you're doing it right.

R How do you know when you are doing things right?

NN Well, sometimes you don't know. You think that you have, that you've done everything that you're supposed to do and that you've done it right but you may not. You have to have your little checklist.

R What do you put on your checklist?

NN Just little things like from top to toe to check, what I've done sort of thing. Like I always go from airway down checking everything in the bed, the ventilation, monitor, observations, input, output, making sure I give the medications, that I've done the baby's cares, you know, just looking after the baby.

The excerpt above highlights many qualities associated with a conception of being competent as a neonatal nurse that is concerned with following the rules. It is acknowledged that the infant must be cared for in a safe manner. However, the focus of caring for the infant is a safe manner is directed toward understanding and managing separate items of technological and life support equipment according to certain NICU policy guidelines, not on the infant's actual physical presence and condition.

The conceived actions of the neonatal nurse are delimited by a meaning that is concerned with checking that all necessary nursing procedures have been followed according to NICU recommendations and recorded accurately on appropriate hospital documents. The neonatal nurse in the above excerpt expresses this notion in the form of a personal mental checklist upon which individual items are listed. Each of these separate items corresponds to a nursing activity that must be attended throughout the course of a rostered shift. As each item is attended it is crossed off the mental checklist.

The impact of each separate nursing activity on the infant and their family is not given any consideration in this category. Rather, the emphasis is on the activities themselves and the nurse's perceived ability to carry them out according to NICU policy. In other words the emphasis is on doing what is considered 'right' so that a particular standard or rule is met. If the rules are followed then the safety of the infant is assured or taken for granted. In this way, being competent is seen as an ability to carry out a series of separate skills or activities according to those rules. If the neonatal nurse follows those rules for each separate skill or activity, then they are being competent in the nursing care provided to infants and their families.

Other neonatal nurses also express how important it is to follow the rules in order to be competent and provide a safe level of care to the infant and family. In each of these excerpts safety of the infant and family is taken for granted so long as the rules detailing how certain activities should be carried out are followed.

(JACKIE)

NN To be a competent neonatal nurse you have to be a safe practitioner. You always need an ethical resource manual to go to so that you practice within a set of rules or guidelines.

R Is being a safe practitioner the same as being competent in neonatal nursing?

NN Yes!

R Why do you say that?

NN Because if you 're not safe, you're not competent. You have to follow a code of ethics, have principles and follow set guidelines, policies and procedures.

R Can you give me an example of what you mean from the clinical setting?

NN Well you have to make sure that alarm limits are set at the appropriate range. It's everything that we do. Like administering medications, line changes, getting babies out for cuddles. You have to follow the guidelines so that you are being safe.

(LUCY)

NN Well I stick to them. Sometimes you might have to adapt them on doctor's orders, but if things are left up to me I stick to the policies.

(PAULA)

R When you talk about going through the procedure and doing what's written down, I take it you mean following the protocol manual.

NN Yes that's right.

R OK. Why do you think it is important to follow the manual?

NN Because you are meeting a standard.

R Why are meeting standards important?

NN Because you follow the policy and you achieve the goal of whatever the policy may be. Like safe removal of a line.

The importance placed on following the rules according to detail is described below.

(EVA)

R What sort of things are you aiming for when caring for the baby?

NN To get things done.

R What sort of things?

NN Oh , you know, like urinalysis, dextrostixs or taking a capillary gas, stuff like that.

R Are these sorts of things an important part of being a competent neonatal nurse?

NN Well yes. You need to know how to take the urine, put it on the stick, and take a reading. And what to do when you're taking a capillary gas.

In the excerpt immediately above the neonatal nurse is describing how important it is to follow the rules associated with a separate item within the NICU environment. That separate item is concerned with the technicalities of performing a skill known as a

urinalysis. Reference is made to detail involved in performing a urinalysis. There is an understanding that each of these details forms the skill known as a urinalysis. In this way, the neonatal nurse is able to discern that each separate skill is composed of certain related sub skills. There is also a sense that it is important to carry out each of these certain related sub skills in a particular or 'right' way so that the information, in this case a reading is accurate. Thus, the neonatal nurse's actions are delimited by a meaning ascribed to being competent that is concerned with managing separate activities according to following the rules.

7.4.2 Becoming a competent neonatal nurse

When competence as a neonatal nurse is conceived of as following the rules, strategies involved with becoming a competent neonatal nurse are also concerned with following the rules. The following excerpt demonstrates this relationship.

(BELINDA)

R How important are policies in developing competence in neonatal nursing?

NN Very important for our own protection and the patient's protection because most of the things that are in the policy book have been tested and are known to be safe practices. And policies change from year to year when they find that something is not based on good sound evidence.

The above excerpt shows the importance placed on the relationship between following the rules and becoming a competent neonatal nurse. 'Safe practices' are central to becoming competent as a neonatal nurse. Thus, in this sense, becoming competent involves strategies that enable the neonatal nurse to carry out nursing activities in a safe manner. What is interesting in this excerpt is that the aspect of personal protection or safety has been introduced as well as safety for the infant.

My interpretation of this excerpt is as follows. Reference is made to the fact that policies are safe because they are derived from objective evidence-based data. There is an understanding that if the policy 'rules' are followed accurately a so-called *'known'* or proven level of safe practice will be provided to the infant. This known level of safe practice helps to explain why safety of the infant and family are taken for granted and why rules are in the foreground of awareness in becoming competent as a neonatal nurse.

Policies within the NICU change regularly, as new data become available. This means that a corresponding change in any given set of policy rules is possible at any time. Therefore becoming competent as a neonatal nurse involves constant attention to the 'policy book' so that any changes to the 'rules' are noted and assimilated into current practice. In this way, the infant is protected because they are receiving the 'known' benefits of the updated policy. The neonatal nurse is protected or safe in their ability to provide nursing care because changes to the 'rules', that is, NICU policy and procedural guidelines, have been duly noted and subsequently followed.

Another neonatal nurse expresses the known benefit of following the rules.

(JACKIE)

NN I guess my development has been helped by the feedback I've received.

R What do you mean?

NN Like if you had done the right thing for the baby and followed the policy, you would get positive feedback from your colleagues and be glad the baby was OK.

In my interpretation, the above excerpt raises two important points. The first point is concerned with the idea that there is only one way to care for an infant. That is, the way detailed in the NICU policy and procedural guidelines. There is a sense that the infant

was OK because certain policy 'rules' had been followed. Thus, in order to become competent as a neonatal nurse, all activities must be managed in the 'right' way because of the known benefit to the infant and family.

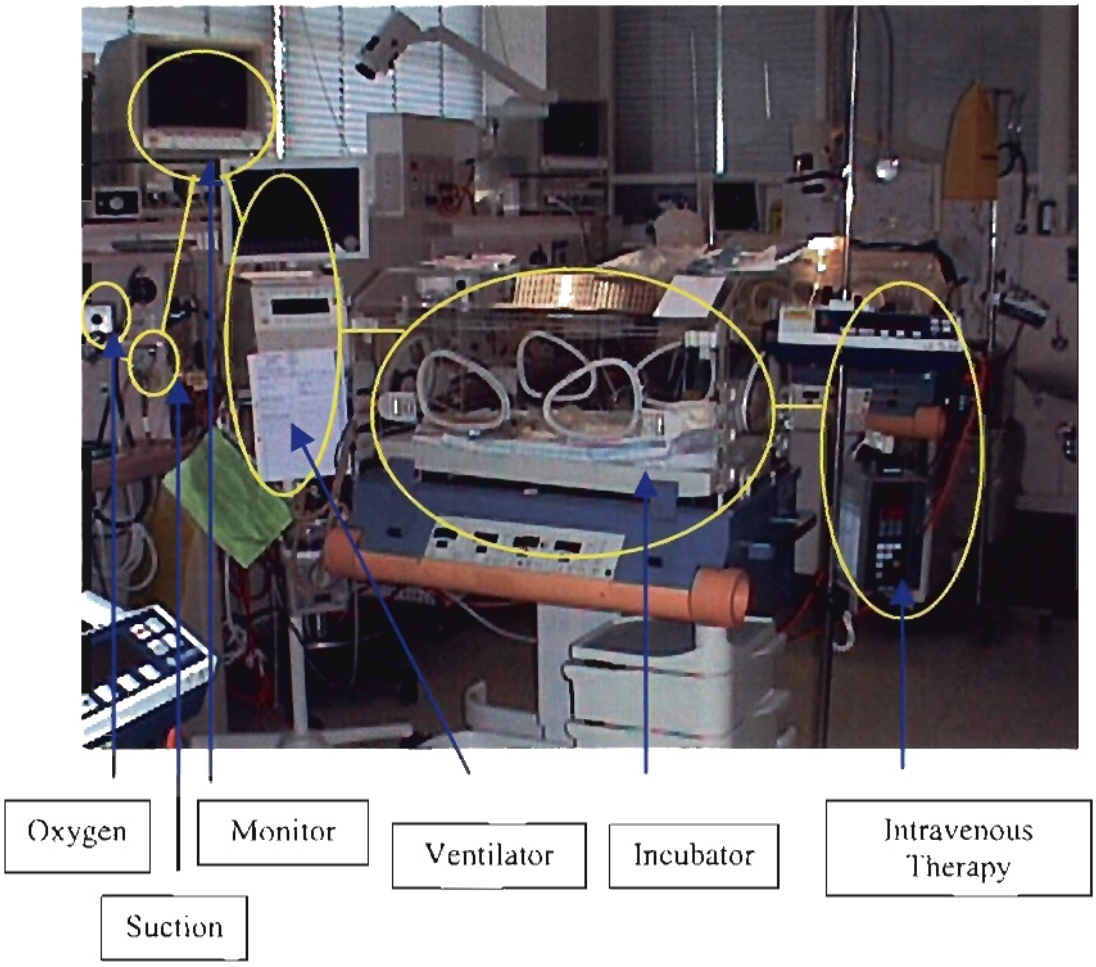
The second point is concerned with receiving positive feedback from colleagues. Receiving positive feedback from other colleagues that an infant is 'OK' because certain rules have been followed reinforces the idea that in order to become competent rules must be followed. It also reinforces the idea that there is only one way to care for an infant, the 'right' way detailed in the NICU policy and procedural guidelines.

7.4.3 Summary

In Category I the meaning of being competent as a neonatal nurse is seen as an ability to carry out or manage nursing activities according to NICU policy and procedural guidelines. Each nursing activity has a particular set of rules. Those rules govern the myriad of technical life support equipment and clinical activities peculiar to the NICU. Neonatal nurses expressing this category follow each particular set of rules accurately and methodically. Following the rules in this way is seen to provide a safe level of care to infants and their families because each particular set of rules has been developed from objective evidence-based data that has a known or taken for granted benefit. Thus, in this category competence in neonatal nursing practice can only be achieved by following the rules.

It is that safety aspect associated with the known or taken for granted benefit of following the rules that is also a feature of strategies involved in becoming a competent neonatal nurse. Those strategies involve constant revision of certain manuals noting any change in NICU policy or procedural guidelines. They also involve learning how to manage nursing activities according to the particular way detailed in the NICU policy or procedural guidelines. There is an emphasis on managing individual nursing activities in the 'right' way and in the 'right' order without consideration of how each of these activities may impact on the infant or their family. Again this is because providing a safe level of care to the infant and family is taken for granted so long as rules are followed.

Figure 5 **Focusing Category II**



Managing integrated clusters of items within the NICU environment according to technology-based policy and procedural rules

In this category, the main focus is also directed toward the NICU environment. The difference between this category and Category I is that in II relationships are seen between separate items of the NICU. In the photograph above yellow circles have been drawn around separate items within the NICU environment. The names of these items appear in text boxes. The yellow lines drawn between circled items represent an integrated cluster or the ability to see part/whole relationships. Each integrated cluster is then managed according to policy and procedural rules.

7.5 Category II

Managing integrated clusters of items within the NICU environment according to technology-based policy and procedural rules.

7.5.1 Being a competent neonatal nurse

Table 4: Competence as managing integrated clusters of technology-based rules

Competence as:	Referential Aspect (meaning)	Structural Aspect
Managing integrated clusters of technology-based rules	Neonatal nurses describe competence as managing clusters of items within the NICU environment according to a personal efficiency clustering in use of policy and procedural rules.	Focus is on integrated clusters of rules together with using objective evidence from monitoring and life support equipment.

In Category II, being competent as a neonatal nurse is seen as a shift in focus with the perceived meaning directed toward an integrated clustering in the use of policy and procedural rules. At first glance, it seems that neonatal nurses who express this category think about being competent in their practice in a similar way to those neonatal nurses expressing Category I. This apparent similarity stems from the fact that Category II and Category I are both concerned with an ability to manage items within the NICU environment. Those items being the technical and life support equipment and procedural activities peculiar to the specialty of neonatal nursing. Thus, the activities themselves are in the foreground of awareness.

Another similarity is that in this category as in Category I the needs of the infant and family recede into the background of awareness because of the taken for granted known benefits of following the rules. The qualitative difference is that in Category I meeting

those needs places emphasis on managing nursing activities in a certain or 'right' way as detailed in NICU policy and procedural guidelines. In this conception the emphasis shifts to an integrated clustering as shown in Figure 5 in the use of policy and procedural guidelines concerned with items in the NICU environment.

There are three critical aspects of managing integrated clusters of technology-based rules constituting the meaning of being competent as a neonatal nurse. These aspects are seen as ability to:

1. Manage clustered nursing activities with dexterity and within specified safety requirements found in NICU policy and procedural guidelines.
2. See links between separate items of the NICU environment.
3. Understand how certain items within the NICU environment influence other items within the NICU environment.

Many neonatal nurses express the notion that dexterity is an important aspect of being competent in their practice, as can been seen in the following excerpts.

(BETTY)

NN Working in level 3 means that you are working to develop your skills. You need to do and see things...become familiar with everything.

R Is being at ease or familiar with what you do part of being a competent neonatal nurse?

NN Um well, basically the more times you do something the easier it becomes. It's just like driving a car or riding a bike, the more practice you do the better you are at it. Like with TPN (total parenteral nutrition) changes, the more you do, the better you are at it and the more at ease you feel. You won't think twice, you'll just get on with it.

And

(MARK)

NN ...nursing is fairly simple, it's a simple trade with simple tasks, you just have to put things into perspective. You become dexterous over time and get used to doing things.

And

(REBECCA)

NN Repetition is a factor. You have to repeat certain skills day after day, which makes you better and more dexterous at line changes or suctioning. What happens is that you get better and faster.

From the three excerpts above there is a sense that being competent as a neonatal nurse is seen as an ability to manage nursing activities with speed and dexterity. There is also a sense that some activities are fairly automatic because they are repeated often during the nurse's day-to-day work practices. Trying to understand why this aspect is important in terms of being a competent neonatal nurse and why it is an essential aspect of this category comes from looking closely at the following excerpt.

(MEGAN)

NN It's a time thing. You have to be there in the area and do things, then you get faster at things and you get more done.

R How does doing things faster relate to being a competent neonatal nurse?

NN I think it improves your time management and you become more confident because you can co-ordinate yourself better. That's the difference between me and say a new person. They are too busy worrying about how to get through the shift with one baby. The simplest thing like changing TPN takes them an hour and a half. If

> they have to do morphine as well that's more time. So if you're with them you have to think not to go too fast checking the fluids and doing drug calculations because you'll loose them. Then it will take even more time because you have to go back and explain how you got the dosage.

When looking at the above excerpts *in toto*, an important factor is brought to light. That factor concerns the issue of being in the area and doing things. In my interpretation, what is being said about being a competent neonatal nurse is that the longer a nurse works in the area of neonatal nursing, the more practiced or dexterous they are at performing procedural skills and managing nursing activities associated with technological and life support equipment.

In this category the management of procedural skills and nursing activities peculiar to the NICU environment are second nature and the neonatal nurse expresses a sense of ease and confidence with their ability to manage a range of nursing activities. Confidence in the ability to manage a range of nursing activities allows the neonatal nurse to see the efficacy of linking separate items of the NICU environment together in order to save time without compromising the safety aspect of following the rules. This ability enables a personal clustering of nursing activities that keeps the safety aspect of following the rules in focus together with the efficiency aspect. Thus, the conceived actions of the neonatal nurse are delimited by a meaning that is concerned with an integration of technology-based rules. The fact that technology-based rules have become incorporated into a series of personalised integrated clusters in Category II means that there is a qualitative difference when compared to Category I, which focuses on following technology-based rules one at a time without any attempt at integration.

The example immediately above (MEGAN) shows how the integrated focus resulting from a personalised clustering of items within the NICU. The neonatal nurse understands that it is possible to check the drug calculations for the morphine infusion and the TPN orders together as one activity. Once the orders have been checked both infusions are prepared and the appropriate lines changed. What has happened is that two procedural nursing activities, checking and changing a morphine infusion line, and

checking and changing a TPN infusion line become streamlined into a single efficient activity. The neonatal nurse has been able to personally streamline this activity because of an ability to understand the links between each of these activities and that they can be joined or clustered together to save time and improve efficacy without compromising safety. Care is taken to explain these links to colleagues so that they too can manage the NICU environment in a more integrated manner.

The remaining aspect of Category II, understanding how certain items within the NICU environment influence other items within the NICU environment, is concerned with having a certain type of local knowledge. In this sense local knowledge is seen as an ability to know a vast amount of separate yet interrelated pieces of information vital to the successful functioning of the NICU.

The sorts of information referred to here are knowing the layout of the NICU itself such as where different types of equipment are stored, where the phones are and how to use them, especially the paging system. Knowing where the emergency equipment is located and how to use it. Knowing general ward routines such as doctors' rounds, nursing and medical handover times, where to access information or resource material. Knowing who is in-charge of the shift and who is the team leader in special bay so that any problem can be referred to the appropriate person. Neonatal nurses in the following excerpts express this sort of thinking.

(RUBY)

NN ...and something that doesn't sound like much, but I think knowing the unit, knowing where things are kept, knowing where equipment is, and knowing how it pieces together. Not a glamorous side of neonatal nursing but it's a side that makes you function as a unit. You can provide a level of care because you've got expert knowledge of where everything is, what's available, what you might need and what's happening in the broader environment. You are able to use the paging system, pick up the phone and do all that.

And

(SANDRA)

R You mentioned that a competent neonatal nurse should know about ward routine. Can you explain why?

NN This is really important. You can't be a competent neonatal nurse and a good resource person if you don't know what the ward routine is. Night duty is a good example here. We do a lot of things on nights like changing suckers and humidifiers, which you need to know about so that you can guide junior staff.

What these excerpts show is that many separate items of the NICU environment influence other items of the NICU environment. There is a sense of ease and confidence expressed by the neonatal nurse who is able to use local knowledge about one or several items within the NICU environment to influence the outcome of another item within the NICU environment. This sense is similar to the aspect of managing integrated nursing activities with dexterity and within NICU policy and procedural guidelines.

I have found this particular aspect of being competent as a neonatal nurse quite interesting. The notion of local knowledge and how it is concerned with being a competent neonatal nurse has a different yet similar focus to the procedural-clustering example given above (MEGAN). I will now explain how I have interpreted this aspect and why it is a part of Category II.

The two excerpts immediately above (RUBY and SANDRA), have described how items of local knowledge have been used to manage a clinical situation. In each of those situations the application of local knowledge has a certain '*perceived*' benefit. I have referred to this benefit as perceived because the descriptions do not suggest that any objective tests have been conducted to confirm a known benefit. Hence, the perceived benefit of knowing the layout of the nursery assists in overall nursery function. The perceived benefit of knowing about ward routine is seen as a way to act as a resource person. What is interesting is that the perceived benefit of local knowledge seems to be thought about in a similar way to the known benefit of following the rules described in

Category I, despite the lack of objective evidence. Thinking about a perceived benefit in the same way as a known benefit may have resulted from repeated successful application of local knowledge in given clinical situations over time. The accumulation of repeated successes, in this sense, provides the neonatal nurse with evidence that local knowledge has a positive or known benefit.

The issue here in relation the being competent as a neonatal nurse is knowing which items of local knowledge will afford benefit in a particular situation. The repeated successful application of local knowledge in given clinical situations enables the neonatal nurse to see links between a particular situation and certain items of local knowledge. The ability to see those links allows smoother and faster management of the clinical situation. Thus, there is a sense of integration in being able to select or cluster items of local knowledge according to the benefit that is afforded. Because the perceived benefits of local knowledge are thought about as known benefits, even if personally derived, there is an integrated focus present in the foreground of awareness. So, in this way, the local knowledge aspect is a part of Category II.

7.5.2 Becoming a competent neonatal nurse

Once again there is a relationship between the strategies involved in becoming a competent neonatal nurse and conception of being a competent neonatal nurse. The excerpt below describes the nature of that relationship. In particular, there is reference to integrated personal clustering of items within the NICU environment.

(PAMELA)

R How do you think you have become competent in your practice?

NN Well you know that you have the knowledge and the experience to deal with any situation.

R Can you give me an example to explain what you mean?

NN Well, if you have a 25-weeker and you have to resuscitate that infant. You know from your years of experience and being in that situation time and time again and from trial and error that a particular treatment works or doesn't work. So, you use the one that works. That's how you build up your skills. You take a group of skills that you know through trial and error work plus the knowledge from someone telling you to do this, this and this. Through your experience you become a little bit innovative and you decide to do certain combinations of things that you know work. Say you're doing the taping. We used to have a stock standard way of taping all babies ETTs in the nursery. Now we use duoderm under the strapping because we know it's important for skin protection. There's got to be an ease. There's got to be a quickness. You can't be doing something that's going to take a long time when you have a sick baby. You get prepared beforehand and have all your tapes cut so you can initiate things straight away. It's thinking ahead, that's what you have to do to make things work, to become competent.

Looking at the excerpt above, several strategies related to becoming competent as neonatal nurses come to light that are concerned with managing integrated clusters of technology-based rules. These strategies are interrelated and include repetition of skills over time, trailing various skill combinations, accepting knowledge from a person in authority, accepting objective evidence and thinking ahead.

Managing clustered nursing activities with dexterity as well as within specified safety requirements found in NICU policy and procedural guidelines is an aspect of being competent as a neonatal nurse. The excerpt above describes how becoming competent as a neonatal nurse involves certain stages. The initial stage is accepting knowledge from a person in authority about a particular way to carry out a skill. In other words, that knowledge is concerned with how to follow the rules.

Repetition of that skill over time, according to the rules, leads to dexterity described above as '*ease*' and '*quickness*'. It also leads to a familiarity with the components of the skill, which enables the neonatal nurse to think ahead and carry out the skill in what could be considered as an automatic sense. Thus, a relationship can be seen between the dexterity aspect of being a competent neonatal nurse and the strategies of repetition and thinking ahead used to become competent in neonatal nursing.

The statement 'you become a little bit innovative and you decide to do certain combinations of things that you know work' points to a second stage by suggesting that efficient clustering in use of policy and procedural rules proceeds dexterity. Becoming familiar with the components in certain skills allows the neonatal nurse to see links between the components in those skills, another aspect of being competent, and then speculate on how an improvement, thought about in terms of efficiency, can be achieved. In this way, the integrated clustering in use of policy and procedural rules has uniquely personal qualities.

Those personal qualities arise from trialing different skill combinations to see which combination is easier and quicker. The most integrated combination that does not compromise the known safety benefit of following the rules is chosen and becomes that neonatal nurse's way of managing a given item within the NICU environment. In this way it is possible that other neonatal nurses with this conception of competence in neonatal nursing may have a slightly different ways of managing the same item within the NICU because they have trialed and selected a different combination, which highlights the personal nature of these integrated clusterings. Thus, there is a relationship between integration and the ability to link certain items of the NICU environment, which are aspects of being competent as a neonatal nurse and the strategies of trialing various skill combinations used to become competent in neonatal nursing.

The above excerpt also provides a good example of how the known benefits of following the rules change over time and become incorporated into an integrated clustering in use of policy and procedural rules. That example describes how the standard way to tape an endotracheal tube insitu has been modified because a product

called *Duoderm* has a known benefit with regard to skin protection. Thus, development of competence in neonatal nursing in this category involves attention to changes in policy and subsequently following the rules of that policy in a similar way to development of competence in Category I.

The qualitative difference between this category and Category I as far as the last point is concerned is that integration is brought into focus by suggesting that ease and speed is also important. In this way, following the rules and integration are thought about simultaneously in the development of competence as a neonatal nurse. Thus, another relationship can be seen between the aspects of being a competent neonatal nurse and the strategies of accepting objective evidence and trialing various skill combinations used to become competent in neonatal nursing.

7.5.3 Summary

The distinction between this category and category I is the simultaneous focus on following the rules and integration. In Category I the meaning of being competent is related to managing separate items within the NICU environment according to policy and procedural guidelines. In Category II the meaning of being competent is related to managing clusters of items within the NICU environment according to a personalised integrated clustering in use of policy and procedural rules.

The key aspects of Category II are concerned with the integration of safety, dexterity and local knowledge. In this category there is an understanding of the rules governing the myriad of technological and life support equipment peculiar to the NICU, which have been developed from objective evidenced-based data. There is also an understanding that those rules provide a certain level of safety to the infant and their family. The integrated focus of this category means that relationships within individual nursing activities as well as between groups of individual nursing activities are seen. This enables groups of nursing activities to be linked together in a time efficient manner without compromising safety. Being competent in this category is also about accumulating and integrating items of local knowledge, which are perceived to benefit in the management of a busy NICU. Thus, providing an integrated and safe level of care to infants and their families is the focus of being a competent neonatal nurse.

As the focus of being competent as a neonatal nurse is on managing integrated clusters of items or nursing activities within the NICU environment within policy and procedural guidelines, attention is directed toward those activities and away from the infant's physical presence or condition. Thus, becoming competent as a neonatal nurse involves strategies concerned with repetition of skills, trialing various skill combinations, accepting knowledge from a person in authority, accepting objective evidence and thinking ahead and is influenced by the length of time spent in the area of neonatal nursing.

Figure 6 **Focusing Category III**

Managing a support system for the infant and family by using objective sensory observation of the infant to guide the use of policy and procedural rules according to priorities

In this category the main focus is directed toward the infant and family. This photograph shows a mother holding her newborn infant. In the upper middle portion of the photograph, there is a neonatal nurse's hand holding on to the technology that supports the infant's life. What this photograph is attempting to show is that the need of a mother to hold her infant has been achieved. This need has been achieved because the neonatal nurse was focusing on objective sensory observations of the infant. Those observations indicated that the infant was stable enough to be outside the incubator. They also provided the basis to manipulate or guide a change in how the infant's life support system would be managed.

7.6 Category III

Managing a support system for the infant and family by using objective sensory observation of the infant to guide the use of policy and procedural rules according to priorities.

7.6.1 Being a competent neonatal nurse

Table 5: Competence as prioritising care to infant and family

Competence as:	Referential Aspect (meaning)	Structural Aspect
prioritising care to infant and family	Neonatal nurses describe competence as managing a support system for the infant and family according to specific clinical infant/family priorities.	Primary focus on the infant's clinical condition as indicated by objective sensory evidence such as visual, auditory or tactile observation of the infant together with numerical data from monitoring and life support equipment. Secondary focus on integration of the rules.

In Category III, it is not the activities themselves that are the focus of being a competent neonatal nurse as in Categories II and I. Rather there is a shift in focus toward the impact these activities have on the infant and family, which represents a major qualitative distinction.

In Category III being competent as a neonatal nurse is concerned with managing the care of infants and their families according to specific clinical priorities as shown in figure 6. As with Categories I and II, there is an awareness that there are many separate items that must be managed in order to provide care to an infant and family, throughout the course of a rostered shift. Those items being the technical and life support equipment along with procedural activities peculiar to the specialty of neonatal nursing.

There is also awareness that these items can be integrated without compromising the safety of care provided to the infant and their family as in Category II.

Closer analysis reveals a qualitative difference between this category and Category II. In Category II the focus of being competent as a neonatal nurse is on managing personalised integrated clusters of items within NICU policy and procedural rules. In this way, activities related to those items are in the foreground of awareness.

In Category III, it is not the activities themselves that are the focus of being a competent neonatal nurse as in Categories I and II. The qualitative shift in focus toward the impact these activities have on the infant and family means the infant and family, not the activities themselves, are in the foreground of awareness. The degree of impact that these activities have on the infant and family create specific clinical priorities. Appropriate management of these clinical priorities is what constitutes being competent as a neonatal nurse. Thus, aspects of being competent as a neonatal nurse arise from considering relationships between separate items or activities as well as from relationships between those activities, the infant and their family.

There are four critical aspects of prioritising care to the infant and family constituting the meaning of being competent as a neonatal nurse. These aspects are seen as ability to:

1. Manage integrated clusters of nursing activities within specified safety requirements found in NICU policy and procedural guidelines and at a time suitable to the infant and family.
2. See links between separate items of the NICU environment and the infant's clinical appearance.
3. Understand and respond to specific changes in an infant's clinical appearance.
4. Understand and respond to family needs.

The following excerpt describes several aspects of being competent associated with Category III

(DEBRA)

NN You see some situations where people have their hands on the baby all the time. They seem stressed and haven't organised themselves very well. They haven't done all the things they need to do at once or they haven't checked to see how the baby is coping with having all those things done at once. They might think it's good to get all those things done at once, leave the baby neat, tidy and dry with all the bloods done. But maybe some things could have been done at different times because now the baby is exhausted and has to have the ventilator turned up and doesn't look as well as before all the activity started.

In this excerpt the neonatal nurse is describing a clinical situation they have experienced. The fourth sentence suggests that a colleague has grouped activities according to a personalised integrated cluster, consistent with Category II. The neonatal nurse's description is critical of the way a colleague has managed nursing care activities because the impact of those activities on the infant has not been taken into account.

In describing this situation the neonatal nurse has highlighted the qualitative difference between Category II and Category III. That is, actions delimited by an integration of rules, as in Category II, do not see relationships between nursing activities and the infant's actual clinical condition at the time that these activities are being carried out. The reason being is that the infant is not in the foreground of awareness. Rather, it is the activities themselves that are in the foreground of awareness.

When the infant is in the foreground of awareness as in Category III, there is an ability to see links between separate items of the NICU environment and the infant's clinical appearance. The last two sentences of the excerpt above demonstrate this ability. The neonatal nurse describing the clinical situation has the ability to see that the clustering of activities has impacted on the infant. That impact has resulted in a change to the infant's condition and is expressed as 'the baby is exhausted and doesn't look as well as

before all the activity started'. There is criticism of the colleague because they have not noticed that change in the infant's condition.

The last sentence of this excerpt is also expressing another aspect of being competent as a neonatal nurse associated with Category III. That aspect being the ability to manage integrated clusters of nursing activities within specified safety requirements found in NICU policy and procedural guidelines and at a time suitable to the infant and family. In the excerpt above there is a sense that the neonatal nurse describing the situation acknowledges that managing integrated clusters of nursing activities within NICU policy and procedural guidelines is important. However, the qualitative difference between this category and Category II is concerned with how activities are clustered and completed.

In Category II activities are clustered mostly on the basis of time efficiency and then completed within NICU policy and procedural guidelines. As indicated above, the colleague being described in the above clinical situation is doing just that. However, the neonatal nurse describing the clinical situation indicates in the last sentence that it is sometimes not appropriate to cluster too many items together. What is the significance of this last point?

In the excerpt above, the impact of clustering a large number of items together has resulted in a change to the infant's condition necessitating an increase in assisted ventilation support. The neonatal nurse describing the clinical situation has a focal awareness that it is important to integrate rules. However, that focus is secondary to the infant's condition as indicated by objective sensory, in this case visual, observation of the infant. In other words, any integration of rules is discontinued if the infant's condition as indicated by objective sensory observation of the infant changes.

The neonatal nurse describing the clinical situation is suggesting that the increase in assisted ventilation may not have been required if the colleague had not clustered so many activities together and completed them. Thus, in Category III activities are clustered according to priorities determined by objective sensory observation of the infant's clinical condition. This priority clustering is qualitatively different from the

integrated time efficient clustering in Category II, which is personally determined and concerned only with completing the activities themselves.

Being able to see links between separate items of the NICU environment and the infant's clinical appearance plays another role in Category III. It enables the neonatal nurse to focus on trying to understand how information recorded from routine technology assisted monitoring parameters relates to the infant's actual clinical presentation and underlying disease pathology as the following excerpt shows.

(SANDRA)

NN You have to be aware of the disease process that the baby has so that you understand what's happening with the baby and are able to treat the disease process.

R Can you give me an example to explain what you mean?

NN Well it's the physical side what's actually presenting to you. So any signs or symptoms. A sick baby cannot communicate so you have to rely on your own clinical skills to be aware of any sign or symptom that is presenting.

R What sorts of clinical skills do you rely on?

NN You can use monitoring, you need to know normal values of heart rate and respiratory rate, bloodpressure, oxygen saturation and TC's, then you can delineate between normal and abnormal values. Other physical signs would be the way the baby's breathing, chest movements, colour, perfusion and an overall assessment of how the baby looks. Like whether the baby looks stunned or apnoeic from a

difficult forceps delivery or severe birth asphyxia. I need to think here for a minute.

R Go right ahead.

NN Then you have blood work ups. You know, if it's a respiratory problem you look at your blood gas values and work out whether the baby has an acidosis or an alkalosis. You can also tell whether it's respiratory, metabolic or mixed. Colour comes into it again, whether they're cyanosed or pale because they've had a bleed, whether they're polycythaemic. Physical things also mean you look at the baby to see whether or not there are any abnormalities present. Once you've done all that, you can get into the nitty gritties of the underlying disease pathology.

R Hm. So a competent neonatal nurse would need to have an understanding of these sorts of clinical skills?

NN Oh yes!

In the above excerpt separate nursing skills and activities are grouped together by the neonatal nurse in a way that could be considered as a personal efficiency cluster as in Category II. The neonatal nurse records the numerical values corresponding to each of these items from the monitoring equipment accurately and methodically in a manner consistent with a conception of competence as following the rules. However, there is a qualitative difference between Categories I and II when compared with Category III. Looking at what the neonatal nurse does with the information after they have recorded it highlights the qualitative difference.

In the above excerpt the neonatal nurse describes making an evaluation about whether numerical readings recorded from monitoring equipment are within acceptable parameters or not. Results of these evaluations are cross-checked against results from other evaluated material such as objective visual observations of the infant's condition e.g. breathing, chest movements, colour and perfusion.

When competence in neonatal nursing is seen as following separate rules (Category I) or integrating rules (Category II), the emphasis is on recording numerical readings from monitoring equipment. Links between numerical values from monitoring equipment and the infant's clinical appearance are not seen because the emphasis is on completing the recording of information, not on what that information actually means.

In Category III the infant is in the foreground of awareness, which directs attention toward looking for relationships between numerical values from monitoring equipment and the infant's actual clinical appearance. In this sense, the emphasis is on what the information actually means for the infant. Thus, it is the ability to evaluate the meaning of recorded information that distinguishes Category III from Categories II and I, where evaluations of recorded information are not undertaken.

The point to make about the evaluations described by the neonatal nurse in the above excerpt is that they have been derived from objective sources. That is, the numerical values visible on the monitoring equipment and on blood chemistry reports together with objective sensory observations such as how the infant is breathing and the actual colour of the infant's skin. This emphasis on objective information helps explain why there is a focus on specific clinical priorities in Category III. It will also help in distinguishing this category from Category IV, which will be addressed later.

In Category III there is an ability to see links between separate items of the NICU environment and the infant's clinical appearance. The ability to see those links allows the neonatal nurse to make evaluations about the infant's clinical condition. Those evaluations help the neonatal nurse to understand and respond to specific changes in an infant's clinical appearance. The following excerpts describe examples of this aspect of being a competent neonatal nurse.

(BELINDA)

NN Um. You have to know which issues are the most important to deal with at the time. For instance if you were looking after a baby you have priorities for the babies needs like oxygen and nutrition and that sort of thing. Say you were feeding a baby and it started to go blue, your priority would be not to feed it anymore, even though it needs to be fed, you would have to tend to it's oxygen needs first. That's an extremely simple example. There are lots of things that you could be doing but certain needs are greater than others and you need to tend to those first.

And

(REBECCA)

NN I'll never forget one time a person was scrubbed for a line change and their baby became apnoeic, they got into a real dilemma over whether they should contaminate themselves or attend to the baby. This person was hyperconcerned about being sterile and maintaining a sterile field and that actually over rode the fact that the baby was apnoeic. I had to step in and get the baby breathing again.

What both of these excerpts show is that in this category being competent as a neonatal nurse involves an ability to use objective evidence from sensory observation of the infant as well as monitoring and life support equipment. Understanding that evidence enables the neonatal nurse to respond to specific changes in an infant's clinical appearance. They also show how the secondary focus of integration of the rules is overridden by the primary focus of the infant's clinical condition.

In the first excerpt, the neonatal nurse acknowledges that the infant has nutritional and oxygen needs. The neonatal nurse in this situation is integrating the rules by feeding an infant to meet nutritional needs. During feeding the infant becomes blue or cyanosed.

The neonatal nurse understands the relationship between the blue discolouration of the skin and a need for oxygen.

The blue discolouration of the skin has been used as objective visual or sensory evidence that the infant's condition has changed since the feeding activity was commenced. That evidence has been used to stop the feeding activity and focus on a higher priority in providing care to the infant. That is, providing oxygen. In other words, the secondary focus of integrating the rules has been overridden by the primary focus of the infant's condition. Thus, the neonatal nurse has managed the care of the infant according to specific clinical priorities.

The second excerpt is another situation where a neonatal nurse is describing the actions of a colleague. In this situation the colleague is described as being 'hyperconcerned about being sterile and maintaining a sterile field', which indicates a primary focus on performing the activity itself. Because the colleague is focusing on completing the activity itself, the impact of that activity on the infant is not noticed. When the infant becomes apnoeic (stops breathing), during that activity, the colleague has difficulty stopping the activity and attending to the infant. Why would the colleague act in this way?

Given that the colleague's focus is on the activity itself, it is reasonable to suggest that they are being guided by a conception of competence that is concerned with either following technology-based rules (Category I) or integration of the rules (Category II). In both of these categories, emphasis is placed on completing activities accurately or timely because the NICU guidelines governing those activities have a known safety benefit. Thus, not completing the activity either accurately or timely may be thought about as breaking the rules. Failure to follow the rules either accurately (Category I) or timely (Category II) may have caused the colleague to think they were compromising the infant's safety, which is why 'being sterile and maintaining a sterile field actually over rode the fact that the baby was apnoeic'.

This clinical situation shows that the known safety benefit of following the rules is sometimes misplaced in Categories I and II because the focus is on the activities themselves as opposed to a focus that is directed toward how the infant is responding to

those activities as in Category III. As a consequence of this misplaced safety benefit, the infant is placed in an at risk situation, albeit a momentary one, but a risk none-the-less. In this case, the neonatal nurse describing the clinical situation intervenes and stops the activity to focus on a higher priority, keeping the infant breathing, because of an ability to see links between that activity and the infant's clinical appearance.

Thus, both excerpts highlight a critical aspect of this conception. That is, the ability to stop an activity and focus on a higher priority for the care of the infant. In this sense there is an understanding that following the rules does not always guarantee provision of safe care to the infant. This is why integration of the rules has a secondary focus to the infant's condition.

The final aspect of Category III is concerned with understanding and responding to family needs. In this category, competence is seen as managing the care of the infant and family according to specific clinical priorities. Thus far, examples have only addressed specific clinical priorities related to the infant.

In this category specific clinical priorities of the family are concerned with an understanding of the infant-family dynamic. The infant and their family are thought about as a whole unit. In this category the primary focus is on the infant's clinical condition and how changes may occur to the infant's clinical condition as a result of activities within the NICU environment. That focus also extends to the infant's family, in the sense that the neonatal nurse understands the family's concern about the condition of their infant.

Each clinical priority experienced by the infant is reflected in how the infant's family responds to those changes. Thus, the neonatal nurse focuses on the family's response to changes in their infant's clinical condition in the same way as they focus on changes to the infant's clinical condition as a result of activities within the NICU environment. The following excerpts provide some clinical practice examples of this aspect of being competent as a neonatal nurse.

(CAMILE)

NN Well I just try to relate to the parents and be observant for problems that they have as well as the baby. You're not just looking after the baby you're looking after the whole family really.

R How do you relate to the parents and family?

NN You ask them questions that give you feedback that they understand what's happening or they might express their feelings about what's happening.

And

(REBECCA)

NN I've found that listening to what parents are saying is a good indicator of how comfortable I feel about my own clinical abilities. If I can listen to the parents, think of the family unit as a whole and have them factor into my day, then I'm probably managing the baby well.

In both of these excerpts there is a sense that the infant and family are managed in-tandem. Feedback from the infant's family about their response to their infant's clinical condition is an important aspect of being competent as a neonatal nurse in Category III. This aspect is not present in Categories I or II because the focus of those categories is directed toward items within the NICU environment not the infant and family.

7.6.2 Becoming a competent neonatal nurse

In this category there is also a relationship between the strategies involved in becoming a competent neonatal nurse and conception of being a competent neonatal nurse, as in the previous two categories. In this category being competent as a neonatal nurse is seen as managing the care of the infant and family according to specific clinical priorities. A primary focus on the infant's clinical condition and a secondary focus on integration of

rules delimit actions of the neonatal nurse in managing these clinical priorities. These foci also delimit the strategies used in becoming a competent neonatal nurse.

The secondary focus of integration of rules means that neonatal nurses expressing this conception of competence use the same strategies to become competent as in Category II. That is, repetition of skills, trialing various skill combinations, accepting knowledge from a person in authority, accepting objective evidence and thinking ahead. However, there is a qualitative difference between Category II and Category III in the way that these strategies are used.

In Category II the focus of being competent as a neonatal nurse is on managing integrated clusters of items or nursing activities within NICU policy guidelines. Becoming competent in this sense means that the strategies mentioned above are used to hone the activities themselves. In Category III the primary focus on the infant's clinical condition means that becoming competent as a neonatal nurse involves more than honing the activities themselves. It involves noticing change. Change in the infant's clinical condition as a response to activities within the NICU and change in the way a family responds to what's happening to their infant.

Understanding change in this sense involves the additional strategy of undertaking postgraduate education. The following excerpts indicate the importance placed on postgraduate education in order to become a competent neonatal nurse.

(SANDRA)

R Has completing a specialty course qualification helped you to be a competent neonatal nurse?

NN Of course. It gives you a theoretical base and because you have to be working in the clinical area, hopefully you are putting that theoretical knowledge into clinical practice.

And

(REBECCA)

NN Academic knowledge goes hand in hand with practice. I think at first you perform tasks so you get the physical side of things then you start thinking about the whys and the wherefores and the consequences of what you're doing.

R Hm.

NN One of the things that was a big obstacle for me and that I now know I've figured out and got into my mind is cardiac. Um say for example you administer indomethacin because it's ordered. At first I didn't know why I was administering this drug, I didn't understand the processes that occurred pharmacologically and physiologically. When I did my postgraduate course I learned about why this drug was given and also a lot about the foetus and the neonate and what happens during transition from a foetus to a neonate. I found transition hard but now I've got it into my head. Now I can sit down and draw a picture and I like the fact that I can do that. And now I use that knowledge to guide the approaches I take in my own practice.

The second excerpt is particularly interesting because there is a suggestion that there has been a change in conception of competence as a result of undertaking postgraduate education. The neonatal nurse administers a drug because it is ordered, which suggests that the focus was on the activity itself. The neonatal nurse also admits to not knowing the action of the drug or its physiological effect on the infant, which suggests that the infant's response as a result of this activity would not be noticed. Therefore it could be argued that the neonatal nurse is expressing a conception of competence that is

consistent with either following technology-based rules (Category I) or integration of rules (Category II).

Undertaking postgraduate education provided the neonatal nurse with knowledge about why the drug was administered and its effect on the infant. This knowledge has helped the neonatal nurse focus on noticing changes in the infant's clinical condition as a result of administering this drug. Thus, a shift in focus toward the impact of activities on the infant and family suggests a change in the way competence in neonatal nursing practice is experienced. That is, toward Category III.

Thus, neonatal nurses expressing a conception of competence in neonatal nursing practice consistent with Category III are using the strategy of postgraduate education to further knowledge and understanding of the infant's clinical condition and associated underlying disease pathology as well as about issues related to the psychosocial needs of families. This knowledge provides the neonatal nurse with the means to notice change in the sense described above and become a competent neonatal nurse.

7.6.3 Summary

The main distinction between Categories I and II and this category is the shift in focus from NICU activities themselves to the infant and family. In Category III being competent as a neonatal nurse is related to managing the care of the infant and family according to specific clinical priorities. A primary focus on the infant's clinical condition as determined by objective sensory observations of the infant and a secondary focus on integration of rules delimit actions of the neonatal nurse in managing these clinical priorities. Managing the infant and family according to clinical priorities involves an ability to see links between items within the NICU environment. It also involves an ability to understand relationships between items in the NICU environment, the infant's clinical condition and the family's response to their infant's clinical condition.

The primary strategy that neonatal nurses use to become competent in their practice is undertaking a postgraduate course in neonatal nursing. The postgraduate education strategy is accompanied by secondary strategies associated with Category II such as repetition of skills, trialing various skill combinations, accepting knowledge from a

person in authority, accepting objective evidence and thinking ahead. However, there is a qualitative difference between Category II and Category III in the way that these strategies are used. That difference is related to the ability of the neonatal nurse to notice and respond to change both in the infant's clinical condition and in the family's response to their infant's clinical condition.

Figure 7 **Focusing Category IV**

Managing a support system focused on the infant and family by using objective sensory observation of the infant and tacit feelings about the infant arising from variation in the previous experiences of outcome for infant and family to guide and challenge the use of policy and procedural rules

This photograph is an abstract representation of Category IV. As such it is necessary to provide an explanation for using this image. The infants in this photograph are all graduates from JSN. Each infant (and family) represents an outcome for infant and family that the neonatal nurse has experienced. Therefore, as a group, these eight infants provide a visual representation of variation in experience of outcome for infant and family experienced by the neonatal nurse.

Neonatal nurses expressing a conception of competence consistent with Category IV use tacit knowledge arising from a collated history of variation in previous experiences of outcome for infant and family to guide their practice, which the infants in this image represent. This collated history of variation in previous experiences of outcome for infant and family stimulates tacit feelings about present infants in their care. Stimulation of these tacit feelings directs the neonatal nurse to focus on certain objective sensory observations of the infant or numerical readings from monitoring and life support equipment. Decisions about an infant's clinical condition are either confirmed or refuted by subsequent tacit feelings. The iterative nature of this process provides the basis from which to challenge the use of policy and procedural rules and manage the support system for the infant and family.

7.7 Category IV

Managing a support system focused on the infant and family by using objective sensory observation of the infant and tacit feelings about the infant arising from variation in the previous experiences of outcome for infant and family to guide and challenge the use of policy and procedural rules.

7.7.1 Being a competent neonatal nurse

Table 6: Competence as managing a support system that works toward achieving the best outcome for the infant and family

Competence as:	Referential Aspect (meaning)	Structural Aspect
Working toward the best outcome for the infant and family	Neonatal nurses describe competence as managing a support system focused on the infant and family according to personalised contextual guidelines that aim to achieve the best outcome for the infant, their family.	Focus on the infant's clinical condition as indicated by tacit intuitive signs together with objective evidence from visual observation of the infant, monitoring and life support equipment. Rules adapted contextually depending on the infant's condition.

The major distinction between this category and Category III is that NICU policy and procedural rules are adapted according to objective and tacit intuitive information about the infant's clinical condition. In this way being competent as a neonatal nurse is concerned with managing the care of the infant and family according to personalised contextual guidelines that aim to achieve the best outcome for the infant, their family and the specialty of neonatal nursing.

As with Categories I, II and III, neonatal nurses expressing a conception consistent with Category IV are aware that there are many separate items that must be managed in order to provide care to an infant and family, throughout the course of a rostered shift. Those items being the technical and life support equipment along with procedural activities peculiar to the specialty of neonatal nursing. However, the focus on the infant's clinical condition in this category means that the infant and family are in the foreground of awareness. Thus, the focus of this category is directed toward the impact that these activities have on the infant and family as in Category III, not the activities themselves as Categories I and II.

In this category the impact of those activities on the infant and family is thought about in a qualitatively different way to Category III. In Category III neonatal nurses integrate rules efficiently unless objective sensory observations of the infant detect a change in the infant's clinical condition, as a result of an activity, that is of a higher priority in managing care for the infant. If a higher priority is detected the original rule following activity is stopped so that the higher priority can be managed. In Category IV rules are adapted according to objective as well as tacit information about the infant's clinical condition either before an activity begins or during its performance. This contextual adaptation of the rules is seen to reduce the impact that activities have on the infant and family, thereby creating a potential for an improvement in outcome for infant and family.

In this sense, outcome is a broad term used to describe how changes to neonatal nursing practice have the potential to improve the care provided to the infant and family. Changes to neonatal nursing practice through contextual adaptation of the rules is seen as a way to improve the many guises of outcome by addressing areas such as infant morbidity and mortality, infant-family separation, parenting, teamwork and specialty nurse education.

There are four critical aspects of working toward the best outcome for the infant and family constituting the meaning of being competent as a neonatal nurse. These aspects are seen as ability to:

1. Manage nursing activities with dexterity and efficiency according to a personal contextual adaptation of NICU policy and procedural guidelines.
2. Anticipate and respond to changes in an infant's clinical condition.
3. Show empathy towards parents and family.
4. Commitment to on-going professional development.

The aspect of managing nursing activities with dexterity and efficiency according to a personal contextual adaptation of NICU policy and procedural guidelines in this category is difficult to describe. That difficulty is due to the fact that highly personal tacit intuitive information is used alongside objective information about the infant's clinical condition when making decisions about how rules should be adapted to achieve the best outcome for the infant and family. Moreover, the difficulty neonatal nurses in this study had in describing that tacit information meant that examples used are incomplete, which made interpretation difficult. Never-the-less, the following excerpts provide some insight into how tacit intuitive information is combined with objective information about the infant's clinical condition when making decisions about how rules should be adapted to achieve the best outcome for the infant and family.

The first excerpt is from a relatively new member of the JSN nursing team.

(LYN)

NN I don't see that things should be done the same step by step way unless it is a specific thing like an adrenaline infusion. If you can do something differently or better without putting the baby in any peril then I don't see why you should follow things step by step.

A more senior member of the nursing team takes the idea further.

(RUBY)

NN Policies aren't a bad thing. Take the small baby protocol that came about because of me. You know the baby's skin was falling off because we had to use TCs. Some of us didn't put TCs on all the time

and felt that there had to be a better way, so we did our research. Now people can see that if we use different electrodes we can save the baby's skin and assist with transepidermal water loss. Now babies aren't getting septic so early. Their matrix has a chance to mature and then we can put the dots on later. So I think this policy has made looking after smaller babies much easier and better.

Consensus for the opinion described in the above example is found in an excerpt from another neonatal nurse.

(DEBRA)

NN There's always room for adapting nursing care. I think the small baby protocol is a good example of that. I think neonatal nurses have to go with change and not be stuck in set routines that may have existed for a long time. I don't think that's being as competent as you can be.

The point that has to be emphasised here is that in each of the three excerpts above there is a sense that NICU policy and procedural rules do not necessarily guarantee that the best outcome for the infant and family will be achieved. This is a very different kind of thinking when compared with Categories I and II, where the meaning of being a competent neonatal nurse is concerned with following rules. It is also different to Category III, where rules are still followed unless a higher priority intervenes. In this category there is a tacit intuitive feeling that care of the infant and family can be improved by a contextual adaptation of the rules.

In the second excerpt (RUBY) the neonatal nurse is using objective sensory observations from previous experiences that the rule of using a certain probe was having a negative impact on the infant's skin. This objective sensory evidence was combined with a tacit intuitive feeling that care of the infant could be improved by adapting that rule. The initial personalised contextual adaptation of the rule was to reduce the amount of time that the probe was used. The next step was to conduct research into clinical practice to find evidence that this personalised contextual adaptation of the rules was a

better way to provide care to small babies. The end result was that a personalised contextual adaptation of the rules became formalised into a policy to care for small babies. This example helps to explain how a change to neonatal nursing practice that began with a personalised contextual adaptation of the rules has improved outcome, in this case by reducing the incidence of sepsis in the small baby population.

Thus, in this category rules are not followed accurately as in Category I or in an integrated sense as in Category II. The impact of activities on the infant and family is considered in this category, but not in terms of specific clinical priorities that happen at a particular point in time, as in Category III. Rather, objective sensory observations from previous experiences of the impact of certain activities on the infant and family are used to justify a tacit intuitive feeling that there must be a better way to conduct those activities when providing care to the infant and family, thereby improving outcome. Once tacit feelings are evoked about a particular activity, the efficacy of the rules governing that activity is questioned. At this point, personalised contextual adaptation of the rules begins. Followed by the process of finding evidence to support those adaptations.

The importance of that process as far as being a competent neonatal nurse is concerned is shown in the following excerpt.

(PAMELA)

NN As far as being competent goes I think it's more important to challenge yourself.

R Why?

NN Well a competent neonatal nurse challenges herself and her peers. Sometimes with peers it may be a bit destructive but you hope that you can turn things around and do it in a useful manner and not in a negative or bitchy way.

R What sort of things do you challenge?

NN Whatever comes in. You know, do you think it's a right way, a fair way or the best way for that baby. You need to take a policy and modify it to suit each baby. First you challenge then you stand up and justify what you're doing. You discuss things with your peers and accept constructive criticism without feeling threatened. Then you re-evaluate the situation.

The second aspect in this category is concerned with anticipating and responding to changes in an infant's clinical condition. The following example is lengthy but articulates in some detail this aspect of being a competent neonatal nurse.

(ROBYN)

NN You have to be able to for yourself, collate the information that comes to you. You come on and you take a report from a member of staff, then you may need to act on the information that member of staff has given you.

R Can you think of an example?

NN Well, it depends. If I've come on and I don't know the baby then I'll start at A and go to Z. What that means is that whilst I'm taking handover I will be looking at the baby and thinking what does this infant look like to me? So I look at the appearance. Is this baby active? Is this baby looking "well" in inverted commas? Does this baby feel a well baby to me? If they are ventilated, what kind of chest movement does the baby have, is there spontaneous breathing? At this point you don't have your stethoscope out yet to listen you

are just looking at things. Then you move on to look at whether the ET tube is loose or tight are the leads on correctly. What is the whole appearance of the baby that can take 2 seconds actually. Hello how are you going? to the staff member but you're actually looking at the baby. Then I'd look at the haemodynamics, what are those numbers reading. When I'm taking handover I will continually look at the monitoring so they I know what the baby's like when I come on. I'm listening to the person saying overnight they have been....but now I'll say the sats are reading 88 has that been happening overnight. Because once that person goes I have no real understanding of whether the numbers were bad overnight. Even if you go back into your haemodynamic log sometimes the real picture doesn't come up and you really need to ask that person, that's why I always watch the monitors. Now that we have lovely new ventilator screens we can just look at loops and flows which hopefully is fairly carefully showing a picture of what the baby is actually doing. I'm feeding all of that information into my brain and also into a feeling of whether that baby looks well to me or do they look sick, how is this baby responding? Then as the report goes through I'll ask certain questions if they haven't mentioned things I want to know. Most people go through their flow charts but sometimes they forget certain things and hopefully I remember to ask any questions I may have before they go out the doors, like how does this baby handle with you? What happens during suction? Have the parents visited today? Is the mother expressing? Those very fundamental questions which for me is a level of expertise that's already there because of my background education and qualifications. Fundamentally in intensive care you have to be very observant and

then you have to know what to do with those observations. Sometimes people can be looking at something and not really know that they need to do something about it. I don't think you can be competent if you don't know what to do with information or if your intimidated by the information.

R. Hm.

NN You know I was just thinking you have to understand normal. If you're going to turn an alarm off you have to know why you're turning the alarm off. You need total action if necessary and base it on you knowledge of XY and Z. You have to be able to think about why your baby is supported in that way. The baby may be ventilated, but why is it being ventilated should it be on SIMV or SIPPV or IMV. Why are we doing these things. The whys are as important as having the certificates. The collating of information in your own brain is as important as someone giving you the information. In some instances it's intuitive. You know all the numbers are fine yet my baby doesn't seem well to me then I'll go to the doctors and say all my numbers are fine but I'm getting the feeling that the baby's not well.

R. Is there anything in particular that you hone in on?

NN Usually it's a sense of the baby being too quiet, especially if I've looked after the baby before. The best thing is having looked after that infant before, because then you know where you are and you may see a change in that baby's behaviour and you see a change in colour or perfusion. All the numbers might be fine but the baby has

changed his or her sense of well being, the changes might be minute but you're unhappy about that. Then again the changes might be florid, the tummy blows up or there's an increase in oxygen requirements and the numbers are changing. You also have a sensitivity to how the baby reacts to handling so I guess that's how you would explain it in a physical sense. But sometimes it is just because the baby doesn't give you a good feeling and that's something that can't be quantified. You could try with the number aspect but other times you just can't. You just have to pay attention to finer details. That's what you're there for, to know exactly what's happened and happening to the baby moment to moment. And that is attention to detail not walking off and doing other things. You might be able to have a conversation with someone but you are tuned into your baby. You might be going over to check the chest x-ray but you are still listening out for your baby. If you don't have the ability to tune in to the finer details then you're not going to make as competent an intensive care nurse as you should be. Basically an intensive care baby is dependent on you for all their needs. I mean babies generally are but most aren't sedated or have an endotracheal tube. These babies are here for the reason of needing life support so you have to pay attention to detail, that's what you're there for to anticipate things before they happen.

Taking a closer look at this excerpt, there is a distinct emphasis on being able to collate, interpret and evaluate items from the NICU environment such as routine technology assisted monitoring parameters together with objective sensory observations of the infant's clinical condition. At first glance, it may seem that this aspect of being competent as a neonatal nurse is the same as understanding and responding to specific changes in the infant's clinical appearance as in Category III. However, there is a subtle

qualitative difference between Category III and this category that is concerned with the way the infant's response is monitored or assessed.

In this category, assessment of the infant's clinical condition involves the use of tacit signs or feelings together with objective evidence from visual observation of the infant, monitoring and life support equipment. In Category III tacit intuitive information is not used to collate information about the infant's clinical condition. Only information from objective sources such as visual observations of the infant together with numerical values from monitoring and life support equipment are used in the collative process. The addition of tacit intuitive information into the collative process means that the neonatal nurse expressing a conception of competence in neonatal nursing practice consistent with Category IV is truly engaging with the infant in a spatio-temporal sense. In other words the neonatal nurse has a sense or awareness of how the infant is responding to the NICU environment at any given moment.

Spatio-temporal engagement with the infant is only present in Category IV. It helps explain the ability to anticipate and respond to the infant's clinical condition. In this way, objective evidence from visual observation of the infant, monitoring and life support equipment together with tacit intuitive signs reflecting the infant's well-being are noted and collated. Once collated, potential problems are discussed with appropriate members of the health care team such as the medical officer in the situation above, before they become actual emergency or clinical priorities. So, in real terms the qualitative difference between Category III and this category is that in Category III there is a response to a problem **after** it occurs. In other words, Category III does not have the anticipatory spatio-temporal capacity found in Category IV, which enables an adaptive response to prevent a potential problem **before** it occurs.

This aspect of anticipating and responding to the infant's clinical condition is strongly linked to managing nursing activities with dexterity and efficiency according to a personal contextual adaptation of NICU policy and procedural guidelines. The reason being, that when problems are anticipated, rules governing activities within the NICU environment are often adapted before an activity is commenced to reduce the impact of those activities on the infant. This helps to explain another facet of improving outcome for the infant and family. That is, by preventing potential problems turning in actual

problems the impact of activities on the infant is reduced. In this way, the infant's overall clinical condition or outcome is improved. When the impact of activities on the infant is reduced, so to is parental and family anxiety about their infant's clinical condition, which is also seen as improving outcome.

The ability to show empathy to parents and family is an important aspect of Category IV. In my interpretation, the ability to empathise exceeds the ability to understand and respond to family needs, thus representing a qualitative difference between this category and Category III. The following excerpt shows the importance placed on ability to show empathy to parents as far as being competent, as a neonatal nurse is concerned.

(SANDRA)

NN To be a competent neonatal nurse you have to set your emotions aside so you can deal with the parents and family and be empathic rather than sympathetic.

The next excerpt provides a description of empathy in action.

(MEGAN)

NN If you care about what you're doing you give that little bit more, especially where the family's concerned. I'm not saying that you get overly involved because that can be detrimental to you in another way. But you do take the time to be there for the family, get the baby out for a cuddle, find out how they are coping, ask if there is anything that the Nursery can do to help like providing contact numbers and names of support services that kind of stuff. And think of little things like arranging for a parking permit so they don't have to stress finding a car park. That's where I see a distinction among neonatal nurses. A competent nurse will make sure that the baby's

OK and not at risk, but the really competent nurse goes that little bit extra and makes sure that the family's OK.

The description above highlights the difference between Category III and this category. In Category III there is a reliance on verbal responses given by parents and family indicating how they feel about their infant's clinical condition. In Category IV, focus on tacit intuitive signs of the infant's clinical condition extends to parents and family, which means those verbal as well as non-verbal responses given by parents and families about their infant's clinical condition are noted. This translates into an ability to empathise or be attuned to the needs of parents and family without necessarily having to ask. Reducing parental and family anxiety through the ability to empathise is seen as another way to improve outcome for the infant and family.

The final aspect of Category IV is concerned with a commitment to on-going professional development. Professional development is not an aspect of being a competent neonatal nurse in Categories I, II and III. In those categories professional development is loosely related to strategies involved in becoming a competent neonatal nurse. In this way, professional development is thought about as a means to an end. In Category IV professional development is seen not only as a strategy to become competent in neonatal nursing practice but also as a part of being competent in neonatal nursing practice.

In this category interest in the specialty of neonatal nursing is a fundamental element of on-going professional development as far as being a competent neonatal nurse is concerned. That interest is concerned with understanding the interrelated nature of the infant, their family and the NICU environment. There is an appreciation that such an understanding does not stop when a specialty course is finished, it continues throughout working life as the following excerpt shows.

(PAMELA)

R Does being interested in the area of neonatal nursing affect your ability to be a competent neonatal nurse?

NN Oh yeah you have to have a huge interest. It has to be the one and only place you want to work in. That's probably when you look at the competent nurses they're the ones who have stayed around for a long time. The younger ones might be just using it as a stepping stone to move onto another field or they aren't sure if this is their niche. I think that you finally find your little niche and you stay there. Some people might stay there because of a certain comfort zone but I think or like to think that I stay here because of enthusiasm and a love of the speciality and you continue to want to learn more. Oh and I think to that just because you don't want to go to uni doesn't mean that you don't want to continue learning. You know you're judged that if you don't go to uni then you mustn't have an interest in neonatal nursing. When really there's so much opportunity to learn out there, like inservices through this unit, conferences and our Association. You have access to information without spending the time doing a formal course over a couple of years and it's probably more up-to-date. When I did the neonatal course in '88 I felt that I read every current book and everything on the subject and I'm sure someone going to uni is doing the same thing. But in 6 or 7 years time she will have her piece of paper that says she has a grad dip but she may never have looked at a book since finishing the course. Whereas I have kept up my reading and continuing education but not gone to university. I mean you can go through a course and not learn anything because you aren't interested. It's like making a chocolate cake. Two people have the same recipe, one makes it and it turns out great, the other makes it and it turns out a flop. If the one who made the flop isn't interested in why it was a flop then they'll never get it right.

7.7.2 Becoming a competent neonatal nurse

When competence in neonatal nursing practice is concerned with working toward the best outcome for the infant and family, so too are strategies involved in becoming a competent neonatal nurse. Strategies used in Categories I, II and III are also found in this category. The difference is that in Categories I, II and III only objective evidence is used to guide the use of those strategies. In this category both objective and subjective evidence is used to guide strategies used to become a competent neonatal nurse.

To reiterate, in Category I strategies used to become a competent neonatal nurse involve constant attention to policy and procedural manuals. These manuals detail the management of activities, which are then followed accordingly. Alternatives to the way detailed in these manuals are not considered. This is because the known benefit associated with the details in these manuals is based on objective evidenced-based data and is seen as the right and only way to guarantee the safety of the infant and family.

In Category II, becoming a competent neonatal nurse means that alternatives are considered but only from the point of view of improving efficiency and achieving integration. The strategies of repeating skills, trialing various skill combinations, accepting knowledge from a person in authority, accepting objective evidence and thinking ahead are used to improve efficiency in the time taken to complete certain activities without compromising the known safety benefit of following the rules. These strategies are not used in a critical sense to determine whether or not an integrated clustering of activities actually reduces the impact on the infant because the focus is on the activities themselves.

In Category III, the major qualitative shift away from activities themselves to the infant and family directs the focus of becoming a competent neonatal nurse toward noticing change. Change in the infant's condition as a response to activities within the NICU and change in the way a family responds to their infant. Here, postgraduate education is seen a major strategy in providing the means to understand the information required to notice these changes. Alternatives are considered but only in response to an observed clinical priority displayed by the infant. That is because information used to determine specific clinical priorities is based on objective sensory observations of the infant together with numerical displays from technological equipment.

In Category IV objective and subjective information is considered to have equal importance in guiding strategies used to become a competent neonatal nurse. In this category, improving outcome in its most general sense is concerned with reducing the impact of activities within the NICU on the infant and family, thereby preventing potential problems from turning into actual problems. Preventing problems before they occur is seen as a better way to conduct clinical practice activities than dealing with problems as they arise. Thus, becoming competent as a neonatal nurse involves looking for better ways not right (Category I), integrated (Category II) or prioritised (Category III) ways to conduct clinical practice activities.

Critical reflection about the impact of activities on the infant and family is an important strategy in determining better ways to conduct clinical practice activities that improve the outcome for the infant and family. Experiences of the impact of activities on the infant and family are evaluated by focusing on the infant's clinical condition. Information about the infant's clinical condition is drawn from three major sources: numerical information from monitoring and life support equipment, objective sensory observations of the infant and tacit intuitive feelings based on previous experiences of outcome for infant and family. This information from the infant provides a basis to look for theoretical evidence that would support an alternate or better way of conducting clinical practice activities. The process is on-going and linked to continuing professional development. This helps to explain why professional development is an aspect of being competent as well as a strategy used to become competent in neonatal nursing practice.

The following excerpt expresses how critical reflection has been used as a strategy to become competent in the practice of neonatal nursing and how the process has been ongoing.

(RUBY)

R Can we talk about how you have become a competent neonatal nurse?

NN I suppose the years I have spent in the area have helped but I don't want to sound like an elitist. During the years I have listened at lots

of levels. I've watched the senior people. I've taken a lot of time to reflect on what I've learned. So I've watched my own growth, as I've come to understand all manner of things about neonatal nursing. I'm not overwhelmed by the environment anymore. I've used courses to gain knowledge and watched how people interact with one another. I've learned to speak my truth over the years and watched things change in the nursery as a result. I've always kept a professional distance because I believe that that's important as a clinician because it allows me to focus on the baby. I've worked in charge of shifts for a number of years now out of hours which allows me to have a more global perspective of what's going on in the unit. As things have changed in neonatal nursing I've done more study and picked out areas of interest to focus on. I continue to watch my colleagues to see how they deal with situations and have learned from them as well as from being in situations myself. After I've analysed each situation I move forward and maybe change the way I do things depending on the situation. I think I'll always be the type to change or adapt because I don't want to be one of those rigid non-moving types. You know it would be lovely if you could become more competent by doing this, that and the other. That's where people fall down by following strict and rigid rules to be competent. You have to have a basic desire to want to learn and be able to grow and understand what it's like to be a clinician. As a nurse, competency is like the air we breathe, without it we are nothing.

7.7.3 Summary

In Category IV being competent is related to managing the care of the infant and family according to personalised contextual guidelines that aim to achieve the best outcome for the infant, their family and the specialty of neonatal nursing. Focusing on the infant's

clinical condition as indicated by tacit intuitive signs together with objective evidence from sensory observations of the infant means that potential problems are anticipated and responded to before they become an actual clinical priority. This ability comes from a unique spatio-temporal awareness, which allows the neonatal nurse to have an understanding of the interrelationships that occur on a moment-by-moment basis between the infant, their family and the NICU environment.

Neonatal nurses expressing this category understand what is happening to the infant at all times and can use this information to empathise with parents and families. An interest in the specialty of neonatal nursing means that professional development is considered an aspect of being as well as becoming a competent neonatal nurse.

Critical reflection about the infant's clinical condition is the main strategy used to become a competent neonatal nurse. Strategies used in other categories are also used in this category. However, the use of objective as well as subjective information concerning the infant's clinical condition means that looking for better ways of conducting clinical practice activities are the subject of inquiry not right, integrated or prioritised ways to conduct clinical practice activities.

7.8 Concluding remarks about the results of this study

This study has found variation in the way neonatal nurses conceive of competence in their practice. That variation has been distinguished into four qualitatively different categories of description that are hierarchical and internally related. The study has also found a strong relationship between strategies used to become competent as a neonatal nurse and conception of being a competent neonatal nurse. The difference between Category II and Category III is particularly interesting because of the change in focus from items within the NICU environment to individual infant and family response to items within the NICU environment.

These findings are important to consider when designing educational support for new graduates entering the specialty of neonatal nursing. Of particular importance is the change in focus between Categories II and III. The following chapter intends to focus on the critical nature of this difference and suggest how it can be used to structure

learning experiences that foster development of more complex and inclusive conceptions of competence in neonatal nursing practice.

Chapter 8

8 Discussion: educational significance of results

8.1 Introduction

In the previous chapter a systematic attempt was made to reach an understanding about the nature of the experience of competence in neonatal nursing practice. I am not aware of any other study that has looked specifically at the nature of competence in neonatal nursing practice from this perspective. In using a phenomenographic approach, variation in the way neonatal nurses conceive of, or experience competence in their practice has been captured and categorised according to meaning and structural aspects. Of the four hierarchical, internally related categories of description, the most complex and inclusive way of experiencing competence in neonatal nursing practice is expressed by Category IV - managing a support system focused on the infant and family by using objective sensory observation of the infant and tacit feelings about the infant arising from variation in the previous experiences of outcome for infant and family to guide and challenge the use of policy and procedural rules.

This chapter intends to explore the type of educational support needed for development of this complex and inclusive way of experiencing competence in neonatal nursing practice. It draws together information from earlier chapters to identify and explain why the ability to discern and focus on individual infant and family response is critical for the development of a more complex and inclusive conception of competence in neonatal nursing practice.

8.2 Critical aspects of variation: implications for this study

Discussions in Chapter 5 about the structure of awareness (Marton & Booth 1997; Marton & Trigwell 2000) indicate that experiencing something in a certain way presupposes discernment, which by its very nature is dependent on simultaneity and variation. This theory has led researchers to postulate, "there is no learning without discernment. And there is no discernment without variation" (Marton & Trigwell 2000, p.381). Moreover, Bowden & Marton (1998) in synthesising more than two decades of research concerned with learning and relating it to the structure of awareness argue that

"when some aspect of a phenomenon or event vary while another aspect or other aspects remain invariant, the varying aspect will be discerned" (p.35).

These authors raise an issue that is important to consider here. That issue is concerned with the notion that some aspects of variation are more important or critical than others in determining whether or not the learner becomes capable of experiencing a phenomenon in a particular way. Therefore, in relation to the present study, it is important to identify critical aspects of variation that allow competence in neonatal nursing practice to be experienced in a more complex and inclusive way.

New graduates entering the specialty of neonatal nursing can be helped to discern competence in their practice in a more complex and inclusive way by experiencing variation in a critical dimension. That is, by planning educational support which creates a simultaneous awareness of two different aspects of a critical dimension (Trigwell 2001, personal communication). Therefore, the following discussion plans to address two major issues. The first is concerned with identifying and exploring the critical dimension of individual infant and family response. The second looks at developing educational support based on this critical dimension, which is a relatively new area for phenomenographic researchers to pursue.

8.3 Individual infant and family response: a critical dimension

This study has found variation in the way competence in neonatal nursing practice is conceived of or experienced. That variation has been expressed by the four qualitatively different categories of description discussed in Chapter 7.

The impact of technology, thought about, as the management of machinery and equipment is an important conceptual focus within these descriptive categories. Given the highly technical nature of the neonatal nursing context detailed in Chapter 4 it was not surprising to find that such a focus existed within the interview transcripts. As such, this finding can be said to support other studies that have described a link between competence in nursing practice and the use of technology (Ray 1987; Walters 1995; Barnard 2000).

The use of machinery and equipment focus is particularly prominent in Categories I and II. It is still present in Categories III and IV but has a different meaning. This conceptual change in the meaning of the use of machinery and equipment highlight critical differences between Categories II and III, and between Categories III and IV. These differences affect relationships between being and becoming competent in neonatal nursing practice, as described in Chapter 7. I intend to argue that the difference between Categories II and III can be used as a starting point in the development of an educational program for new graduates entering the specialty of neonatal nursing.

The difference between Categories III and IV is more subtle and complex. The basic foundations of Category III are present in Category IV but the understanding of competence in the clinical practice of neonatal nursing is much deeper. As such, this difference has more relevance to a continuing education / professional development program for RNs already working within the specialty of neonatal nursing and will not be a focus of discussion here.

8.3.1 The impact of technology in Category I

In Category I competence in neonatal nursing practice is experienced as managing separate items within the NICU environment according to technology-based policy and procedural rules. Neonatal nurses have expressed this notion in the following ways.

(Paula)

You follow the policy and you achieve the goal of whatever the policy may be.

(Jackie)

It's everything that we do.[...].You have to follow the guidelines so that you are being safe.

Structurally the internal horizon is made up of the separate items within the NICU environment, such as ventilators, infusion pumps, incubators or procedural activities such as performing a unrinalysis, suctioning an endotracheal tube or changing central line fluids that must be managed for each particular infant as the following excerpt shows. Hence, the referential or meaning aspect is concerned with using machinery and equipment according to NICU policy and procedural rules. The external horizon extends past separate items that must be managed for a particular infant to include all the NICU policy and procedures governing the whole NICU environment.

In this category competence is experienced as an increase in knowledge about rules associated with the use of machinery and equipment. Machinery and equipment within the NICU have numerical and graphic displays, which feature numbers, abbreviated symbols and graphic trends. These numerical and symbolic displays constitute a unique clinical practice language or form of communication. Understanding the use of machinery and equipment, which includes this unique form of communication is seen as fundamental to competence in neonatal nursing practice as is seen in the following excerpt. One neonatal nurse has expressed this notion in the following way.

(Emily)

The monitors tell you want's happening to the baby and you have to learn about them to be competent.

Undertaking procedural activities such as performing a urinalysis suctioning an endotracheal tube or changing central line fluids also requires knowledge about the use of machinery and equipment as well as knowledge about how to do the actual procedure. Each procedure has a set of rules detailed in the NICU procedural manual, which the neonatal nurse sees as important to follow as the following excerpt shows.

(Eva)

You need to know how to take the urine, put in on the stick and take a reading.

Failure to establish and develop procedural and communicative knowledge about the use of machinery and equipment is understood to be incompetent or not providing a safe level of care to infants and their families.

The focus of this category and the way competence in neonatal nursing practice is experienced is similar to the 'technology as increasing knowledge' category described by Barnard & Gerber (1999). Barnard & Gerber (1999) indicate that an increase in knowledge about machinery and equipment was seen as fundamental in contemporary surgical nursing practice.

8.3.2 The impact of technology in Category II

In Category II competence in neonatal nursing practice is experienced as managing integrated clusters of items within the NICU environment according to technology-

based policy and procedural rules. In this category, all the separate items within the NICU environment are seen in relation to one another but not in relation to the infant. In other words the machinery and equipment surrounding an infant is thought about and managed as a discrete whole. That discrete whole consists of an incubator, ventilator, cardiorespiratory and oxygen saturation monitor, arterial blood pressure monitor, resuscitation equipment and intravenous infusion pumps. Related procedural activities such as changing intravenous lines or administering intravenous medications are also thought about and managed as discrete wholes or clusters as discussed in detail previously in **7.5.1**. This part-whole conceptual thinking is similar to the notion of numerosity described by Neuman (1989, cited in Marton et al. 1997) and discussed later here in 8.5.

Hence, the referential aspect of this category is also concerned with using machinery and equipment and following NICU policy and procedural rules. This means that the external horizon of this category is the same as in Category I. The difference between this category and Category I arises from an internal horizon that focuses on discrete wholes or clusters of machinery and equipment or procedural activities.

In this category competence is also experienced as an increase in knowledge about rules associated with the use of machinery and equipment. However, the integrated focus of this category indicates a desire to be more in control of the machinery and equipment. NICUs are busy places with complicated activities that place great demands on time. Linking procedural activities together is seen as a way to save time and gain control of clinical practice. Neonatal nurses have expressed this notion in the following ways.

(Rebecca)

You have to repeat certain skills day after day, which makes you better and more dexterous at line changes and suctioning. What happens is that you get better and faster.

(Pamela)

Through your experience you become a little more innovative and you decide to do certain combinations of things that you know work.

Another way of gaining control is being able to integrate the clinical practice language of machinery and equipment and report it to other nursing and medical colleagues. This sort of control brings increased respect from nursing and medical colleagues as well as parents and family members. It also increases autonomy of practice and confidence in ability to provide competent care to infants and their families. One neonatal nurse expresses this notion in the following way.

(Sandra)

You can't be a competent neonatal nurse...if you don't know what the ward routine is...you need to know about [ward routine] so that you can guide junior staff.

The focus of this category and the way that competence in neonatal nursing practice is experienced has elements of the 'technology as respect and autonomy' and 'technology as control of clinical practice' categories described by Barnard & Gerber (1999). It also indicates the positive regard afforded to machinery and equipment, which equates to Sandelowski's (1997) notion of technical optimism.

Even though a difference exists between the internal horizons of Categories I and II, which is important in terms of the way competence in neonatal nursing practice is experienced, I am arguing that these structural differences between categories are not educationally critical. My reasoning here stems from the fact that whether items within the NICU environment are understood and managed separately (Category I) or as integrated clusters (Category II), it is the machinery and equipment or procedural activities that are in the focus of awareness and simultaneously discerned. Hence, it is the numerical values, abbreviated symbols and graphic trends displayed on the machinery and equipment that signify the infant's condition.

8.3.3 The impact of technology in Category III

In Category III competence in neonatal nursing is experienced as managing a support system for the infant and family by using objective sensory observations of the infant to guide the use of policy and procedural rules according to priorities. Thinking about technology as a support system is qualitatively different from the way in which technology is thought about in Categories I and II. In this category information communicated by that support system is not seen as important as information

communicated by the infant. In others words the infant's condition is signified by their clinical signs as directly observed by the nurse. This explains why the referential aspect is concerned with understanding individual infant and family response to rule governed machinery and equipment. Thus, in Category III it is the infant that is in the foreground of awareness not the technology as in Categories I and II. One neonatal nurse expresses this notion in the following way.

(Sandra)

A sick baby cannot communicate so you have to rely on your own clinical skills to be aware of any sign or symptom that is presenting. [...]...physical signs would be the way the baby's breathing, chest movements, colour, perfusion.

The infant's clinical presentation is a measure of their response to the NICU support system. As mentioned in Chapter 7, parents and family mirror positive or negative responses in their infant's clinical presentation. Thus there is a dependent relationship between infant and family response. Together, these responses constitute the internal horizon of experience. For the moment however, I will only refer to infant response, dependent family response is assumed.

Clinical presentation is based on objective sensory observation of the infant, such as colour, breathing patterns or amount of activity as mentioned above. These sensory observations of the infant are experienced as a form of communication with the infant. Thus, an understanding of 'normal' infant parameters such as heart rate, breathing patterns, skin colour, perfusion, tone and activity are considered fundamental to competence in neonatal nursing practice. An understanding of normal infant parameters enables abnormal or varying infant parameters to be discerned and focused on. This notion is described eloquently in the following excerpt.

(Sandra)

You need to know normal values of heart rate and respiratory rate, bloodpressure, oxygen saturation and TCs, then you can delineate between normal and abnormal values.

Despite technological advances in machinery and equipment used in the NICU, there is still a 'delay' factor or difference in time between when a machine takes a recording from an infant to when it is displayed on the monitoring device. Other factors can also

impede machinery and equipment function such as movement artifact or faulty probes and electrodes (Lefrak 1998). These factors are taken into account in this category, which helps to explain why objective sensory observations are seen as a more reliable source of communication than machine and equipment sources.

Abnormal or varying changes detected in any of the objective sensory observations of the infant mentioned above constitute a priority to be managed. Management that can be initiated either before the abnormality registers on the numeric, symbolic or graphic values displayed on monitoring devices, or, more importantly, because there may have been a failure of the monitoring devices to register an abnormality and sound an alarm accordingly. The external horizon extends past the boundary of a specific infant's clinical presentation and family response to that presentation to include the following: knowledge about infant condition in general, family dynamics associated with caring for a sick infant and objective evidence about items within the NICU environment governed by policy and procedural rules.

In this way, the condition of the infant is not signified by the numerical values, abbreviated symbols or graphic trends on the machinery and equipment alone as in Categories I and II. Rather, primacy of experience is given to the condition of the infant as signified by that infant's individual response to rule governed technology within the NICU environment, which is monitored using objective sensory observation of the infant. Family response is assumed to mirror infant response. Thus, **understanding individual infant [and family] response to rule-governed technology within the NICU environment represents a change in the meaning and importance of technology and an educationally critical difference from Categories I and II.**

This category bears a striking resemblance to the 'technology as including the patients' experience and clinical presentation' category described by Barnard & Gerber (1999). Here, the negative effects of an over interest in machinery and equipment that result in excessive diagnostic interest and a de-emphasis on the human condition are acknowledged. Such effects are countered by placing a greater emphasis on information from the patient rather than information from machinery and equipment.

8.3.4 The impact of technology in Category IV

In Category IV competence in neonatal nursing practice is experienced as managing a support system focused on the infant and family by using objective sensory observation of the infant and tacit feelings about the infant arising from variation in the previous experiences of outcome for infant and family to guide and challenge the use of policy and procedural rules. The referential aspect is concerned with trusting and acting on tacit intuitive judgments of the infant's clinical presentation.

The internal horizon is formed by the infant's clinical presentation and family response to that presentation as in Category III. There is an ability to see interrelationships between objective sensory observations of the infant in a more holistic sense. The large excerpt from one neonatal nurse (Robyn) in 7.7.1 describes the holistic nature of these interrelationships. These complex interrelationships stimulate tacit intuitive feelings about the condition of the infant, which the nurse intuitively recognises as indicating variation between the infant's 'normal' condition and some change in condition. This notion is expressed as follows.

(Robyn)

You know all the numbers are fine yet my baby doesn't seem well to me than I'll go to the doctors and say all my numbers are fine but I'm getting the feeling that the baby's not well.

These tacit intuitive feelings, present in the internal horizon, are almost imperceptible and are derived from an external horizon that contains a history of previous clusters of objective sensory observations of infants, and previous experiences of known outcomes for infants and their families. Knowledge about infant condition in general and objective evidence about items within the NICU environment governed by policy and procedural rules also contribute to the external horizon of this category.

This means that the infant's condition is signified by a combination of the infant's own individual response to the NICU environment and tacit feelings about the infant arising from previously experienced variation of outcome for infants and their families. Thus, **a tacit understanding of individual infant [and family] response to rule-governed technology in terms of previously experienced variation of outcome for infants and**

their families represents a subtle change in the meaning and importance of technology and an educationally critical difference from Category III.

This category has an element of the 'technology as including the patients' experience and clinical presentation' category described by Barnard & Gerber (1999). That element is associated with the immediacy of a patient's clinical presentation. As far as tacit understanding derived from previous experiences is concerned, technology may be experienced by the neonatal nurse as a barrier between themselves and the infant's experience of illness. Thus, there could be an element of the 'technology as alteration of the free will of nurses' described by Barnard & Gerber (1999) and Walters (1995) notion of 'balancing' as mentioned in Chapter 4. Given the focus on tacit feelings about the infant in this category and the way those feelings are acted upon, it is here that a close resemblance to Benner's (1984) notion of an expert nurse is seen.

Thus, the transcripts from neonatal nurses in this study indicate that the impact of technology on the experience of competence in neonatal nursing practice is significant. This is especially so between categories II and III where the meaning focus changes from managing machinery and equipment to managing a support system for the infant and family. The change between Categories III and IV is subtle but none-the-less important. It is now interesting to look at how these educationally significant differences highlighted by the impact of technology affect the way competence in neonatal nursing practice is developed. I plan to do this by: exploring the relationships between being and becoming competent in neonatal nursing practice, considering the effect of clinical experience in neonatal nursing and by looking at the content of communication with parents, family and colleagues.

8.4 Developing competence in neonatal nursing practice

In the previous chapter it was shown that there was a direct relationship between the way competence in neonatal nursing practice is conceived of or experienced and strategies used to become or develop competence in neonatal nursing practice. Thinking back to the notion of intention and how it has been used to describe the directional force of the experience of learning (Johansson, Marton & Svensson 1985; Marton & Booth 1997), it was not surprising to find that such a relationship existed in the present study.

8.4.1 Exploring relationships between being competent in neonatal nursing practice and becoming competent in neonatal nursing practice

In Category I being competent in neonatal nursing practice (direct object of learning) is understood in terms of technology-based NICU policy and procedural rules. When looking at the strategies used in the development of competence in neonatal nursing practice (act of learning) there is an intention to learn the policies governing the use of machinery and equipment within the NICU environment by reading them repetitively. Intention is also directed toward the repeated performance of nursing activities according to details set out in procedural manuals. This intention and the strategies resulting from it are consistent with a conception of learning that is primarily concerned with reproducing (Marton, Dall'Alba & Beaty 1993) educational/work related content.

In Category II being competent in neonatal nursing practice (direct object of learning) is also understood in terms of technology-based NICU policy and procedural rules. Looking at strategies used in the development of competence (act of learning) there is still and intention to learn the policies governing the use of machinery and equipment within the NICU by reading them repeatedly. However, the more integrated focus of this category means that intention is directed toward learning how to link nursing activities together so that performance is more streamlined. Increasing knowledge, memorising and reproducing are still strategies used within this category. The integrated focus does however; place more of an emphasis on the application of nursing activities to specific situations. Nevertheless the intention and strategies resulting from it are also consistent with a conception of learning that is primarily concerned with reproducing (Marton, Dall'Alba & Beaty 1993) educational/work related content concerned with machinery and technological equipment.

In Category III being competent in neonatal nursing practice (direct object of learning) is understood in terms of managing a support system for the infant and family, where that management is guided by certain infant priorities. When looking at the strategies used in the development of competence in neonatal nursing practice (act of learning) there is an intention to learn about how the infant and family respond to items within the NICU environment. Undertaking postgraduate studies in neonatal nursing is a major development strategy in this category.

New knowledge from postgraduate studies assists in the contextual understanding of infant and family response to nursing activities in terms of relationships between objective numerical information on monitoring equipment and objective sensory information that the infant is physically displaying on a moment to moment basis. This understanding enables the neonatal nurse to see that infant response can be different to numerical monitor response. Thus, the intention in this category is consistent with learning that is primary concerned with seeking meaning (Marton, Dall'Alba & Beaty 1993) of educational/work related content concerned with individual infant response.

In Category IV being competent in neonatal nursing practice (direct object of learning) is also understood in terms of managing a support system for the infant and family as in Category III. However, in this category there is also tacit intuitive guidance arising from variation in previous experiences of outcome for infants and their families. As with Category III there is an intention to learn about how the infant and family respond to items within the NICU environment. However in this category, strategies used in the development of competence in neonatal nursing practice (act of learning) extend further than the immediate benefits of postgraduate studies.

In this category critical reflection is a major strategy used in the development of competence in neonatal nursing practice. New knowledge gained from a variety of sources such as postgraduate studies, current journals and Internet links to other hospitals is thought about critically in relation to variation in previous experiences of outcome for infants and their families. This amalgam of knowledge is then used to think about other ways of carrying out nursing activities that may be more beneficial to the infant and family then the way currently acknowledged in policy or procedural manuals. Thus, learning and understanding consistent with seeking meaning is extended to seeing something in a different way and possibly changing as a person (Marton, Dall'Alba & Beaty 1993).

The 'conceptions of learning' (Marton, Dall'Alba & Beaty 1993) have provided a useful analogy for looking at the relationship between being competent in neonatal nursing practice and developing competence in neonatal nursing practice. By using this analogy it can be seen that in Categories I and II learning is primarily concerned with reproducing. Conversely, learning in Categories III and IV is primarily concerned with

seeking meaning. The former limits learning to that associated with performance of tasks within the NICU environment. The latter move learning beyond the tasks to how the infant and family respond to those tasks, or what those tasks signify.

8.4.2 The effect of clinical experience in neonatal nursing

Experience was something that all neonatal nurses in the present study mentioned as being important in the development of competence in neonatal nursing practice. In general, clinical experience was thought about and expressed as a function of time in the specialty of neonatal nursing. Hence, it was interesting to look at the effect of experience on the relationship between being competent in neonatal nursing practice (direct object of learning) and becoming competent in neonatal nursing practice (act of learning).

As mentioned above, learning in Categories I and II is primarily concerned with reproducing. This reproducing intention limits the effect of experience gained in neonatal nursing practice to the performance of tasks. The more certain tasks are performed, the more practiced or integrated performance becomes. In this way, experience has enabled procedural integration but not an understanding of how infants and families respond to those tasks because intention was not focused in that direction. Many neonatal nurses in this study, with more than 5 years clinical experience in neonatal nursing expressed core statements consistent with Categories I and II.

In Categories III and IV learning is primarily concerned with seeking meaning. This intention extends the effect of experience to enable understanding of how infants and families respond to performance of tasks within the NICU environment as well as the ability to act on those understandings. Interestingly, many years of experience in neonatal nursing did not necessarily equate to the expression of core statements consistent with Categories III or IV. In fact, neonatal nurses often expressed core statements consistent with Categories III and IV with less than 5 years clinical experience in neonatal nursing.

So, what is the crux of the effect of clinical experience on the development of competence in neonatal nursing practice? The discussions above suggest that it is the type and way that experience is reflected on and used over time not just the length of

time experienced in neonatal nursing that has the most influence on how infant response is noticed and subsequently attended to. Thus, it is type of experience not amount of experience that has the most bearing on development of competence in neonatal nursing practice. Sandberg's (1994) arguments concerned with how engine optimisers develop competence at work support this finding. Moreover, Benner's (1984) ideas on development of clinical expertise in nursing and Bjørk's (1995, 1997,1999) ideas on the development of practical nursing skills are consistent with this finding.

8.4.3 Content of communication with parents, family and colleagues

All neonatal nurses in the present study acknowledged the importance of effective communication in their day-to-day practice. However, the content of communication with parents, family or colleagues is affected by conception of competence in neonatal nursing practice.

The machinery and equipment focus is most prominent in Categories I and II. Thus the content of communication with the medical officer for example is mainly concerned with separate (Category I) or integrated (Category II) numeric, symbolic or graphic information from displays on monitoring and life support equipment. In this way, the conveying of information is experienced as a relatively passive process because no attempt is made to synthesise or evaluate information as the following excerpt shows.

(Betty)

You have to tell the doctor things like heart rate, sats, resps and TCs so they know what's going on.

Emphasis is also placed on communicating with parents and family in Categories I and II. However, the content of communication is limited to explaining information to parents and family that is related to machinery and equipment within the NICU environment. Such as, how the monitor works and what the coloured lines and numbers show. Or, how the ventilator works and what settings are currently in use for their infant. In these categories it is thought that this is the sort of information that parents and family should be told.

In this way, the focus of communication processes is on what the neonatal nurse thinks is best for the parents and family to be told, which may not be what the parents and family necessarily want to hear. Attempting to discover how the parents and family may feel about being told this information or how they are coping with having their infant in the NICU is not found in the content of such communication.

(Emily)

NN You have to keep the parents informed about what their baby's doing.

R What do you mean by keeping parents informed?

NN Well you know... tell them everything about their baby's condition.

R What do you tell the parents about their baby?

NN Well. I tell them about the monitors. What the dots are [heart rate monitoring electrodes] and what a normal heart rate is. I tell them what their baby's is and that it's normal. Provided it is that is. I tell them about the sat [oximetry] probe and where it's reading on the monitor and what normal is. And about ventilation, where the tube goes and what their baby's on. You know stuff like that.

The above excerpt shows that the content of communication is concerned with infant condition as signified by monitoring and life support equipment. It is the sort of content that could be given to any set of parents or family in a fairly standard way.

In Categories III and IV the focus on infant and family response to rule governed NICU technology changes the meaning of the use of machinery and equipment. It also changes the content of communications with parents, family and colleagues.

The cues that an infant gives about whether or not they are in a stable autonomic state, such as, colour and activity are considered to be that infant's way of communicating. Taking note of these cues, evaluating them and deciding how they relate to the numeric, symbolic and graphic information from monitoring and life support equipment determine the content of communication.

Instead of the standard technology-based communication content consistent with the focus of Categories I and II, the focus of communication content in Categories III and IV is tailored to the receiver. For example when communicating with a medical officer the content shows evidence of synthesis and evaluation. That is, clinical language from monitoring and life support equipment is combined with information about infant response in a much more holistic and active process as the following excerpt shows.

(Robyn)

All the numbers might be fine but the baby has changed his or her sense of well being, the changes might be minute but you're unhappy about that. Then again the changes might be florid, the tummy blows up or there's an increase in oxygen requirements and the numbers are changing. You also have a sensitivity to how the baby reacts to handling so I guess that's how you would explain it in a physical sense. But sometimes it is just because the baby doesn't give you a good feeling and that's something that can't be quantified. You could try with the number aspect but other times you just can't. You just have to pay attention to finer details.

Where parents and family are concerned, the content of communication centres on what the infant is doing or how the infant presents to them. In Category III that is fairly objective and limited to obvious physicalities such as colour and amount of activity. In Category IV, content of communication indicates an attempt to understand the perspective that a given set of parents and family has about their infant being in the NICU in a more empathic sense as the following excerpt shows.

(Megan)

If you care about what you're doing you give that little bit more, especially where the family's concerned. I'm not saying that you get overly involved because that can be detrimental to you in another way. But you do take the time to be there for the family, get the baby out for a cuddle, find out how they are coping, ask if there is anything that the Nursery can do to help like providing contact numbers and names of support services that kind of stuff. And think of little things like arranging for a parking permit so they don't have to stress finding a car park. That's where I see a distinction among neonatal nurses. A competent nurse will make sure that the baby's OK and not at risk, but the really competent nurse goes that little bit extra and makes sure that the family's OK.

8.5 The importance of understanding educationally critical differences

So then, why is it important to understand educationally critical differences between ways of experiencing competence in neonatal nursing practice? In short an understanding of educationally critical differences has the potential to provide a pathway or framework for structuring learning experiences that are **relevant** for the development of more complex and inclusive conceptions of competence in neonatal nursing practice. Moreover, Marton & Booth (1997) argue that students may not reach more complex understandings of the content (direct object of learning) unless aspects of educationally critical differences are experienced simultaneously.

Relevance is a key issue for any educational program and has two main issues that deserve consideration. The first is concerned with whether the relevance structure of the learning situation that is experienced by learners affords the 'desired' or more complex way of experience. Phenomenographic researchers exploring the experience of learning have been very interested in this issue. Marton & Booth (1997) draw on the work of several phenomenographic studies that have explored the experience of learning in the following areas: numbers, recursion, Newtonian motion and the nature of matter. In each of these studies variation was found in the way the content area (direct object of learning) was understood. What was even more interesting is that the findings of these studies were at odds with those of the dominant research community.

As a case in point Neuman (1987, 1989 cited in Marton & Booth 1997) looked at the experience of learning simple arithmetic skills. Consensus of the dominant research community was that children develop arithmetic skills along the following pathway: 1. Modeling; 2. Counting strategies; 3. Number facts. In other words, "first they count things, then they keep practicing arithmetic tasks with symbols, and eventually they come to know the number facts by heart" (Marton & Booth 1997, p.58). However, in an earlier study of 7-to-13-year-olds Eriksson & Neuman (1981, cited in Marton & Booth 1997) found that 72% could not solve simple arithmetic problems involving numbers from 1 to 10 without using counting strategies. This meant that up to six years of practicing counting strategies did not necessarily ensure the capability of using number facts. On the basis of subsequent research Neuman (1989, cited in Marton & Booth

1997) claimed unequivocally that the critical aspect in developing mastery of number facts was the child's ability to experience the numerosity of numbers larger than 3 or 4.

Numerosity, as Neuman (1989, cited in Marton & Booth 1997) describes it, is the ability to experience numbers from 5 to10 as 'wholes', such as, the eightness of eight. For children, this is easy to do when dealing with small numbers like 2 or 3 but when the number is greater than 4, the sense of numerosity is lost and the child resorts to counting. To experience the numerosity of 8, priority must be given to the nature and structure of 8. For example, the number 8 can be experienced as two sets of four, four sets of two or 8 sets of 1. In each case the number 8 is a sum of its parts. Numerosity is the ability to experience these part-whole relationships of the number 8 simultaneously, so the eightness of eight is revealed. Counting strategies tend to focus on the separate parts of 8 not the relationships between separate parts of 8, which make 8 a whole number. This is why such strategies have limited potential in developing mastery of number facts. Hence, Neuman (1989, cited in Marton & Booth 1997) argued that the dominant research community consensus concerning the developmental path of simple arithmetic skills was no longer relevant because the intended goal, that is, mastery of number facts was not met for more than 70% of children studied.

The second issue is concerned with whether or not participants in an educational program see the course content as relevant to their needs. In discussing the findings of several large studies that have looked at reasons why adults do not participate in educational programs, Merriam & Caffarella (1999) list lack of course relevance as one of the top six factors. Tennant (1997) also talks about relevance of course content as being a major area of conflict in adult education. Thus, if there is a lack of relevance in both the way learning experiences related to specific course content have been structured together with perceived participant need, it is unlikely that the intended goal of the educational program or a more complex way of experience will be achieved.

8.5.1 The problem with current educational programs for new graduates entering the specialty of neonatal nursing

Issues concerned with relevance are important when looking at the problems associated with current educational programs for new graduates entering the specialty of neonatal nursing. As discussions in Chapter 4 have indicated, the focus of current educational

programs within the specialty of neonatal nursing is mostly concerned with manipulating technology and performance of tasks.

New graduates overwhelmed by the prospect of working in an intensive care area may perceive that technology/task-based content is relevant to their needs. However, the findings of this study suggest that structuring learning experiences that focus only on performance of tasks do not provide new graduates with opportunities for the development of complex and inclusive conceptions of competence in neonatal nursing practice. The reason being, teaching and learning activities that foster thinking about items within the NICU environment as a series of tasks with emphasis placed on performance of those tasks separates the tasks from individual infant and family response to those tasks.

This means that the potential for noticing or discerning variation in individual infant and family response to those tasks is lost. If this potential is lost then there can be no learning about individual infant and family response. Thus, less complex conceptions of competence in neonatal nursing practice consistent with Categories I and II are the likely outcome. Support for this likely inferior outcome comes from recent theoretical assumptions as discussed in **8.2**, which suggest, "there is no learning without discernment. And there is no discernment without variation" (Marton & Trigwell 2000, p.381).

This inferior outcome is not desired by those like myself who are responsible for providing educational support for new graduates entering the specialty of neonatal nursing. Neither is it desirable for the infants and families that we have a duty of care to protect and nurture.

8.5.2 Changing the focus of current educational programs for new graduates entering the specialty of neonatal nursing

In this study, Category IV expresses the most complex and inclusive conception of competence in neonatal nursing practice. Therefore, it could be argued that Category IV is the most desired way of understanding what it means to be competent as a neonatal nurse. As discussed earlier, development of this desired way of understanding is dependent on a collated history of experienced variation in objective sensory

observation of individual infant and family response to rule governed technology within the NICU.

In simple terms the structure of infant and family response to the NICU environment can be thought about as a sum of three main parts. The first part is numerical, where information from technology-based monitoring equipment is noted and documented accurately. The second part is sensory, where objective changes in the infant's physical condition, such as colour and movement, are noted along with family response to those changes. The third part is tacit, where almost imperceptible changes in the infant's physical condition are noted along with family response to those changes. This part is only present in Category IV.

Category III is the only other category to share the focus on experienced variation in objective sensory observation of individual infant and family response to rule governed technology within the NICU. Thus, there is support for the argument that the difference between Categories II and III, is an appropriate starting point in developing educational support for new graduates entering the specialty of neonatal nursing. This means that educational programs designed to develop competence in neonatal nursing practice must give priority to the nature and structure of objective sensory observation of individual infant and family response, if variation in that response is to be experienced and discerned.

8.6 Developing educational support for new graduates entering the specialty of neonatal nursing

The preceding discussion has identified the critical dimension of individual infant and family response from within the outcome space of the experience of competence in neonatal nursing practice. It was then argued that experiencing variation in individual infant and family response to rule governed NICU technology is critical for the development of more complex and inclusive conceptions of competence in neonatal nursing practice. Therefore, discussion will now move forward to look at the pedagogical implications of how those responsible for the education of neonatal nurses (teachers) can structure learning experiences for new graduates (learners) entering the specialty of neonatal nursing focused on this critical dimension.

It is acknowledged that teaching and learning is a mutual or complimentary activity. However, the pedagogical implications of this study are more concerned with how teachers can formulate instructional strategies that promote learning. In particular, instructional strategies that enable new graduates to constitute or discern particular patterns of variation associated with a more complex and inclusive way of experiencing competence in neonatal nursing practice within their learning situation.

Literature concerned with principles of 'good' teaching is vast and open to conjecture. However, I have found the principles of 'good' teaching outlined by Biggs (1999), Tennant (1997) and Prosser & Trigwell (1999) together with ideas from recent experiential learning theorists (Boud, Keogh & Walker 1985; Boud & Walker 1992; Boud, Cohen & Walker 1993; Boud & Miller 1996) useful to consider here.

Biggs (1999) discusses his ideas of good teaching principles under two main headings: constructing a base of interconnected knowledge, and, learner activity and interaction. The former involves structuring new knowledge onto existing knowledge in a hierarchical fashion and constructive use of formative assessment. The latter involves the use of a variety of teacher, peer or self-directed teaching/learning activities, such as tutorials, peer teaching and learning partnerships, that encourage active engagement with material to be learned. Many of these teaching principles are similar to those espoused by recent experiential learning theorists (Boud, Keogh & Walker 1985; Boud & Walker 1992; Boud, Cohen & Walker 1993; Boud & Miller 1996).

Tennant (1997) critiques the psychological theories that have informed contemporary adult education practices. From this analysis, Tennant suggests that there are eight principles necessary for critical adult education practice. These principles are: valuing the experience of learners, engaging in reflection on experiences, establishing collaborative learning relationships, addressing issues of identity and the power relationship between teachers and learners, promoting judgements about learning which are developmental and which allow scope for success of all learners, negotiating conflicts over claims to knowledge and pedagogical process, identifying the historical and cultural locatedness of experiences and transforming actions and practices.

Prosser & Trigwell (1999) in their analysis of the experience of learning suggest that good teaching involves a continuous awareness of five major aspects. Those aspects include students' present learning situations, the contextually dependent nature of teaching, students' perceptions of teaching technologies used in teaching, student diversity in classrooms and the need to continually evaluate and improve teaching.

Each of these authors has developed their ideas about 'good' teaching principles from a different perspective. Despite this, there is agreement that teaching and learning is a mutual activity bound by the context within with that teaching and learning takes place. Thus, there is a relationship between the learner and the context in which learning occurs, which Prosser & Trigwell (1999) describe as a learning situation.

The Constituitionalist model of student learning developed by Prosser & Trigwell (1999) has provided a useful framework within which to consider the learner's or new graduates perception of their learning situation within the context of neonatal nursing. Phenomenographic studies concerned with the design of teaching have also been useful to consider here in tandem ideas about principles of good teaching outlined by Biggs (1999) Boud, Cohen & Walker (1993) and Tennant (1997).

8.6.1 Designing teaching for learning

Thinking about how teaching can be designed to enable learning about an object of study in a particular way is an expanding area of phenomenographic research. In a study by Runesson (1999) five mathematics teachers were examined to see how they handled the same content, fractions and percentages that they were required to teach. Runesson (1999) found that teachers were able to mould the object of study for students to experience in three distinct ways depending on which aspects were varied or thematised and which were kept invariant or unthematised. Essentially, that variation was concerned with numbers in the problem, procedure to solve the problem and the meaning of numbers. Together these different dimensions of variation opened up by the teachers constituted a space of variation, which enabled students to discern the critical aspects of the content in particular ways, thereby facilitating learning about the object of study.

Other researchers have also looked at how teachers can open up a space of variation in which learning can occur. Rovio-Johansson (1999) investigated the different ways teachers handled subject matter in economics specifically related to 'management accounting in higher education'. She found that the students' ways of experiencing the subject matter was grounded in and systematically related to the different ways it was taught. McKenzie (2000) in her study of university teachers' conceptions of changing their teaching has found that the teachers' ability to experience conceptual change and as a consequence become more student focused in their teaching is a function of experienced variation. Pong (1999) in a study of the economic themes of price and trade found that contextual variation used by teachers to construct cases or provide experiences about relationships between price and trade was essential in helping students understand the meaning of those phenomena.

In this study, those responsible for the education of neonatal nurses (teachers) have not been examined. Therefore it is not possible to say anything about how teachers actually constitute a space of variation as Runesson (1999), Rovio-Johansson (1999), McKenzie (2000) and Pong (1999) have done. What can be said however is that the findings of these studies show that experienced variation is a necessary condition for learning and that teachers play a vital role in helping students discern that variation.

8.6.2 Creating a space of variation

In Chapter 5 an example of a coffee mug and tea cup was used to show how previously experienced variation in the dimensions of colour, size and shape enabled certain aspects of the coffee mug and tea cup to become thematised in focal awareness (figural) while others became unthematised and receded into the background. It was argued that previously experienced variation in the shape of coffee and tea cups was the critical dimension giving the objects their meaning, thus enabling discernment.

This example may seem fairly simplistic or concrete when compared to something as nebulous or abstract as the experience of competence in neonatal nursing practice. However, it does raise an important educational consideration as far as new graduates entering the specialty of neonatal nursing are concerned. That is, it is not possible to discern critical aspects of variation associated with complex and inclusive conceptions of competence in neonatal nursing practice, if those aspects have not been previously

experienced. The vital role that teachers, or in this case nurse educators and mentors play in that consideration is borne out in those studies mentioned above in **8.6.1**.

So, how is it possible to create a space of variation in which learning about complex and inclusive conceptions of competence in neonatal nursing practice can occur? Sandberg (1994) argues that any educational support for the development of competence at work has to "take deliberate action towards changing workers' conceptions of their work" (p.148). Based on the findings of his own study, Sandberg (1994) has suggested three guiding principles for the development of competence at work. These principles involve taking the workers' conception of work as the point of departure, directing development activities toward the competence whole and to use encounters between workers and their work as developmental triggers.

Looking first at *taking the workers' conception of work as the point of departure.* Sandberg (1994) argues that this is the fundamental principle of developing competence at work. The reason being, if workers are not aware of their present conceptions of the work, they will incorporate any new aspects of competence into those present conceptions and will continue to develop their competence at work in the same way.

Sandberg's (1994) makes an important point here and I want to consider it in light of current educational practices used within JSN and this study's findings. When a new graduate enters the NICU it is a usual practice to 'buddy' them with a more senior or experienced RN for a period of time. This practice stems from the novice / expert or apprentice / master philosophy, where the expert or master passes on their knowledge and skills to the novice or apprentice. This practice has been used widely throughout the history of nursing as discussed in Chapters 2, 3 and 4.

The buddy system has its advantages, but in terms of helping new graduates develop more complex and inclusive conceptions of competence in neonatal nursing practice, there is a major flaw. That flaw is concerned with the buddy's conception of competence and perception of their situation within the context of the NICU. If that perception arises from a conception of competence in neonatal nursing practice that is consistent with Categories I or II of this study, then the buddy's ability to help the new graduate develop competence in their practice is limited. This is because the buddy is

not aware of the critical dimension of individual infant and family response shared by Categories III and IV, which lead to more complex and inclusive understandings of competence in neonatal nursing practice. This may help to explain why limited understandings of competence in neonatal nursing practice are perpetuated.

Sandberg's (1994) notion of taking the workers' conception of work as the point of departure raises another issue that is problematic for this study. What does showing new graduates that competence in neonatal nursing practice is conceived of or experienced in four qualitatively different ways achieve? According to Sandberg it should provide an impetus for new graduates to reflect on their own practice to date and come to a decision about how their present conception of the work is affecting their perception of being competent within the context of the NICU. Is this activity a realistic expectation for a new graduate entering an unknown context? I would suggest that new graduates might find this activity difficult if not impossible because they have not experienced working within the context of neonatal nursing. It is not possible to reflect on experiences you have not yet experienced.

This does not mean that Sandberg's first principle is not important to consider. Rather, the reverse it true, it has great importance for those neonatal nurses 'buddied' to new graduates. If this more senior group of neonatal nurses can acknowledge their own conception of the work in light of other ways of experiencing competence in neonatal nursing practice, then they may appreciate the need to work at changing their conception. If senior neonatal nurses can be helped in changing their conception of competence in neonatal nursing as well as perception of their learning situation within the context of the NICU they may be able to help new graduates experience the difference between conceptions that focus on NICU technology, and those that go beyond the technology to include the infant and family. This in turn may help to break the perpetual cycle of limited understandings of competence in neonatal nursing practice.

The second of Sandberg's (1994) principles is concerned with *directing development activities toward the competence whole*. Here Sandberg (1994) points out that aspects within each conception of competence should not be treated as separate entities

otherwise there is a risk that the basic meaning structure of that conception will be distorted.

To use the present study findings as an example, there are four major aspects that delimit Category III. To reiterate, these aspects include: manage nursing activities with dexterity and efficiency within specified safety requirements found in NICU policy and procedural guidelines at a time suitable to the infant and family; see links between separate items of the NICU environment and the infant's clinical appearance; understand and respond to specific changes in an infant's clinical appearance; and understand and respond to family needs. If any one of these aspects are taken out of that category as a whole and focused on separately as an educational development strategy, then that aspect's true relationship to the meaning structure of Category III is obscured. If this principle is thought about in relation to the one above there is a risk that individual aspects of categories will be incorporated into neonatal nurses' present conceptions of the work and be developed within that meaning structure rather than that aspect's true meaning structure.

The third principle is concerned with *using encounters between workers and their work as developmental triggers* (Sandberg 1994). The purpose of these encounters is to challenge workers with less complex conceptions of their work to think about and reflect on their work in ways that point to more complex conceptions of the work. The idea is to help workers with less complex conceptions of their work realise the limitations of their present conception and explore alternative ways of accomplishing their work. A chain of encounters, which focus on alternative ways of accomplishing the work, is seen as the best way to develop competence and thus change the worker's conception of the work.

When this principle is applied to the present study, it suggests that any encounters used to challenge neonatal nurses in the development of more complex and inclusive conceptions of competence in their practice should always point to notions expressed in Category IV. Moreover, those encounters should be organised in a variety of clinical and non-clinical situations. It is the organising and chaining of encounters that I see as having the most potential for helping new graduates experience the variation in ways of

conceiving of neonatal nursing practice, particularly if those encounters are organised and chained around the critical dimension of infant and family response.

8.6.3 Using the SCORPIO to organise and chain encounters

In Chapter 3 I indicated my preference for the SCORPIO system of medical teaching proposed by David Hill (1992). I remain of the opinion that this method of teaching could be adapted to organise and chain encounters around the critical dimension of infant and family response.

The SCORPIO system provides an opportunity for students to experience something, in most cases a patient with a particular clinical problem, in a particular way. The combination of theoretical and practical teaching stations attempts to point out the major features of a patient presenting with a specified clinical problem. The organisation of stations is, in a sense, a chain of encounters designed to help students focus on the **best** way of dealing with the clinical problem or situation. Participating students receive knowledge by senior clinicians in a similar vein to the master/apprentice philosophy. In this way students are exposed to a potted version of many years clinical experience by clinicians committed to imparting their knowledge. Given that previous experiences shape future experiences of a particular phenomenon (Marton & Booth 1997), the SCORPIO system is certainly providing a relevant framework for learning. Moreover, the SCORPIO system is in keeping with experiential learning ideals.

However, in focusing only on the best way of dealing with a clinical problem situation, students are not being exposed to alternate ways of dealing with a given clinical problem. If development of competence is dependent on workers being exposed to alternative ways of accomplishing the work (Sandberg 1994), then students participating in a SCORPIO should be exposed to alternate ways of dealing with a given clinical problem. Focusing on alternate as well as the best way of dealing with a given clinical problem creates a space of variation in which learning can occur. Exposing that variation will help students to see or experience the best way in light of the limitations offered by having seen or experienced alternate ways.

The teaching focus of the SCORPIO is also an interesting point to pursue. Hill (1992) emphasises that 'teachers' are selected to participate in SCORPIO sessions because of

their expertise and commitment to the medical program. Both of these qualities are important to the teaching / learning process. However, as Prosser & Trigwell (1999) show from their review of student learning literature, there is a relationship between teachers' approaches to teaching and learners' approaches to learning. In short, the students of teachers who tended to favour student-centred approaches reported using higher quality or deeper approaches to learning. Conversely, the students of teachers who tended to favour teacher-centred approaches such as information transmission reported lower quality surface approaches to learning.

The SCORPIO teaching system has used pre-test / post-test MCQs to measure knowledge gain (Hill 1992; Jeffery, Henderson-Smart & Hill 1996). This approach to assessing knowledge is largely teacher-focused. If this is the only assessment measure used there may be a danger that teachers will focus only on information transmission, which could lead students to adopt lower quality surface approaches to learning (Ramsden 1992; Prosser & Trigwell 1999).

8.6.4 Adapting the SCORPIO for new graduates entering the specialty of neonatal nursing

The ability to discern and focus on individual infant and family response to rule governed technology within the NICU environment has been identified as an educationally critical dimension because it is associated with more complex and inclusive ways of experiencing competence in neonatal nursing practice. Central to that dimension is the ability to experience objective sensory observations of the infant. By adapting the SCORPIO to incorporate the notions of variation, discernment and simultaneity it is possible to help new graduates entering the specialty of neonatal nursing discern and focus on objective sensory observations of the infant. The objective sensory observation of colour together with content of communication with parents and family found within this dimension are presented in an example below to show how that adaptation could take place.

The example described by (REBECCA) in 7.6.1 has been used as the basis for constructing the following SCORPIO focused on infant and family response. However, this example will be adapted to include a greater family emphasis. The aim of this adaptation is that new graduates will experience the difference between conceptions that

focus on NICU technology, and those that go beyond the technology to include the infant and family.

8.6.4.1 SCORPIO – Managing Apnoea of Prematurity

Location: Department of Neonatal Medicine
Royal Prince Alfred Hospital

Structure: Six 20-minute stations taking place in separate rooms. Each station will have a designated facilitator. A bell will ring indicating the commencement and completion of each station.

Total time: 2 hours 30 minutes (2 minutes allowed for movement between stations, 20 minute refreshment break after station 3)

SCORPIO Learning Objectives (each student to receive)

1. Understand the physiology associated with apnoea of prematurity.
2. Recognise variation in the normal skin colour of infants.
3. Recognise variation from normal skin colour to more serious colour changes displayed by an infant experiencing apnoea of prematurity.
4. Compare the effectiveness of different ways of managing an infant experiencing apnoea of prematurity and discern the most appropriate way.
5. Discuss the different ways of providing parent support and education about apnoea of prematurity and discern the most apprriopriate way.

Problem Scenario (each student to receive)

Keith is a 32-week infant experiencing apnoea of prematurity. A maintenance dosage of caffeine 5mg/kg (JSN protocol 2000) is prescribed but Keith continues to have episodes of apnoea that require stimulation. Nutritional requirements are being met by a combination of intravenous fluids and oral intragastic feeds of expressed breastmilk. During an intravenous line change Keith experiences an episode of apnoea. The monitor is displaying a normal value and no alarms have sounded. Another neonatal nurse walking past noticed that Keith's face had a bluish colour and came to assess the situation. This neonatal nurse noticed that Keith's lips were also a bluish colour and placed a finger under the chin to open his airway and provided gentle tactile stimulation.

At this point the monitor alarmed. The display on the monitor showed an oxygen saturation reading of 75% and a respiratory rate of zero. Keith recovered quickly following the actions of the second nurse. Keith's mother witnesses this episode and bursts into tears.

Station 1 – Identfying Learning Issues

(Facilitated group discussion – 20 minutes.)

During this station students are given time to read the scenario. Students are then asked to write down what they see as the main issues raised by the scenario. These issues may include:

Physiology of apnoea of prematurity

Medications used in the treatment of apnoea

Recognising signs that the infant is experiencing apnoea

Failure of first nurse to recognise signs of apnoea displayed by infant

Skill mix of nursing staff

Mentoring of nursing staff

Grades of apnoea and appropriate treatment

Over reliance on monitoring equipment

Mother's response

Emotions of parents who have experienced the birth of a preterm infant

Parent support, information and education needs

The role of the facilitator is to listen to the issues raised by each student. A scribe chosen from the student group can write these issues on a whiteboard. Students can then compare their own list of issues with those of the entire group. This is a good way of highlighting conceptual differences that may exist in the way issues within the scenario are seen. The facilitator then funnels these student issues into learning issues identified by the SCORPIO, which provides students with a clear idea of what the SCORPIO is designed to help students achieve.

Station 2 – Physiology of Apnoea of Prematurity

(Iterative lecture for 20 minutes)

This station is devoted to development of students' understanding about the physiology of apnoea of prematurity. This is the ideal station for input from medical colleagues. An

appropriate medical officer and neonatal nurse could adopt a team approach to the presentation of physiology and associated research. Emphasis can then be placed on the relationship between physiology and the latest clinical trials supporting the use of caffeine and tactile stimulation as treatment options will be addresses (JSN protocols). Students will be provided with current JSN protocol with associated reference material at the end of the lecture.

Station 3 – Skin Colour as an Indicator of Apnoea of Prematurity

(Demonstration and discussion using real infants / video footage displaying variation in skin colour from normal to more serious skin colours for 20 minutes)

In this station the facilitator can explain that the skin colour of a normal healthy newborn infant is often described in textbooks as being pink. However, there are many variations of this normal pink colour commonly seen in newborn skin. Some examples include *acrocyanosis*, a dark bluish-pink discolouration of the palms of the hand and soles of the feet that is present after birth and for up to 24 hours of age. *Plethora*, a reddish-pink appearance that often indicates a high level of circulating red blood cells. *Jaundice*, a yellowish-pink discolouration of the skin due to excess bilirubin in the blood being deposited in the skin. *Cutis marmorata*, a light bluish-pink mottling or marbling of the skin that may be caused by chilling or over stimulation. *Harlequin colour change*, where the dependent side becomes a sharply demarcated dark redish-pink colour and the upper side a pale whitish-pink colour (Witt 1996).

More serious skin colours are where 'pink' is not present. Such as *cyanosis* of a central nature where there is a blue discolouration of the skin, lips, tongue, earlobes and nailbeds. *Pallor* is another serious colour, which may indicate a compromised cardiac status with blood being shunted away from the skin to other more vital organs (Witt 1996).

Variation in observations and actions of the two neonatal nurses in this scenario may have caused some students to ask how is it possible that the neonatal nurse performing the procedure failed to notice that the infant had become cyanosed and stopped breathing? Phenomenographic pedagogy (Marton & Booth 1997; Bowden & Marton 1998) may help to explain why this situation has occurred by considering the following questions in discussion. Had the neonatal nurse ever seen or experienced an infant

presenting with central cyanosis and apnoea? Had the neonatal nurse seen or experienced an infant receiving treatment for central apnoea? Had the neonatal nurse seen or experienced variation in infant response to the procedure that was being performed? If the answer to these last three questions is no, then it is entirely possible for situations such as the one described in the scenario to occur.

This station is designed to concentrate on objective sensory observation of infant skin colour. The infant in the problem scenario is presenting with a bluish discolouration of the face and lips, which is indicative of central cyanosis. In order to discern central cyanosis, new graduates need to experience this bluish skin discolouration in light of normal skin colour variations.

Mannequins are of no use here. Real infants, video footage or photographs offer the best way of helping a new graduate experience variation in skin colour. Parents often give consent for their infant to be a 'star' in a teaching/learning session provided several conditions are met. Those conditions may include the mother or father being present, assurances that the infant will not be over handled, woken up if asleep or subjected to any form of invasive procedure.

The idea of this station is to place a normal healthy pink newborn infant next to a newborn infant with jaundice. Then place the same normal healthy pink newborn next to an infant with a plethoric appearance. And so on until the healthy pink newborn infant has been placed next to infants with each of the normal and more serious skin colour variations mentioned above. As far as the more serious skin colours are concerned video footage or photographs would be used. In this way the normal newborn baby with pink skin and any other symptoms remains invariant, while the skin colour of the other infants vary. This provides an opportunity for the new graduate to simultaneously experience variation in infant skin colour, which is consistent with phenomenographic pedagogy. It has also ensured that only skin colour has varied so that other differences are not discerned.

Station 4 – Initiating Treatment for Apnoea of Prematurity

(Discussion and Demonstration for 20 minutes)

The discussion component of this station will use the scenario to address the issue of initiating treatment for apnoea of prematurity. Central to that discussion is variation in the way the aspect of colour is experienced.

The scenario can be used to show how the aspect of colour may be experienced in different ways. For the first neonatal nurse, colour is experienced as a numerical value. When colour is experienced this way, the nurse is waiting for the monitor to alarm and display the percentage of oxygen saturation. Thus, it is the monitor signifying the infant's condition and alerting the neonatal nurse to initiate treatment for apnoea of prematurity. The second neonatal nurse experienced colour as the infant's individual objective sensory response. When colour is experienced in this way appropriate treatment for apnoea of prematurity may be initiated before the monitor alarms.

Discussing variation in the way colour is experienced by each of the neonatal nurses in the scenario provides an opportunity for students to experience numerical and sensory aspects of infant response simultaneously. At the time treatment was initiated in the scenario both neonatal nurses would be seeing the same saturation reading on the monitor. Thus numerical values associated with infant response may be considered invariant for both nurses. The varying aspect of infant response is the objective sensory observation of colour, which only the second neonatal nurse is able to discern and focus on. Focusing on the timing that treatment for apnoea of prematurity occurs in the scenario helps to emphasise the importance of discerning and focusing on individual infant response as opposed to numerical monitor displays.

The second part of this station is a demonstration of airway maintenance and how to perform gentle tactile stimulation. A mannequin can be used here, but is of limited value. New graduates can only develop their ability to manage apnoea of prematurity by being mentored appropriately while an infant is experiencing an episode. Hence the importance of the mentor's conception of competence in neonatal nursing practice.

Station 5 – Communicating with parents

(Role play and discussion for 20 minutes)

The important pedagogical issue here is that neonatal nurses need to understand is the direct relationship between individual infant and family response. In order to reach that

understanding, the integratedness of individual infant and family response must be experienced so that it can be discerned and focused on in clinical practice. Role play offers a way for students to experience the best way as well as an alternate way to experience communicating with parents.

This station requires three actors to role-play two different endings to the scenario. The first actor will play the role of the first neonatal nurse. The second actor will play the role of the second neonatal nurse. The third actor will play the role of the mother.

In the first ending the first neonatal nurse tells the mother in an off-handed way not to worry that preterm infants turn blue and stop breathing all the time. In the second ending the second neonatal nurse acknowledges the mothers feelings and explains why her son is experiencing apnoea, how she can identify colour changes, open his airway and provide gentle stimulation. Students can then discuss variation in content of communication with parents about apnoea of prematurity.

Station 6 – Feedback

(Formative assessment for 20 minutes)

This station provides an opportunity for students to critically reflect on whether or not SCORPIO learning objectives have been meet. MCQs may work here provided they address elements from each station and are not used in a punitive sense. A better way would be to ask open-ended questions that enable the facilitator to locate learning or teaching problems encountered by students.

The facilitator may be able to address some of these problems within the allocated time. Other problems may require more long-term strategies that involve the student identifying future learning needs associated with the SCORPIO and how they might be achieved. Ways to achieve these needs may require the student to journal their progress and/or work with a learning partner on a mutual project.

Problems of a teaching nature require review by those involved with the SCORPIO. It may be that some of the teachers conceive of competence in neonatal nursing practice in less complex ways. These teachers will have difficulty helping students to understand something, which they themselves have not grasped conceptually. Thus it is important

for teachers to reflect on their current conception of competence in their practice in light of other more complex conceptions.

8.6.4.2 Analysis of SCORPIO

The chaining of encounters in this SCORPIO allows new graduates to experience Sandberg's (1994) notion of the competence *whole* of Category III. To explain, SCORPIO stations addressing each of the four aspects that distinguish Category III appear in brackets. 1. Manage nursing activities with dexterity and efficiency within specified safety requirements found in NICU policy and procedural guidelines at a time suitable to the infant and family (Stations 3, 4, 5, 6).
2. See links between separate items of the NICU environment and the infant's clinical appearance (Stations 1, 2, 3, 4, 6).
3. Understand and respond to specific changes in an infant's clinical appearance (Stations 2, 3, 4, 6).
4. Understand and respond to family needs (Stations 2, 3, 4, 5, 6).

Moreover, the focus of Station 4 in particular, points to objective sensory observations that form the basis of tacit understandings expressed in Category IV. This focus is consistent with Sandberg's (1994) assertions that educational development activities should be directed toward the most complex and inclusive conception of competence at work. Thus, the SCORPIO session as outlined above achieves relevance for new graduates entering the specialty of neonatal nursing from both phenomenographic pedagogy and adult learning perspectives. The former because learning experiences have been structured to meet content needs associated with development of more complex and inclusive conceptions of competence in neonatal nursing practice. The latter because new graduates are encouraged to take responsibility for their own learning and explore meaningful relationships between themselves and the work they will be engaged in.

The SCORPIO has also been designed with Biggs (1999), Tennant (1997) Boud, Keogh & Walker (1985), Boud, Cohen & Walker (1993) and Prosser & Trigwell (1999) principles of 'good' teaching in mind. The Stations are interconnected and structured to build on existing knowledge. Student participation is encouraged by the use of a variety of teaching and learning activities. In, particular there is time set aside for students to

reflect on their experiences and work toward future learning needs identified by the SCORPIO. Team teaching with medical colleagues is seen as a way to identify and address power relationships that exist within nursing and medicine. It is also seen as a way to establish collaborative teaching and learning partnerships. Most importantly the SCORPIO is based in the contextual realities of neonatal nursing practice, which helps to create an awareness of the students' perceptions of their learning situation.

The SCORPIO has used formative assessment to help new graduates entering the specialty of neonatal nursing to develop more complex and inclusive conceptions of competence in neonatal nursing practice. Formative assessment is important because it provides students and teachers with an idea of how learning is progressing. It also allows students to identify weaknesses or errors in their thinking, which can be used as triggers for further learning (Biggs 1999).

The intention of formative assessment is very different to summative assessment, which is used to grade or accredit students at the end of a program. In a formal learning situation students fear summative assessment because the result is final and futures hinge on it. Weaknesses or errors in thinking no longer act as sources for further learning as in formative assessment, they now signal punishment (Biggs1999).

It is planned that the SCORPIO learning framework proposed above will be used as part of an orientation program for new graduates entering the specialty of neonatal nursing. The program is not formal in the sense that it leads to an award qualification. The program does however encompass several compulsory 'skills' accreditations such as neonatal resuscitation, neonatal drug calculations and sampling from arterial lines, which must be completed according to a timeline specified by organisational policy.

By including SCORPIOs, such as the example above within the structure of the orientation program, opportunities are created for new graduates to experience the variation or different ways of managing clinical practice situations. It is only by experiencing this type of variation that limitations in understandings of competence in neonatal nursing practice can be identified. Once identified, learning strategies can be instituted to help new graduates overcome these limited understandings and work toward development of more complex and inclusive understandings of competence in

neonatal nursing practice. Introducing summative assessment may discourage disclosure of limited understandings. Hence, the decision not to use summative assessment within this framework seems appropriate.

This does not mean that summative assessment cannot be introduced. If however, summative assessment were to be introduced, consideration must be given to what aspect(s) of learning will be assessed, what methods of assessment will be used and what the assessment 'results' will mean.

Research into student learning discussed earlier in Chapter 3 has found that summative assessment methods which emphasise recall of facts, give conflicting messages, covers a large amount of curricula content or creates anxiety encourages students to adopt surface approaches to learning. The likely result of adopting surface approaches to learning is a lower quality outcome or understanding of the content to be learned (Ramsden 1992; Marton, Hounsell & Entwistle 1997; Prosser & Trigwell 1999).

There are several aspects of learning in the proposed SCORPIO that could be assessed summatively provided that constructive alignment was achieved. For constructive alignment to exist there must be a balance between teaching and learning activities to mimimise the chances of students using surface approaches. To achieve that balance there must be clear learning objectives, which stipulate the desired level of understanding about the content in question. Teaching activities and assessment methods are then referenced to these objectives (Biggs 1999).

The SCORPIO – *Managing Apnoea of Prematurity* has provided a problem scenario and stipulated clear learning objectives related to that scenario. Facilitated stations have been designed referenced to those objectives. Therefore, it may be argued that constructive alignment has been achieved. It may also be argued that the teaching and learning activities minimise the likelihood of new graduates adopting surface approaches toward learning. In so doing, the context in which the SCORPIO takes place has been structured to afford the use of deeper approaches toward learning.

If summative assessment were introduced it could take the form of an OSCE, which has been used successfully for medical (Hill et al. 1997; Jeffery, Henderson-Smart & Hill

1996; Matsell, Wolfish & Hsu 1991) and nursing (O'Neill & McCall 1996; Nicol & Freeth 1998; Bujack, Mcmillan, Dwyer & Hazelton 1991a, 1991b) students. Or, greater emphasis could be placed on reflective techniques together with criteria referenced self and peer assessment, which would encourage more autonomy in the learning experience (Biggs 1999; Lester 1999; Evans & Langley 1999; Mulligan 1993; Milligan 1996; Patterson 1996). Given the nature of the orientation program in which the proposed SCORPIO would be used, the latter seems a more appropriate option. Support for selecting the latter option is in keeping with assumptions concerned with the development of practical knowledge as discussed in Chapter 2 and espoused by experiential learning theorists (Boud, Keogh & Walker 1985; Boud & Walker 1992). Further research could explore the type and use of summative assessment in this learning situation.

8.7 CONSERVE: a new way of thinking about development of competence in neonatal nursing practice

Nurses and doctors share a tradition of communicating with one another in combinations of alphabetical abbreviations. Hospital-based television drama series such as *E.R.* and *All Saints* often focus nurse/doctor/patient scenes around the overt use of these abbreviations. Invariably the patient in the scene asks the nurse or doctor to explain what the abbreviations mean in 'plain English', which prompts a lengthy non-abbreviated explanation.

Television programs aside, alphabetic expressions are part of the natural lexicon of nursing practice. A personal example provides some insight into the tradition of this natural lexicon. When I commenced preliminary training school (PTS) as a student nurse, I remember being given a list of 'standard' abbreviations. The list of abbreviations was several pages long and I wondered how I was going to learn and remember them all before the end of PTS. When PTS ended and ward work started, I found that the abbreviated expressions of nursing practice very confusing. Fortunately that confusion was only transient. Because of the extent to which such abbreviated expressions are common practice, it did not take long before I became very adept at speaking in abbreviated tongues.

The point I want to make here is that these abbreviated expressions have an embedded meaning. Some expressions may be of a general nature common to all areas of nursing; others are more specific to specialised areas of nursing such as neonatal nursing. Neonatal nurses participating in this study would often express themselves using combinations of alphabetical abbreviations. Some examples of those alphabetical abbreviations included TCs, SATs, SIMV and ET. These abbreviations refer to trancutaneous oxygen and carbondioxide readings, oxygen saturation readings, synchronised intermittent mandatory ventilation and endotracheal tube respectively. You can see that the non-abbreviated forms are lengthy and complex. Hence, the use of abbreviations allows nurses and doctors to be succinct in their communications with one another without obscuring the intended meaning.

It is the meaning embedded within an abbreviated expression that I want to consider here. If I were going to disseminate the present study's findings and proposed recommendations, I would have to find a way to present the information that neonatal nurses would identify with as well as understand the embedded meaning.

I needed to emphasise that performance of **skills** was seen as an important part of being competent in neonatal nursing practice especially in relation to manipulation of machinery and equipment within the NICU. This notion is well supported by Barnard (2000), Barnard & Gerber (1999), Walters (1995) and Bjørk (1995, 1997, 1999). However, the objective and tacit skills involved in discerning and focusing on individual infant and family response to items within the NICU were of greater importance because of their association with more complex and inclusive conceptions of competence in neonatal nursing practice.

The next issue to consider was the **educational context**. However, I needed to emphasise that educational context was more than just the physical attributes of the NICU environment such as technological equipment, light, noise, infants, families and lots of people. These physical attributes are important, but even more so, is the new graduate's perception of their learning situation within the context of the NICU, which may be influenced by the realities of horizontal violence (Chang & Daly 2001; Heath 2001; Duffy 1995). As new graduates will undertake educational instruction within the context of the NICU it is important to look at how that context can be altered to

minimise surface approaches to learning and encourage deeper approaches to learning. The Constitutionalist model of student learning (Prosser & Trigwell 1999) provides support for this notion.

Discussions in Chapters 2 and 3 have indicated that many educational researchers and professions such as nursing acknowledge the value of **reflection** in the learning process, particularly in developing practical knowledge (Boud, Keogh & Walker 1985; Boud & Walker 1992; Schön 1983, 1987; Gray & Pratt 1991; Taylor 2000). I wanted to assert my support for the use of reflective techniques and emphasise that new graduates need encouragement to reflect on experiences in order to grow from those experiences. I also needed to explain that the development of tacit understandings associated with the most complex and inclusive conception of competence in neonatal nursing practice (Category IV) was linked to an ability to reflect on and during experiences in the clinical setting.

Experienced **variation** is a key issue that must be highlighted. This is because of theoretical assumptions discussed in Chapter 5 and previously in this chapter that learning cannot occur without it (Marton & Trigwell 2000). Of particular importance are critical aspects of variation that enable a phenomenon to be experienced in a particular way (Marton & Pang 1999). In this study, it is asserted that development of complex and inclusive conceptions of competence in neonatal nursing practice is dependent on new graduates experiencing variation in individual infant and family response associated with the management of clinical situations within the context of neonatal nursing practice.

Individual infant and family response is a complex entity consisting of numerical, sensory and tacit aspects of the infant's response to their environment that is mirrored by the infant's family. Developing an understanding of tacit aspects of individual infant and family response arises from an ability to discern objective sensory observations of the infant from numerical observations of the infant. Therefore it is requisite that learning activities are structured in a way that enables the new graduate to experience and discern objective sensory observations of the infant. This can only happen if numerical and sensory observations of the infant are experienced simultaneously. Keeping the numerical observations of the infant constant during a learning experience and varying a single objective sensory observation of the infant provides an opportunity

for the new graduate to experience and discern that varying aspect. Creating learning opportunities in this way increases the likelihood of new graduates experiencing the difference between conceptions that focus on NICU technology, and those that go beyond the technology to include the infant and family.

Formative and summative **evaluation** is an important consideration for any educational program. Discussions in Chapter 3 and above in this chapter indicate that assessment practices are known to influence student approaches to learning and learning outcome (Prosser & Trigwell 1999). Therefore it is important to ensure constructive alignment when planning how learning of specific content is to be assessed (Biggs 1999). Use of formative assessment involving self, peer and teacher activities is seen as an appropriate way to expose the variation or difference between conceptions that focus on NICU technology, and those that go beyond the technology to include the infant and family. Summative assessment may be introduced but needs further research to determine type and usage.

Underpinning the issues raised by **serve** is the notion of **conceptual variation**. This notion is based on theoretical assumptions concerned with the experience of learning (Marton & Booth 1997). Central to those assumptions as discussed above in this chapter as well as Chapters 3 and 5, are that conceptual change is a necessary part of learning. An adaptation of the SCORPIO teaching method (Hill 1992) to include the critical dimension of individual infant and family response is seen as a core teaching/learning activity in fostering that conceptual change.

Thus, the acronym of CONSERVE was born. It is hoped that with appropriate exposure this acronym will be able to convey its intended meaning in a similar way to other alphabetical expressions used in neonatal nursing.

8.8 Conclusions and recommendations for further research

This study has been concerned with two major areas. First, examining the nature of competence in neonatal nursing practice from the perspective of neonatal nurses. Second, exploring the type of educational support needed to help new graduates develop more complex and inclusive conceptions of competence in neonatal nursing practice.

After considering the conflicting knowledge perspectives that have influenced the development of nursing knowledge, it was decided to use a research approach based in the human science domain. Research of this nature seeks to "capture the basic meaning structure of human experience of reality" (Sandberg 1994, p.163) by faithful interpretation of human activities. Being competent in the practice of neonatal nursing is an experienced human activity. Thus, knowledge gained from research of this nature may contribute to a deeper understanding of neonatal nurses' experience of competence in their work. It is this deeper understanding that Sandberg (1994) asserts is a prerequisit for developing and refining human activity, especially where human competence at work is concerned.

As mentioned earlier, this study has been influenced by Sandberg's (1994) phenomenological refinements of Marton's (1981) phenomenographic approach. These refinements were concerned with the principles of life-world and intentionality. Sandberg (1994) asserted that these principles would provide greater theoretical and methodological integration. That integration places greater attention on communicative and pragmatic validity, thus ensuring the defensibility of knowledge claims. I am in agreement with Sandberg on this point. However, given the problems encountered in this study as discussed in **6.6** I also agree with Ashworth & Lucas (2000) that there is still scope for further research addressing the processes involved in generating and interpreting defensible knowledge claims using phenomenography.

The phenomenographic approach used in this study has captured the basic meaning structure of neonatal nurses' experience of competence in their work. That structure is hierarchial and consists of qualitatively different internally related categories of description as discussed in Chapter 7. These descriptive categories indicate that neonatal nurses' experience of being competent in their practice have two main foci: the NICU environment (Categories I and II) or the infant and family (Categories III and IV).

These main foci direct strategies used to become competent in neonatal nursing practice. A focus on the NICU environment directs development of knowledge and skills toward a separate (Category I) or integrated (Category II) understanding of items within the NICU. Conversely, a focus on the infant and family directs development of

knowledge and skills toward an objective (Category III) or tacit (Category IV) understanding of individual infant and family response.

These qualitative differences in the way competence in neonatal nursing practice is experienced provide a deeper understanding of the inherent knowledge and skills concerned with competence in neonatal nursing practice. Such an understanding was absent from the definition in the introduction of this thesis provided by CNCs working in the specialty of neonatal nursing. Moreover, this deeper understanding of relationships between the infant, the family, the nurse and the NICU environment has allowed me to propose a new way of developing appropriate educational support for new graduates entering the specialty of neonatal nursing.

In his study of professional engine optimisers Sandberg (1994) suggested that development of human competence at work should be based on three principles: taking the workers' conception of work as the point of departure, directing development activities toward the competence whole and using encounters between workers and their work as developmental triggers. This study has adopted Sandberg's principles but would like to suggest an addition that has arisen as a result of considering the second face of variation or how people come to experience something in a certain way. That principle is concerned with *structuring learning experiences of the work focused on critical dimension(s) of variation in experience of the work.*

In this study the critical dimension of variation in experience of the work is individual infant and family response. This dimension is critical because it is associated with more complex and inclusive conceptions of competence in neonatal nursing practice. Structuring learning experiences focused on this critical dimension provides opportunities for new graduates to experience variation or different ways of managing a clinical practice situation. More especially in the certain or particular way associated with a more complex and inclusive conception of competence in neonatal nursing practice.

The final issue I want to comment on is concerned with the development of competency standards for neonatal nursing practice. In the introduction of this thesis, I indicated that ANNA is concerned that the quality of care provided to neonates and their families is

being gradually eroded because the skill mix of registered nurses working in NICUs is undergoing a dilution. The workforce issues discussed in Chapter 4 indicate that such a dilution is taking place but research is not available to substantiate ANNA's concern. In fact, the 'hard' outcome of 'survival' for infants born at 28 weeks gestation has continued to rise slightly (Donoghue 2000; Donoghue & Cust 2001) despite ANNA's concern.

ANNA has argued that the reason it cannot substantiate such claims is because there has been no clear description of what is expected of a competent neonatal nurse. Nor is there consistency in educational development programs for neonatal nurses. ANNA asserts that this situation has been remedied in part by the recent publication *Competency Standards of Neonatal Nurses* (ANNA 2001). These standards were distributed via post to the membership in February of this year (2002). At this stage however, there is no research looking at how these standards have been used in clinical practice.

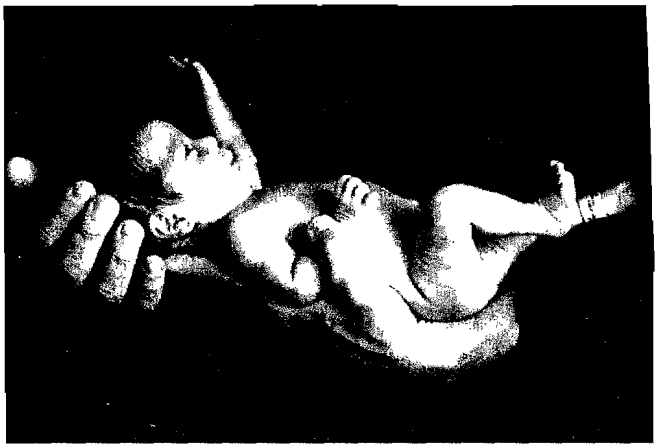
ANNA (2001) suggests that the competency standards can be used " as a framework for the development of practice based assessment or as a self-reflective tool for all levels of neonatal nurses. Individual practice settings are encouraged to develop cues for each of the performance criteria identified. [This will]...reflect the diversity of the context of neonatal nursing" (p.12). Five domains of neonatal nursing practice are defined: family centered care, clinical practice, leadership and teamwork, research, professional development and reflective practice.

Looking at the elements and performance criteria listed under each of these domains, I can see that the underlying premise of many of these criteria is a focus on *individual infant and family response*. For example, in the family centered care domain one of the elements is concerned with evaluating 'progress towards expected outcomes and reviewing plans in accordance with evaluation data. In order to meet the expectation of this element a focus on individual infant and family response is a requisite. Similarly, in the clinical practice domain, the element concerned with analysis of the infant's situation assumes a focus on individual infant and family response.

These competency standards represent the collective opinion of neonatal nurses across Australia. As such, they provide an ideal way to contrast similarities and differences within the categories of description of this study to perspectives within the professional discourse of neonatal nursing in the manner suggested by Dalgren & Falsberg (1991). Discovering that a focus on individual infant and family response is an underlying premise of ANNAs (2001) competency standards for neonatal nurses suggests that the categories of description in this study have more similarities than differences with the professional discourse of neonatal nursing. However, further research is needed to confirm or refute this opinion.

Research of this nature would provide neonatal nursing with a greater degree of theoretical and educational consistency. Further research to look more closely at how learning experiences can be constructively aligned using an adaptation of the SCORPIO teaching method would also contribute to that consistency.

Another area of research that the findings of this study have raised is the appropriate selection of mentors for new graduates entering specialty practice. This study has suggested that less complex conceptions of competence in neonatal nursing practice may be perpetuated if mentors cannot help new graduates to experience and discern individual infant and family response. This may help to explain why ANNA has raised concerns about infant survival rates and the ability of current and future neonatal nurses to provide an appropriate level of care to infants and their families. Hence, further research exploring the role of mentors in neonatal nursing would be a worthile project that would compliment the findings of this study and offer suggestions for the future of neonatal nursing.



Appendix 1

Telephone: (02) 515 6766
Facsimile: (02) 515 7176

Reference: X96-0111
4.3/JUN96

19 June 1996

Ms J Davey
John Spence Nursery
Level 8, Building 13
Royal Prince Alfred Hospital

Dear Ms Davey,

Re: **Protocol No X96-0111 - "Competency in clinical nursing practice"**

The Ethics Review Committee, at its meeting of 12 June 1996, considered the above protocol and recommended that the pilot study be approved. The Committee requests that the investigators resubmit a final protocol with the interview format when it is developed.

Please note that this approval relates to the ethical content of the trial, and individual arrangements should be negotiated with the Heads of Diagnostic Departments in those situations where the use of their resources is involved.

The Committee requires you to furnish it with a report on progress with the trial by June 1997 for its examination.

All correspondence should be addressed to the:

Research Development Office
Room 38, Level 5, Building 72
Royal Prince Alfred Hospital

Yours sincerely

Production Note:
Signature removed prior to publication.

Lesley Townsend
Secretary
Ethics Review Committee

HERC\#9996-06 (p45)

Appendix 2

Research Office

Director
Angeline Farmer

PO Box 123
Broadway NSW 2007
Australia

Tel. +61 2 330 1256
Fax +61 2 330 1244

University of Technology, Sydney

26 AUG 1996

22 August, 1996

Associate Professor Keith Trigwell
Centre for Learning and Teaching
Broadway Campus UTS

Dear Keith

HREC 96/62 - TRIGWELL, A/Prof Keith (for DAVEY,Ms Jane - PhD student) - "Competency in clinical nursing practice"

The Committee considered the above application at its meeting of13 August 1996 and approved it subject to the following provisos:

i. the consent form should be on UTS letterhead if possible, to reflect that the research is indeed part of Ms Davey's PhD thesis rather than a requirement of the hospital, thus avoiding any possibility of coercion, and

ii. the phone number on the consent form should be updated.

The approval number is UTS HREC 96/62A. Would you please send a copy of the revised consent form to Susanna Davis.

The NHMRC guidelines require us to obtain a report about the progress of the research, and in particular about any changes to the research which may have ethical implications. The attached report form must be completed at least annually, and at the end of the project (if it takes more than a year), or in the event of any changes to the research as referred toabove, in which case the Research Ethics Officer should be contacted beforehand.

I also refer you to the AVCC guidelines relating to the storage of data. The University requires that, wherever possible, original research data be stored in the academic unit in which they were generated. Should you submit any manuscript for publication, you will need to complete the attached *Statement of Authorship, Location of Data, Conflict of Interest* form, which should be retained in the School, Faculty or Centre, in a place determined by the Dean or Director.

Please complete the attached (green) report form at the appropriate time and return to Susanna Davis, Research Ethics Officer, Research Office, Broadway. In the meantime, if you have any queries please do not hesitate to contact either Susanna or myself.

Yours sincerely,

Production Note:

Signature removed prior to publication.

Associate Professor Ashley Craig
Chair
UTS Human Research Ethics Committee

Office City campus, No. 1 Broadway, Sydney NSW
Campuses Balmain, City, Kuring-gai, St Leonards

Appendix 3

PO Box 123
Broadway NSW 2007
Australia

Tel. +61 2 330 1990
Fax +61 2 330 1551

University of Technology, Sydney

Research Project Consent Form

I _____ agree to participate in the research project Competency in Clinical Nursing Practice being conducted by Jane Davey, Clinical Nurse Educator, John Spence Nursery, King George the Fifth Memorial Hospital For Mothers and Babies, Sydney, telephone (02) 9515 8462.

I understand the purpose of this study is to describe, analyse and understand workplace competency from the perspective of neonatal nurses. I also understand that the data collected from this study will form a substantial part of a doctoral thesis being undertaken by Jane Davey at the University of Technology, Sydney.

I understand that my participation in this research is voluntary and will involve talking about my understanding of competency in providing nursing care to a neonate requiring admission to a level 3 nursery and having this tape recorded. I understand that the interview process may take approximately one hour of my own time. I understand that I may choose when and where contact with the researcher occurs.

I am aware that I am at liberty to contact Jane Davey if I have any concerns about the research. I may also contact Jane's supervisor Associate Professor Keith Trigwell at the Centre for Learning and Teaching, University of Technology, Sydney, telephone 9514 2200. I also understand that I am free to withdraw my participation from this project at any time I wish without giving reason.

I agree that the researcher - Jane Davey has answered my questions fully and clearly.

I agree that the research data gathered from this project may be published in a form that does not identify me in any way.

_____ ___/___/___
Signed by

_____ ___/___/___
Witnessed by

NOTE
This study has been approved by the Ethics Review Committee RPAH Zone) of the Central Sydney Area Health Service. Any person with concerns or complaints about the conduct of the research study can contact the secretary of the Ethics Review Committee (RPAH Zone) on 9515 6766.

This study has also been approved by the University of Technology, Sydney Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research you may contact the Ethics Committee through the Research Ethics Officier, Ms Susanna Davis (Ph: 9514 1279). Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

Office City campus, No.1 Broadway, Sydney NSW
Campuses City, Kuring-gai, St Leonards

9 References

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