

PhD Thesis

**Reflective Practice
and the Learning of
Health Care Students**

by

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Abstract

Reflective practice, though ill-defined, has become an accepted educational concept within many health care disciplines particularly in nursing. Subsequently it has become benchmarked within Paramedic Sciences as a professional requirement for continuing education and clinical practice. However, despite the vast literature in nursing and the increasing growth of reflective practice in paramedic curricula it is unclear how it influences the students' learning in preparation for graduate practice as future reflective practitioners.

This research explored 'to what extent does reflective practice in the paramedic curriculum influence the students' academic and clinical learning leading to graduate practice'?

A mixed methods approach with cohort samples of undergraduate health care students comprised four studies including surveys and non-participant observations of clinical simulation that were conducted in a university learning environment. The results showed overall that Paramedic students believed that they understood reflective practice and perceived it to be useful for their academic studies and clinical practice; although this is probably influenced more by formal teaching rather than the result of their own views. Students were able to describe reflective practice in ideal theoretical terms and were positive towards it regardless of their individual learning styles. However, in a clinical context, they applied it differently with significant emphasis on technical reflection. Evidence of the nature of reflective practice as it occurred during and after clinical simulation scenarios highlights a need for revised approaches to existing learning/teaching strategies with paramedic students.

An extended understanding and refinement of reflective practice concepts including a new pedagogic framework to promote enhanced reflectivity are proposed. This theoretical framework is designed to accommodate reflective learning for both personal and collaborative learning related to curriculum outcomes. The use of clinical simulation for the development of reflective practice in the paramedic curriculum is supported with recommendations for further studies in academic and clinical settings.

CHAPTER 1

Introduction

1. INTRODUCTION

Reflective practice has been developing as an important concept in health care and other disciplines over the last two decades and can now be found in many higher education curricula. More recently, it has continued to develop and expand in paramedic education as a new discipline to higher education in an era where there is a movement away from the traditional model of training and strict protocol approaches to practice to a more flexible guidelines approach that involves reflective practice for continuing professional development.

The place of reflective practice in the undergraduate paramedic curriculum has been identified as an alternative basis for the development of professional knowledge and competence thus an important aspect of the learning process for students. As an area of curriculum innovation in paramedic sciences reflective practice in the undergraduate curriculum is currently understudied even though a decade has elapsed since it was first introduced and implemented. Yet throughout their programme of study and especially at the point of imminent transfer to graduate practice paramedic students are expected to demonstrate the reflective abilities (in and on action) that are necessary requirements for their learning and continuing professional development. As an example of innovatory curriculum development it is proposed in this research that reflective practice in the paramedic curriculum needs to be validated in order to establish the extent to which its expected outcomes for learning and professional development are being achieved.

This thesis concerns an investigation into the perceptions, understanding and application of reflective practice concepts related to the learning experiences of undergraduate paramedic students at the University of Hertfordshire (UH). This introductory chapter outlines and discusses an overview of the thesis, the research questions, its aims and

outcomes, the underpinning background, rationale, and the contributions to knowledge. It also discusses the historical context of reflective practice in the paramedic curriculum and provides an overview of similar developments that have since followed both locally and elsewhere.

1.1 Thesis Overview

The research approaches and the time span of this project on reflective practice in the paramedic curriculum followed a similar process of curriculum research described by McKernan (1998 p211) as “*critical trialling*” i.e. a study undertaken during the implementation of an example of curriculum innovation to gather data about its appropriateness and impact on learning. This approach was adopted in order to provide a whole picture of reflective practice implementation in the paramedic curriculum and to identify the extent to which reflective practice concepts have influenced the students’ learning up to the point of transfer to graduate practice. Conducted over a full curriculum cycle this involved exploring different aspects of reflective practice at different stages of the curriculum with different cohorts of students. Consequently, the research project was structured so that each of the four studies undertaken could be informed and developed from the outcomes of the preceding study.

Overall this research could be regarded as “*A formal collection of evidence presented as an interpretive position of a unique case to gather data about the impact and effectiveness of curriculum innovation in order to inform future learning and teaching developments*” (McKernan 1998 pp74-75). In the context of the undergraduate paramedic curriculum it was anticipated that the formal collection of evidence could usefully inform the ongoing curricula developments and contribute to knowledge by establishing the following:

- a. a profile of reflective practice to inform how students perceive, interpret and apply reflective practice concepts to their learning and clinical work aligned to curriculum learning outcomes and
- b. what might be the most effective ways for enhancing reflective practice learning and teaching outcomes in the paramedic curriculum for future development?

It is proposed that an informed approach to reflective practice in the undergraduate paramedic curriculum supported by empirical evidence has the potential to better inform and enhance reflective practice learning outcomes for the students' continuing personal and professional development rather than its uncritical use and assumed benefits.

1.1.1 Research Questions, Aims, Purpose and Intended Outcomes of the Study

Against the background of an identified need for concrete evidence to inform the continued developments of reflective practice in paramedic curricula, the central research question underpinning the thesis as earlier identified is as follows:

'To what extent does reflective practice in the undergraduate paramedic curriculum influence the students' academic and clinical learning leading to graduate practice'?

Commensurate with the goals of evaluation research in education, the students' perceptions, views and application of reflective practice concepts (including structured reflection) were identified as the major sources of feedback about how, as an example of curriculum innovation these concepts may have influenced their learning. However, in order to explore the main question more fully over a full curriculum cycle a number of additional related questions pertaining to the students' learning were also identified to underpin the investigations.

Informed by literature and the works of key theorists including Dewey (1933) and Kolb (1981, 1984) they are as follows: 1) To what extent are the students' beliefs of reflective practice concepts shared across the different levels of academic study? Beliefs have important influences on learning development and consequent practice therefore it was important to establish how the students' beliefs related to a new paradigm of learning as defined by reflective practice outcomes in the curriculum e.g. the use of structured reflection. 2). The role of attitudes is also an important dimension in the reflective learning process. Thus given that attitudes can influence the students' motivation to learn it was highly relevant to establish what the attitudes of paramedic students were towards reflective practice concepts. 3) Similarly, do the students' individual learning styles influence their perceptions and views of reflective practice? Learning styles' influences are known to be both individual and disciplinary related. Further, each professional discipline has its own frame of reference that informs the students' learning

and therefore a relevant issue to explore and inform reflective practice learning in paramedic sciences as a different discipline in contrast to nursing for example.

The relationships between beliefs, attitudes and individual learning styles to reflective practice concepts highlighted so far have important theory to practice implications in the paramedic curriculum context and are therefore useful to establish for learning and teaching purposes. The extent to which such factors interrelate to reflective practice learning in the paramedic context as a new area of curriculum implementation appeared to be lacking and was therefore considered worthwhile to investigate for informing further developments.

In consideration therefore of the main research question and the other related questions identified this study aimed to:

- (1) Investigate paramedic students' perceptions, understanding, attitudes and applications of reflective practice concepts towards their academic studies and clinical practice.
- (2) Explore the students' individual learning styles relationships to their views of reflective practice.
- (3) Evaluate and inform curriculum approaches and outcomes for future reflective practice learning and teaching strategies in undergraduate study.
- (4) Create new interpretations of reflective practice specific to paramedic contexts.

Purpose and Intended Outcomes:

The overall purpose of the research was to describe the extent to which reflective practice influenced and interrelated to the learning experiences of undergraduate paramedic students from the point of their early perceptions of reflective practice as a learning concept up to the point at which they should be able to demonstrate how it might be ultimately applied in a work based context. This necessarily involved looking at different aspects of reflective practice from the students' perspectives at different stages of learning and progression in the curriculum.

The following intended outcomes were anticipated:

- Identification of paramedic students' perceptions, attitudes and applications of reflective practice concepts to academic studies and clinical practice leading up to the point of transfer to graduate practice.
- Correlations of reflective practice findings to the works of key theorists including Dewey (1933) and Schön (1983, 1987).
- Critical analyses of paramedic students' learning styles relationships to reflective practice.
- Refinement of reflective practice concepts relevant to the paramedic student learning context.
- Proposal of revised curriculum strategies for learning and teaching of reflective practice in paramedic education.

1.1.2 Research Methods and Outcomes Achieved

This research utilised a mixed methods (triangulation) approach that involved four separate studies to investigate different aspects of reflective practice with different cohort samples of undergraduate paramedic students beginning with a foundation study of undergraduate nursing students following a similar curriculum pathway. The methods included questionnaire based surveys with students at different levels of academic study followed by observational studies of clinically based scenarios in a clinical simulation environment involving third year finalist paramedic students.

The main outcomes of the research highlighted that evidence of reflective practice as featured in the paramedic curriculum does exist although it is limited in practical application within a clinical context i.e. there is an emphasis on technical reflection and lack of wider synthesis to learning. These outcomes suggest that reflective practice could be structured in more effective ways through its redefinition and implementation of a new pedagogic framework that is grounded in a paramedic learning context. This should better enable students to achieve more complete reflectivity. By identifying and

classifying a number of external 'reflective practice indicators' (rpi's) during and after practice, it has been possible to show that reflective practice could be structured more cohesively to integrate personal as well as collaborative learning aligned to curriculum outcomes. However, as an important learning/teaching consideration this research established that paramedic students generally perceived reflective practice to be useful to their academic and clinical work and the majority had positive attitudes towards reflective practice regardless of their individual learning styles. These are relevant attributes that can influence learning positively and therefore a useful finding for both curricula and professional practice developments.

It is also proposed that although this research is limited to the context and learning experiences of undergraduate paramedic students in one institution the findings have the potential to be applied across a range of higher education programmes involved in similar reflective practice developments. The basis for further research on reflective practice in academic and clinical settings has also been established and could be extended to both under and graduate levels of study in paramedic sciences given the current growth of similar paramedic programmes nationally and elsewhere.

1.1.3 Research Rationale

The rationale for undertaking this piece of work was threefold. First, as the paramedic profession has become more education rather than training focussed this research was considered to be timely in response to the increasing emphasis by higher education and health service providers for paramedic students to become reflective practitioners (later benchmarked by the Quality Assurance Agency for Higher Education (QAAHE 2004). Second, as an example of curriculum innovation locally and nationally a need was identified to evaluate the extent to which students had perceived and embedded reflective practice within their learning experiences particularly at the point of imminent transfer to graduate practice as reflective practitioners. Reflective practice in paramedic practice is identified as an important educational strategy for enhanced care delivery and continuing professional development.

Currently this is an initiative that lacks empirical evidence to support the continued growth and implementation of reflective practice in the undergraduate curriculum and the paramedic context generally although it appears that this problem applies to other

health care disciplines. Notably, similar questions have been raised about the implementation of reflective practice in nursing curricula (Carroll et al 2002) even though it has been much longer established within that discipline. It appears also that *“consideration of the context in which reflective action is engaged is a seriously underdeveloped aspect of discussion of reflection”* (Boud and Walker (2002 p97). As such the undergraduate paramedic context seemed a reasonable and justifiable starting point for establishing how reflective practice exists in that specific context which is different to nursing.

Thirdly, the motivation for this work also arose out of my personal reflective enquiry as an educator with professional responsibilities for curriculum development and is summed up as follows:

“Any developments in reflective practice already in place should be subjected to empirical review so that its dissemination can be justified as a valid and reliable method of promoting excellence in professional practice and thus quality patient/client care”(Malik 1998 p61).

Reflective practice outcomes in the paramedic context are designed to ultimately influence professional practice and patient care outcomes and therefore are worthy of study.

1.2 Summary of Chapters

The **first** chapter deals with the background and context of reflective practice concepts including an overview of the thesis and the specific paramedic background and curricula context of the research.

The **second** chapter provides a critical review and discussion of relevant literature including various definitions, the works of key theorists such as Dewey (1933), Schön (1983), Kolb (1984) and the key emergent sub themes such as structured reflection and methods used to promote reflective practice. It also identifies the gaps in the literature that support the foundation study with nursing students and the subsequent phases of this research with paramedic students.

The **third** chapter discusses the research methodology including the frame of reference that guided the research and justifications for the approaches used in each phase of the

research including the methods used for data collection and analysis. Ethical issues and limitations of the research are also addressed.

The **fourth** chapter describes the findings of a substantial foundation study with nursing undergraduate students prior to the main investigations with paramedic students. This study concluded that the majority of nursing students perceived that they understood the meaning of reflective practice and related concepts such as structured reflection including the potential usefulness of these concepts to their learning, academic studies and clinical practice. The majority of nursing students also indicated that they had a positive attitude towards these concepts and identified them as important ways of learning. This chapter concludes with a proposal of modifications to the first study with the paramedic students to further investigate the influences of reflective practice in the curriculum.

The **fifth** chapter presents the results and findings of the first study with a whole population of paramedic students at different undergraduate levels of study. This study repeated the foundation study undertaken with the nursing students but with a larger sample of paramedic students including full and part-time students. Following a review of the survey outcomes and feedback from the nursing students there were also minor modifications to this survey which included additional questions about reflective practice methods not pursued in the first study. When generally compared to the nursing sample the results of this survey with paramedic students showed that sex differences between the two disciplines did not influence the students' general perceptions of reflective practice. One finding showed however, that paramedic students were less positive in their attitudes about structured reflection than the nursing students.

Regarding the methods used for reflective learning, Gibbs' Reflective Cycle (1988) emerged as a popular reflective tool cited by paramedic students although students had been introduced to a variety of other models and frameworks throughout their three year programme of study and no particular framework had been prescribed. This chapter concluded that a more in-depth study designed to elicit qualitative data was necessary to clarify the students' understanding of reflective practice in their own words, unlike the initial surveys that were designed for general descriptive purposes only.

Chapter **six** concerns the second phase of study with final year paramedic students' regarding their individual views of reflective practice and its applications. This phase also included more in-depth explorations of learning styles relationships to reflective practice learning. Analysis of the qualitative data from a semi-structured questionnaire utilised the six components of Gibbs' (1988) reflective cycle for thematic coding of the data to identify what meanings students ascribed to reflective practice and to compare whether or not it supported the students' previous claims that it was the reflective tool most used and most helpful to their learning.

An adapted version of Kolb's Learning Styles Inventory (1984) was also used in this study to identify whether or not there were any differences in the students' views and applications of reflective practice linked to their self scored learning styles. This instrument indicated that learning styles were not a significant factor in influencing students' views of reflective practice. It did however, usefully provide an indication of the different learning 'styles' distribution within this particular disciplinary sample not previously known. Given the current debates about learning styles in the literature further studies with paramedic students outside the limitations of this research are recommended. Based on the findings of the qualitative data this chapter proposes a re-definition of reflective practice and identifies the need for further independent observations to compare what the students say about reflective practice and how it is applied in a life-like setting thus giving a fuller picture of reflective practice learning.

Chapter **seven** concerns the study of reflective practice observations involving final year paramedic students in the university's simulation environment both during and after episodes of clinically simulated scenarios using medium and high fidelity technology. Verbal communication and clinical task activities were used to classify the students' interactions during and after simulated clinical scenarios to extrapolate meanings of reflective action as it occurred during and after practice. The emergent categories of communication both during and after practice were categorised as external indicators of reflective practice (rpi's).

The six dimensions of Gibbs' cycle were used to code and classify the debrief processes after the simulation scenarios as a measure of how students engaged with reflection-on-action appropriate to their level of academic study. The UK's ambulance clinical

algorithm of ‘Primary Survey’ ‘Secondary Survey’ and ‘Treatment’ was also used to classify clinical activities that occurred during (in-action) the simulation exercises. The coded categories from the overall simulation data identified that paramedic students significantly engage in ‘technical reflection’ and less explicitly so with the broader synthesis of learning which is an important issue for informing future curricula development and implementation of reflective practice approaches. This chapter concludes that a new pedagogy for reflective learning is needed to achieve much wider and deeper reflectivity both individually and collaboratively. A redefinition of reflective practice grounded in the findings of the simulation observations is also proposed.

Chapter **eight** synthesises and critically discusses the key findings of the thesis and implications for curriculum further developments of reflective practice learning and teaching strategies. This chapter culminates in a redefinition of reflective practice and the proposal of a new pedagogic framework for the revised implementations of reflective practice in the paramedic curriculum. A theoretical example of a key paramedic curriculum learning outcome (8:5) that integrates theory to practice is proposed as the basis for further testing of the new reflective framework.

Finally, chapter **nine** presents the conclusions of the thesis and discusses the contributions to knowledge. Recommendations for future studies are proposed and discussed. The limitations of the research are also acknowledged.

1.3 Main Contributions of the Thesis

This thesis argues for a refinement of reflective practice concepts and new pedagogic approaches to its application in the paramedic curriculum. The contributions to knowledge are significant to paramedic professional and educational developments as an emerging higher education discipline and its quest for reflective practitioners (as already established in other allied health disciplines such as nursing and physiotherapy).

In summary I have:

- Provided new and original insights into the structure of reflective practice in the paramedic undergraduate curriculum which show that paramedic students emphasise ‘**technical reflection**’ during and after practice.

- Identified that there are differences in what students in their own words say about reflective practice and the processes that are applied in a practice context thus a **theory - practice gap** exists. Students were able to give ideal theoretical definitions of reflective practice which imply the use of a full cycle of reflective learning. However, when observed in a clinical context they omitted key dimensions of reflective practice such as ‘conclusion’ and ‘future actions’ which are indicators of a wider synthesis to learning and transformed learning.
- Demonstrated that it is possible to code and classify specific actions that occur during practice and afterwards that are indicative of reflective practice learning. These indicators are ‘Supplementary Clinical Actions’ that inform communication patterns students use *during* clinical interventions and are distinct from ‘Primary Clinical Actions’ which are medically orientated. Also communication patterns in debrief sessions have been classified and coded to indicate distinctions between ‘Technical Clinical’ and ‘Non-Technical Clinical’ categories that describe the students’ orientations to reflective practice *after* action.
- Proposed a re-definition of reflective practice that is grounded in the students’ experiences and includes personal learning as well as professional development.
- Proposed a new theoretical framework (‘Joint Action Framework’) for reflective practice that explains and connects reflection *during* and *after* action. This framework supports the theoretical constructs of reflective practice within a curriculum framework of knowledge, skills, attitudes and attributes related outcomes. It also emphasises ‘focus’ and ‘reflective action’ for learning. The framework accommodates reflective practice for both personal and collaborative learning outcomes that are aligned to ‘situated learning’ concepts which importantly reflect the paramedic professional learning and clinical contexts.

Other contributions include the support for the development of reflective practice through clinical simulation and recommendations for future research in the wider paramedic contexts elsewhere and beyond undergraduate study.

1.4 Reflective Practice in Higher Education: Historical Background

This section and sub sections describe and discuss the historical background of reflective practice developments both generally and specifically as explored in this research. It includes current developments of paramedic education in the UK and ends with a summary of the general questions that the research set out to answer and potential suggestions for future developments.

Over the last two decades reflective practice concepts have continued to gain momentum in many disciplines notably in teaching and nursing. Such is the strength of its reputation that it has become a prescribed competency for nursing both in the UK and elsewhere by the professional bodies e.g. the former English National Board for Nursing, Midwifery and Health Visiting (ENB). Reflective practice has especially become a popular educational concept since the seminal works of Schön (1983, 1987). Endorsed by a number of sources since then e.g. the Dearing report (NICHE 1997) the QAA (2001) Moon (1999) Brockbank and Mc Gill (1998) and Barnett (1997) reflective learning is generally considered an important requirement for personal and professional development in higher education.

However, despite the reported lack of evidence to support its effectiveness (Burton 2000) or consensus about its precise meaning (Lee and Tan 2004) reflective practice has evolved as an academic competency of substantial importance and can be found as a recurring theme in many higher education curricula including nursing and teaching (Moon 2000, Teekman 2000). The implementation of reflective practice can also be found in many of the other allied health care disciplines in higher education including physiotherapy, pharmacy, and social work, the latter highly challenged by Ixer (1999).

It is notable too that the vast majority of the literature is dominated by academic and education scholars who advocate many benefits of reflective practice such as the enhancement of critical thinking and improved practice e.g. Boud et al (1985) Palmer et al (1994) Moon (2000) and Rolfe et al (2001). It appears that such claims are based on theoretical debates and popular opinions rather than empirically derived evidence. Yet these claims have become the basis for the further development of related concepts such as structured reflection, i.e. reflective writing, learning journals, reflective models and frameworks, written assessments and practice based competencies measurements. Only

a handful of writers e.g. Ixer (1999) have questioned whether teachers and students even shared the same meanings of reflective practice. Similarly, although it is not proven reflective practice has been challenged as being a ‘flawed strategy’ for nursing (MacIntosh 1998).

The underlying assumptions by proponents of reflective practice are that it can be taught, learnt and assessed. However, there remain some unexplored gaps that are central to the concept, for example “*the importance of attitudes*” to reflection which was originally emphasised by Dewey (1933, p28) as an integral requisite of reflective thinking. The relationship between attitudes and learning has long been identified as an important indicator of individual differences in the achievement of educational outcomes yet remains surprisingly unexplored in the context of reflective practice learning. Additionally, the reflective style of learning as classified by Kolb (1984) Honey and Mumford (1986) also appears to have been largely overlooked in this respect despite the theoretical evidence that not all learners are predominantly ‘reflectors’ and may therefore hold different views and attitudes to reflective practice learning.

At a pragmatic level there is also a serious contention about the applications of reflective thinking in situations where time is limited. Eraut (1994 p145) contends that “*Schön fails to appreciate the importance of time variables in the understanding of professional behaviour. When time is extremely short, decisions have to be rapid, and the scope for reflection is extremely limited*”. Schön’s (1983) proposals that professionals reflect *during* practice (‘reflection-in-action’) therefore have particular significance for paramedics who are time critical in their practices as emergency responders. For example, do they think independently ‘on the spot’ as is suggestive of reflective practice or do they follow a pre-determined course of action inherent in a protocol approach to practice? Currently these views of reflective practice remain unknown with little or no original insights into how they impact upon paramedic practices either from the qualified practitioner or students’ learning perspectives.

1.4.1 From Traditional Paramedic Practice to Reflective Practice

Understanding the historical context of paramedic practice is essential to the applications of reflective practice in a curriculum context and is addressed in the subsequent sections of this chapter.

Traditionally paramedic training (with the emphasis on training) has largely relied on the use of ‘protocols’ as its established model for pre-hospital emergency care management. However, a major report (Wells 1995) into the UK ambulance services highlighted the need for paramedics to take a more holistic approach to patient care indicating that the traditional protocol-based approach alone to practice was no longer sufficient for contemporary care that increasingly extended beyond bio-medical problems and trauma management alone. Similar concerns at that time had also been raised in the USA about paramedic practice highlighting the need for more critical thinking skills in order to address the shift in emphasis from psychomotor skills competencies alone to the wider demands of pre-hospital care (Janning 1994).

In the past although the stringent protocol approach and its many benefits have long underpinned paramedic practices satisfactorily there are many reported instances where following protocols habitually had not always proved to be the best course of action for both patient and practitioner, thus resulting in fatal care outcomes (Jones and Cookson 2000). However, it was acknowledged that protocols were designed to ensure consistencies in practice to the novice as well as the more experienced paramedic including the benefit of protection against potential legal challenges following care interventions.

Increasingly however, due to changing health care demands paramedics are confronted by unexpected complex non-trauma cases for which there are no protocols but nevertheless they have a legal obligation to respond. It is in this respect especially that reflective practice as a concept challenges the model traditionally associated with paramedic practice i.e. the use of scientifically/medically based practice protocols for guiding practice. This is similar to the “*instrumental problem solving*” approach criticised by Schön (1983 p21) for its traditional influence on professional practice arguing that it was no longer suitable for contemporary practice. Perhaps arguably it is also no longer acceptable in holistic care management or suited to the changing roles of paramedics that continue to evolve and expand in diverse health care settings. Schön’s views therefore have some important implications for reflective practice in paramedic contexts. Although protocols/guidelines inform the diagnosis and treatment of medical problems they do not prepare paramedics to deal with the other essential interrelated

aspects of care which are often more complex and present with unexpected difficulties such as socio-emotional problems.

Arguably trauma management remains the core of emergency care treatment but the importance of the social and psychological context of care is now recognised as having a major influence on contemporary practices which cannot be captured in standard protocols/guidelines and therefore requires the paramedic practitioner to think independently and on the spot. This reinforces the argument that the ‘technical rational approach’ to practice as argued by Schön (1983) (and inherent in paramedic practice) cannot by itself solve the complex problems of contemporary practice. In contrast, as an alternative and coherent model for problem solving, reflective practice permits the review of everyday practice to develop the additional knowledge, skills and competencies required to enhance care delivery. Thus it is seen as an ideal and pervasive model for practice enhancement. Reflective practice also fits well with a movement away from ‘protocols’ to clinical practice ‘guidelines’ that allow a more flexible approach to practice. This idea was mooted over a decade ago by the UK’s largest National Health Service ambulance trust in response to the Wells (1995) report which recommended a more holistic approach to care and wider thinking skills to underpin care than previously existed. The emerging consensus by health care policy makers at that time was that a more holistic approach to contemporary paramedic practice could be developed through reflective practice enabling a more comprehensive and critical understanding of the rationale and knowledge about their clinical practice, i.e. knowing **why** as well as **what**.

The subsequent shift from protocols to ‘guidelines’ implemented by the Joint Royal Colleges Ambulance Liaison Committee (JRCALC) in 2001 strongly suggested that without the legal cushion that protocols provide, paramedics necessarily needed to develop more flexible and critical thinking skills for complex decision making such as those inherent in reflective practice.

Currently reflective practice remains a relatively limited concept in development and application to UK paramedic practice compared to other health care disciplines such as nursing where it has become a well recognized and compulsory model for professional development. The conspicuous dearth of literature relevant to paramedic practice does

appear however, to indicate a global gap rather than merely a local one. The development of reflective practice in the paramedic curriculum pertinent to this research can thus be regarded as an example of curriculum innovation. As an example of curriculum innovation this initiative was highly commended by the Quality Assurance Agency (QAA 2000) subject review and in this sense has some external credibility for the incorporation of reflective practice in the paramedic curriculum.

1.4.2 Quality Assurance of Reflective Practice and HE

Since 2004 the term 'reflection' has appeared in UK paramedic education benchmarking statements which include critical reflection, self evaluation and commitment to the use of evidence/research in the evaluation and improvement of the best practice of paramedics. The Quality Assurance Agency for Higher Education (QAAHE 2004) in its general framework has subsequently included reflective practice in its professional benchmark statements for paramedic science. Section B4 (ibid) on 'Evaluative Skills' includes the directive to 'reflect' on and review practice (<http://www.qaa.ac.uk/academicinfrastructure/benchmark/health/paramedicscience.asp>). Similarly the case for reflective practice in the medical profession has also appeared (<http://www.qaa.ac.uk/academicinfrastructure/benchmark/honours/medicine.asp>). Thus it appears that reflective practice, although not a succinctly defined concept and lacking concrete supporting evidence (identified in the literature) is endorsed as a benchmark of quality assured practice. Further, it represents a polar opposite to the traditional bio-medical model which is still the necessary basis for the many practice protocols/guidelines that paramedics apply in clinical situations. The corollary of all of this is that there is a clear expectation that paramedics must be able to demonstrate critical reflection attributes whatever they may be. Since 2006 reflective practice has received further endorsement by the British paramedic Association (BPA) in its curriculum framework for ambulance education that extends to all grades of paramedic practitioners.

1.4.3 The Paramedic Curriculum and the Research Context

This section outlines reflective practice developments in the BSc (Hons) curriculum in Paramedic Sciences from its inception to the period during within which this research was conducted and completed at my home institution. The developments during these

periods are the most pertinent to this research that has explored reflective practice and the learning experiences of undergraduate paramedic students.

The research commenced in 2001 to coincide with the first cohort of full-time paramedic students who were about to complete a full curriculum cycle of three years study. This period also marked five years since reflective practice in the paramedic curriculum was first introduced to qualified paramedics on the part-time route therefore justifying the timeliness of the research. Timeliness is regarded as an important consideration in evaluative research of curriculum innovation to avoid pre-mature conclusions (Mckernan 1998). The sequence of developments in the context of the research begins with the history and background of reflective practice in the paramedic curriculum.

In 1996 the University of Hertfordshire in conjunction with the London Ambulance Service (LAS) launched the first Honours degree in Paramedic Science. This initial degree was developed on a part-time basis and was aimed at qualified paramedics who could for the first time pursue a focussed paramedic academic pathway within higher education. This led to the rapid development of a fulltime honours degree pathway in 1998 that was subsequently revalidated in 2004. The full-time degree pathways also incorporated the Institute of Health Care Development (IHCD) Technician and Paramedic Awards aimed at providing both a professional and higher education award for new recruits to the ambulance service. Structured in parallel to the equivalent fulltime nursing curriculum pathway, this curriculum involved shared teaching for some subjects including reflective practice with nursing students. The programme has since been revalidated in 2007 (see section 1:5:4).

From the outset of the curriculum development and implementation the concept of a reflective practitioner in paramedic practice had been identified as a fundamental aim for graduate practice both by ambulance service providers and my home university. The consensus adopted by the curriculum developers and ambulance service providers at that time was that reflective practice as already well established in nursing could be taught, learnt and assessed to enhance both academic learning and clinical practice in paramedic sciences. Moreover, these outcomes had to be designed to accommodate not

just the learning requirements for new full-time undergraduate students but also for existing qualified practitioners studying for a similar degree on a part-time study basis.

The assumed importance and emphasis of reflective practice in the curriculum implied that the concept was fully understood and that the necessary knowledge, understanding and skills (learning outcomes) could be successfully measured. The curriculum structure for reflective practice implementation in the undergraduate curriculum as studied in this research was largely influenced by its learning/teaching and assessment strategy congruent with Moon's (2001) description of the input/ outcome model of learning and assessments. Subsequently reflective practice was developed as a thematic thread in the paramedic curriculum similar to that of the nursing curriculum which included written reflective accounts for formative and summative assessments of learning.

1.4.4 The First Programme: The Part-time Route

This section summarises the chronological developments of reflective practice in the undergraduate curriculum as contained in the appropriate curricula documentation and pertinent to this thesis.

The Certificate of Higher Education in Paramedic Sciences was designed for qualified paramedics in September 1996 and the programme philosophy identified that "*on completion of the scheme the paramedic will have developed their ability to become informed reflective practitioners whose theoretical knowledge, clinical skills and professionalism meet the demands of patients within such dynamic care settings*" (Scheme Document 1996 p6). This philosophy marked the formal launch of reflective practice in the paramedic curriculum that has since extended to the various curricula pathways which have subsequently emerged. Latterly these curricula have had to take account of the relevant professional bodies that all include directives for paramedics to reflect on their practice i.e. the Health Profession's Council (HPC) 'Standards of Proficiency Education and Training for Paramedics' (2003) the QAA (2004) 'Benchmark Statements for Paramedic Science' and the 'British Paramedic Association (2006) Curriculum Framework' for Ambulance education.

As the basis for the introduction of reflective practice in the paramedic curriculum in 1996 the students at level 1 were expected to be able to:

- Define reflection and reflective practice (personal and theoretical).
- Identify links between reflective practice and professional development/competence.
- Recognise and adopt journal writing skills.
- Identify the benefits of and participate in the process of peer reflection.
- Demonstrate the application of at least one theory/concept/framework for reflection-in and on practice.

Looking at the above learning outcomes above it can be seen that reflective practice was structured along the knowledge and skills objective approach commensurate with Bloom's Taxonomy (1956) of learning objectives. Students were also expected to think about reflection both during and after practice and in a peer context which mirrored their day to day work highlighting personal as well as collaborative learning.

At academic levels 2/3 of study an incremental approach to reflectivity was designed to promote deeper reflection again aligned to Bloom's taxonomy (ibid) as an integral part of paramedic practice and the development of critical thinking skills through reflective practice. At these levels students were expected progress their reflective learning by being able to:

- Analyse different definitions of reflective practice.
- Compare and contrast and apply alternative reflective models/frameworks.
- Critically appraise a selection of reflective practice literature.
- Demonstrate theory-practice links arising from reflection.
- Explain personal learning from reflective practice and its potential impact on others and future practice.

The achievement of these outcomes were reflected in the programme content and the teaching/learning strategies used which included critical incident techniques, peer reflection and a selection of reflection models/frameworks e.g. Kolb (1984) Gibbs'(1988) Johns'(1993). As seen from the learning outcomes above although students were expected to use a framework no particular reflective framework was prescribed. Students were also directed to explore the wider literature and develop their own ideas of reflective practice. The relevant learning outcomes for the part-time students were mainly assessed through summative essays using appropriate incremental learning outcomes marking grids.

1.4.5 The First Full-time Pathway

Building on the developments of 1996, in 1998 the first full-time the BSc (Hons) in Paramedic Sciences curriculum was launched. Modelled from the parallel nursing curriculum, reflective practice learning and teaching in years one and two were shared with nursing students following a similar undergraduate pathway. An overall aim of this 'scheme of study' was to enable students to "*become critical, reflective and self directing in the world of practice*" (Scheme Document 1998 p4). The learning outcomes for reflective practice were similar to that of the part-time programmes e.g.

- Examine the background, relevance and benefits of reflection to professional practice.
- Demonstrate enhanced skills in reflective journal writing.
- Compare and utilise a selection of frameworks for the development of reflective practice.

The programme content supporting reflective practice outcomes remained similar to the part-time route including definitions of reflection, journal writing, learning cycles/frameworks, reflection in and on action and professional development. However, the modes of assessment were changed (previously essay) to continuous written evidence in the form of short reflective synopses. The summative assessment criteria followed the taxonomic approach to reflective learning previously described. This meant that at academic level 3 students were expected to demonstrate more in-depth

analysis leading to synthesis and evaluation of learning from reflection beyond the basic levels of description and recall of knowledge at level one and application at level 2.

Adopted from the nursing curriculum the professional practice competencies for the full-time paramedic students were designed around the former English National Board for Nursing (ENB 1991 p50) ten key characteristics that required mastery at first degree level in the following areas viz. *clinical skills, team work, accountability, innovation, use of research, health promotion, staff development, resource management, quality of care and management of change*. This framework represented a movement away from the traditional training based approach to the broader skills of contemporary paramedic practice. In parallel to the pre-registration nursing BSc degree pathway this framework also provided a structure for paramedic students to demonstrate reflective practice outcomes at both formative and summative levels of learning throughout the three years of undergraduate study. This necessarily involved written reflective accounts (short synopses) by the students for assessment of the ten key characteristics that had to be evidenced in practice profiles for each of the students' individual clinical placements.

Although no particular reflective framework was prescribed to the students, as part of the teaching/learning and assessment strategies the use of Gibbs' reflective cycle (1988) consisting of six dimensions were used to introduce the various skills inherent in the reflective process i.e. *description, feelings, evaluation, analysis future learning and action plans*. These dimensions also matched the curriculum sequencing of learning levels aligned to Bloom's (1956) cognitive domain of learning i.e. knowledge, comprehension, application, analysis, synthesis and evaluation. Reflective cycles were initially introduced for getting students engaged in reflective learning activities by providing a structure for thinking and writing. Other iterative frameworks e.g. Boud et al (1985) and Johns' (1994) linear model of guided reflection were later introduced in the second and third years to expand the students' critical reflective practice abilities through explorations of different reflective frameworks. As an extension to the classroom learning/teaching strategies the full-time students following this curriculum were also introduced to clinical simulation exercises where a variety of clinical assessments could be undertaken including that of reflective practice learning outcomes.

In 2004 when the full-time programme was revalidated to take account of national recommendations (HPC 2003, QAA 2004) the curriculum identified that typically the graduate paramedic will be able to “*reflect critically on their performance and practice*” (Programme Specification 2004 p2). This outcome was identified as an intellectual skill in the curriculum alongside others such as analysis, problem-solving and synthesis of learning. Unlike the previous model of 1998 borrowed from the nursing curriculum reflective practice in the undergraduate paramedic curriculum became more focussed on the key aspects of the practice context i.e. ‘Patient Assessment’ ‘Professional Practice’ and ‘Dimensions of Emergency Ambulance Service Delivery’. Additionally in the curriculum context the ability of the graduate paramedic to reflect in and on professional practice had been identified as transferable skill for their continued learning and clinical work.

Although not within the parameters of this research the more recently validated BSc programme in Paramedic Science(2007) at the university continues to include the aim of producing graduate practitioners who are “*reflective practitioners with the required skills, knowledge and professional attributes to practice effectively as paramedics*” (Programme Submission Document 2007 p9). In this curriculum, reflection as a graduate skill is mapped across the variety of bio-scientific and human sciences modules thus adopting a more integrated approach to learning/teaching and assessments of reflective practice outcomes. Meanwhile despite the various curricula developments since its inauguration (including a Foundation Degree in 2002) no formal studies had been undertaken although the earliest course evaluation of the launch programme in 1996 reported that “*the reflective practice course was found to be the most challenging by the students*” (Submission Document 1997 p2). Outside the parameters of this thesis the lack of evaluation research more widely both locally and in other academic settings and within the discipline itself has remained the case even though reflective practice in paramedic sciences continues to expand locally and nationally.

1.4.6 Reflective Practice in Paramedic Sciences: The Wider HE Perspective

This section provides a snapshot of other reflective practice developments in Paramedic Sciences that may be relevant to the interpretation of this research as similar curricula activities in the interim have followed elsewhere.

Since the initial launch of the undergraduate pathway in 1996 at my home institution the development of Paramedic Sciences in UK higher education has continued to evolve and expand elsewhere. Driven by local, national, European and professional imperatives a number of programmes have emerged at Foundation Degree and Honours Degree levels of academic study. Currently there are twenty two institutions offering or about to commence similar programmes that include reflective practice as an intended learning outcome for professional graduate practice. All curricula are required to incorporate the requirements of the Health Professions Council, the British Paramedic Association and the Quality Assurance Agency for Higher Education where reflection is a recurrent theme for all grades of practitioners on various paramedic pathways.

A review of curricula information made available by three other institutions offering similar paramedic programmes of study found that reflective practice is identified as the basis for a number of learning outcomes including the achievement of improvements to clinical practice, and wider programme outcomes such as communication and team working skills. Reflective practice appears to be embedded in a variety of ways ranging from ‘school and programme philosophies’ to specific modular outcomes. Generally it is aligned to clinical practice e.g. ‘students should be able to demonstrate a reflective and competent approach to their practice’ and ‘students should be able to demonstrate reflective skills in relation to their practice’. It is also evident that these other institutions all utilise ‘clinical practice portfolios’ for formative and/or summative assessments of reflective practice outcomes in the paramedic curriculum. The portfolios are used to assess practice competencies and wider learning outcomes and adopt similar approaches to learning/teaching strategies for reflective practice, i.e. critical reflective written accounts by students who are advised to use a structured reflection model such as Gibbs’ (1988) Reflective Cycle. Assessment criteria for reflective practice appear to be similarly based on an incremental approach to ‘levels of study’ and reflectivity similar to that of the curricula studied in this research. Increasingly reflective practice has also become the lynchpin of Continuing Professional Development (CPD) and can be found in many other institutions’ Professional Development Planning (PDP) systems where it is being used to support the overall programme outcomes including the development of ‘critical thinking skills’ and evidence of theory to practice applications. The use of clinical simulation scenarios and Objective Structured Clinical Examination (OSCE’s) are also being incorporated into learning/teaching and assessment purposes at

some institutions to support the development of a variety of skills including reflective practice skills.

The expanding developments elsewhere suggest that the time may be ripe for other institutions to extend the research into reflective practice in the paramedic context using other methodologies that were not feasible when this research project was originally designed e.g. comparative studies. This research hopefully provides a timely springboard for further studies across multiple institutions and especially in the real world of paramedic practice where reflective practice also extends to all grades of qualified paramedics.

1.5 Summary

The introduction of reflective practice and reflective practitioner concepts in UK paramedic sciences as a relatively new discipline to higher education have been strongly influenced by both higher education and national clinical imperatives. Similar to other health care disciplines reflective practice in paramedic sciences is identified as a subject benchmark standard for professional practice and continuing professional development by the governing professional bodies.

However, although a decade has elapsed since its introduction and continued expansion within UK higher education it was identified that no formal studies had been undertaken in paramedic sciences to evaluate reflective practice in the context of the paramedic students' learning experiences. As a feature of curriculum innovation in higher education and continued investments in paramedic sciences the need for formal evaluations for reflective practice and the learning experiences of undergraduate students was therefore both timely and justified. It is proposed that an informed approach to reflective practice at undergraduate study is more likely to lead to a more cohesive approach for continuing professional developments. Given the continued growth of reflective practice in the paramedic curriculum more widely there is a need to establish how it can be effectively implemented and based on sound evidence in the same way that other forms of tested evidence such as protocols and guidelines underpin paramedic care delivery.

This research provides an extended understanding of the reflective practice concepts relevant to one institution in the undergraduate paramedic curriculum following a full cycle of implementation. It begins with a critical review of the literature and is addressed in the next chapter.

CHAPTER 2

Literature Review

2. INTRODUCTION

This chapter critically examines and reviews the literature to track the development of reflective practice and relevance to the learning experiences of undergraduate paramedic students. The review begins with a broad brush approach and culminates in an exploration of reflective practice that concludes with a summary of the gaps identified in the literature that subsequently informed the research project.

Given the voluminous amount of literature on the subject the parameters of this review have been drawn to support the specific themes that pertain to the development of reflective practice in the paramedic undergraduate curriculum at my home university. The parameters include issues around the reported lack of understanding of reflective practice concepts and the theoretical underpinning methods used to promote students learning. This review therefore explores the origins and definitions including the works of key influential theorists including Dewey (1933) and Schön (1983). It also explores some of the related concepts applied in curricula contexts not previously explored in the paramedic curriculum e.g. structured reflection and reflective methods. This includes the relevance of reflective practice to other constructs such as age, gender, learning styles, attitudes relationships, academic levels of study and a clinical simulation context that promotes the integration of theory to practice and practice to theory learning.

Within this review and the research project aims the terms *reflection*, and *reflective practice* are used interchangeably to describe the applications of reflection in the professional context, i.e. reflection and practice. The use of the merged terminology is supported by findings of previous studies e.g. Burnard's (1995) study of nurse educators' views of reflective practice.

2.1 Background and Overview

Reflective practice as already noted in this submission is frequently mentioned in the literature and is familiar to many professional groups notably nursing and teaching (Moon 2000). Although it is no longer a new idea it is less well studied within newer disciplines to higher education such as paramedic sciences as is evident in the paucity of relevant literature concerning that discipline. Consequently most of the literature reviewed supporting this thesis draws mainly from the disciplines of teaching and nursing where reflective practice is heavily featured.

Since the publication of Donald Schön's (1983) seminal work '*The Reflective Practitioner*' an overwhelming quantity of literature has emerged from a variety of professional and higher education disciplines. Currently, there are already several well published in-depth literature reviews of the subject from various professions e.g. in nursing (Atkins and Murphy 1993, Wilkinson 1999) teaching (Hatton and Smith 1995) the higher education context (Moon 2000, Rogers 2001) and social sciences (Redmond 2004). A later publication by the Higher Education Academy (2004) explored the subject extensively regarding the development of critical reflection in the health professions. The focus of this publication was to share the experiences of educators and draw attention to curriculum implementation of reflective practice within the allied health professions, particularly regarding the facilitation and assessment of reflective practice. The general impression to be gained from this and the majority of the literature is that reflective practice is a 'good thing' (Boud and Knights (1996). However, there are a few writers who contend that as an educational concept it is not well thought out i.e. it is a flawed concept and it is confusing (MacIntosh 1998, Ixer 1999). Although these claims are not proven the need for clarification of its meaning and applications remain problematic both generally and in the paramedic context.

2.1.1 Definitions of Reflection and Reflective Practice

There are many definitions in the literature although the meanings and interpretations "*have been used rather loosely to embrace a wide range of concepts and strategies*" (Hatton and Smith 1995 p33). The term 'reflective thinking' was originally coined by Dewey (1933 pp3-9) to describe what he proposed as a "*better*" way of thinking. Dewey (ibid) chronicled a number of descriptions including the idea that: "*Reflective thought is active, persistent and careful consideration of any belief or supposed form of*

knowledge in the light of the grounds that support it and the further conclusions to which it tends” (p9). The dominant idea in this definition is that of a thoughtful and reasoned process that leads to new evidence based insights about an original idea (discussed further in section 2:4 of this chapter). Various definitions and interpretations have since followed.

Mezirow (1981 pp12-13) for example, classified reflection as having seven hierarchical levels which consists of the following stages: *reflectivity, affective reflectivity, discriminant reflectivity, judgemental reflectivity, conceptual reflectivity, psychic reflectivity and theoretical reflectivity*. The implicit assumptions in Mezirow’s work are that reflection is the start of a complex process of self awareness where each stage builds on the outcomes of the previous stage and concludes in theoretical verifications that consequently transform the individual’s learning. Both Mezirow’s and Dewey’s ideas are compatible with students’ academic progression expected at different levels of study that includes their reflective abilities.

Schön (1983(pp54- 61) on the other hand defined two thought processes concerning reflective thinking. First, one of *reflection-in action* that equates with spontaneous on the spot thinking or “thinking on your feet”, and *reflection-on-action* that involves thinking back on past practice (addressed later in section 2:5 of this chapter). Schön’s descriptions are noticeably less detailed compared to Dewey’s hence lacking in detail of *what* and *how* to reflect although the notion of *when* is apparent i.e. timing. Schön (1983 p295) also emphasised the idea of ‘praxis’ i.e. reflection applied to established forms of practice. He extended the term to “*reflective practice*” to indicate the contextual nature of reflection, i.e. practitioner-client interactions. The consequent appeal and uptake of this idea to health care disciplines including paramedic sciences have been phenomenal even though there is a lack of details in Schön’s definition and other theorists’ views. A variety of interpretations have since emerged.

2.1.2 Reflection as Responsive Action

Boyd and Fales (1983) suggested that reflection was a responsive action i.e. a response to reflectivity triggered by an experience. The idea of experience is also emphasised by Boud et al (1985 p19) who defined the term reflection as a “*generic term for all those intellectual and affective activities in which individuals engage to explore their*

experiences in order to lead to new understandings and appreciations". On the theme of experience and responsive action an early definition widely cited in nursing states that reflective practice is a "*process of reviewing an experience of practice in order to describe, analyse and evaluate and so inform learning from practice*" (Reid 1993 p305). This idea had been borrowed from nursing and incorporated into the paramedic curricula studied in this research i.e. the different stages in Reid's definition are parallel to the behavioural objectives that paramedic students are required to demonstrate progressively throughout their academic study.

Notably, the notion that reflection is a responsive action to experience is contained in many of the frameworks that are used to promote reflective practice including Gibbs' (1998) reflective cycle. Although debatable others use the term to describe reflection as a pre-experience concept i.e. it can occur *before* an experience or inform the pre-planning of learning prior to an experience (Reed and Procter 1993, Greenwood 1993, Loughran 1996).

2.1.3 Relationships to Feeling

The relationship to 'feelings' is not an explicit part of Dewey's original description of reflective thinking. However, popular writers such as Boud et al (1985) Gibbs' (1988) and Johns (1993) in their reflective frameworks have since included the added dimensions of feelings/emotions to support reflection i.e. 'attending to feelings' whether negative or positive. The rationale proposed by these authors is that knowing and feeling are interrelated and that they form part of reflective learning process. Although it is contentious whether or not the feelings of individuals should be assessed (Rich and Parker 1995) the paramedic students in this research were expected to include this dimension in their formative and summative assessments of reflective practice.

2.1.4 Beginning or End Stage of Thinking?

The issue of whether or not reflection is a beginning or ending stage of thinking further complicates definitions of reflective practice and how it may be understood by practitioners. For example, based on Dewey's (1933) ideas of reflective thinking King and Kitchener (1994) developed the reflective judgment model (RJM) which describes the complex development reasoning processes that occur between late adolescents and middle adulthood. Following the outcomes of a longitudinal study they identified a pre-

reflective, quasi-reflective and a reflective phase. The RJM also identified that age and educational levels were significantly influential in how students engaged with the learning process and the judgements they make about their assumptions of a given topic. This finding suggests that full abilities to reflect are the end phase of a developmental process. This is different to Mezirow's (1981) work that identified reflectivity as the starting point in a hierarchical process that adults use to make sense of their learning. These findings imply that students' views and approaches to reflection can and should differ according to different academic 'levels of study'. This idea is reflected in the overall curriculum strategy for undergraduate paramedic students.

2.1.5 A Flexible and Interchangeable Concept

Other writers have taken a flexible stance by suggesting that reflection is a more global and flexible concept that can be used for many purposes. Taylor (2000 pp130-148) for example identifies that there are three types of reflection viz: '*technical*' '*practical*' and '*emancipatory*'. Taylor (ibid) argues that "*no form of reflection is better than another*" for the context of nursing and midwifery.

Increasingly, since the well publicised works of Mezirow (1981) and Benner (1984) the term critical reflection has also been added to the array of definitions in the literature. The terms 'critical thinking' and 'critical reflection' are also used to describe reflection and reflective practice suggesting that it is something other than the ordinary common sense view of reflection. Hatton and Smith (1995 p36) argue that "*critical reflection like reflection itself appears to be used loosely*". The difference proposed by Rolfe et al (2001 p11) is that critical reflection enables the reflective process to be used 'systematically and rigorously' to examine practice. Indeed, the most recent programme specification locally for undergraduate paramedic students (similar to the students in this research) identifies an outcome of profession specific intellectual skills for the paramedic health care practitioner to "*Reflect critically on their performance and practice*". The implicit idea is that reflection needs to be approached by students in a particular way that leads to something other than reflection by itself and/or that not all reflection is critical. However, some have argued that '*reflective*' and '*critical*' may be interchangeable" (Mamede and Schmidt (2005 p1303). More recently it has been observed that reflection concepts have become "*adjusted and adapted*" for use by individuals as perceived relevant and important to them (Loughran 2006 p1).

2.1.6 Reflection as a Collective Process

Alongside the different definitions of reflection there has been a movement beyond the individual perspective towards it as a more collective process. Raelin (2002 p66) for example, advocates peer reflection “*as a mechanism for socio-political and emotional issues to be explored*”. This seems to build on earlier views by Kemmis (1985 p141) who emphasised the “*nature of reflection*” as being socially grounded and not purely psychological or individual. Bolton (2003 p4) also supports this view and adds that reflective practice is about “*opening our practice to scrutiny by others, and studying texts from a wider sphere*”. This definition goes beyond the idea of a personal and introspective process to a wider social remit. Paramedic students are taught about both the individual and collective processes of reflection which are representative of the real world in which their clinical practice occurs. Collective and collaborative reflections are identified as expected outcomes of simulation learning in the paramedic curriculum although exactly how this occurs is currently understudied.

2.1.7 Summary of Inter-relations of Reflective Practice

Looking at the different interpretations and facets of reflective practice it is concluded that definitions are suffused with different meanings that range from it being a method, to a philosophy, a process, a learning/teaching tool and an outcome. Also that learning characteristics such as attitudes though less explored are relevant to it.

From the array of available definitions and interpretations it appears that reflection and reflective practice are used interchangeably and emerge in the literature as a multi-faceted concept, i.e. it can be introspective, retrospective, transformatory and emancipatory. It is also hierarchical, sequential, technical, practical and purpose driven. More recently the idea that it is a collective concept is being emphasised in the literature. The conclusion in this review that reflective practice is a multi-faceted concept is supported in more recent literature e.g. Loughran (2006 p129) who asserted that the meanings and applications are as “*varied as programmes themselves*”. If this is the case it is questionable how such variations might influence the students’ learning.

2.2 Problems of Definitions (Lack of Understanding)

“The impression that the concept is well understood in educational circles is hardly the case when more closely examined” (Rogers 2001 p37).

Despite the popularity there has been a growing concern that ‘reflection’ is not a unified concept and the meaning of reflective practice is ill-defined (Kember et al 2001) and it is lacking in consensus (Lee and Tan 2004 p1). Previously it has been criticised for being a ‘flawed strategy’ (McIntosh 1998), whilst Ixer (1999) contended that there is no such thing as reflection given the confusion and contradictions surrounding its meaning. So how has this situation materialised?

It appears that the various theoretical and individual views of reflection appear to add to the confusion over its meanings. According to Moon (2000 pp7-9) some of the complications regarding discussions of reflection arises *“from problems of vocabulary”* and the different sources from which it emanates and is rationalised e.g. *“ psychology, sociology and philosophy”*. This is compounded by the fact that there is no distinction between reflection *“as a process, method nor reflection as a set theory”* Moon (ibid). Kember et al (2001 p8) suggest that some of the confusion stems from the *“wide and diverse use within disparate contexts and based upon divergent frames of reference”*. Jarvis (1992) for example, contested that in the process of experiential learning there existed a dimension of non-reflective learning. Rogers (2001 p40) later identified in his concept analysis of reflection in higher education that *“no fewer than fifteen different terms were used to describe much the same thing”*.

Views from the disciplines of teaching and nursing where reflective practice is most popular have highlighted particular problems of application. Adler (1991) for example, argued that in teacher education the phrase reflective practice was affected by diverse meanings and intentions. Rodgers (2002) later agreed that as a result of the lack of clarity regarding what reflection looks like it was beginning to lose its value in teacher education. If this is the case, then similar parallels could be drawn from the paramedic curriculum whereby a similar situation could possibly occur if the lack of clarity is not addressed. Paramedics are used to working with well tested and explicit clinical guidelines therefore clarity of meaning concerning reflective practice implementation is important.

Nevertheless, despite the reported lack of clarity there is a general agreement in the definitions from various writers that reflection is a cognitive process of thinking about and learning from experience through a series of steps that result in new learning e.g. (Boyd and Fales 1983, Boud et al 1985, Reid 1993). Overall these views promote the idea of a coherent, rationalised and valid educational proposition for meaningfully enhancing the students' learning experiences that are both persuasive and difficult to contest. However, contextually more grounded evidence is needed to clarify reflective learning applications within the paramedic curriculum rather than the uncontested theoretical assumptions from the literature that presently exists. Further explorations of the major theoretical perspectives to amplify this point include the contributions of Dewey (1933) Schön (1983) and Kolb (1984) respectively which are discussed next.

2.3 Origins and Theoretical Developments of Reflective Practice: John Dewey

The origins of the current trends of reflective practice are rooted in the works of the American educational philosopher John Dewey (1933). Even now it seems that the current ideologies of reflection have diverted little since then. Instead many of Dewey's ideas have since become the basis of the works of other theorists and the legacy of his works can be identified in reflective frameworks such as Kolb's (1984) Cycle.

Dewey (1933 pp 4-9) distinguished reflective thinking from "*automatic, unregulated*" thinking. Dewey (ibid) later clarified his view of reflective thinking as a particular form of problem solving having five phases or aspects that spans from a pre-reflective to an 'active experimentation phase (p107) or testing out the original idea based on evidence. Dewey also emphasised 'analysis' and 'synthesis' to substantiate and clarify facts (p126) and identified 'future action' as an important consideration in informing how an original problem might otherwise be approached. These are some of the thinking skills that paramedic students are required to demonstrate during and after their undergraduate education. Additionally Dewey (ibid) emphasised that as a condition of reflective learning, something additional was also necessary i.e. a supporting personal value system of positive attitudes including open mindedness suggesting that one needed to 'develop a reflective habit attitude'. This provides a reasonable argument that reflective thinking as an attitudinal concept could be learned and modified over time. Nonetheless, the importance of attitudes to reflective practice for both learning and teaching appears to have largely been overlooked in the literature hence a notable gap. The relevance of

attitudes is reviewed separately in section 2:4:2. However, having explored Dewey's (1933) work relevant to this thesis a number of emergent dimensions relevant to the paramedic curriculum suggests that:

- Reflective practice should be structured and requires various thinking skills such as analysis.
- It progresses learning from thought to action and future solutions (evidenced by learning through synthesis).
- It requires positive and open attitudes (conditional).

One of the intended outcomes for this present research is to establish the extent to which Dewey's concepts of reflection apply to paramedic students' understanding and applications of reflective practice concepts.

2.3.1 Reflective Practice: Donald Schön

As previously indicated the impact of American educationalist Donald Schön and the popularisation of terms 'Reflective Practice' and 'Reflective Practitioner' since 1983 have been phenomenal and have since generated a substantial "*output of papers on the subject*" (Moon 2000 p39). The concept of the 'reflective practitioner' has continued to gain popularity across a number of disciplines not least because of its emphasis on learning from the practice context. It has also offered a new paradigm of education that challenges the traditional theory to practice approaches to learning and instruction that has proved timely for paramedic sciences and its transition to higher education.

Following Schön's work the concept of reflection embedded in practice experience (*in* and *on* action) is what appears to be commonly described as reflective practice. Since then reflective practice has increasingly become a central theme and an accepted orthodoxy for curriculum planners responsible for professional education in many higher education disciplines such as teaching, nursing and latterly paramedic education. It is therefore necessary to establish how Schön's work has contributed to the understanding and applications of reflective practice relevant to the students' learning experiences.

2.3.2 Schön's Work and Challenges to it

Although widely accepted there have been some challenges to Schön's reflective practitioner concepts. In particular, Schön does not clarify exactly what happens during the processes of reflection *in* and *on* action hence the increasing criticism for lack of supporting empirical evidence. Greenwood (1993 p1184) for example criticised the limitations of Schön's evidence for merely relying on '*asking professionals about their work*'. Eraut (1995 p13) similarly condemns the use of "*metaphor rather than sustained argument*". It seems that Schön relied on qualitative narratives and his personal experiences as evidence to support his arguments for reflective practice. Nevertheless, from the vast literature to date it appears that the influences of Schön's initial and later works on reflective practice (1983, 1987) have had significant impact on many professional and educational programmes both philosophically and operationally even though very few appear to have tested the effectiveness or outcomes of Schön's proposals. Instead the literature reviewed suggest it has become a credo for teaching, learning and assessment purposes within many higher education curricula notably within the health professions in the UK. So what has been the attraction?

Eraut (1995 p39) observed that "*Schön offers an alternative epistemology based on professional practice whose main distinctive feature is the process he describes as reflection-in- action*". It was highlighted in the previous chapter of this thesis that paramedic science is currently in pursuit of alternative ways of thinking about practice to meet the demands of contemporary health care and reflective practice was identified as an appropriate vehicle for achieving this.

2.3.3 Schön's Work and Nursing and Paramedic Sciences

The timing of Schön's work has been fortuitous for some disciplines. Greenwood (1993 p1183) asserted that "*professional education, including nursing, was in need of such illumination and critique*". A case study of reflective practice in UK and Australian nursing curricula identified that "*the most helpful model to emerge has been that of the reflective practitioner*" (Malik 1998 p52). The closer integration of theory to practice was identified as a cardinal benefit. This view was echoed later by other writers, e.g. "*Schön's work demonstrates in a general manner how theory of practice is built on the basis of reflection*" (Moon 2000, p70). This has much currency for paramedic sciences as an emerging discipline in its own right and the need for such evidence.

It appears that Schön's (1983) justifications for the reflective practitioner were grounded in his opposition to what he called the 'technical rational' or the scientific model as the preferred model for problem solving. Schön (1983) categorised knowledge into two types i.e. technical rationality ('knowing that' or facts) and professional artistry - described as intuitive 'tacit' knowledge derived from the individual's experience and referred to as 'knowing how'. He argued that the technical rational model was outdated and did not solve the complexities of contemporary practice including those found in medicine and engineering for example. Schön proposed instead, that it was the notion of reflection-in action (reflecting whilst doing) and 'tacit' knowledge that practitioners drew upon to solve complex problems, as opposed to technical/scientific methods. This rationale has many parallels for the introduction of reflective practice in the paramedic curriculum that has traditionally 'trained' its members and functioned in the mode of 'technical rationality' or a scientific problem solving based approach. Notably the practice of using 'protocols' in ambulance work has traditionally relied on well tested and evidenced rationality derived from the medical profession. Reflective practice therefore raises some fundamental questions for paramedics who are largely charged with using prescribed protocols and guidelines and whether or not they are able to step out of the scientific paradigm of practice and use tacit knowledge instead. If so what are the consequences and would it be possible to identify and recognise and measure this phenomenon whilst practitioners were in the midst of practice? These issues are important for paramedic education and curricula developments to inform the continuum of 'novice to expert' levels of practice already established in nursing by Benner's (1984) research. Otherwise this leads to an overall assumption that all paramedics operate a rule following procedure equivalent to the novice practitioner identified by Benner which would be highly questionable. Meanwhile reflective practice in medicine has already established that different levels of reflectivity among practitioners exist.

A survey of primary health care physicians exploring factors associated with reflective practice identified that "*In routine situations physicians tend to use an automatic reasoning approach based on recognition and instances of patients they have in memory*" (Mamede and Schmidt 2005 p333). This finding accords with the concept of 'knowing-in-action' manifest in Schön's idea of reflection-in-action and a distinguishing feature of professional practice. There is nonetheless some criticisms about the shortness of time frames when the decision making process has to be rapid

thus making the scope for reflection-in-action extremely limited (Eraut 1994 p145). This aspect is particularly relevant for paramedics who are frequently charged with having to make split-second decision in life and death situations. Consequently, do they continue to follow rules/guidelines or reflect during action? Van Manen (1995 p 35) argues that “*reflection is only limited and restricted to the task in hand*” which suggest that the former is more likely where time is a crucial factor.

Outside of these challenges to Schön’s ideas the popularity of his influences appears understandable. Unlike Dewey, Schön provided a relatively simpler profile of reflection and reflective practice that has been dominant in the literature over the last 25 years. Schön (1987) had argued that *reflection-in- action* and *reflection-on- action* connects thinking and doing resulting in reflective practice. The ideology promoted around this idea is that students in a discipline can be coached to become reflective practitioners in safe coaching environments such as simulation settings. This is in stark contrast to the traditional task orientated training approaches favoured by many health disciplines such as nursing and paramedic practice where ‘training’ rather than coaching has largely dominated.

What remains unclear is the application of Schön’s reflective practice ideology in different contexts such as paramedic work where practice is grounded in a technical rational paradigm but at the same time requires practitioners to demonstrate tacit knowledge generated by reflection-in and -on action. An overall problem seems to be the uniform way in which Schön positioned reflective practice for all practitioners. The literature suggests that there are other considerations to reflective practice not least the learner characteristics of the individual. Learner characteristics are important considerations in a curriculum context for learning and teaching outcomes.

2.3.4 Reflective Practice and Learning Styles: David Kolb

Following the work of Dewey (1933) the most popular theory of learning from experience (Experiential Learning Theory or ELT) was developed by David Kolb (1976, 1984). Kolb’s ideas raised awareness about who, what and how learning takes place. The diagram represented in Figure 2-1 shows the four basic steps in what is commonly known as Kolb’s (1984) learning cycle.

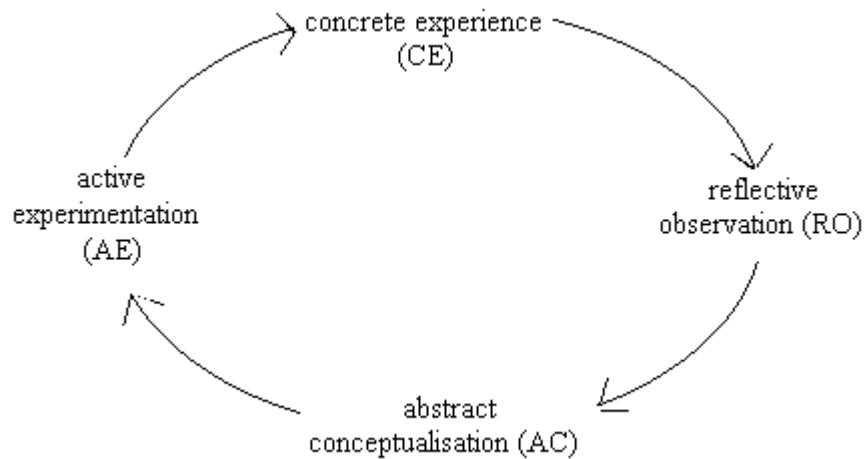


Figure 2-1 Kolb's Learning Cycle (1984)

Kolb's underpinning theory is that an individual learns from having an experience (CE) reflects on that experience (RO) reconstructs what has been learnt (AC) and applies the new learning (AE) in future situations. Kolb later suggested however, that an individual may emphasise a preference for one of the four different modes of learning derived from bi-polar opposites of the four modes. This implies that paramedic students outside the bi-polarity of CE/RO and AC/RO may be not comfortable with reflective practice as a learning concept. If so, could their views of the subject be distinctly different to other styles of learners? Additionally a central feature of Kolb's work is that the four different phases of the cycle are linked to four different learning styles. Kolb (1984 p68) assigned one word to correspond to each of the four modes or styles viz: *feeling, watching, thinking and doing*. These descriptors were later adapted as *activist, reflector, theorist and pragmatist* by Honey and Mumford (1986 p10). These four dimensions can be assessed by use of a learning styles instrument e.g. Kolb's Learning style Inventory (K-LSI).

2.3.5 Learning Styles and Reflective Practice

The field of learning styles has been the subject of extensive studies for various educational purposes not least to enable an understanding of how individuals differ in their approaches to learning. Numerous studies in higher education feature in the literature e.g. Duff (2000), Healy and Jenkins (2000) and more so previously in nursing e.g. Cavannah et al (1995). The results have all concluded mixed views about learning

styles' applications to learning and teaching in particular the measurement instruments used. Notably these studies were not directly related to reflective practice learning.

However, Kolb's theories of the reflective learning style and reflection are aligned to the works of other theorists who promote reflective thinking e.g. Mezirow (1981) and Schön (1983). Their shared theoretical views all suggest that reflective learning leads to new understandings and informed future actions which are desirable outcomes for the reflective practitioner and thus inextricably linked to this research.

Meanwhile what constitutes a reflective learning style does not appear to be a straight forward issue when examined in context. As Moon (2000 p5) explains "*being reflective itself has broader connotations as it is more like the long term characteristic of a person's behaviour, rather than the description of a mental activity*". Moon (ibid) suggests that a person who is reflective seems to be someone who effectively engages in the mental activity of reflection and can make well informed decisions. Well considered decisions are the responsibility of all paramedics regardless of their individual learning style. Consequently there are implications for the teaching and learning support of reflective practice with all students whether they are predominantly reflective or not. Clegg (2000 p452), however, argues that "*reflective practice may not be suited to the achievement of tasks that require different types of learning and cognitive functioning*". Therefore knowing the students' learning styles is important to identify for providing additional areas of learning support involving reflective learning.

2.3.6 Learning Styles and Disciplinary Applications

Previous research by Biglan (1973) and Kolb (1981) have identified that the learning styles differences of individuals would need to be taken into account when considering academic disciplines and learning preferences in teaching/learning approaches. Their categorisations showed that different professional disciplines fall into different cognitive dimensions. A recent mapping by Biglan-Kolb's classification of academic knowledge (<http://www.dfes.gov.uk/dfee/heqe/wblchp3.htm>) suggest that nursing as an example of a soft pure discipline (natural sciences, humanities based) emphasises reflection more so compared to paramedics as hard applied discipline (science based) whose emphasis is action. This again suggests that not all students may favour reflective practice equally if they are not predominantly reflective observers. However, in reality

regardless of learning styles all paramedic students must demonstrate full reflective practice outcomes. This has important implications for learning and teaching strategies if the idea of a reflective practitioner as a graduate outcome is to be achieved for all students.

It appears that popular writers including Schön (1983) and Boud et al (1985) have advocated a wholesale approach to reflection/reflective practice without such considerations therefore a pertinent question for study in this research. Further, it may be argued that traditional paramedic practice could be considered a hard applied science given its alliance to medicine but contemporary practice is also very much allied to the social sciences. Therefore it would be useful for informing appropriate learning and teaching approaches and to know how the disciplinary mapping by Biglan and Kolb previously described applies to paramedic students and their potential tendencies towards reflective learning.

Whereas nurses continue to be the subject of extensive studies using Kolb's LSI in the UK and elsewhere, little available evidence currently exists for paramedics. Only one similar study of Emergency Medical Care Assistants (EMCA's) in Canada (Campeau 1998) was identified looking at the distributions of the practitioners' learning styles for instructional purposes. The findings showed that there were no significant learning styles relationships; however, such relevance to the undergraduate paramedic student context is largely unexplored.

2.3.7 Summary of Key Theories

The conclusions to the works of the three key theorists critiqued so far in this study infer that reflective practice, its meaning and applications are complex and multi-faceted which has probably contributed to the lack of clarity and understanding widely reported in the literature. Consequently the issue of context specific applications such as in paramedic practice remains uninformed. To further understand the paramedic curriculum context it is necessary to further explore the literature from the students' perspectives and applications to their learning.

2.4 Reflective Practice: The Students' Perspectives

As discussed earlier definitions of reflective practice concepts are complex, multi-faceted and open to interpretations for different purposes. Consequently it remains unknown whether or not students share a common meaning and how it influences their learning including clinical practice. Within the aims of the study this section and sub sections critically explore the understanding and applications of reflective practice concepts from the students' perspectives. Two main areas are addressed from the literature perspective i.e. students' views of reflective practice and the methods and approaches that are applied to their learning experiences.

2.4.1 Students' Understanding of Reflective Practice

A notable gap in the literature emerges from the lack of empirical work regarding what students' understand by reflection. Newell (1994) for example noted that despite its growing prominence work in nursing, identifying students' knowledge and understanding of reflection was minimal. Yet it is interesting to note that over a decade later reflective practice retains its appeal. Nurse educators continue to consider it an essential component of nursing education e.g. O'Connor and Hyde 2005 although supporting empirical evidence is lacking. It appears that where studies have been undertaken in nursing especially they have been mainly with post graduate students and using small samples and single methodologies such as focus groups regarding clinical practice e.g. Shield (1995) and Glaze (2002).

Examples of two studies of significant relevance to undergraduate students found were as follows:

- (1) A retrospective study by Paget (2001) involving former and current nursing students found that reflective practice was highly regarded by the majority who were able to identify long term changes to their clinical practice. However, Paget (ibid) acknowledges that "*The response rate to the main phase of 35% (postal questionnaires) raises the possibility of a self-selection bias*" (p211). Given the mixed sample of students (n=200) and the low response rates the generalisability of the results are limited. Also it is highly likely that the views of post graduate students concerning reflective practice would be different to their undergraduate counterparts given their greater experiences in clinical settings.

- (2) A study of undergraduate nursing students using focus groups (Bulman and Schutz 2004) identified that students significantly described reflection as a self developmental concept i.e. to do with self-awareness, self-improvement and self-fulfilment. This finding concurs with much of the earliest theoretical definitions by Boyd and Fales (1983) and Argyris and Schön (1974) who emphasised the need for reflection on personal learning to uncover new learning. Surprisingly, the students' views did not appear to incorporate the more collaborative learning community's ideas for reflective practice that is currently emphasised in the literature. The students however, did cite benefits to clinical practice and the integration of theory to practice that accords with Schön's (1983, 1987) later views of reflective practice for professional development. As with the previous study reviewed these findings cannot be generalised given the lack of demographic details of the sample size. Similar observations are identified in physiotherapy by Donaghy and Morris (2000 p13) who concluded that "*the diversity of research questions posed in the different studies (mainly in nursing) made it difficult to compare one study with another*".

Notwithstanding these concerns reflective practice continues to be generally perceived as a positive development for the health professions by key writers such as Boud et al (1998), Kember et al (2001) and Rolfe et al (2001). Only a handful of writers (Newell 1994, MacIntosh 1998, Ixer 1999) challenge this view. Meanwhile reflective practice learning outcomes in the context of paramedic education are yet to be established although it continues to expand more widely in paramedic sciences.

2.4.2 Attitudes to Reflection

The relationship between attitudes and reflective practice appear to have been largely overlooked in the literature although attitudinal measurements have been widely researched in many diverse areas of education for different purposes. The general consensus is that attitudes are integral to learning and behaviour and that it can drive such outcomes. The importance of a positive attitude to reflective thinking is a key ingredient advocated by some theorists, especially the earliest proponent i.e. (Dewey 1933). Dewey suggested that reflective thinking required a supporting value of 'positive attitudes' that were favourable to reflective thinking and enquiry. Boud et al (1985 p11) later espoused that in the reflective process "*attending to feelings brings together what*

we think, feel and do. Further, that negative feelings can form major barriers to learning”.

The early literature search prior to the start and early phases of this research in 2000 did not reveal any relevant studies in health care of students’ attitudes to reflective practice. However, a later a qualitative study of attitudes to academic work with fourth year medical students by Henderson et al (2003) has since identified the need to minimise negative attitudes for promoting reflective practice in the undergraduate curriculum. One other study by Rees et al (2003) of attitudes to reflective practice and continuing professional development in pharmacy found that students considered reflective practice to be good in theory but not in practice. It is justifiable therefore to identify and compare the attitudes of undergraduate paramedic students to nursing students as a different discipline and establish whether or not it influences their learning experiences of reflective practice.

2.4.3 Methods and Tools for Reflection

Despite the reported lack of clarity about what reflective practice means a significant part of the literature concerns how it might be approached for enhancing learning and teaching. A variety of tools including the use of reflective learning journals, critical incidents and models/frameworks have been used to encourage reflective practice with health care and other professionals e.g. Gibbs’ reflective cycle (1988), Boud et al (1985) and Johns (1993). The literature in the context of higher education has especially promoted the concept of ‘structured reflection’ through the use of such strategies and are pertinent to the students in this research project who are expected to be able to demonstrate the use of structured approaches throughout their academic study. However, as similarly found in teaching (Hatton and Smith 1995) and nursing (Rolfe et al 2001) there is a lack of research evidence to support their use. Even so the use of clinical portfolios in paramedic education appears to be increasing.

2.4.4 Structured Reflection: Learning Journals and Written reflection

The term structured reflection was originally used by Boud et al (1985) leading authors of reflective learning. Since then numerous authors for example, Driscoll (1994) Ghaye and Lillyman (1999) and Rolfe et al (2001) have all implied that through structure the reflective process can be better advanced for learning and continued development.

Collectively these writers have emphasised the need for ‘systematic enquiry’ implying that learners are more likely to make sense of learning journals if structured rather than not. Ghaye and Lillyman (1997 p43) state that “*there are very important reasons for keeping a learning journal*”. “*The first is the belief that journal writing is a necessary skill for lifelong learning*”. Moon (1999 p42) later added “*that journal writing has many purposes linked to learning including the increase of ability in reflection and thinking*”. These statements infer that those who do not keep written journals are less likely to achieve reflective learning which is arguable but nevertheless an influential idea in higher education where written evidence of learning is a core academic value.

The use of journal writing for reflective purposes had been previously advocated in other disciplines e.g. education (Holly and Mc Loughlin 1992). Since then this issue has been extensively explored in nursing including studies by Shields (1995) Jasper (1999) and Stuart (1997). All support the use of structured reflection i.e. written forms of reflection as a useful tool to reinforce learning and promote both personal and professional development. They also called for more emphasis to be placed on this issue. It seems that in nursing the most common techniques for promoting structured reflection are written formats i.e. learning journals and diaries (Platzer et al 1997). Unfortunately none of these writers offer a definition of structured reflection and indeed there were no definitions to be found in the literature. As such structured reflection remains undefined and therefore could mean different things to different people including teachers and students.

The overall picture is that learning journals are considered to be effective measures of reflective thinking emphasising the validity of documented reflection. Such has been the impact of learning journals that assessment measures have emerged for testing their contents e.g. Kember et al (2000). More recently, Plack et al (2005) have devised a method for assessing reflective journal writing based on research of students recorded journals in physical education. The assessment instrument (a coding schema) was designed around the theoretical reflective frameworks of Boud et al (1985), Schön (1987) and Mezirow (1990) to test the elements and levels of reflection that occurred in students’ learning journals. The researchers have defended the inter-rater reliability of the tool and identified the need for further studies to test the generalisability of the assessment method they propose. It does emerge nonetheless that some of the

theoretical sources underpinning the journal assessment instrument are mainly based on theoretical assumptions of reflective thinking. Further, the authenticity of the students' journals are questionable given the findings by Platzer et al (1997) in their research of written journals who identified evidence of 'laundering' thus questioning the originality of the students' written work. This suggests that there is a need for educators to gain first hand independent evidence other than the students written reports especially of reflection-in action to identify and verify what processes actually occur and how they relate to reflection after action i.e. how they match theory to practice.

2.4.5 Models Cycles and Frameworks for Reflection

Since the emergence of Kolb's Cycle (1984) and the popularity of reflective practice a number of supporting frameworks have appeared in the literature. Among the most popular are Boud et al (1985), Gibbs' (1988) reflective cycle, Driscoll (1994) and Johns' models of structured reflection (1993, 1994). Generally reflective frameworks/models may be summarised as being either cyclical or linear and are designed to enable a systematic approach to guide learning that takes the reflector through a series of cognitive stages which should culminate in new (transformed) learning for informing future situations.

Pioneering work by writers such as Driscoll (1994) highlights the significance of a model of reflection which predetermines the way an individual perceives and analyses a situation. Writers such as Boud et al (1985) and Ghaye and Lillyman (1997) imply that such approaches to reflective practice are more productive and beneficial to learning than informal methods such as discussions. Platzer et al (1997) for example, purport that learning through reflection is more potent if there is an understanding of the frameworks that encourage a structural process to guide the act of reflection. In reality this is not so straightforward. As Ghaye and Lillyman (1997 p 15) explain "*some are explicitly called models of reflection and others are generally called models of learning*". Such descriptions are likely to be confusing for students. Ghaye and Lillyman (ibid) have also identified five categories to describe the range of frameworks (models of reflection) used in nursing, i.e. *Structured, Hierarchical, Iterative, Synthetic and Holistic*. This possibly adds to the complexity of descriptions and indicates to some extent how the concept of reflection has become customised since Dewey's (1933) original ideas. From the literature reviewed it also seems that the use of the word '**of**' rather than '**for**'

to describe reflection models has been misleading and not challenged. So given these complexities how do students choose which reflection model is appropriate?

Nursing and paramedic undergraduate students involved in this research are commonly introduced both to iterative and linear models/frameworks such as Gibbs' Cycle (1988) reproduced in Figure 2-2. However, as previously reflected in the curriculum learning outcomes (1:5:4) students are given the flexibility to use a framework of their choice. Paramedic students by the third year of study are expected to show that they can engage with different frameworks although it seems that "*Gibbs' (1988) is particularly favoured by many undergraduate students with the more complex frameworks being adopted by higher degree students*" (Bulman and Schutz 2004 p170). A scrutiny of the diagram below provides a reason why this may be the case.

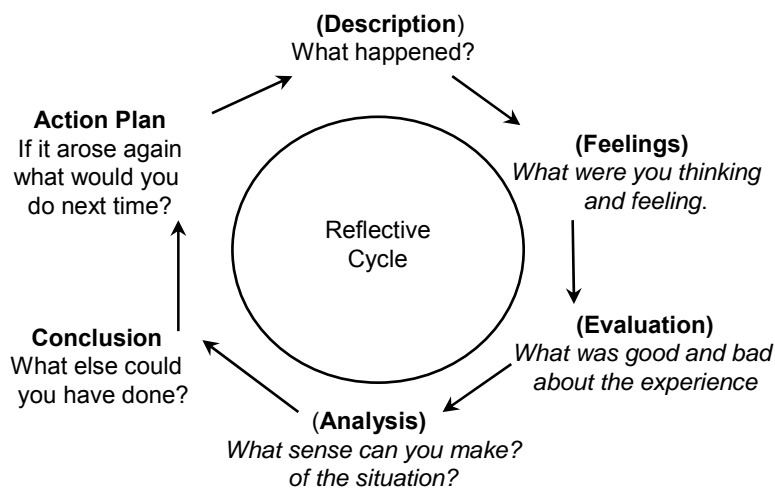


Figure 2-2 Gibbs' Reflective Cycle (1988) Redrawn

It is suggested that Gibbs' reflective cycle is designed to prompt an individual to think systematically about the different aspects of an activity or experience in a fairly straightforward way inferred in the simplistic headings of the six dimensions. This possibly explains the attraction to undergraduate students who prefer to opt for the simple headings that offers straightforward structure for organising their thoughts.

2.4.6 Benefits and Limitations of Models/frameworks

As one of the earliest models Gibbs' Cycle is closely aligned to the reflective thinking earlier captured by Boud et al (1985). Unfortunately the apparently over-simplified steps can imply a recipe following process that never ends. In contrast Dewey (1933) proposed a definitive outcome to reflective thinking sequenced in a linear manner.

Rolfe et al (2001 p29) commented that there has been no work carried out to test the effectiveness of the various models of reflection hence questioning the empirical basis of them. Other writers are more critical. Johns' (1994) model of structured reflection (popular in nursing) is criticised for only addressing the lower levels of reflectivity (Moon 2000). Burnard (2000) also criticises Johns' (1993) earlier model for structuring reflection and questions whether individuals can be sufficiently sure of their feelings to apply a structure to it. Burnard (ibid pp 93-97) describes mixed views of his qualitative study concerning nurse educators' views of reflection and reflective practice. One participant reported "*but it is difficult to get the balance right, because you need a framework in order to do it*". However, another participant stated that "*Any structure that you use as a guide to reflection can perhaps hinder rather than allow freedom*".

The relevance of 'structure' to paramedic students' reflection is important. Previously discursive debriefing has been recognised as a valid learning method for reflective learning (Boud et al 1985). Notably, as a common method in paramedic practice the debrief process does not generally follow a structured model per se. Moreover, it is not known firsthand how students apply such structures to their academic and clinical learning beyond the reported content of their written work re-enforcing a need for direct observations of such applications in addition to their written reports.

2.4.7 The Practice Context

Given that the core of Schön's work is based on practice as the cornerstone of reflective learning, a recurrent theme in the literature remains the lack of empirical evidence to support the applications as an educational ideology. As stated earlier where studies have been undertaken these have been small scale and not sufficiently robust to allow generalisations of the findings more widely. The emphasis still appears to be largely theoretically based. Heath (1998 p1055) for example, contends that "*If the skills of reflection are equated only with academic skills and not practical ability, and reflection*

on practice is delayed, the ability to reflect will lag behind the ability to nurse”.

Wilkinson (1999 p38) concluded from a literature review of reflective practice that *“there is a clear need for research to investigate what reflective practice can achieve”.* This is particularly important if students are to understand what it is they are meant to achieve (Morrison 1996). This appears to be easier said than done.

Such achievements require an understanding of the practice environments within which individuals operate on a day to day basis and the multiple variables that influence their practice. Frequently health care practices are unpredictable and complex especially in the pre-hospital setting where paramedics mainly operate. In the case of paramedic students this could be further complicated by the fact that students operate under supervision and it could be difficult to separate their reflections from that of others. Schön (1987 p161) identifies the *‘incongruence of meanings’* constructed by students to that of their instructors in a reflective practicum. If this is the case then there are bound to be differences in reflective practice applications suggesting that there is a need for an individual as well as shared focus for reflective practice in such situations.

As a solution Schön (1987 p171) labours the point that the development of students to become reflective practitioner requires a virtual world that *“can critically influence learning outcomes”.* The use of simulation is endorsed (ibid p36). Simulation is widely used and validated in medicine, anaesthesia and now increasingly used in paramedic practice. Gaba (2004) identified several dimensions that include knowledge, skills, attitudes and methods of feedback that can be developed through simulation. The numerous empirical studies in medicine and nursing based on simulation learning have latterly measured a range of performance skills e.g. the effectiveness for clinical skills and competence e.g. (Alinier et al 2006). As a recurring theme in the paramedic curriculum, reflective learning although an important outcome of debriefing remains under-explored.

2.5 Summary of Literature Review

An increasing body of literature on reflective practice continues to emerge in higher education since the seminal works of Schön (1983, 1987) popularising reflection *in* and *on* action concepts. Despite criticisms of Schön’s work for lack of specificity reflection and reflective practice have nevertheless become important curricula outcomes for

many undergraduate programmes of study - notably in health care disciplines. The extent to which some disciplines, for example nursing, and latterly paramedic sciences have accepted reflective practice has led to prescribed professional competencies (ENB 1991, UKCC 1995, Health Professions Council (HPC) 2001, QAA 2004) that require students to demonstrate reflective practice learning as measurable outcomes. While this is seen as a positive development the supporting evidence remains lacking.

If too as earlier noted, that some models (Johns' 1993, 1994) for example, do not address the higher levels of thinking then the implications are significant for undergraduate students and the general higher education aims of developing reflective practitioners. Moreover, the extent to which reflective practice influences learning and practice is not extensively evaluated beyond anecdotal evidence and assumptions of its many benefits. Consequently little is known about the effectiveness or validity of reflective practice as a teaching /learning/assessment strategy. In addition to the lack of consensus about its precise meaning, the literature further appears to be lacking in many relevant links such as learning styles and attitude relationships to reflective practice although these concepts are integral to it. The blanket approach to reflective practice has especially lacked understanding of contextual differences including students' individual characteristics such as age, gender and level of study for example.

Only very few have questioned the validity and effectiveness of reflective practice e.g. Burton (2000 p1) in nursing who criticised the notion that "*Nurses are now directed to reflect effectively and practice effectively. When there is scant evidence to support the use of reflection, why does the United Kingdom Central Council, English National Board for Nursing and Midwifery and Health Visiting and institutes of nurse education insist that nurses at all levels of experience reflect*". It is important that paramedic practice as a new higher education discipline avoids similar criticisms.

From the extensive literature reviewed it would seem that whilst the various theorists have their own views about the meaning and methods for reflection and the achievement of specified learning outcomes, little is known about what the students' perceptions and applications of these concepts are in specific disciplinary contexts. As earlier noted few studies were found that inform the students' views and applications of reflective concepts to their learning experiences. None was found relating to paramedic

students. The notion of reflection-in-action in particular is highly significant to understand for the paramedic context given the nature of emergency practice that follow prescribed protocols and guidelines and not least because of the time critical factors highlighted by Eraut (1994) in his critique of Schön's works.

More recently it has been shown that a reflective structure which correlates to Dewey's (1933) five steps of reflective thinking exists in medical practice (Mamede and Schmidt 2004). No similar evidence is yet available for informing paramedic practice - although that is not to say that reflective practice has not existed within that discipline prior to its higher education transitions.

In conclusion the following gaps have been highlighted in the literature review of reflective practice:

- Global lack of literature concerning the implementation of reflective practice in paramedic sciences as a professional discipline although prolific in nursing.
- Lack of empirical evidence concerning paramedic students' perceptions, understanding and application of reflective practice within an undergraduate curriculum context.
- No available data exploring interrelated issues of reflective practice including demographic characteristics, structured reflection, learning styles and attitudes relationships.
- Lack of evidence to support the theory- practice applications of Dewey's (1933) work and especially Schön's (1983) reflection in and on action concepts.

This research has responded to the gaps identified and seeks to address some of these within a whole population of paramedic students as a unique example of curriculum evaluation. The apparent lack of empirical research to support reflective practice has provided one of the reasons for taking a positivistic approach to reflective practice in this thesis. The next chapter explores the methodology underpinning this research project in the undergraduate paramedic education context.

CHAPTER 3

Research Methodology

3. INTRODUCTION

This chapter describes and discusses the research methodology that informed the different phases of this research concerning the status of reflective practice in an undergraduate paramedic curriculum and the extent to which it influences the students' learning over a full curriculum cycle.

As explained in chapter 1 the main research problem and sub-problems investigated sought to address a number of variables pertaining to undergraduate paramedic students' perceptions, understanding, attitudes and application of reflective practice within a curriculum context as implemented in a university environment. This was considered important to explore as it has been proposed that knowledge generated by undergraduate students can usefully contribute to their own and to the development of the profession (Higgs et al 2004). This is highly relevant to paramedic sciences as a developing profession.

The different sections of this chapter include discussions of the research design and rationale, the guiding conceptual framework, the approaches and methods used for data collection and analysis that are supported by appropriate literature. Limitations of the research are also addressed. Finally, a salient issue for the research context as an example of curriculum evaluation pertains to my role and relationship as teacher/researcher in this study of reflective practice with students. These are addressed more fully in other sections of this chapter in particular the choice of methods, ethical issues and bias concerning the research process.

The chapter begins with a discussion of the researcher's underpinning frame of reference for the study of reflective practice in the paramedic curriculum as presented in this thesis.

3.1 Reflective Practice in the Paramedic Curriculum: The Research Frame of Reference

The place of reflective practice in the undergraduate curriculum is governed by the underpinning philosophy that reflective practice offers an alternative epistemology of practice that should enable students to function effectively outside the constraints of the traditional technical rational (scientific) model of practice in order to address the needs of contemporary health care. In a given clinical scenario therefore where a protocol based approach is used it is expected that all students should respond in identical ways according to the corresponding prescribed protocol i.e. following a prescribed set of psycho-motor clinical tasks in an algorithmic sequence. A reflective practice approach on the other hand should demonstrate additional behaviours, i.e. more thoughtful practice including additional skills such as 'questioning' and 'analysis'. These skills are compatible with the learning outcomes in the curriculum framework within which reflective practice is featured and necessary for graduate practice. Reflective practice is also said to be a form of practice in itself that can be identified prior to, during and after practice (Higgs et al 2004). Paramedic students are expected to demonstrate such forms of reflective outcomes both individually and collectively through peer reflection as would be expected in the real world of professional paramedic clinical practice.

However, as identified in the literature review (Ch 2) reflective practice learning can be subject to conceptual and contextual considerations such as the individual's personal characteristics including age (King and Kitchener 1994) gender (Belenky et al 1986) attitudes (Dewey 1933), learning styles relationships (Kolb 1984) and the cultural perspectives of practice that includes the use of language and reflective conversations (Schön 1983). In response, this research adopted a 'positivistic approach' to the enquiry based on the value systems (premises) summarised by Denscombe (2002 pp12-14) who proposes that in positivistic approaches such characteristics are believed to exist by the researcher and that there is a need to discover how they might explain particular phenomena empirically; in this case reflective practice learning in the paramedic context. Further, it is believed that such phenomena could be measured using appropriate methods to establish what patterns might exist and what the causes and

consequences might be. Previously the prime source of evidence for gauging reflective practice learning outcomes in the curriculum had relied purely on a subjective approach i.e. through the students' written reflective accounts of events which has been criticised in the literature for lack of authenticity.

3.1.1 The Study Design: Overview and Rationale

For purposes of curriculum evaluation of reflective practice and the contextual issues discussed in this thesis the overall research design is therefore described as 'exploratory'. This approach is highly appropriate to education and social sciences research i.e. when "*examining a new interest or when the subject of the study is relatively new and unstudied*" (Babbie 1995 p84). Exploratory research also fits well with curriculum innovations such as the introduction of reflective practice in the paramedic curriculum as focussed upon here and where there is an identified need for evidence of new knowledge in a developing area. My intention was to explore the richness of the naturalistic education environment in which reflective practice was being developed to gain an overall profile of its impact on the students' learning experiences at different stages of a curriculum cycle. This was incorporated into the research design so that students at various points of undergraduate study could provide important information about the curriculum as a whole. The underpinning rationale in the first instance was "*to gain new insights, discover new ideas and increase knowledge*" (Burns and Grove 1987 p 38) of reflective practice through a design that could accommodate the most suitable methods for explorations of reflective practice within the scope, context and feasibility of the research.

Thus the considerations of sampling, controlling subjects both within and outside the university, the uncontrolled extraneous variables such as the students' different clinical placements, changes to the programme and ethical issues required for an experimental approach for example, would, I believe, not have been possible and limiting to the underpinning research aims that I had rationalised to be necessary for informing a unique example of curriculum innovation in a single university context. Being a pioneer programme at the time of the study design also meant that there was no other comparable group for an experimental design with students from other institutions. However, since the commencement and progression of this research a number of similar paramedic curriculum developments at other UK universities have subsequently

emerged and such an approach would now be possible. Best and Kahn (1989 p 23) note however, that although evaluation research “*may involve recommendations for action, it is not for generalisations that may be extended to other settings*”. The focus of this research when initially was to evaluate, inform, and recommend local policies for future curricula developments of reflective practice in the paramedic curriculum.

3.1.2 The Conceptual Framework

The conceptual framework adopted for this research is interrelated to the research question, the purpose, design and methods that are used to explore reflective practice in the undergraduate paramedic curriculum. It is mapped from two key perspectives, i.e. the paramedic curriculum framework and the learning outcomes for reflective practice in that context. The following explanations outline the relationships between the concepts studied and for assisting the interpretations of the findings.

First, a relevant definition of reflective practice to the context of this research is described as a “*process of reviewing an experience of practice in order to describe, analyse and evaluate and so inform learning from practice*” (Reid 1993 p305). This definition is also compatible with reflective practice in the paramedic curriculum framework which is designed around the theoretical framework of Bloom’s Taxonomy (1956) for learning and assessments purposes i.e. *knowledge, comprehension, application, analysis, synthesis and evaluation*.

Reflective practice and the curriculum framework as studied also comprise core elements of knowledge, skills and attitudes (knowing, feeling and doing) that are developmental and inter-linked at different levels of learning and expressed as learning outcomes. This means for example, that by level 3 of academic study in the paramedic curriculum ‘application’ and ‘synthesis’ of reflective learning should be demonstrated by all students as a learning outcome that links theory to practice irrespective of the individual’s attitudes to learning or learning orientations. Consequently, the students’ level of academic study, their attitudes to learning and their learning styles relationships to their understanding and application of reflective practice are necessary to answer the research questions in order to establish how these factors are influenced by reflective practice and the learning experiences of undergraduate paramedic students. These multi-faceted concepts justified an exploratory design and mixed methods approach.

3.1.3 Triangulation: A Mixed Methods Approach

The decision to utilise a mixed methods(triangulation) approach is supported by the literature, for example “*Mixed methods research designs are now an established feature of programme evaluation research and policy evaluation studies*” (Clarke 1999 p86). Further the literature suggests that a combination of strategies can compliment and enhance the scientific value of research (Ford- Gilboe et al 1995).

Triangulation in the context of this research involved using different methods to look at different aspects of reflective practice at different stages of the students’ learning experiences. Together, it was envisaged that the mixed approaches might produce a more holistic picture of reflective practice in the undergraduate curriculum. Previous studies on reflective practice found in the literature (mainly in nursing) appear to have been small scale in nature and generally used single approaches from the qualitative paradigm such as ‘Focus Groups’ (Newton 2000) and ‘Sense Making’(Teekman 2000) through interviews with post- qualified staff in clinical practice. Understandably, such approaches have been justified in terms of their compatibility with the philosophical basis of exploring the complexities of health care delivery (Burns and Grove 1987, Polit and Beck 2004) and therefore appropriate for small scale studies. However, the research reported in this submission is different and was concerned with exploring both the theoretical and practical dimensions of reflective practice relevant to a whole population of undergraduate students and a different environment. Hence for exploratory purposes a triangulation approach in this instance seemed more appropriate and justifiable.

Triangulation as a research method for studying the same topic from different angles is supported by many research writers including Denscombe (2002) and Miller (2003) cited in Silverman (2003). Triangulation of methods utilised qualitative and quantitative measures that included surveys and non participant observations involving four separate studies in a university environment. The study of beliefs and attitudes for example was considered to be better suited to established quantitative approaches such as questionnaires, whereas qualitative analysis was deemed more appropriate for obtaining a more elaborate understanding of reflective practice from categorisations of the students’ views, conversations and social actions such as communication and clinical task performance. Details of specific methods used for each phase of the research are included within those relevant sections (Chapters 4-7).

3.1.4 The Survey Questionnaires: Design and Content

As a new area of study no previously tested questionnaires were found that could be adapted, hence informed by the literature an original questionnaire was designed to explore the relevant attributes that could have influenced the students' learning and embedding of reflective practice from a curriculum perspective. Three of the four studies (1-3) conducted utilised a survey questionnaire. Surveys were chosen for of their suitability for evaluation research and their compatibility with obtaining an overview reflective practice that could inform learning and teaching policies which was one of the aims of the research.

The questionnaires used in the surveys contained both open and closed questions for identifying the students' beliefs, attitudes to reflective practice, learning preferences and relevant attributes (demographic details). Oppenheim (1996 p113-114) proposes that "*closed questions can be attitudinal as well as factual*" and open questions are useful for obtaining respondents "*ideas in their own language, expressed spontaneously, and this spontaneity is often extremely worthwhile as a basis for new hypothesis*". The latter was the focus of studies 3 and 4. As a further advantage the surveys were also useful as a preliminary strategy for analysing large amounts of data in the form of percentages and frequencies. As with others methods there are however, disadvantages such as limitations to interpretations of the results. These are addressed in the relevant chapters of this research submission.

3.1.5 Observation Methods

As part of the triangulation approach the use of non-participant observations through video recoding in a simulation context based at the students' home university was considered useful for illuminating the findings of the previous studies that were mainly quantitative. Although simulation learning had been established within the paramedic curriculum since 1998, since 2006 the use of video recordings for the students' performances in the simulation setting had been designed as an integral teaching/learning medium for unobtrusive observations and feedback purposes of clinical scenarios designed to test the students' performance.

The rationale for the observation study was to discover first hand how students apply reflective practice in a work related setting prior to graduate practice with the added

advantages of capturing physical and social events as they occur including language used (May 2003) and reflective conversations in a clinical context. This research utilised a naturalistic learning environment where it would be possible to observe both concepts of *reflection in and on action* within a coaching simulation context as proposed by Schön (1983) with the added advantage of a high level of consistency in the structure of the observation environment. It was further intended that the initial findings from the observations of practice in a simulation learning environment could also illuminate how such activities could translate in a real paramedic clinical context and become the basis for future testing and extended studies in the clinical settings as later recommended (See Chapter 9).

3.1.6 Sampling

The four studies in this research were all conducted with convenience samples of undergraduate nursing and paramedic students i.e. “*they happen to be in the right place at the right time*” (Burns and Grove 1987 p216). The benefits of this approach such as cost, time and accessibility were also considered and justified for achieving the intended research purpose and outcomes. Additionally, the rationale for a whole population approach for the initial studies was justified on the basis that there would be sufficient numbers by sub-groups for meaningful analysis (e.g. age, sex and level of study). Further as previously stated, at that time there were no other equivalent students available outside the research context of a single university implementing reflective practice in the paramedic curriculum for the first time to enable alternative sampling.

Lastly an important consideration for the inclusion of different groups of third year paramedic students with the later studies (3 and 4) was determined by the availability of students as the research progressed. Full time third year students who would have imminently completed a full curriculum cycle were also identified as being most representative of the respondents who were likely to provide the most appropriate data relevant to the study of reflective practice in the undergraduate curriculum.

3.1.7 The Research Settings

The survey questionnaires used for studies 1-3 were administered to students at the end of normal scheduled classroom teaching sessions and the simulation observations in study 4 were undertaken to coincide with routine timetabled sessions. The intention was

to maintain as natural an environment as possible to ensure the study conditions remained consistent with all groups of students. In addition the non-participant observations in the simulation setting were conducted in an environment where it is normal for academic staff to access these sessions for observations and clinical skills training purposes, thus a benefit of minimising researcher intrusion.

3.2 Data Collection and Pre-testing

Pre-testing of the survey questionnaires was conducted prior to each of the surveys with similar groups of undergraduate students not involved in the main studies to gain their views of the content and layout. Feedback from each group identified no major issues in the completion of the questionnaires either in the wording or content except the need for the inclusion of ‘filter questions’ in the first study with the paramedic students to aid the sequencing of responses as relevant to individual respondents (Oppenheim (1996)). This was identified as being necessary for the first survey with the paramedic students to take account of the fact that some of the part-time students new to the curriculum were in the very early introductory stages of reflective practice. In this case some of the questions concerning the use of ‘structured reflection’ for example would be contingent upon their responses to a prior question concerning understanding of structured reflection and therefore possibly not relevant to some respondents.

Preliminary work with other groups of paramedic students not involved in the simulation study was also undertaken to assess the feasibility of the non participant observations in the simulation laboratory and to inform analysis of the video-recorded data, i.e. transcribing and coding.

3.2.1 Data Analysis

The research design incorporated both quantitative and qualitative methods. Quantitative data were analysed using SPSS versions 9-14 throughout the different phases of the study. Where appropriate this was used to quantify and generate descriptive statistics of the characteristics of the samples and the students’ responses to perceptions of reflective practice and their attitude ratings towards it. Examples of statistical measurements of the quantitative surveys in studies one and two included chi-square calculations for relationships between categorical variables such as level of study and perceptions of reflective practice, and t-test for comparative purposes with different

groups of respondents. SPSS proved useful for ease of quantification, tabulations and the presentation of descriptive statistics in the form of graphical data, numbers and percentages, and for identifying any significant trends in all the studies.

Qualitative data was gathered in studies 3 and 4 to progress the research and obtain a clearer view of the students' personal understanding and use of reflective practice. As a starting point content analyses of the qualitative data in study 3 (Ch6) concerning the students own views of reflective practice were thematically coded and categorised according to the six components of Gibbs' reflective cycle (1988). The six components as previously explained (3:1:2) matched the undergraduate paramedic curriculum framework which utilises Bloom's (1956) taxonomy of educational objectives. The components of Gibbs' cycle also provided a straightforward descriptive coding system that could be easily analysed quantitatively. Other emergent category labels as suggested by Corbin and Strauss(1990) were derived and named from the words and phrases used by the respondents themselves to describe the usefulness, importance of and methods for undertaking reflective practice.

Analyses of the qualitative data in study 4 further exploring reflective practice in the simulation context developed from the coding system formulated in study 3 where it was possible to re-use the dimensions of Gibbs' cycle to categorise the debrief sessions representative of reflection-on-action and compare how students described and applied this concept. However, the observations of the simulated clinical practice activities subsequently identified a need for additional coding. The content analyses of the simulation practice (reflection-in-action) were coded according to an algorithm of paramedic clinical practice that follows a sequence of primary and secondary assessment and treatment guidelines. As such three layers of coding were identified that were then sub-classified in order to facilitate finer interpretations of the data. Specific details of the data analyses are contained in each of the relevant chapters.

3.2.2 Reliability

The extent to which the reliability of this research can be determined is explained in the measures that were used to reduce potential sources of errors. First, looking at the surveys used it is suggested that *“reliability of questionnaires may be inferred by a second administration of the instrument, comparing the responses with those of the*

first” (Best and Kahn (1995 p194). However, the questionnaires used for the first three studies in this research were administered only once and to separate groups of students and on separate occasions so the retest for reliability was not possible. At the same time it was also considered that the students’ experiences would be changing at different stages of the programme thus potentially influencing the learners’ attitudes concerning reflective practice perceptions and understanding (the practice of nurses and paramedics are also different). It is likely therefore that any test- retest measure which is “*best used for things that are more stable over time such as intelligence*” would not be accurate or good measures of reliability for testing reflective practice (<http://psychology.about.com/od/researchmethods/freliabiltydef.htm>. On the other hand it is suggested that a standard questionnaire presented to all respondents in survey research (as was the case in this research) can help to reduce unreliability (Babbie 1995).

Second, Cronbach’s alpha coefficient which employs the *split-half method* for measures of internal consistency (Oppenheim 1996 p160) could not be used as within the questions asked as there were insufficient items measuring the same variable that could be split. In support Pallant (2001 p6) states that “*when there are small numbers of items on the scale (less than ten) Cronbach alpha values can be quite small*”. Oppenheim (1996 p 188) suggests that “*traditional scaling methods are often strong*” in reliability Thus, the questions measuring attitudes using Likert scales in the first two surveys could be regarded as having acceptable measures of reliability. Oppenheim (ibid) also contends that “*reliability or self consistency is never perfect, it is a matter of degree*”. It could therefore be argued reasonably that a good degree of reliability can be associated with the questionnaires used in this research.

With regards to the qualitative data obtained from the semi-structured questionnaires in study 3 and the video recordings of study 4 of the simulation observations proportionate cross sections of their respective data were subjected to inter-rater testing by a second ‘outsider’ researcher. As recommended (De Vauss 2002) reliability between the first and second researcher was tested using Cohen’s Kappa Coefficient that showed high inter-rater agreements of the qualitative data. This method is considered to be more reliable and advantageous than percentage calculations alone as it also considers agreement between raters that occurs by chance. (See 6:1:4 and 7:2:3). Although the

subject of much debate the limitations of Cohen's Kappa Coefficient as a bi-rater activity using an identical instrument are acknowledged (Crewson 2005) and it is recognised that other forms of rating and coding using an 'expert colleague' for example could also have sufficed.

3.2.3 Validity

According to De Vauss (2002 p53-56) "*a valid measure is one which measures what it is intended to measure*". However, there are different types and measures of validity and it is noted that the question of validity is a complex one for example, "*In opinion type questions there are no right or wrong answers as it is concerned with popularity rather than subtleties of thought*" (Kirakowski 2000 p3).

For the different studies conducted a number of different types of validity were considered regarding the quantitative and qualitative dimensions of the research. First that of 'content validity' which was concerned with the surveys and the extent to which the questions are closely aligned to the reflective practice concepts studied. Looking at the items in the questionnaires for the first three studies (appendices B1, C1, D1) a high content validity was anticipated as the content could be closely mapped to all components of the main research question i.e. reflective practice, structured reflection, attitude relationships and individual characteristics and learning preferences. As a subset of content validity these components could be also be said to represent 'face validity' i.e. the questionnaires used "*give the appearance of measuring the content*" (Burns and Grove 1997 p295).

The second consideration was that of 'construct validity' i.e. "*the extent to which the outcomes, samples and setting represent the theoretical construct of interest*" (Clarke 1999 p117). Reflective practice as the theoretical construct of interest studied and the curriculum framework within which it is operationalised have been amply justified within the methods used to conduct the research. This was deemed highly appropriate to paramedic students in a university context where the development of reflective practice had been identified as an alternative route to professional development than the traditional in-service training model.

Lastly, as an example of curriculum innovation and evaluation concerning reflective practice as studied in this research is the concept of ‘external validity’. It has been considered that a most serious threat to the validity of this research concerns the context of the study which was conducted in a single institution therefore limiting the external validity. However, as an example of evaluation research in a single institution although the findings are to be cautiously interpreted it is re-iterated that evaluation research is not primarily for wider generalisations and this is taken into account in the ‘conclusions’ sections of this submission.

3.2.4 Minimising Bias: Ethical Considerations Informed Consent

It is recognised that a number of factors related to research can result in ‘bias’ but it can be reduced by appropriate designs. According to Greene et al (1989) triangulation overcomes the limitations of single methods both in bias and the results. Even so the potential issues of ‘researcher bias’ were identified in this investigation of reflective practice. First, as an educator undertaking research locally, it is recognised that researcher bias could be construed and researcher integrity questioned given the context of the research environment and the researcher/student relationships. A main problem of potential ‘researcher bias’ was identified whereby the students might have felt obliged to please the researcher thus introducing a ‘*Hawthorne Effect*’ i.e. the effect of being observed leading to altered performance (Burns and Grove 1987). However, every attempt was made to present the research purpose as honestly and objectively to students as far as possible including both personal and policy interests in curriculum developments. Further, following the first survey of the research with paramedic students due to role and location changes I was no longer in direct teaching contact with paramedic students. Any interactions with the students during the conduct of the other studies were mainly for administrative purposes of the research hence minimal contact.

In addition, for the three surveys conducted a numerical code was assigned to each participant by an independent administrator to ensure anonymity and confidentiality of responses. Similarly, further measures were implemented by adopting a ‘complete observer’ non-participatory role in the observation studies through video recordings of the students’ simulation activities. The observations were conducted unobtrusively through one way viewing facilities in the simulation centre thus no added researcher intrusion was knowingly incurred. As part of a code of practice in the local simulation

setting, students were always made aware prior to learning/teaching activities that the video recordings would be used to reflect upon their performances and facilitate feedback by academic staff as well as for their individual self directed studies.

Second, the decision to administer a Learning Styles Indicator (LSI) **after** the students had completed the semi-structured questionnaire with third year students was to minimise the potential bias concerning how they might have subsequently responded to the items in the questionnaires regarding their views of reflective practice. It has been suggested “*that the use of a pre-test at the beginning of a study may sensitise individuals by making them more aware of the concealed purposes of the researcher and could serve as a stimulus to change*” (Best and Kahn 1989 p122). Administering the LSI after the questionnaire rested on the premise that the LSI is a fixed closed instrument based on pre-determined calculations of responses that cannot be influenced by others unlike the personal opinions as sought in the questionnaires.

Having argued that every effort was made to reduce the impact of any ‘Hawthorne Effect’ in this research it is nevertheless acknowledged that bias may have been unintentionally present and to some extent may be a wider dilemma of evaluation research where practitioners seek to research their daily field of practice in similar educational settings. This was borne in mind when reviewing the outcomes of the project and is acknowledged in the later parts of the submission including ethical issues.

3.2.5 Ethical Issues and Informed Consent

The ethical issues concerning this research identified the following main potential issues i.e. Power- coercion of the student and disruption or distortion of the students learning experiences. This is reflected in the research design which avoided an experimental approach in order to overcome the potential problems of ethical objections surrounding random assignment of experimental and control groups/pairs/individuals for any kind of “*differential treatment*” (Clarke 1999 p129) especially as the students were following the same programme pathway of study within the same institution. To do so could have for example, influenced and altered the students’ attitudes to reflective practice which was an important area of study in the research.

All four studies conducted within this research fully complied with the relevant faculty and university's ethical policies for research with human subjects and reflective practitioner work. This included providing the relevant background information about the research to the students truthfully and factually including the fact that it was concerned with new learning and teaching developments of reflective practice locally and informed by national imperatives such as the QQA (2004) Benchmark statement. (See Appendices A 1 to 4 for full Students' Information and Consent).

Mindful of my role as teacher/researcher and ethical principles of power-coercion all students were informed verbally and in writing that participation in the studies was entirely voluntary and care was taken to obtain their written informed consent where appropriate. Students were further assured that participation, non participation or the right to terminate participation in the research would not jeopardise their position at the university or otherwise in any way. While it is understandable that students might have felt coerced to participate in order not to jeopardise their assessment grades for example, this was unlikely given my role and location changes earlier highlighted.

3.3 Summary and Presentation of the Studies

The research methodology issues described and discussed in this chapter have been rationalised from the literature review that identified the existing knowledge gaps of reflective practice including limitations to previous studies found. Based on the frame of reference and conceptual framework identified for this research and drawing from evidence of conducting education and social research the need for an exploratory design using a mixed methods approach were justified for research of this kind that sought to break new ground. However, potential problems of reliability validity and bias have been acknowledged and addressed within the design underpinning the research.

As an example of evaluation research, the methodology has informed how reflective practice in the undergraduate paramedic curriculum could initially be approached to establish the much needed parameters for further explorations and descriptions that are currently lacking. Additional discussions pertaining to these are addressed in each of the subsequent chapters.

CHAPTER 4

Study 1 – Reflective Practice: Perceptions of Undergraduate Student Nurses

4. INTRODUCTION

This foundation study describes and discusses the use of a structured questionnaire to explore nursing students' perceived understanding of reflective practice and the important sub-concepts which relate to the students' learning experiences i.e. *Reflective Practice, Structured Reflection, Attitude Relationships and Learning Preferences*. The rationale for conducting a foundation study with the nursing students was to enable comparisons of findings to the paramedic students in the main studies and further inform the research progression. The two populations of students were also following similar undergraduate pathways and reflective practice outcomes for the paramedic students were modelled on that of the nursing curriculum. Another aim was to identify any further relevant areas for development of the subsequent study with the paramedic students that might emerge from this first study.

Reflective practice in nursing education is considered to be a significant learning and teaching strategy (Atkins and Murphy 1993, Palmer et al 1994, Platzer et al 1997). However, as noted in the literature review there is a lack of empirical evidence to support its implementation and use in nursing (Burnard 1995). Thus as a curriculum outcome similar to that for the paramedic students it was important to know if nursing students believed that they understood reflective practice, how they perceived its usefulness to their academic and clinical learning and what attitudes they held towards such approaches. It was also essential to know how these rated the importance of reflective strategies for assisting their learning alongside other methods such as the more 'hands on' approaches traditionally associated with nursing as a discipline.

As these areas had not been previously explored systematically a survey questionnaire was chosen as the best approach for gaining an initial profile of the structure of reflective practice with different cohorts of nursing students at different levels of academic study.

Thus the investigation set out to explore the following specific questions:

- Do nursing students believe that they understand the basic reflective practice concepts including structured reflection?
- Do they perceive that these concepts could be beneficial to their learning and clinical practice and if so how might they potentially apply them?
- What are their attitudes towards reflective practice?
- How do they rate the importance of their learning preferences including reflective methods?

Predicted relationships between these concepts and whether or not any attribute variables (demographic variables) e.g. age, attitudes and level of academic study relate in any way are also explored. The chapter concludes with a general discussion and summary of the study, evaluation of the questionnaire and justifications for further studies with the paramedic students.

4.1 Method:

Sample

The convenience sample consisted of undergraduate student nurses (n=90) in their first, second and third years of study at levels one, two and three correspondingly.

4.1.1 The Questionnaire Content

As explained previously (3:1:4) the questionnaire was designed to focus on the emergent areas that were relevant to the students' reflective practice learning within an undergraduate curriculum framework context. As the literature search at that time did

not reveal a matching questionnaire the following blueprint was developed to include the following:

- (1) Demographic data.
- (2) Perceived understanding of, and beliefs about reflective practice.
- (3) Perceived understanding of, and beliefs about structured reflection.
- (4) Attitudes to structured reflection.
- (5) The perceived importance of reflective learning methods compared to other ways of learning. (See appendix B 1 for questionnaire).

4.2 Results

All students who were approached volunteered and consented to be involved in the preliminary study culminating in a high response rate.

The main results are split into the following sections based on the major concepts being investigated in the questionnaire i.e.

- Nursing students' perceived understanding of reflective practice.
- Their perceived understanding of structured reflection.
- The importance of learning preferences and
- How the different concepts identified in the three above categories inter-relate to other variables e.g. age, gender and level of study.

The results begin with a selection of demographic details related to age, gender and level of study that are presented for informing the main areas of the foundation study. (For details of demographic details not included in this section e.g. previous education and professional qualifications (see appendix B2).

Table 4-1 Age Range of Nursing Students

Age range	Percent
18-25	78.9%
26-35	17.8%
35+	3.3%

Table 4-2 Distribution of Nursing Students by sexes

Male	12.2%
Female	87.8%

Table 4-3 Current Level of Study for All Nursing Students Surveyed

Level of Study	Percent
Level 1	32.2%
Level 2	44.4%
Level 3	23.3%

Tables 4-1, 4-2 and 4-3 show that the majority of nursing students are within the 18-25 year range, are female with the majority of the sample at level 2 of their academic studies. Details of other demographic details such as educational qualifications are contained in Appendix B2.

4.2.1 Understanding and Usefulness of Reflective Practice

Question 11 asked about the student nurses' perceived understanding of the term 'reflective practice' and if thought it could be useful for their learning and for practice.

A large majority (over 97.8%) of all the student nurses in this study thought that they understood the term reflective practice. It is not possible however, to say what they

understood by the term due to the closed nature of the question. This would have been useful to know, although the intention of the research at this initial phase was to establish a consensus of shared perceptions in the first instance before later explorations in the subsequent studies with the main paramedic sample of students.

Question 12 asked the students about their beliefs concerning the usefulness of reflective practice to their learning and clinical studies.

Figure 4-1 shows the distribution of the students' responses concerning the perceived **usefulness** of reflective practice.

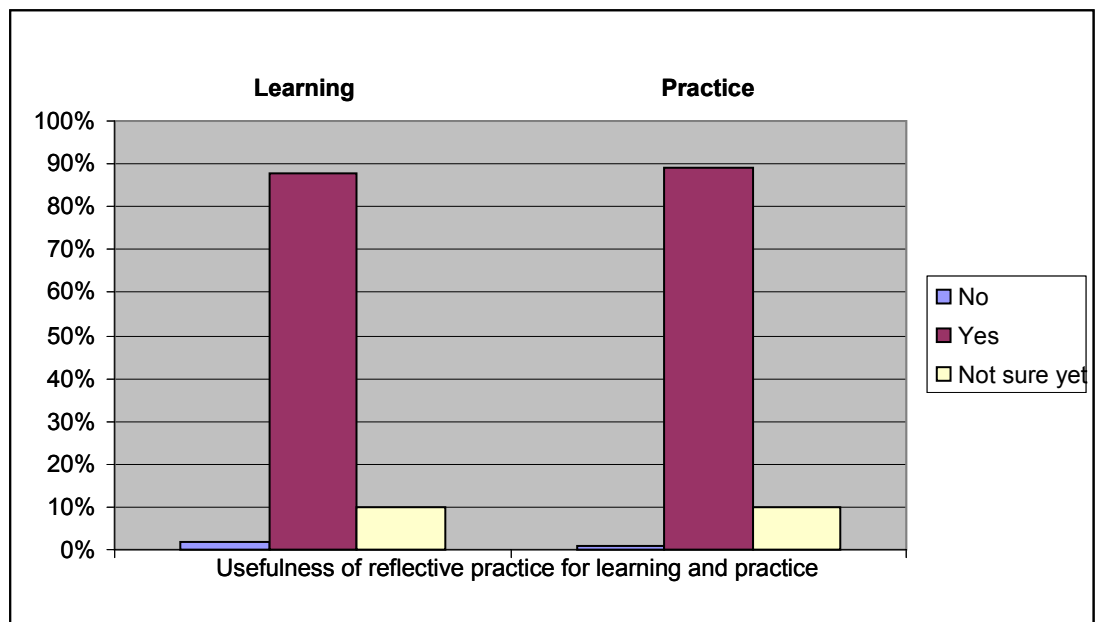


Figure 4-1 Nursing Students' Responses to the Usefulness of Reflective Practice

As shown in Figure 4-1 it can be seen that a majority of the nursing sample also perceived that reflective practice could be useful for both their learning and for practising within a nursing context. Although it is not possible to be specific about the ways reflective practice is thought to be useful, it is notable the majority of students identify the usefulness to both aspects almost equally.

4.2.2 Understanding of Structured Reflection

In the next set of questions (13-16) the nursing students were asked whether they believed that they understood the term ‘structured reflection’ and about their attitudes towards it. Table 4-4 shows that as with reflective practice a majority of nursing students believed that they understood the term structured reflection. As shown however, the majority of positive responses to their beliefs of structured reflection was less than that for the term reflective practice suggesting that fewer student nurses perceived that they understood the concept of structured reflection.

Table 4-4 Comparison of nursing students understanding of reflective practice and structured reflection

	Yes	No
Understanding of the term reflective practice	97.8%	2.2%
Understanding of the term structured reflection	76.4%	23.6%

A paired samples t-test revealed a significant difference between the responses to the two questions ($t [df = 87] = 4.89, p < .001$) indicating that although a majority of nursing students believed that they have an understanding of the terms reflective practice and structured reflection there are significant differences in their individual perceptions.

The results in next graph (Figure 4-2) show how students classified structured reflection.

The categories used for describing structured reflection were derived from the literature review (Ch2 4:5) which refers to the range of formats that could be used for structuring and guiding the students’ reflective learning.

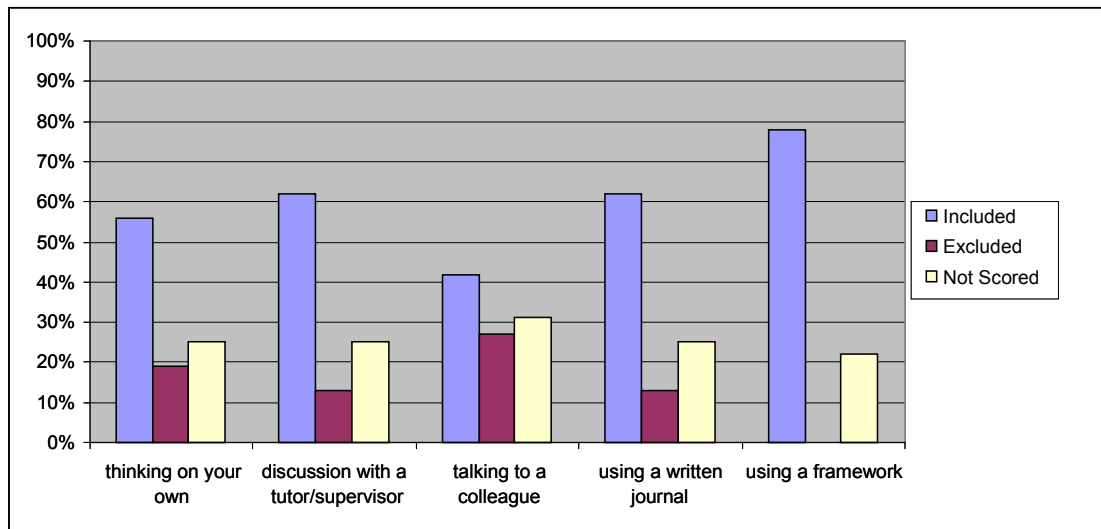


Figure 4-2: Items that student nurses included or excluded in their description of structured reflection

Overall this result shows some variations in the expressed understanding that nurses had about what constitutes the term structured reflection even though a majority of them said they understood the term.

However, it can be seen from Figure 4-2 that ‘Using a framework’ is the item most often included suggesting that frameworks are most strongly associated to the concept of ‘structured’ reflection. This concurs with the literature in nursing that emphasises written formats such as reflective frameworks and learning journals for structuring reflection (Platzer et al 1997). It is interesting to note however, that “discussion with a supervisor” is rated higher than ‘talking to a colleague’. This also fits with the literature in nursing which promotes the mentor/supervisor as a prime supporting strategy for enabling learners to manage the reflection process the clinical context (Palmer et al 1994 p36, Bulman and Schutz 2004).

4.2.3 Students’ Attitudes Towards Structured Reflection

Using Likert measurements the nursing students were next asked in question 14 about their attitude towards structured reflection rated against 4 dimensions i.e. *Positive, Relaxed, Confident and Unsure*.

Figure 4-3 shows the nursing students responses to these items. A series of chi square tests showed significant differences for the items ‘**Positive**’ ($\chi^2 [3] = 66.25, p < .001$), ‘**Relaxed**’ ($\chi^2 [3] = 49.77, p < .001$), and ‘**Confident**’ ($\chi^2 [3] = 34.97, p < .001$) being rated equally. Therefore overall it appears that the students’ responses were significantly favourable towards the concept of structured reflection

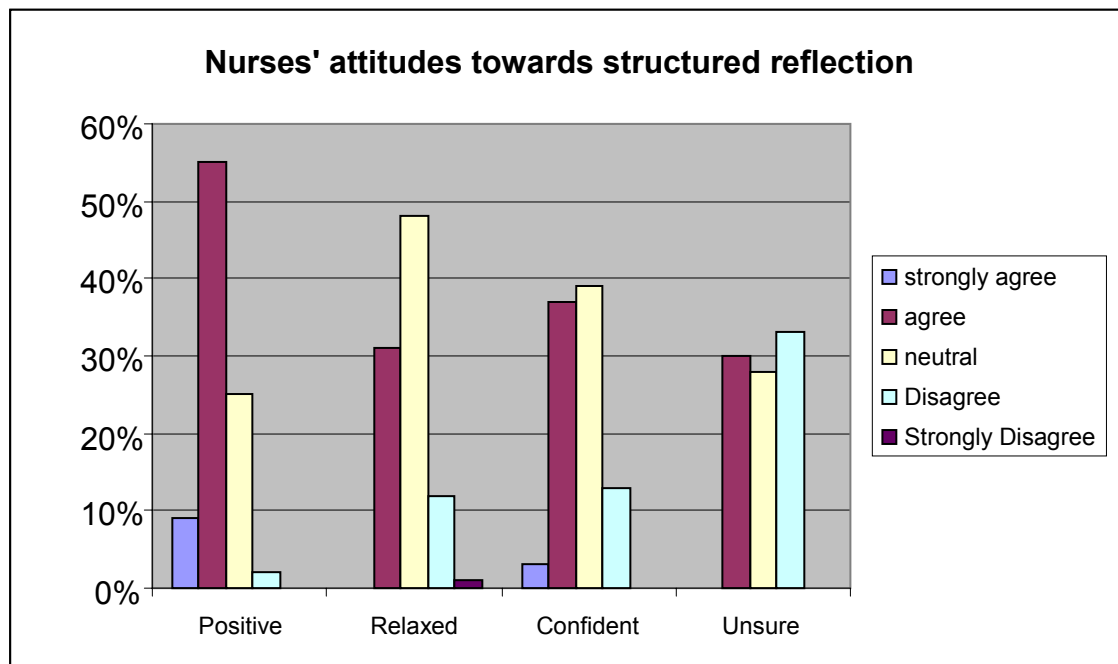


Figure 4-3 Nursing Students’ attitudes towards structured reflection

The results in Figure 4-3 also show that the majority of the nursing students appeared to be positive about structured reflection even though they were less confident about it.

4.2.4 Ability to Use Structured Reflection

Question 15 asked the students “How would you rate your ability to use structured reflection?” A majority of the nursing students stated that their ability to use structured reflection was just acceptable or good.

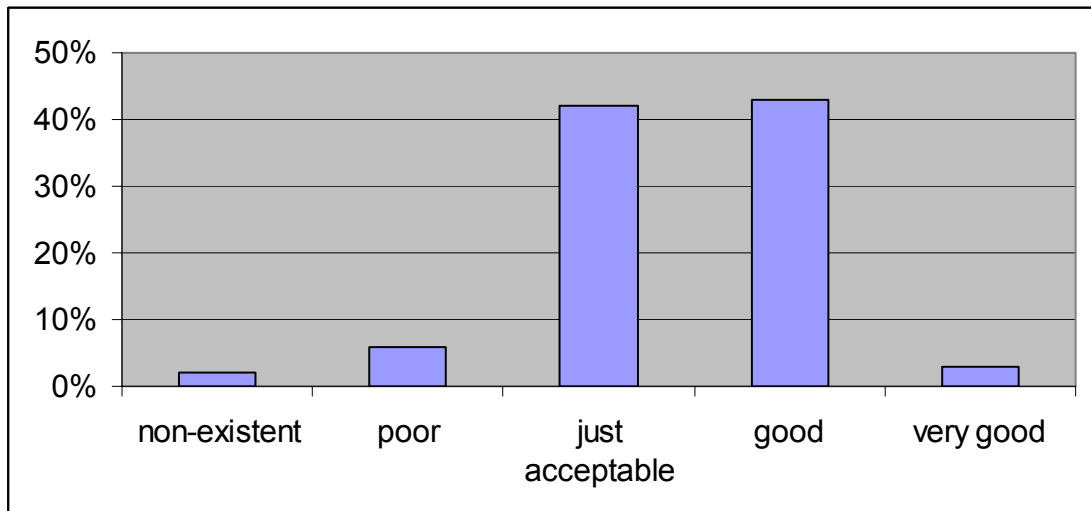


Figure 4-4 Students' assessment of their ability to use structured reflection

Figure 4-4 shows that only a small percentage of the students assessed their abilities as being very good. However, this group includes third year students who make up approximately 25% of the sample supporting an expectation that the response to this category should have been higher.

Table 4-5 relates to the students nurses' responses reported of their ability to use structured reflection. This table also shows that a significant majority of the nurses who perceived that they understood the concept also rated their ability to use structured reflection as acceptable or good (χ^2 [df=1] = 17.96, p = .001). This result suggests that there is a significant relationship between a perceived understanding of these concepts and a perceived ability to do it.

Table 4-5 Understanding of structured reflection in relation to ability to use structured reflection

		How would you rate your ability to use Structured Reflection?					Total
		Non-existent	Poor	Just Acceptable	Good	Very Good	
Do you believe that you understand what is meant by the term Structured Reflection?	No	2.3%	3.4%	12.6%	3.4%		21.8%
	Yes		2.3%	31.0%	41.4%	3.4%	78.2%
Total		2.3%	5.7%	43.7%	44.8%	3.4%	100.0%

It is interesting to note from the results in Table 4-5 that even those who believed that they did not understand the term (16%) nevertheless perceived that they had good or just acceptable abilities to use this concept. This result suggests that although individuals perceive that they may have an inability to define something they may nevertheless perceive that they have an ability to use it. It is also possible that some students may feel that they do not need to understand something in order to do it.

The next part of this subset (question 16) asked the students to rate the **importance** of structured reflection to their practice. Figure 4-5 shows that a majority of nurses agreed that structured reflection was an important part of nursing practice.

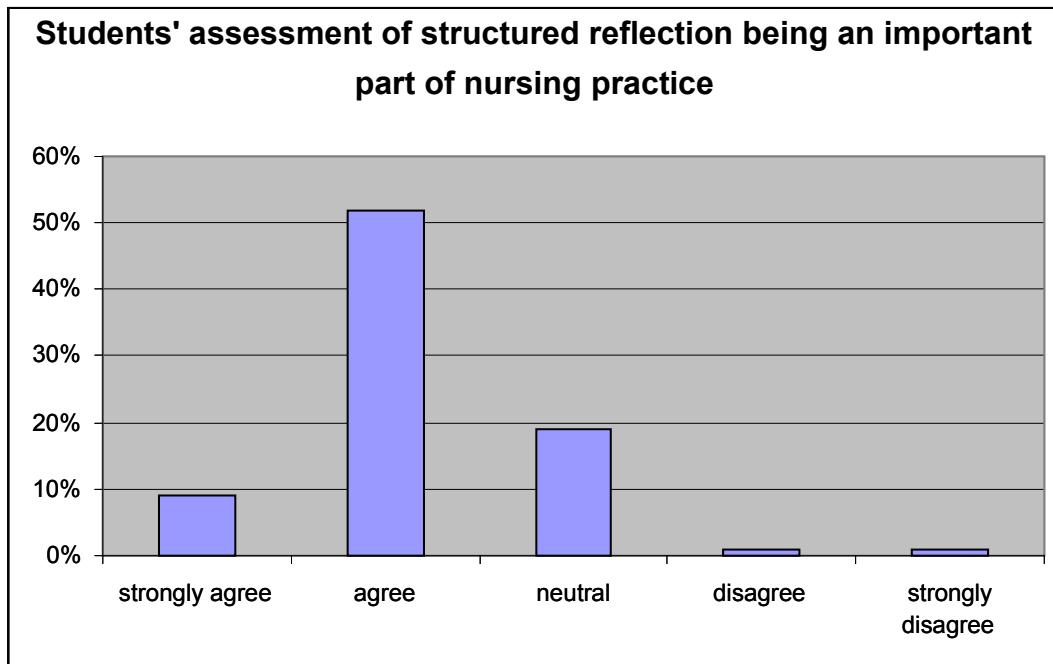


Figure 4-5 Nursing Students' Assessment of Structured Reflection and its Importance to Nursing Practice

It can be seen from Figure 4-5 that although the majority of students agree/strongly agree that structured reflection is an important part of nursing a number of students (nearly 20%) remained neutral to this question. This is surprising given that a majority of students were shown to have a significant positive attitude towards it (Figure 4-3).

Responses to Question 16 were explored further to identify whether or not there was a relation between how students assessed the *importance* of structured reflection and their perceived *ability* to use it (see Table 4-6). The results shown indicate that all students (100%) perceived they had used structured reflection. However a chi-square test showed that no significant association was found (χ^2 [df = 12] = 13.65, p = 0,32) between the nursing students' perceptions regarding the **importance** of structured reflection and their rating of their ability to use it.

Table 4-6 Nurses' assessment of the importance of structured reflection in relation to their own ability to use structured reflection

		How would you rate your ability to use Structured Reflection?				Total
		Poor	Just Acceptable	Good	Very Good	
If you have used Structured Reflection before do you agree that it is an important part of nursing practice?	Strongly Agree			9.5%	1.4%	10.8%
	Agree	2.7%	28.4%	29.7%	2.7%	63.5%
	Neutral	2.7%	12.2%	8.1%		23.0%
	Disagree		1.4%			1.4%
	Strongly Disagree		1.4%			1.4%
Total		5.4%	43.2%	47.3%	4.1%	100.0%

4.2.5 Preferred Ways of Learning

In this final closed question (17) the students were asked to rate the importance of their preferred learning methods itemised in four categories adapted from the literature. This was a general attempt to identify whether or not nursing students preferred more 'active' ways of learning as suggested by Kolb's (1981) research compared to the more thoughtful 'reflector' style of learning.

Figure 4-6 below shows that for all 4 items, the nursing students perceived that all these particular types of learning approaches were appropriate for them. It is evident that they thought that each of the approaches were all *quite or very* important methods of learning. However, the high response to "hands on experience" suggests a particular preference for 'doing' or active experimentation. Kolb's (1981) study of learning styles applications to professional disciplines in higher education classified nurses as 'active experimenters'. The findings in this study nevertheless need to be treated cautiously as

the ways in which nursing students interpreted the different ways of learning are purely descriptive and obtained in a classroom environment.

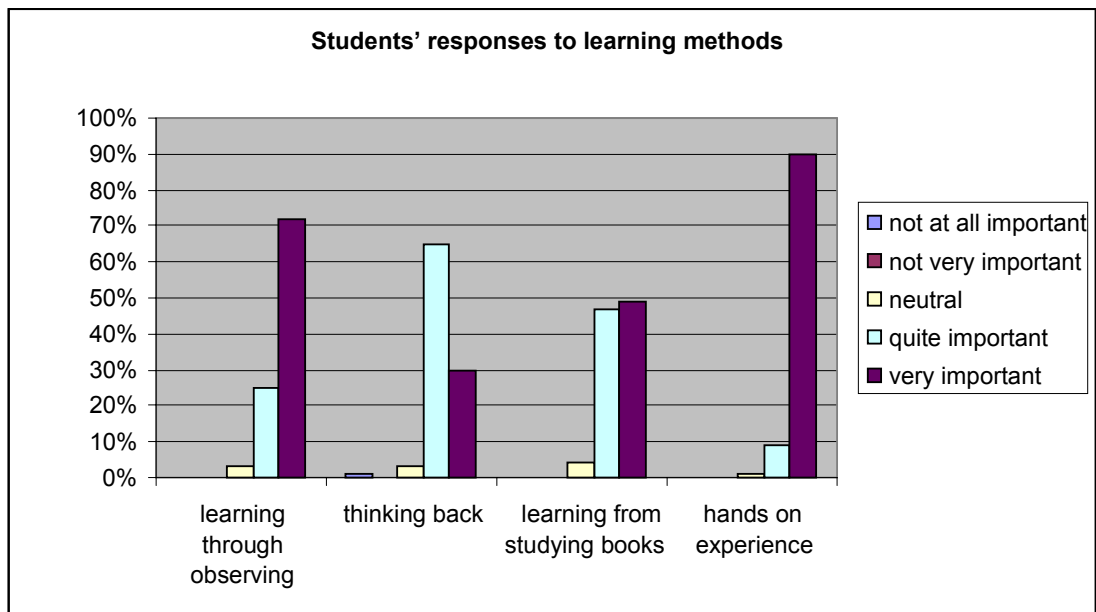


Figure 4-6 Nursing Students Responses to Learning Methods

4.3 How the different reflective practice concepts inter-relate to student nurses responses

This section further explores the results of the key concepts analysed to identify any significant findings regarding the students' perceived understanding of reflective practice concepts and applications to their learning.

4.3.1 Reflective Practice and Structured Reflection

The intention with these two separate questions was to establish whether or not the students who perceived that they understood the term reflective practice similarly perceived the term structured reflection. A majority of the nurses said they perceived an understanding of both terms as earlier seen in Table 4-4 although the responses were reduced for structured reflection. However, because of the closed nature of the questions it is neither possible to say what students perceived the different concepts to mean or to say what any similarities or differences may be.

4.3.2 Reflective Practice Related to Learning Preferences

Again because of the generally positive levels of understanding for reflective practice this item proved difficult to assess. A series of chi square tests presented below identify that no significant associations were found between the ways that students scored the ‘importance’ of learning through different methods including reflective ways such as ‘observing and mulling over past experiences’ (shown in Figure 4-6) viz:

Observing ($\chi^2 [2] = 0.8, p = 0.67$)

Mulling over past experiences ($\chi^2 [3] = 1.09, p = 0.78$)

Learning from books/attending lectures ($\chi^2 [2] = 0.1, p = .95$)

Hands on experience ($\chi^2 [2] = 0.2, p = 0.9$).

4.3.3 Structured Reflection and Learning Preferences

Only one significant link was found between students’ perceived understanding of structured reflection and their view of the importance of ‘thinking back’.

A chi square showed a significant relation ($\chi^2 [3] = 10.38, p = 0.016$) between the two indicating that the students who did not understand the term structured reflection were less likely to identify ‘thinking back’ as an important method for learning. This would seem to be a logical response.

Table 4-7 below shows how students rated their understanding of structured reflection in relation to their views on the importance of ‘thinking back’ over past experiences as a way of learning. Thinking back is highly related to the concept of reflection-on-action.

Table 4-7 Understanding of structured reflection in relation to importance of ‘thinking back’

		Please Indicate the importance of the following in your learning – ‘thinking back’				Total
		Not at all important	No strong feelings either way	Quite important	Very Important	
Do you believe that you understand what is meant by the term structured reflection?	Strongly Agree	1.1%	2.2%	18%	2.2%	23.6%
	Agree	0%	1.1%	48.3%	27%	27.4%
Total		1.1%	3.3%	66.3%	29.2%	100.0%

The results in Table 4-7 show that a significant majority (95.5%) of nursing students who believed that they understood structured reflection considered ‘thinking back’ as a being a highly important way of learning although even though Figure 4-5 showed that they perceived it to be less so (74 %) for their nursing practice.

4:3:4 Relationships to Level of Study

The responses from question 9 ‘What is your current level of study?’ were further analysed to see if there are any important differences in the students’ perceptions of the basic reflective practice concepts (including structured reflection) related to the students’ level of academic study. According to Mezirow (1981) and Goodman (1984) for example, reflective abilities are developed in stages.

In this study no significant evidence emerged for perceived understanding of the term ‘reflective practice’ according to the different stages (levels) of study. However, looking in further depth over the three levels of study there are some differences with regard to understanding of structured reflection. At level 1, 57.1% said they understood the term. At level 2, this increased to 80% and by level 3 this further increases to 95.2%.

Similarly for the items on question 14 regarding attitude to structured reflection, level 3 nursing students were most sure about being positive in their attitude ratings (χ^2 [df = 4] = 21.33, $p < .001$). Overall this leads to a suggestion that reflective practice may be perceived as a generic term commonly understood whereas structured reflection may be perceived as something that is more complex and has to be learnt over a period of time.

4.4 Discussion

The aim of this foundation study was to explore a variety of Reflective Practice concepts focussing on their relationships to the context undergraduate nursing students and to inform the subsequent studies with the paramedic students.

This was done by surveying the students' perceptions and attitudes concerning reflective practice and structured reflection and the perceived importance to their academic and clinical studies. The importance of their preferred learning methods including reflective methods to their learning was also explored.

This discussion focuses on the following aspects:

- (1) Students understanding of reflective practice.
- (2) Students understanding of structured reflection and their attitudes towards it.
- (3) Learning preferences and associations with reflection.
- (4) Differences by levels of study.
- (5) The validity of the questionnaire.
- (6) Introduction to study 2.

4.4.1 Students' General Understanding of Reflective Practice

Questions **11–12** focused on the student nurses' perceived understanding and were designed to establish whether or not the respondents believed that they understood the general meaning of reflective practice including its usefulness for their learning and

clinical practice. As indicated in Table 4-4 a significant majority of nurses believed they understood the term reflective practice. Given the lack of clarity reported in the literature this is considered an interesting result although it could have been influenced by what they had been taught in the curriculum. However, as Palmer et al (1994 p65) state “*reflection is an idea used in ordinary and educational life*” consequently it may be a loose concept associated with spontaneous everyday thinking.

Further investigation into an understanding of this concept was explored by enquiring whether or not it was perceived by nursing students as being useful to both learning and practice. As before a majority of respondents said that the concept of reflective practice was indeed useful for both learning and clinical practice, indicating that students may have a certain level of knowledge about the application of reflective practice or at least experiences of operating in a reflective mode for the two purposes.

4.4.2 Students’ general understanding of structured reflection and their attitudes towards it

Questions 13–16 asked the students to rate whether or not they believed that they understood the term ‘structured reflection’. The students were given a set of items derived from the literature that asked them to choose what they considered to be examples of structured reflection.

As with reflective practice a majority of students said that they did also understand the term structured reflection. The majority in this case however, was significantly lower (by 23 %) than for their perceived understanding of reflective practice, hence indicating that students did not all necessarily perceive both concepts in the same way, in particular structured reflection which appeared less coherently conceived.

Analysis of questions 13-16 highlighted some differences in the students’ understanding and applications of structured reflection. It was interesting to note that over 23% of the sample said that they did not understand the term structured reflection yet claimed to have acceptable abilities to use this concept. This result possibly suggests that knowing how to do something for some individuals does not necessarily follow a sequence of ‘knowing what it means’ something that is traditionally associated with formal learning i.e. theory before practice. Also that having practical abilities to do something might not

necessarily depend on a theoretical understanding of it but by being able to follow tasks or rules associated with them. In other words the educational ideology of theory before practice does not appear to apply in this context. This proposal would however, need to be tested further beyond students' perceptions alone which by itself makes it difficult to tell.

With regards to the nurses' attitudes towards structured reflection a series of attitude items using Likert measurements were presented to test whether the students were generally positive or negative in their attitude towards structured reflection. The results showed that although they were not all sure of their understanding a majority of the sample claim to have a positive attitude towards it. The importance of positive attitudes in the literature is considered to be a necessary condition for the reflective learning process e.g. Goodman (1984). Dewey (1933 pp29-34) also advocated positive attitudes such as "wholeheartedness and open mindedness" whilst Boud et al (1985:11) which suggest that "*negative feelings particularly about oneself can form major barriers towards learning*". Thus knowing that the majority of nursing students generally have positive attitudes towards reflective practice concepts could be attributed to their motivation to learn and is therefore considered an important curriculum outcome for the implementation of reflective practice.

Concerning interpretations of structured reflection some interesting results emerged. Similar to reflection and reflective practice there are no concrete definitions of structured reflection in the literature although some writers (Moon 2000 and Rolfe et al 2001) refer to 'structure' as written formalisms e.g. journal writing and guided frameworks. Although the nursing students in this study rated a range of methods in their inclusion or exclusion of structured reflection (Figure 4-2) a large majority (nearly 80%) perceived using a 'written framework' to be the most favoured representation of structured reflection which concurs with the literature.

Looking at the utility of 'structured reflection' however, just over 50% of the sample considered it to be important for their practice and considered that they were able to use it. When compared to asking the same questions for reflective practice the reduced majority responses for structured reflection suggest that there may possibly be something particular or specific in meaning and applications of these two concepts.

4.4.3 Learning Preferences and Associations with Reflective Learning

This item in the questionnaire was designed with the specific purpose of identifying how students' rated the importance of reflective methods within a range of individual preferred ways of learning. The categories for the different ways were adapted from Honey and Mumford's (1986) four learning styles preferences (Activist, Reflector, Theorist, Pragmatist) i.e. learning by observing, by thinking back, by learning from lectures and reading or from trying things out for themselves.

The distribution of learning methods scored by the students showed that the majority favoured both the passive learning styles associated with reflective learning such as 'observations' and 'thinking back', as well as 'hands on' or active experimentation learning. However, a majority of nurses (Figure 4-6) rated the 'hands on' approach more highly than the other approaches such as 'thinking back' and 'observing' in indicating that they may not all have as strong a preference for reflective learning methods. Similarly the results shown in Table 4-6 and Table 4-7 suggest that although the students perceived structured reflection as being highly important to their learning they perceived it less important to nursing practice.

4.4.4 Differences by Levels of Study

Academic levels of study appear to be an influential factor concerning what nurses include and exclude in their meanings of structured reflection.

When looking at Figure 4-5, level 3 student nurses for example were the most likely to exclude "thinking on your own" and "talking to a colleague". This result suggests that by the third year of study nursing students seem to perceive that structure is not informal and verbalised but formalised and documented. Also at level 3 nurses were also more confident about their perceptions of structured reflection. Why this is the case is not possible to say from a study of perceptions alone although it is suggested that third year students may have become more experienced with different structured reflection formats.

However, there are some notable inconsistencies in the overall findings of nurses' perceptions of these concepts. Analysis of the differences in perceptions of reflective practice and structured reflection by the students' level of academic study raises

important issues relating to the literature on reflective practice meanings and how they are taught and learnt. An interpretation of the literature on reflective practice for this research indicates that the term acts as an umbrella concept encompassing many different activities, e.g. thinking, critical thinking, learning and a tool for professional practice (Moon 2000 pp3-4). Given the reported lack of consensus regarding definitions of reflective practice concepts it is therefore surprising that the majority of nurses claimed a perceived understanding of its meaning.

The final question (18) was open ended and was intended to give students the freedom to express comments that would hopefully highlight any relevant areas that were overlooked by the researcher or perceived relevant to the students' beliefs and attitudes of reflective practice concepts applicable to themselves as individuals.

As Oppenheim (1996 pp112-113) states "*The chief advantage of the open question is the freedom it gives to the respondents. We obtain their own ideas in their language, expressed spontaneously, and this spontaneity is often extremely worthwhile as a basis for new hypothesis*". This did not prove to be the case. Only a handful of responses concerning reflective practice assignment issues such as submission dates were raised by the students. These issues were dealt with outside the research remit.

4.5 Summary

The purpose of the foundation study with student nurses was to ascertain new aspects of data lacking in the current literature i.e. students' beliefs of reflective practice and related concepts such as structured reflection which are most pertinent and applicable to their learning.

This study conducted with 90 nursing students at academic levels 1-3 of their undergraduate study used a survey questionnaire that highlighted a number of pertinent issues relevant to the aims of the subsequent studies with paramedic students. The data so far although restricted to students' perceived understandings of reflective practice and whether or not it could be useful to their learning experiences lie mainly in the affective domain i.e. they believe they understand it, they think it could be useful and they think that they are able to do it.

The study has also identified some issues of clarity regarding key terms, in particular structured reflection. Although the nursing students indicated that they were generally positive about these concepts in relation to their academic study and clinical practice it was shown that there are variations in their interpretations of the terms even though they all claim a perceived understanding of the term structured reflection.

With regards to different learning methods although the students' preferences for learning included both passive and active ways a large majority of nursing students identified that 'hands on' approaches were preferable to the more reflective learning type approaches i.e. 'thinking back'. These and the overall results provide a useful background for further comparisons and explorations in the subsequent parts of the research which concerns undergraduate paramedic students.

4.6 Introduction to Study 2

As the basis for further evaluations of reflective practice in the paramedic curriculum it was necessary to establish how paramedic students perceive and apply reflective practice concepts to their learning experiences and how this might compare with nursing students as the nearest similar population following a similar curriculum pathway.

Following the outcomes of the foundation study the initial study with paramedic students also aimed to identify how they apply reflective practice as a different discipline to nursing and whether or not a similar degree of shared perceptions exist within that discipline. The need to progress the research aims and gain further insights their reflective learning was also established.

The foundation study which yielded some encouraging results has identified the need for some modifications to the questionnaire used in that study. First, it was considered that the use of 'filter questions' with the paramedic students needed to be incorporated into the survey questionnaire to accommodate the responses of a mixed sample who unlike the nursing students comprised full time as well as part time students. Consequently it was considered that some of the questions might not be relevant (see Ch 3:2:3).

In order to explore reflective practice more fully therefore, the revised questionnaire following the foundation study included two additional questions for the paramedic students on methods and use of reflection. The modified questionnaire is analysed and discussed in the next phase of the study. The full method is described and discussed in Chapter 5.

CHAPTER 5

Study 2 – Reflective Practice: Perceptions of Undergraduate Paramedic Students

5. INTRODUCTION

This chapter explores the general perceptions and potential applications of reflective practice including structured reflection by undergraduate paramedic students. In the previous chapter some general preliminary results pertaining to nurses' perceptions of reflective practice, structured reflection and attitudes to these concepts were analysed and discussed.

This next phase of the research aimed to investigate how some of the basic concepts of reflective practice explored with nursing students compare with paramedic undergraduate students on a parallel curriculum pathway. This study therefore builds on the earlier findings with nursing students using a similar survey approach but with a larger sample of paramedic students. The following areas were investigated:

- Do paramedic students perceive that they understand the basic concepts of reflective practice?
- Do they perceive it to be beneficial to their learning and clinical practice?
- What are the students' attitudes towards these concepts including their usefulness?
- How do they rate the importance of their preferred learning methods including reflective approaches?
- What reflective tools do paramedic students use and how do they rate them for assisting their learning?

- How the concepts interrelate and compare with findings from the foundation study with nursing students.

The students' demographic characteristics such as age, gender and level of academic study were used to identify whether or not any significant patterns and relationships existed between these characteristics and their perceived understanding of reflective practice concepts.

5.1 Methods

Following feedback and evaluation of the questionnaire in the foundation study with nursing students a revised survey questionnaire containing twenty items was administered to a convenience sample of full and part-time paramedic students (n = 133) in their first, second and third years of study (See Appendix C1 for questionnaire).

The revisions to this questionnaire as explained previously explained (Ch 4.6) included 'filter questions' to enable the students to exclude the questions from particular items that were not relevant to them. Two additional questions on the use of popular reflective frameworks were also included at end of the questionnaire to identify which of these the students used and how they rated these tools for assisting their learning. This was important to establish to inform further explorations concerning the application of reflective practice by paramedic students.

Unlike the nursing sample the paramedic students included both full time and part-time undergraduate students. The part-time students were already qualified paramedics.

5.2 Results

All students (n=133) who were approached responded to the questionnaire.

The results are split into three sections. This first section begins with a selection of tables and graphs that describe the students' demographic characteristics most relevant to the study. Full details of demographic data not included in this section can be found in Appendix C2.

The second section concerns students' general perceived understanding of reflective practice and sub-concepts including the choice of reflective tools as applied to their learning experiences. The third section explores the interrelationships of these concepts and compares the general findings with the paramedic students to the nursing students in the foundation study.

For purposes of presentation some of the Tables in the subsequent sections of this chapter do not use percentages where low numbers of student responses are involved.

5.2.1 Results Section 1: Demographic Details of the Paramedic Students

Some demographic data collected in this survey including professional qualifications for example, were not subsequently analysed. The complexity provided by these additional measures (See appendix C2) would have required substantial statistical analysis that could have possibly distorted the key relationships under investigations. Oppenheim (1996 p22) describes these as confounding variables that “*can have hidden influences of unknown size on the results*” thus the decision to exclude such data in this second study. The following were explored:

Table 5-1 Distribution of Sample by Sex

<i>Number of Subjects</i>	<i>133</i>	<i>Percentages</i>
Number of Males	85	64%
Number of Females	48	36%

Table 5-2 Age Range

<i>Age range</i>	<i>Percent</i>
18-25	48.9%
26-35	24.8%
36-45	20.3%
45+	6%

Compared to the nursing sample in the foundation study the age range of paramedic students who comprised full and part-time students is greater though the majority are similarly within the 18-25 years age group. This is important to note when making comparisons between the nursing and paramedic students' perceptions of reflective practice to identify whether or not the greater age range of the latter group (as suggested in the literature) could prove to be a significant influencing factor.

Table 5-3 Mode of Study

Full time or Part time	Percent
Full Time	57.1%
Part Time	42.9%

Table 5-4 Current Level of Study for all Students

Level of Study	Percent
Level 1	37.6%
Level 2	33.3%
Level 3	29.3%

Table 5-5 Length of Time in Practice

Years in practice	Percent
0	22.6%
1- 4 years	39.2%
5 + years	38.2%

Table 5-5 shows that for those students in practice (pre-dominantly the part- time students) over half the sample had less than 5 years experience.

5.2.2 Results Section 2: General understanding of reflective practice

Question 11 asked the students ‘Do you believe that you understand what is meant by the term **Reflective Practice**’? Table 5-6 shows that 129 (97%) out of 133 answered yes. There were no significant differences in the students’ responses to this question due to levels of study or to being full or part-time.

Table 5-6 Understanding of Reflective Practice

Q11 Understanding Reflective Practice	Full time			Part-time		
	Level 1	Level 2	Level 3	Level 1	Level 2	Level 3
Yes	28	27	21	22	17	18
No		3		1		

Question 12 asked the students about the usefulness of reflective practice to their learning and practice. The majority of students perceived that reflective practice was useful both for learning and for practice (Figure 5-1 and Figure 5-2).

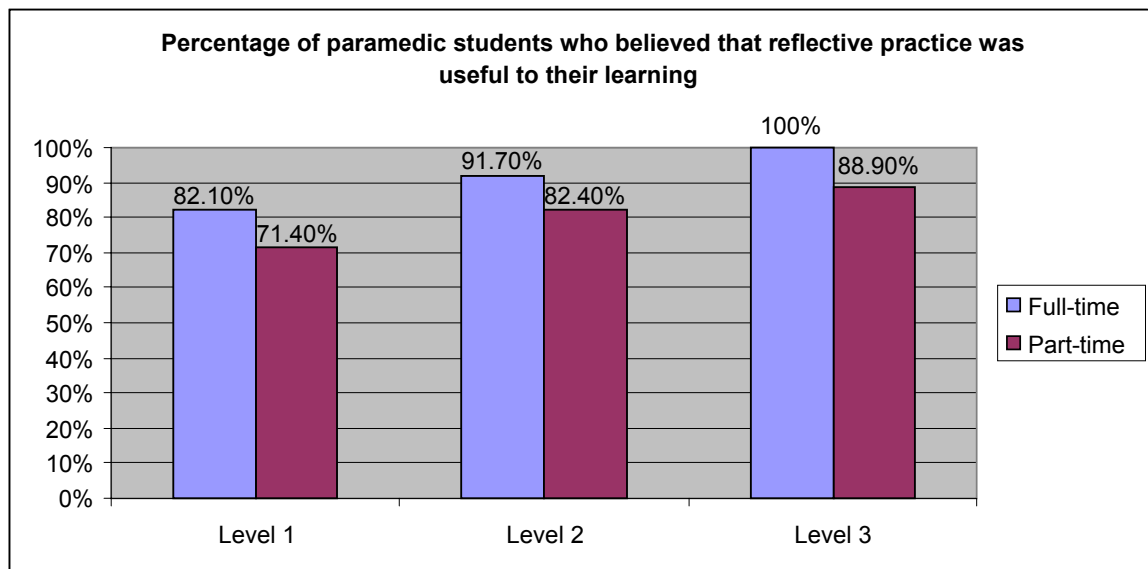


Figure 5-1 Usefulness of Reflective Practice

It can be seen from Figure 5-1 that more full-timers overall perceive that reflective practice could be useful to their learning than do the part-timers although the difference is not statistically significant ($\chi^2[2] = 3.32, p = 0.19$). The scores increase significantly with each level of study for all students ($\chi^2[2] = 9.64, p = 0.047$) indicating as would be expected that students at level 3 were most likely to find reflective practice useful to their learning.

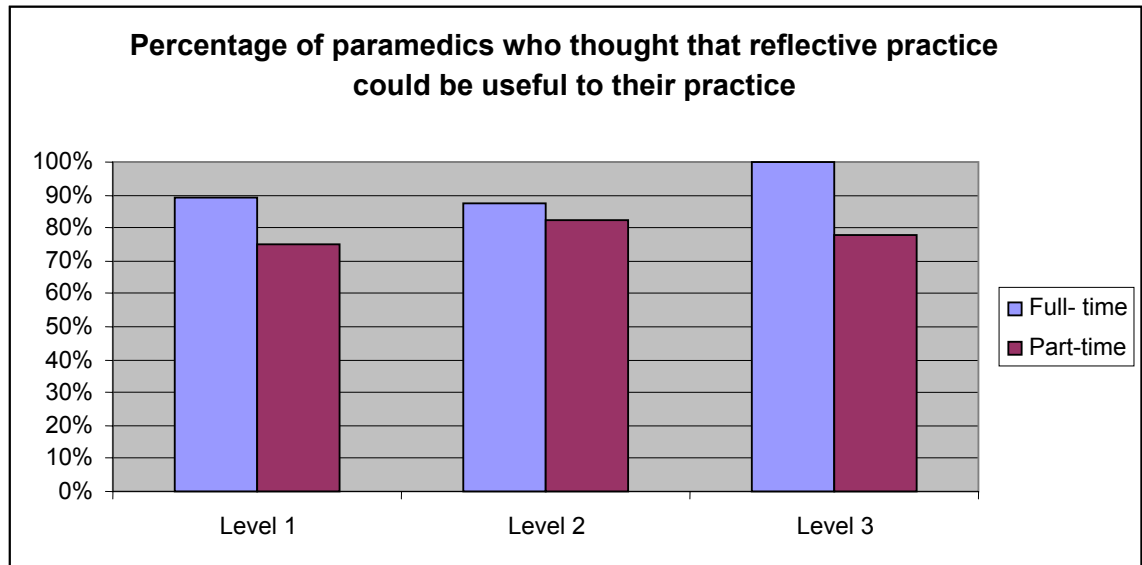


Figure 5-2 Percentage of paramedics who believed that that Reflective practice was useful to their practice

When considering whether or not Reflective Practice could be useful to their practice the full-timers again rated it higher than do the part-timers ($\chi^2 [2] = 6.43, p = 0.04$). Looking at levels of study the full timers and part-timers show some slight variations in their responses from level to level. However, a chi-square showed no significant differences between the levels of study ($\chi^2[4] = 1.01, p = 0.9$).

5.2.3 Perceived Understanding of Structured Reflection

In this set **Question 13** first asked the students whether they believed they understood the meaning of the term **structured reflection**. As shown in Table 5-7 a majority of the students said yes although this number is lower than for their understanding of the term reflective practice.

Table 5-7 Paramedic students' understanding of structured reflection and reflective practice

	Yes	No
Do you understand what is meant by Structured Reflection?	77.5%	18.8%
Do you understand what is meant by Reflective Practice?	97%	3%

This result shown in Table 5-7 is similar to that of the nursing group in the foundation study (Table 4:4) indicating as before that students perceived that structured reflection might possibly hold a different meaning to the general term reflective practice. The second part of Question 13 asked the students to identify the items that they would either include or exclude as examples of structured reflection. Figure 5-3 below shows the results as rated by all students.

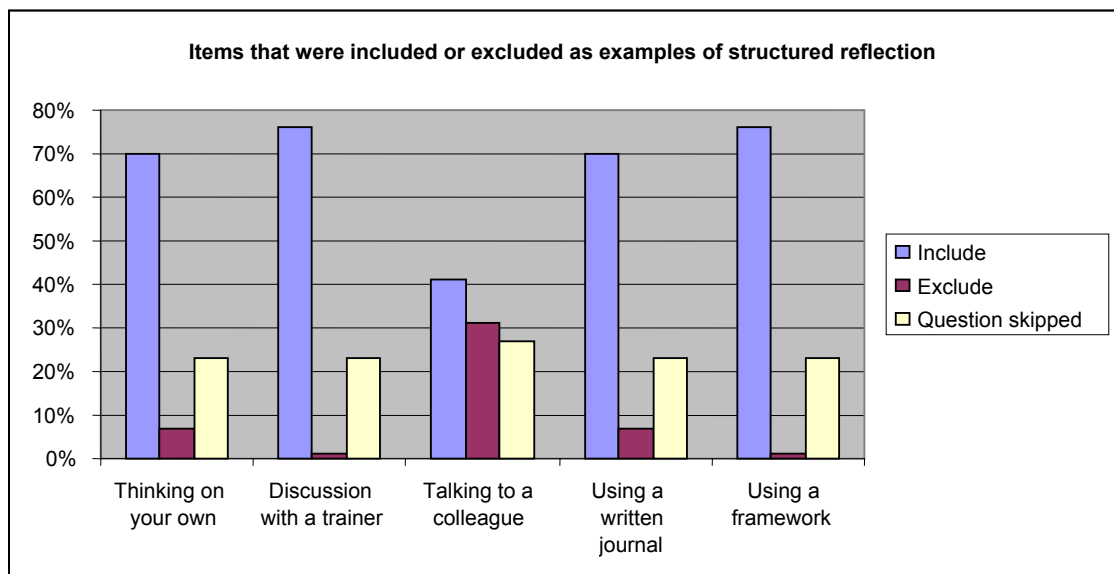


Figure 5-3 Items that paramedic students included or excluded as examples of structured reflection

From Figure 5-3 it can be seen that fewer paramedic students include “talking to a colleague” as an example of structured reflection while ‘discussion with a trainer’ is scored equally to ‘using a framework’. This is consistent with the perception that

discussions with a trainer involve a structured process whereas talking to a colleague may be less formal and this proved to be statistically significant ($\chi^2 [1] = 2.04, p=15$).

When compared to Figure 5-4 below it can be seen that the nursing students included ‘using a framework’ as their leading item for structured reflection. Again a series of chi square tests show that the only item not to achieve a significant difference was “talking to a colleague”, ($\chi^2 [1] = 3.16, p = 0.07$).

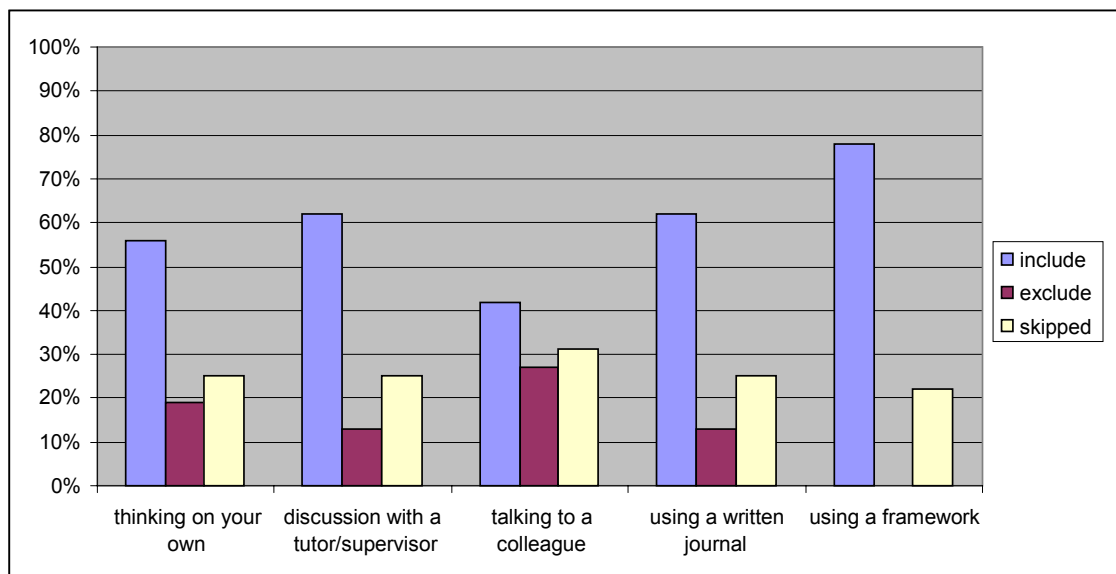


Figure 5-4 Items that nursing students included or excluded in a description of structured reflection

5.2.4 Attitudes to Structured Reflection

Using a Likert scale from 1-7 (where 1 is highest) **Question 14** asked the paramedic students to rate how they felt about structured reflection. The items in Figure 5-5 below show how the students rated their attitudes towards structured reflection.

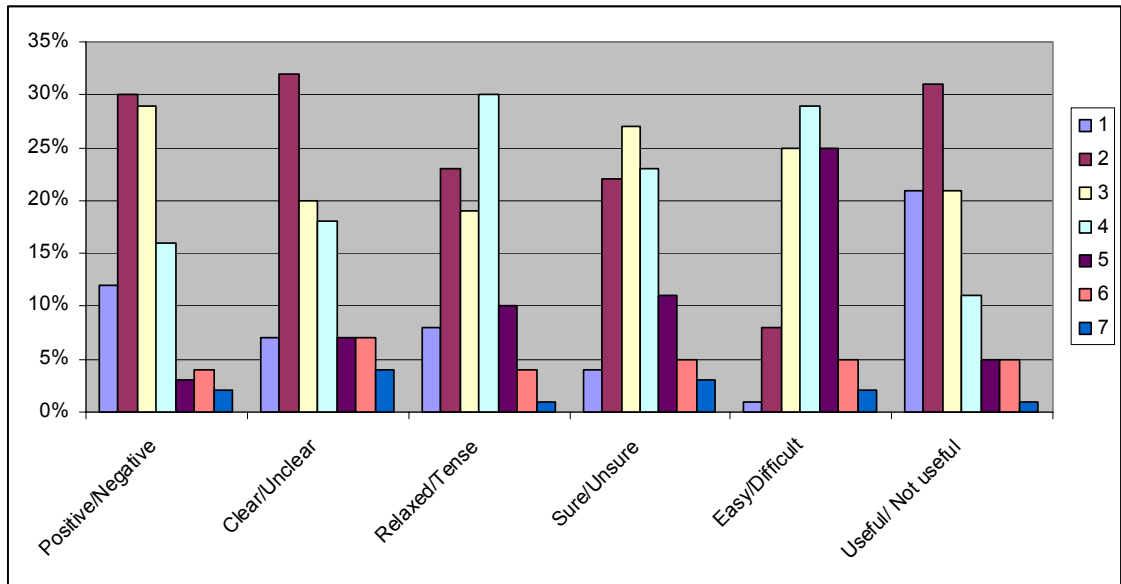


Figure 5-5 Students attitudes to structured reflection

As seen in Figure 5-5 above a majority of paramedic students were positive and clear about structured reflection. Majorities also felt that it was useful. The only item reaching a pre-dominantly negative value was the item “easy/difficult” with more than 25% giving a response leaning towards “difficult”. This indicates that although there is generally a positive attitude towards structured reflection some of the paramedic students did not necessarily perceive it easy to do.

5.2.5 Ability to use Structured Reflection

Question 15 asked ‘How would you rate your ability to use structured reflection?’

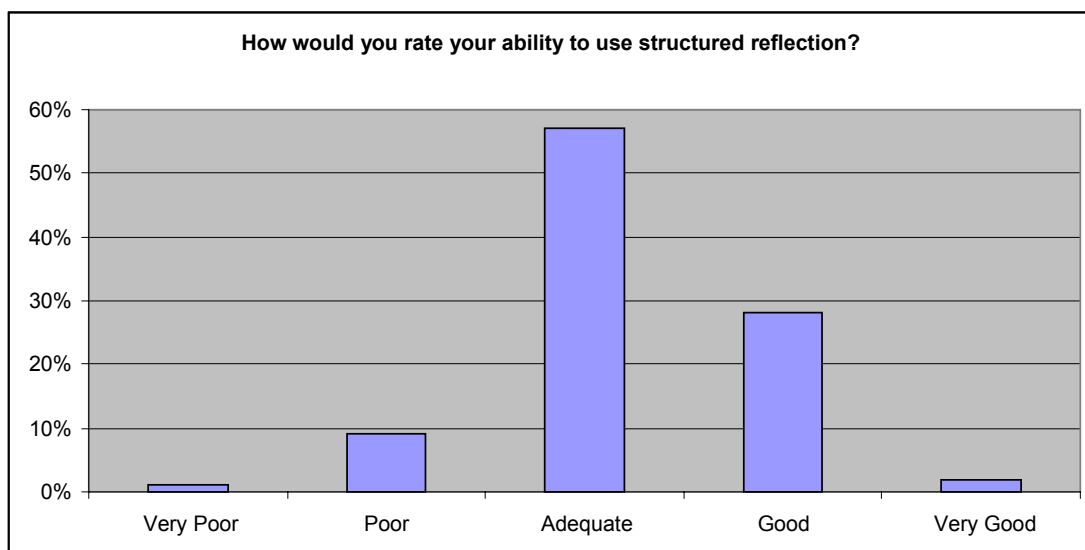


Figure 5-6 Students' judgements of their ability to use structured reflection

Looking at Figure 5-6 a majority of students stated that their abilities to engage in structured reflection were adequate or better. A chi square test indicated that some students said that they had adequate to good abilities to use structured reflection despite earlier stating that they did not all understand the term ($\chi^2 [4] = 18.92, p = 0.001$). The results are similar to the nursing students' responses in the previous study again highlighting an issue that some students perceive that it may be possible to do something without an understanding of it. This result is explored further in section 5:3:3.

5.2.6 The Importance of Structured Reflection

This last item in the set of questions concerning structured reflection (Question 16) explored the students' views about its importance to practice. The majority of all paramedic students who agreed that they had used structured reflection also agreed its importance for practice (shown in Figure 5-7 below).

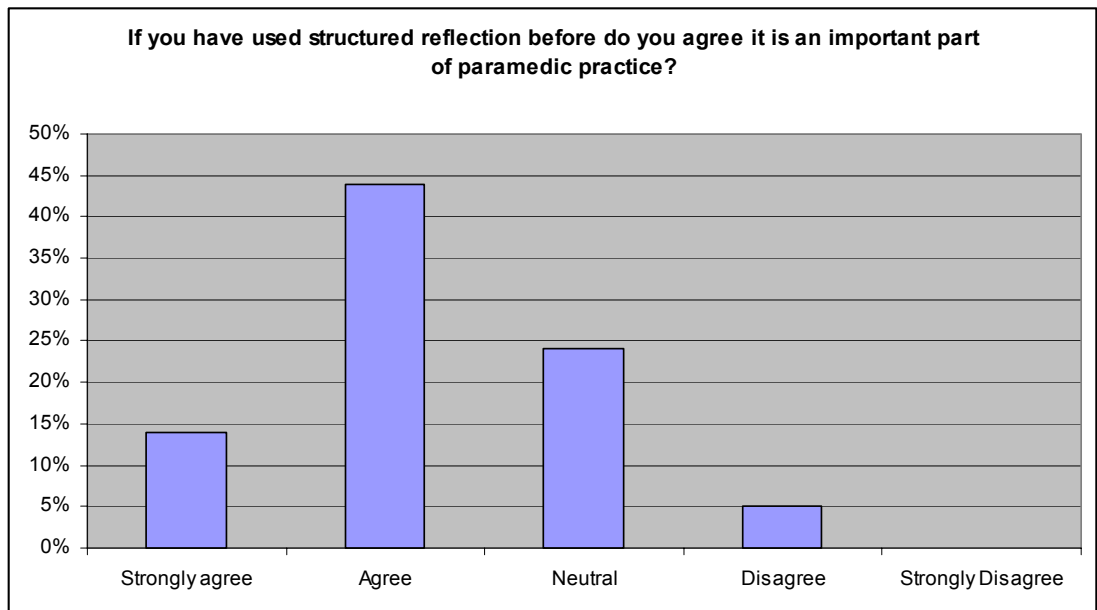


Figure 5-7 Importance of structured reflection for paramedic practice

Exploring this question further Table 5-8 below shows a significant relationship between the students' understanding of structured reflection and its perceived importance to paramedic practice ($\chi^2 [3] = 10.58, p = 0.014$). The students who said that they believed they had an understanding the concept correspondingly agreed or strongly agreed that it was important for paramedic practice which seems a logical response.

An interesting phenomenon however, arises from these results in that there are paramedic students who claim not to understand the concept of structured reflection yet believe that it is important for paramedic practice. Similar to the nursing students in the foundation study this could be as before the result of what the paramedic students are taught in the curriculum rather than their personal beliefs. This is explored further in the next study.

Table 5-8 Understanding of structured reflection in relation to importance of structured reflection for paramedic practice

		If you have used Structured Reflection before do you agree that it is an important part of paramedic practice?				Total
		Strongly Agree	Agree	Neutral	Disagree	
Do you believe that you understand what is meant by the term Structured Reflection?	No		6.0%	6.9%	2.6%	15.5%
	Yes	16.4%	44.8%	19.8%	3.4%	84.5%
Total		16.4%	50.9%	26.7%	6.0%	100.0%

5.2.7 Preferred Personal Learning Methods

In Question 17 the students were asked to rate the importance of different ways of learning as applied to them individually. The intention was to find out how they were likely to rate reflective methods such as ‘thinking back’ alongside other methods identified in learning styles work by Kolb (1984) and Honey and Mumford (1986). The four descriptors used for this question as shown in Figure 5-8 were simplified and adapted for ease of responses within the survey.

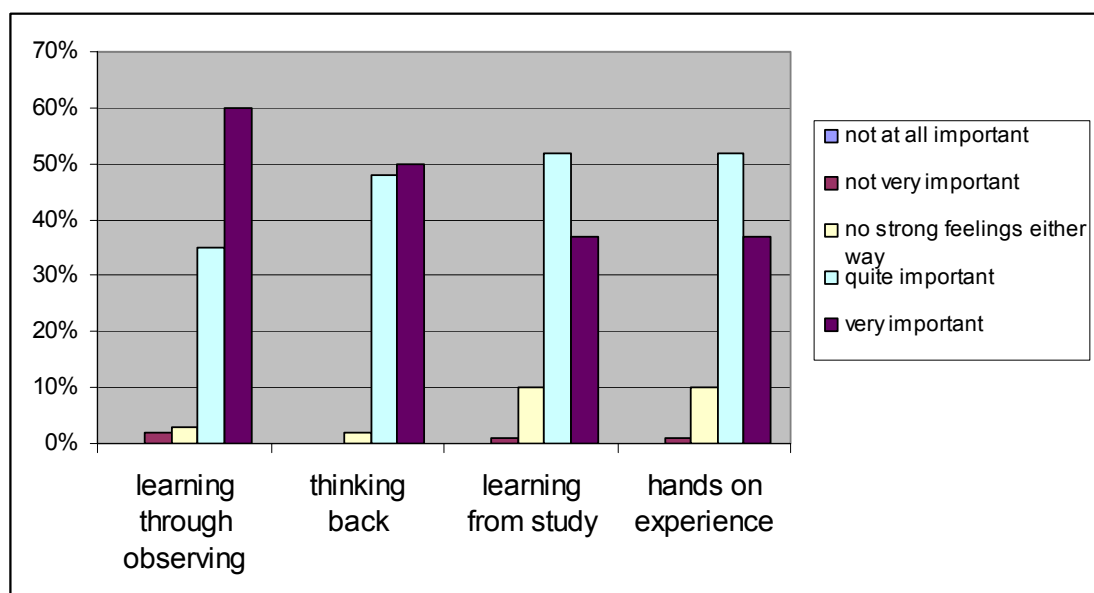


Figure 5-8 Paramedic Students' Personal Learning Preferences

As shown in Figure 5-8 a majority of paramedic students considered all 4 ways of learning important with 'learning through observing' obtaining the highest responses. By comparison, this response is different to the student nurses (Figure 4-6) who rated "hands on experience" as their highest choice. This result could suggest that paramedic students, more so than nursing students show a greater preference for reflective learning methods; both 'learning through observing' and 'thinking back' are more closely associated with the reflector style of learning.

A possible reason might be that paramedic work presents more immediate practice risks than nursing particularly where on the spot decisions have to be made rapidly. Thus learning through 'hands on' experience may be something that paramedic students find less preferable until they feel more skilled or better equipped. A more comprehensive assessment of different learning styles using a more in-depth instrument (e.g. Kolb LSI 1985) would be needed to give more precise classifications of those who may be predominantly reflectors and those who are not. This is addressed in the next chapter.

5.2.8 Use of Reflective Tools

Question 18 asked the students to indicate which reflective tools they had used listed in Figure 5-9. The selection of tools given to the students to choose from was identified in the literature review as the most popular tools at that time and included linear as well as cyclical frameworks.

Figure 5-9 shows that a majority of paramedic students indicated that they had used Gibbs' (1988) reflective cycle. This is somewhat surprising because although students are introduced to this cycle early in the curriculum this is not prescriptive and other reflective frameworks are recommended including those listed below, thus supporting an expectation that the of tools used would be more variable in frequency distributions. However, looking at the wording of the question '*Please indicate which of the following reflective tools you have used by ticking the appropriate column*' it is possible that students could have used more than one reflective tool and this may be included in the ratings of the different items.

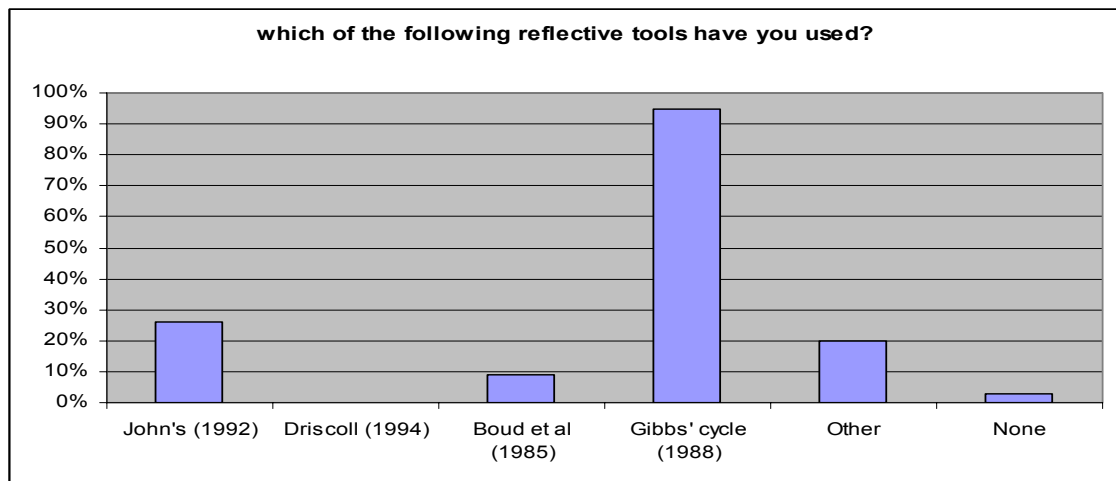


Figure 5-9 Different types of reflective tools used by the students

Question **19** was designed to clarify what ‘other’ reflective tools had been used. This was relevant to find out as students were expected to explore the literature more widely and not rely purely on what they had been taught. The majority of responses to this category identified the S.T.A.R. (Steps To Active Reflection) an unpublished framework (Jones and McMorran1998) designed locally. Unlike the other frameworks this was neither cyclical nor linear but as the name suggests it is star-shaped allowing use at its various points and in no particular order thus more flexible unlike Johns’ (1993) framework for example which follows a linear sequence. Notably from the list of choices given none of the paramedic students indicated that they had used Driscoll’s model even though it is cyclical and similar to Gibbs’ cycle but unlike Gibbs’ cycle contains a series of trigger questions for each stage of the cycle (21) in total.

Finally question **20** asked the students to rate the reflective tools that they considered to be most effective in assisting their learning; i.e. on a reverse scale of 1-5 (1 being the least effective).The results are shown in Figure 5-10.

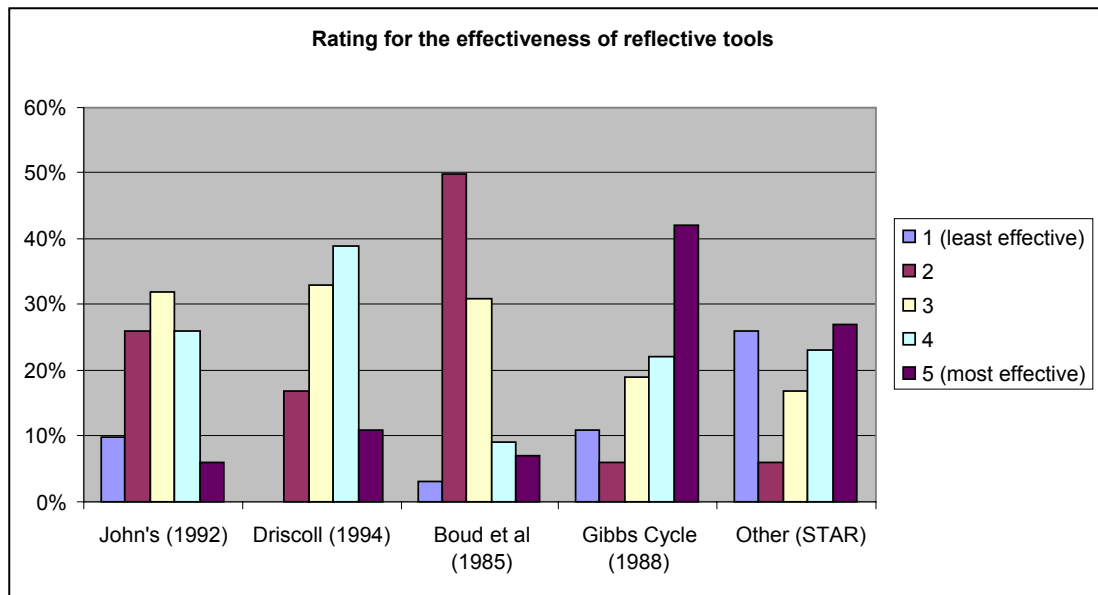


Figure 5-10 The effectiveness of the reflective tools used

Due to the fact that a majority of students' rated Gibbs' cycle as the tool most effective to their learning no significant differences emerged in relation to the type of reflective tools used. However, it is interesting to note that unlike the responses to the previous question this time a small percentage of students cited Driscoll's model as one that assisted their learning more so than Johns' model even though as shown in Figure 5-9 none had used it.

5.3 How the Different Concepts Interrelate

This section explores some of the results to further inform an understanding of reflective practice and structured reflection concerning its potential applications to the learning and practice of paramedic students. A selection of results relating to age, level of study, sex differences, ability and attitudes to structured reflection are also presented for comparisons with the nursing students in the foundation study.

5.3.1 Relationship to Age and Level of Study

Whilst one may expect age-based differences to arise in students' perceptions and potential use of structured reflection this was not the case. A chi square test indicated no significant differences in percentage scores of students' beliefs by the different age groups ($\chi^2 [3] = 4.335, p = .227$). This is shown in Table 5-9.

Table 5-9 Do you believe that you understand what is meant by the term Structured Reflection? Cross tabulation (Age)

		Age				Total
		18 to 25 years	26 to 35 years	36 to 45 years	46 to 60 years	
Do you believe that you understand what is meant by the term Structured Reflection?	No	12.5%	3.9%	1.6%	1.6%	19.5%
	Yes	35.9%	21.1%	18.8%	4.7%	80.5%
Total		48.4%	25.0%	20.3%	6.3%	100.0%

The next set of analysis looked at the students' 'Level of study' i.e. the length of time the students have been engaged in their current programme of study. A cross-tabulation shown in Table 5-10 indicates a significant relationship between understanding the concept of structured reflection and level of study $\chi^2 (2) = 6.95, p = 0.03$. It can be seen that level 1 students (first years) were most likely to indicate that they did not understand the term.

Table 5-10 Cross-table indicating understanding of the term structured reflection in relation to level of study

		Do you believe that you understand what is meant by the term Structured Reflection?		Total
		No	Yes	
Current Level of Study	Level 1	15	33	48
	Level 2	6	35	41
	Level 3	4	35	39
Total		25	103	128

5.3.2 Relations Between Understanding of Structured Reflection and Sex Differences.

Comparing differences between the sexes by combining the nursing and paramedic data no significant differences arise between males and females in the main questions regarding their understanding of, or attitudes to structured reflection. Another comparison between the nursing sample (Figure 4-5) and paramedic sample (Figure 5-5) does, however, reveal one significant finding i.e. nursing students (over 50%) were identified as having more positive attitudes towards structured reflection than paramedic students (30%) shown in this chi-square calculation ($\chi^2 [6] = 27.7, p < .001$).

5.3.3 The Relationship Between Students' Perceptions Of Structured Reflection, Their Abilities To Use it And Their Attitudes Towards It

Exploring the relationship between the students' understanding of and attitudes to structured reflection a number of cross tabulations carried out gave significant findings. A selection of these findings is presented to give an indication of the trends as follows:

Table 5-11 Cross-tabulation for understanding of structured reflection by ability to use structured reflection

		How would you rate your ability to use Structured Reflection?				
		Very Poor	Poor	Adequate	Good	Very Good
Do you believe that you understand what is meant by the term Structured Reflection?	No	0.8%	5.5%	9.4%	3.1%	0
	Yes	0%	3.9%	49.6%	26%	1.8%

Looking at Table 5-11 it is interesting to note that (18.8 %) of paramedic students perceived that they **did not** understand the term structured reflection. However, a further analysis of this would in fact mean that 12.5% (representing two thirds or 66%) of that group still claim to have either an adequate or good ability to use structured reflection even though they said they did not understand it. This was also found to be the case with the nursing students in the foundation study and raises questions about

theory-practice relationships and whether or not knowing how to do something necessarily depends on knowing what it means. It could also mean that undergraduate students in these disciplines are focussed on ‘doing’ more so than on ‘knowing’.

Table 5-12 Understanding of structured reflection in relation to positive/negative attitude towards structured reflection

		Do you believe that you understand what is meant by the term Structured Reflection?		Total
		No	Yes	
Please indicate how strongly you feel about Structured Reflection by circling the appropriate rating? 'Positive - Negative' Scale 1-7	1	2	14	16
	2	2	38	40
	3	3	33	36
	4	11	11	22
	5	1	3	4
	6	2	3	5
	7	2	1	3
Total		23	103	126

Looking at the numbers in Table 5-12 chi-square calculations show that students who did **not understand** the term were less likely to view the concept positively $\chi^2 [6] = 28.72, p < .001$. This is discussed further in 5:4:2. With regards to **ability** to use structured reflection the students who had more negative perceptions also correlated with a poor ability to **use** structured reflection $\chi^2 [18] = 34.86, p = .010$ as seen in Table 5-13 below.

Table 5-13 Ability to use structured reflection in relation to positive/negative attitude towards structured reflection

		How would you rate your ability to use Structured Reflection?				Total
		Poor	Adequate	Good	Very Good	
Please indicate how strongly you feel about Structured Reflection by circling the appropriate rating? 'Positive - Negative' Scale	1	0	8	8	0	16
	2	0	22	16	2	40
	3	3	26	8	0	37
	4	6	14	2	0	22
	5	2	1	1	0	4
	6	1	3	1	0	5
	7	0	2	1	0	3
Total		12	76	37	2	127

Table 5-14 also shows that students who rated structured reflection negatively were also least likely to think that it is *important* for paramedic practice $\chi^2 [18] = 66.83, p < .001$.

Table 5-14 Perceived importance of structured reflection in relation to positive/negative feelings about structured reflection

		If you have used Structured Reflection before do you agree that it is an important part of paramedic practice?				Total
		Strongly Agree	Agree	Neutral	Disagree	
Please indicate how strongly you feel about Structured Reflection by circling the appropriate rating? 'Positive - Negative' Scale	1	8	6	1	1	16
	2	6	31	3	0	40
	3	5	15	12	1	33
	4	0	5	10	2	17
	5	0	0	2	2	4
	6	0	2	2	0	4
	7	0	0	2	1	3
Total		19	59	32	7	117

Overall, the emergent findings shown in Table 5-12, Table 5-13 and Table 5-14 identify a significant relationship between students' understanding and attitudes to structured reflection that need to be recognised by educators when planning learning/teaching activities around reflective practice.

5.4 Discussion

This section describes and discusses the study conducted with undergraduate paramedic students (n=133) that aimed to explore their understanding of, and attitudes to reflective practice concepts including structured reflection and learning styles relationships.

5.4.1 General Understanding of Reflective Practice Concepts

As with the nursing students in the foundation study the majority of paramedic students (97%) also perceived that they understood the meaning of reflective practice. They also indicated that it could be equally useful to their learning (83%) and clinical practice (83%). This finding is not consistent with the literature that reflective practice lacks clarity of meaning, however this cannot be confirmed because of the closed nature of the questions used in this survey. Instead, the intention of this phase of the research was to gain consensus of the students' general perceptions of key terms rather than specific meaning.

Regarding structured reflection a reduced majority of students (77%) stated a perceived understanding of this term compared with that of reflective practice. This finding is similar to the nursing students' responses in the previous study. Thus 'structured reflection' may have a specific meaning to the students or it may be perceived differently to the more general term reflective practice. The literature suggests that 'structured' generally mean the use of formal written learning journals and/or reflective models of structured reflection e.g. Johns (1993).

The items that paramedic students included and excluded as examples of structured reflection (Figure 5-3 and Figure 5-4) suggest for them that structured reflection means a range of approaches including both formal and informal in nature. It was interesting to note however, that the majority of paramedic students (over 70%) considered 'using a framework' and 'discussion with a trainer' to be the two leading items for structured reflection. This possibly suggests that paramedic students consider that the academic requirements of using a structured framework compare to the methods generally used in practice, i.e. 'discussion with a trainer' (the latter method is commonly used in paramedic day to day practice and for debriefing purposes). Nursing students on the other hand identified the use of a 'framework' as their leading perceptions of structure. This concurs with the literature in nursing where it is widely suggested that such approaches are more beneficial for reflective practice outcomes (Platzer et al 1997). The different perceptions of structured reflection between nursing and paramedic students may also possibly reflect differences in the role of 'trainees' in practice between the two different professions and how reflective concepts such as structured reflection are perceived in those contexts.

With reference to perceived abilities to use structured reflection the results showed that only a small proportion of paramedic students (below 5%) considered themselves to be very good with this although the majority rate themselves as being adequate to good. This finding again suggests the paramedic students in this study similar to the nursing students in the first study have highlighted that ‘knowing how’ to do something might not depend on ‘knowing what’ it means. This would appear to render reflective practice as a task orientated approach to learning familiar to the traditional training model in paramedic sciences and previously in nursing where ‘doing’ rather than ‘knowing’ has long been the dominant mode in these professions and that remnants might still exist.

5.4.2 Attitudinal Links to Understanding and Use of Structured Reflection

Regarding attitudes to structured reflection (Figure 5-5) the majority of paramedic students appear to have positive attitudes towards it and this correlates with the responses regarding the students’ assessment of its ‘importance to practice’ (Q17). Conversely those who rated a negative attitude towards it were least likely to rate it as being important for practice. The results (Table 5-13) also show that students who indicated a negative attitude towards structured reflection rated their ability to use it as correspondingly ‘poor’. This finding accords with the views that ‘*the reflective process is a complex one in which both feelings and cognition are closely interrelated and interactive*’ Boud et al (1985 p11). The results of this study have shown that attitudes, thinking and doing are interlinked although it is important to note that students were not responding to negative feelings about themselves but to the concept of structured reflection. Either way the results support the need for an integrated approach to reflective learning and teaching, i.e. there is a need to foster positive attitudes to reflective practice if students are to value its applications more fully. As noted in the literature, positive attitudes to reflective learning need “*to be cultivated in order to secure their adoption and use*” (Dewey 1933 p30).

5.4.3 The importance Of Different Ways of Learning And Effects on Reflective Abilities

The foundation study (Ch 4) had showed that nursing students rated the ‘active experimentation’ preference for learning more highly than that associated with the reflector style. Therefore it was highly pertinent in this study to find out whether or not paramedic students similarly perceived methods of learning e.g. ‘hands on’ to be of more or lesser importance to reflective methods such as thinking back.

Question 17 asked the respondents to rate the importance of four different ways of learning to their personal learning approach. The four ways identified for this question (Figure 5-8) were based on categories derived from Kolb's (1984) and Honey and Mumford's (1986) formal learning styles classifications. These theorists identified the 'reflector' as one of four learning dimensions that individuals prefer or have a greater tendency towards. The current results indicate that the majority of paramedic students rated all the four ways of learning as either important or very important but significantly 'learning through observations' and 'thinking back' which are both synonymous with the reflective learner. This is in contrast to the nursing students who rated 'hands on approaches' as the leading item. From the scoring of this item, it is not possible to attribute these findings to the different theoretical learning styles derived from the literature per se as the categories used in the questionnaire were adapted to represent only their broad descriptions. Currently learning styles' applications to learning is little explored with paramedic students although much more extensively studied in other subjects such as geography, for example Jenkins and Healy (2000).

This aspect would need to be more comprehensively addressed by the use of a recognised and approved self scoring instrument such as Kolb's (1984) or Honey and Mumford's (1986) LSI. This is pertinent to the both nursing and the paramedic curriculum contexts that require all students to engage reflectively in their academic and clinical work and demonstrate such abilities through various assessments regardless of individual learning styles. This is addressed further with paramedic student in the next chapter.

5.4.4 Use of Reflective Tools and Their Effectiveness

As identified in the literature, a range of reflective tools have been promoted over the last two decades for enhancing learning, for example Kolb's (1984) learning cycle, Boud et al's (1985) cyclical model of reflection and Gibbs' (1988) reflective cycle. Other formats include Johns' (1992, 1993, 1994) models of structured reflection and written learning journals (Moon 1999). Gibbs' Cycle (1988) being one of the early reflective tools to emerge has remained a popular choice in health care and other disciplines. Further, studies of reflective practice in nursing (Platzer et al 1997) have identified that reflective learning can be more effective through the use of frameworks

suggesting that a structured approach better guides the reflective process. The use of such frameworks has featured in the paramedic curriculum since 1996.

Analysis of the results in this chapter was to establish: (1) what forms of structure the students were using including what they had been taught and (2) and whether or not the students understanding of structured reflection concur with the meaning ascribed to it in the literature. It is noteworthy that in traditional and contemporary paramedic practice qualified practitioners mainly followed discursive methods such as critical incident debriefing (CID) for trauma management (Parkinson 1997) and informal dialogue with peers. The students on the other hand are taught to follow formal structures such as the use of a reflective framework for their learning.

All the respondents in this study had been introduced to formal written formats of reflective learning as part of their university study i.e. reflective essays, learning journals, and clinical reports (reflective synopses) from the outset of their academic study. At the same time, students were also being exposed to informal methods such as discursive debriefing when on clinical placement learning. The results in Figure 5-3 suggest that the large majority of paramedic students regards both 'discussion with a trainer' and 'using a framework' equally (over 70%). This could mean that the students perceived structured reflection as having equal relevance to both the theoretical and practical aspects of their learning reflecting what they had been taught in the curriculum.

To explore this further Question (18) asked students to identify which if any reflective tools they had used. The responses in Figure 5-9 show that the vast majority of them (over 90%) identified Gibbs' (1988) reflective cycle. This has two possible explanations. First, the fact that students were introduced to this tool right at the start of their university education and also as the most popular tool talked about at that time may have influenced the students' perceptions. However, over the three years of undergraduate students were also taught and given the choice to use and explore other models for their individual use thus an expectation of more variable choices.

It is proposed, however, that the students may have perceived Gibbs' cycle with its six components easier to follow compared to Johns' (1992) model for example which is

more probing, complex in nature and therefore more time consuming. Johns' model (ibid) consists of a series of cues and subset of 24 questions compared to only six dimensions in Gibbs' cycle appear which appear fairly straightforward for reflective learning. This would need to be tested separately through further studies outside the parameters of this research.

Paramedic practitioners however, normally pursue more pragmatic narrative methods such as 'on the spot' verbal debriefing which the students may also consider to be more appropriate. However, the adoption of the simplest model by students may have led to criticism in the literature by Boud et al (1996) who suggest that reflection in simple formats has the danger of becoming a process of recipe following which mitigates against critical reflection. It is interesting to note that a small percentage (over 20 %) indicated that they used and found other tools apart from Gibbs' cycle (1998) to be effective e.g. the S.T.A.R. model of reflection which was also introduced in the earlier curriculum. It has been proposed that a flexible framework similar to the S.T.A.R framework could help to promote a more individualised approach to reflective practice thus minimising the criticisms of a ritual approach (Jones Cookson 2001).

5.4.5 Demographic Effects Including Age, Sex Differences and Level of Academic Study

Despite the vast literature the effects of age and sex differences relating to reflective practice are less well studied and understood. As Clegg (2000 p452) noted "*reflective practitioners as they are reported in the literature often appear as genderless and classless*".

As seen in the method section of this chapter (Table 5-2) the age range of the paramedic students shows a split with approximately half the sample in the 18-25 group and (unlike the nursing sample) a wide range from 18- 45 + years, thus it was anticipated that age might be an influencing factor in the students' beliefs about reflective practice concepts. Major studies concerning undergraduate students' intellectual development and reflective judgement (e.g. Perry 1970, King and Kitchener 1994) showed positive correlations to age, increased cognition and reflective development respectively.

However, chi square calculations with the paramedic students showed that there were no significant differences in responses to perceptions and usefulness of reflective

practice methods in relation to age. If, for example the question had asked students to explain their meanings of structured reflection it is possible that age might have proved to be a significant influencing factor. Brewer (2000 p11) states that “*age is expected to moderate the causal effect of treatments that require cognitive elaborations*”.

Subsequently, a quantitative study of reflective practice applied to physicians’ practice (Mamede and Schmidt 2005) has since shown that reflective practice was negatively correlated to age and the number of years in practice, i.e. those who were below 33 years old showed higher mean scores for reflective practice than those who were over 53 years.

On the other hand when looking at levels of academic study (length of time students have been on their degree course) students’ perceived understanding of structured reflection show a significant difference. Out of the three academic levels, level 1 students were the most likely to say that they did not understand the term structured reflection which suggests that students possibly perceive ‘structured reflection’ to be a less easy to grasp concept initially than the general perceptions of the term ‘reflective practice’. While there are many definitions of reflective practice in the literature structured reflection is less well defined although it is most frequently linked to frameworks and models of reflection.

Finally when comparing sex differences between nursing and paramedic data no significant effects are found with regards to their perceived understanding of reflective practice and structured reflection although student nurses appeared to have a more positive attitude to structured reflection than paramedic students. Although significant, this may not be a fair comparison given the mixed sample of paramedic students, their greater age ranges and length of experience. There may however, also be other reasons why particular groupings of students vary in their perceptions. A study of ‘attitudes to reflective practice and continuing professional development’ with pharmacy students by Rees et al (2003) found that although students agreed that the concept of reflective practice was good they found the process to be tedious.

5.5 Summary

This second study with a whole population of paramedic students has identified similar outcomes to the foundation study (Ch 4). Unlike the nursing students in the first study who were predominantly female the majority of paramedics were males and of a greater age range. This allowed for further investigations and comparisons with the nursing students based on age and sex differences.

As with the nursing students in study one, the results showed that paramedic students perceived they understood the meaning of reflective practice and the related concepts such as structured reflection. However, the decision to include all undergraduate students (full-time and part-time) in the sample also made interpretation of the results much more complex than the previous study. The variations in clinical experiences and age differences for example between the part-timers who are already qualified practitioners could have influenced their responses differently compared to the full time students who have limited clinical experiences. It is known from Benner's (1984 p13) research in nursing that the ways in which nurse practitioners develop their intuitive or tacit knowing as posited by Schön (1983) are defined according to experiences along a continuum of five stages i.e. *novice, advanced beginner, competent, proficient and expert*.

Such exact or even broad extrapolations from the existing data so far would be difficult to conclude from students' perceptions alone. However, as intended this study has provided initial and useful quantitative insights into the perceptions of undergraduate paramedic students regarding reflective practice concepts and possible applications. It has also informed further methodologies to overcome the limitations identified so far with closed questions in particular. These are addressed in the next chapter.

CHAPTER 6

Study 3: – Reflective Practice: Paramedic Students’ Views and Learning Styles Relationships

6. INTRODUCTION

This chapter explores what students in their own words say about their understanding and applications of reflective practice to their learning experiences and what relationships exist between their views of these concepts and their learning styles.

In the previous study of this submission (Ch 5) it was found that as with the nursing students a large majority of all paramedic students (97%) surveyed perceived that they understood the meaning of reflective practice and related concepts including structured reflection. Although this finding has been useful for providing a broad descriptive picture of reflective practice in the paramedic curriculum, the need for further research was highlighted to explore the students’ understanding of it and to identify whether or not their understanding was in any way influenced by their individual learning styles.

In order to extend the scope of the research and build on the previous study the need for qualitative data was identified as an alternative way of discovering meaning beyond the students’ perceptions alone that were derived from a survey using closed questions. The focus of this study was therefore to use open ended questions that are considered to be the most effective and way for eliciting authentic qualitative data (Silverman (1995). This was necessary to establish because the overwhelming view in the literature continued to highlight reflective practice as a useful learning tool. Also simultaneous to this research reflective practice was for the first time included as a professional benchmark statement for paramedic sciences by the Quality assurance Agency for Higher Education (2004: Section B4). Reflective practice although prescribed by the QAHE was however, not defined.

Thus if given the opportunity to express it in their own words how might students explicitly define reflective practice concepts as it applies to their learning experiences? In the previous study it was noted that the full time paramedic students at level 3 agreed most (100%) that reflective practice could be both useful to their learning and academic studies. Further as a consideration of theoretical sampling (Strauss and Corbin 1998, Morse 2000) level three students were considered likely to be the most experienced and knowledgeable group regarding reflective practice concepts, understanding and applications to their learning.

This study conducted with level 3 paramedic students aimed to further explore two general questions. The first concerned what students in their own words understood by reflective practice and what views they held about its application to their academic studies and clinical practice as they approached the final stage of academic study prior to graduate practice. The second question aimed to identify whether or not there were any relationships between what they say they understood the term to mean and their self-scored individual learning styles. In particular it was considered highly pertinent to identify whether or not students who are predominantly 'reflectors' at this level of study view reflective practice more favourably or differently to those who are not. These are important issues to address because at the end of their three years of higher education studies, paramedic students regardless of their preferred learning style are expected to demonstrate explicit understanding and application of reflective practice concepts applied to their academic studies and clinical practice. Such issues are also important for educators to acknowledge when planning learning/teaching for enhancing reflective practice applications to ensure that the appropriate reflective practice outcomes as defined in the curriculum are achieved.

6.1 Method

A nine item semi-structured questionnaire incorporating qualitative dimensions followed by a Learning Styles Indicator (LSI) test was administered to a convenience sample (n=27) of level 3 full time paramedic students at the end of normal classroom learning and teaching activities. This group had not participated in the previous survey. It was recognised that as an important research consideration there is a need to avoid overuse of students and make every attempt not to influence the students' responses (Burns and Grove 1987). Additionally the rationale for the focus with full time third

year students at this stage of the research was the need to identify reflective practice outcomes following a complete curriculum cycle prior to qualified paramedic status, unlike the part-time students who were already qualified paramedics.

As with the previous studies in this research a numerical code was assigned by an independent administrator to each participant to ensure anonymity and confidentiality of responses.

6.1.1 The Questionnaire: Design and Content

The development of the questionnaire for this study (Appendix D1) was influenced by the need to obtain deeper insights and emerging patterns of reflective practice applications that currently exist in the paramedic curriculum and necessary for future developments. The need to obtain qualitative data was identified as a necessary part of the triangulation approach discussed in Chapter 3. In addition the previous studies in this research were concerned with general perceptions rather than specific meanings of reflective practice. This study involved a nine item semi structured questionnaire and sought the students' responses to the following categories:

- Age and Sex.
- Understanding of reflective practice.
- Usefulness of reflective practice to academic studies and clinical practice.
- Reflective practice methods used and their usefulness to learning.
- Importance of reflective practice to academic studies and clinical practice.
- Additional views of reflective practice related to academic studies and clinical practice.

6.1.2 The Learning Style Indicator

Following completion of the semi-structured questionnaire an 18 item learning style indicator (LSI) designed for free individual online testing of learning preferences (<http://www.nwlink.com/~donclark/hrd/kolb.html>) was also administered to the group (See Appendix D2 for LSI).

The rationale for administering the LSI after the semi-structured questionnaire as previously explained in chapter 3 was to ensure that the students' views about reflective practice were not biased by the learning styles' indicator test prior to completion of the research questionnaire. A further advantage of using this particular LSI with the whole group at once was the speed in which it could be completed and the instant availability of results to the students i.e. students were able to instantly identify the categories that summarise their self scored learning style associated with the one of the following: *a) doer, b) watcher, c) feeler' d) thinker*. These categories are derived from Kolb's (1984 p68) classifications of the four learning preferences as follows:

- active experimentation (doing)
- reflective observation (watching)
- concrete experience (feeling)
- abstract conceptualisation (thinking).

6.1.3 Rationale for the Chosen LSI

It is important to note that at the time of this phase of the study in 2004, Kolb's (1985) original LSI was difficult to obtain as it was under review by the author at that time. Simultaneously a major systematic and critical review of thirteen LSI's (including Kolb) was also being undertaken in the UK by the Learning and Skills Research Centre LSRC) for tests of validity (Coffield et al 2004). The preliminary findings of that study indicated problems of validity with all instruments tested. The implications for this study with third year paramedic students are acknowledged (see section 6.4.3).

Within the context of this research the intention was primarily to identify a descriptive profile of learning styles distribution within the sample to inform a sub-problem of reflective practice linked to learning styles that had not been previously explored.

6.1.4 Coding Schemes and Inter-Rater Reliability of Coding

Post coding of the qualitative data derived from the open ended question (Tables 6-3 to Table 6-8) which asked about understanding of reflective practice was themed according to the emergent categories of the students' written responses. The six dimensions of Gibbs' (1988) cycle were also used as part of the coding system i.e. *description, feelings, evaluation, analysis, conclusions and future practice* because the majority (over 90%) of paramedic students in the previous study indicated Gibbs' cycle to be the reflective tool most used.

To ensure the reliability of the initial coding of the qualitative data a second researcher recoded data from a random selection (6) of the sample. For each question the second rater assigned categories to the answers given and they were compared to the coding assigned by the researcher. There was an 85% level of agreement giving a Cohen's Kappa figure of 0.81, $p < .05$ consequently indicating significant reliability of the original coding. (See Appendix D3 for details of the inter-rater coding.)

6.2 Results Section

All students who were approached volunteered to participate thus resulting in a high response rate.

The results are split into three sections.

- (1) Tables and graphs describing the demographic characteristics of the sample.
- (2) The emergent categories and incidence of these categories for each of the questions.
- (3) The profile of categories pertaining to the students' different learning styles related to their views and applications of reflective practice to learning experiences.

6.2.1 Demographic Characteristics of the Sample

Unlike the previous studies conducted so far only the most relevant attribute variables i.e. age and gender were included in the data collection thus avoiding the problems of 'confounding variables' (Oppenheim 1996) previously identified such as professional qualifications for example.

Sample n=27 of full time third year pre-registration undergraduate paramedic students.

Table 6-1 Gender of Sample

Gender	Number	Percentage
Male	16	59.3%
Female	11	40.7%
Total	27	100 %

Similar to the nursing students the majority of paramedic students are in the age range 18 to 25 years, as illustrated in the Table 6-2.

Table 6-2 Age Range of sample

Age Range (years)	Number	Percentage
18- 25	24	88.9%
26-35	3	11.1%
Total	27	100 %

6.2.2 The Coded Categories of the Qualitative Data

The coded categories are based on responses by the full sample for all questions except questions 3 and 8b which are based on 26 out of 27 student responses. The quantitative measurements are given in the results section (6.2.3) with additional data in Appendix

D4. For purposes of anonymity the comments have been ‘group analysed’ (Burns and Grove 1987 p345) so that individuals cannot be identified by his or her responses.

For Question (3) that asked the students to state in their own words their understanding of reflective practice, the six dimensions of Gibbs’ cycle were again used to code the responses for students’ understanding of reflective practice i.e. *description, feelings, evaluation, analysis, conclusions and future practice.*

The following tables show the coded categories. Table 6-3 presents a selection of examples of comments which show that all dimensions of Gibbs’ reflective cycle are included in the students’ understanding of reflective practice as well as an added dimension of professional/personal development. This outcome however, possibly represents the results of what students are taught rather than their personal views. It may however, also be an ideal theoretical response generated by the academic context and environment of the research and would probably be different if it was conducted in a clinical practice context.

Table 6-3 Emerging categories using the dimensions of Gibbs Cycle for answers to the question: What is your understanding of reflective practice?

Categories (Gibbs’1988 reflective cycle)	Examples
Description (What happened?)	“looking back” “standing back ” “stepping back” “retrospective look”
Feelings (What were you thinking and Feeling?)	“it involves reviewing thought and feelings about the experiences” “Also expressing feelings”
Evaluation (What was good and bad about the experience?)	“reflecting on what went right and what went wrong” “What went well or bad”
Analysis (what sense can you make of it?)	“analysing work that you have done” “ retrospective analysis” “analysing your performance”

Categories (Gibbs'1988 reflective cycle)	Examples
Conclusion (what else could you have done?)	“reflecting on things you could have done to improve the way you dealt with the experience”
Action Plan (What would you do next time?)	“learn on the experiences to advance further practice”, “prospective-what will be done in future”
For professional/personal development	“enabling continued professional development”. “A teaching and developmental methodology that allows personal and professional development”. “develop professionally”

As previously stated (5:4:4) Gibbs’ cycle was introduced to students early in the curriculum, however a variety of other frameworks followed throughout the three years of study and by the third year students are expected to have developed their independent views beyond what they have been taught (indicative of reflective practice learning).

Looking at the selection of examples in Table 6-4 and Table 6-5 the categories that emerge from group analysis of the qualitative data suggest that students’ view the usefulness of reflective practice to academic work and clinical practice similarly. The quantitative measurements are given in Figure 6-1 and Figure 6-2.

Table 6-4 Emerging categories for the question: How is reflective practice useful for academic study?

Category	Examples
Not useful	“too many reflective essays” “ I don’t need to write it down in an essay”
Dislike aspects of coursework	“synopsis seems pointless”, “feel there is no need to write down my reflections”
Helps improve practice	“ helps to analyse events on the road”

Category	Examples
	“improve practice and patient care”
Helps improve academically	“encouraged critical analysis of my work” “help to gauge if I was writing at the appropriate level” “allowed me to assess my progression”
Helps eliminate errors	“to eliminate mistakes previously made”

Table 6-5 Emerging categories for the question: How is reflective practice useful for clinical practice?

Category	Examples
Not useful	“not always relevant to pre-hospital care”
Helps improve academically	“allows you to improve your knowledge base” “facilitated improved learning experiences”
Improves practice	“improves treatment of the patient and patient care”, “consideration is given to how I practice especially when attending a call which was difficult”
Dislike aspects of coursework	“feel there is really no need to write down my reflections” “tend to reflect automatically without having to write a 1000 word account”
Helps eliminate errors	“Avoiding mistakes can be achieved by reflective practice”

Table 6-6 Emerging categories for the question: In what ways do you undertake reflective practice?

CATEGORIES
Talking to others
Self-analysis
Gibb's cycle
Reading and research
Writing essays
Writing a journal

It can be seen from Table 6-6 that the third year students identified a number of ways in which they undertake reflective practice with talking to others as the most favoured way and Gibbs' cycle the least. The distribution by percentage is shown later in Figure 6-3.

Table 6-7 Emerging categories for the question: What is the Importance of reflective practice for academic studies?

Category	Examples
Academic importance	"very important", good learning tool" "It makes you think about jobs in more detail"
An aid to research	"it allows research to be carried out"
Professional importance	"It keeps you to keep up to date (ish) with innovation within the ambulance arena"
Helps develop communication skills	"It has improved my practice and communication skills"
Not of use professionally	"wouldn't bother unless I had to" "not quite sure how this relates to academic studies as well as work placements"

Table 6-7 above shows that academic studies include practical as well as theoretical aspects of learning. Only one example showed a negative response.

Table 6-8 Emerging categories for the item; Importance of reflective practice to clinical practice

Category	Example
Helps eliminate errors	“ can improve care from learning from previous mistakes”
Improves practice	“very important because it can improve work styles and patient care”
Not relevant	“not relevant in call situations”
Learning from others	“learn from others” “Able to discuss between colleagues how best to treat patients”
Fosters personal development	“gives greater scope and clarity to your development” “allows personal and professional development”

6.2.3 Results Section 2: The coded categories and incidence of these categories for each of the questions

The next results section focuses on the categories derived from students’ answers to the questions, and their frequency of responses. In Figure 6-1 it is notable that students focus least on ‘*Feelings*’ with a greater focus rather on ‘*learning for future practice*’ and ‘*looking at past practice*’. This response could however, be interpreted differently depending on whether or not it is related to a clinical practice or academic context.

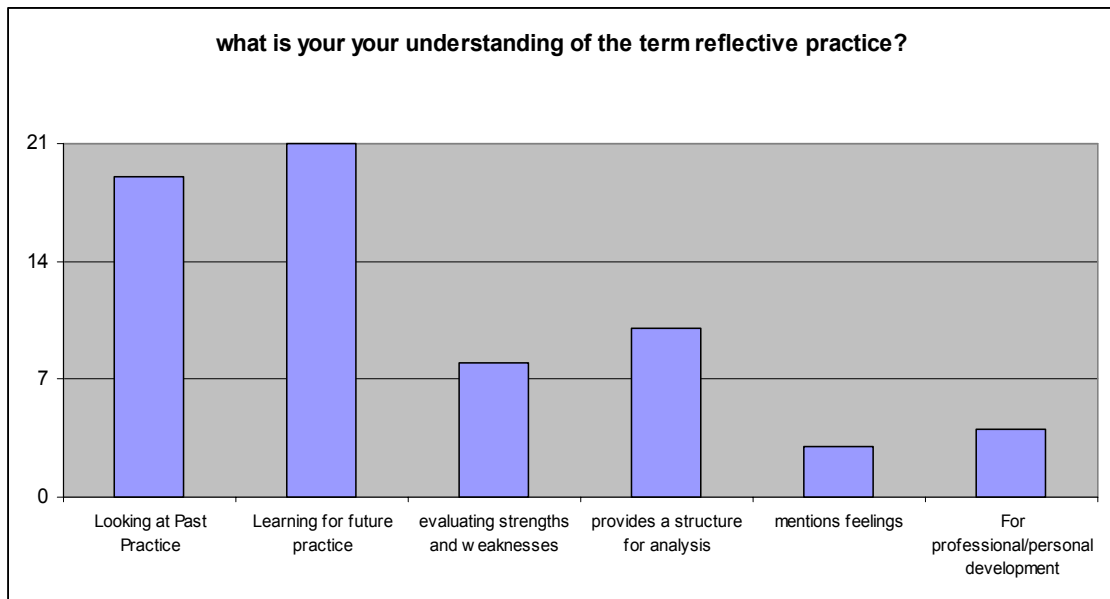


Figure 6-1 Students' understanding of reflective practice aligned to Gibbs' (1988) cycle

With regard to the utility of reflective practice to their academic studies students were asked to rate the usefulness of reflective practice and to describe their reasoning. Table 6-9 shows the majority of students found it somewhat useful. Only one student said it was not useful. In spite of this, the only negative type of answer that they described was that of not liking elements of the coursework. (Due to the small numbers the use of percentages are not used in tables 6-9 and 6-10).

Table 6-9 How Useful is reflective practice to your academic studies?

	Frequency
Very useful	5
Somewhat useful	11
Useful	6
Not very useful	4
Not useful	1
Total	27

Looking at Table 6-9 above it is notable that the majority of students considered reflective practice to be useful for their academic studies.

Table 6-10 below documents the students' ratings of how useful reflective practice is to clinical practice. Again only 2 students stated that reflective practice was not useful. The majority said it helps improve practice (Figure 6-2).

Table 6-10 How useful is reflective practice to clinical practice

	Frequency
Very Useful	7
Somewhat useful	9
Useful	7
Not very useful	1
Not useful	1
Not sure	2
Total	27

These results are shown in more details in Figure 6-2 below where 'improvement to practice' is seen as the leading benefit.

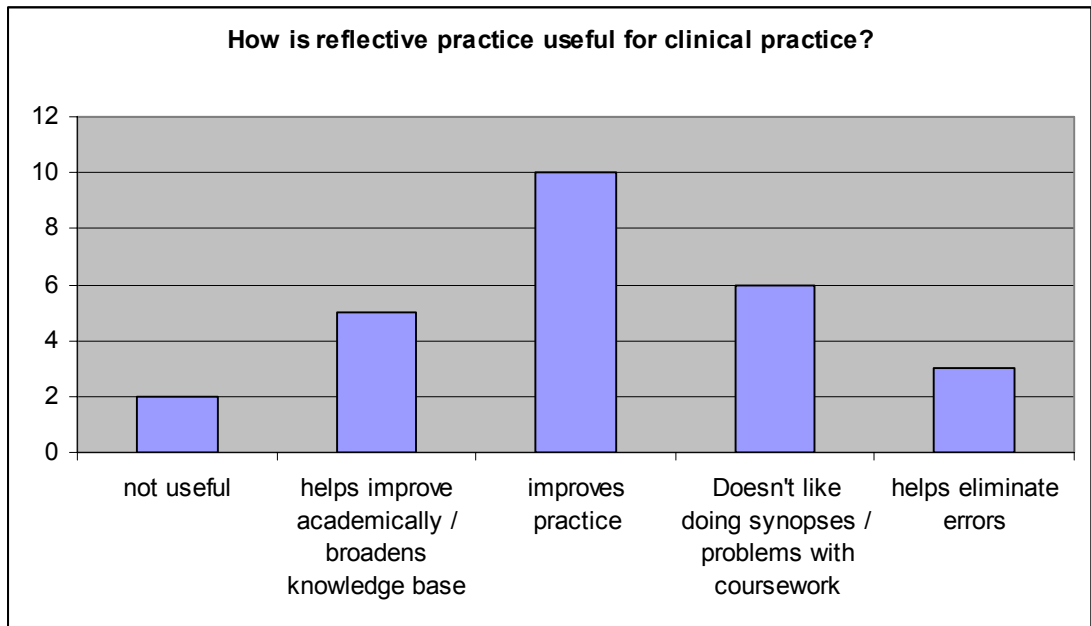


Figure 6-2 The usefulness of reflective practice

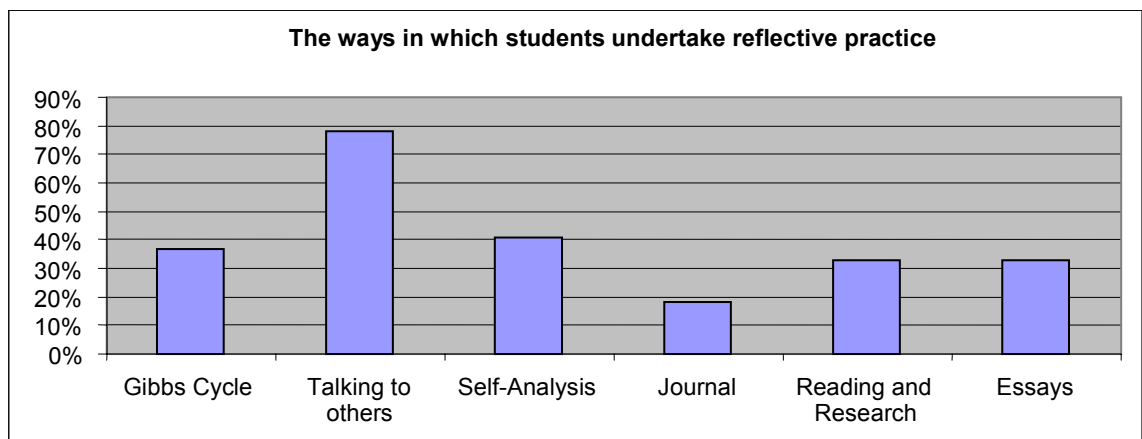


Figure 6-3 What reflective tools have you used?

Figure 6-3 shows that Level 3 students identify ‘talking to others’ as the most common way in which they undertook reflective practice. It is obvious from the percentages in Figure 6-3 that students use multiple methods in which to undertake reflection. Notably third year students rated Gibbs’ Cycle lesser than ‘talking to others’.

The next set of results focus on the *importance* of reflective practice to identify whether or not students think reflective practice is *important* as well as *useful* which may be different.

Table 6-11 indicates that the number of students who thought that reflective practice was **important** for their academic studies is in the majority.

Table 6-11 Importance of reflective practice to academic studies

Categories	Frequency
Very Important	9
Quite Important	8
No strong feelings either way	8
Not Very important	9
Total	27

Figure 6-4 below show that a number of students identified its academic importance and professional importance. It is worth noting that a number of subjects also stated that it was “not of use professionally” (which is curious as this was not the focus of the question). This may however, possibly be due to difficulties for some students in separating ‘usefulness’ from ‘importance’ although this was not identified at the pre-testing stage of the questionnaire.

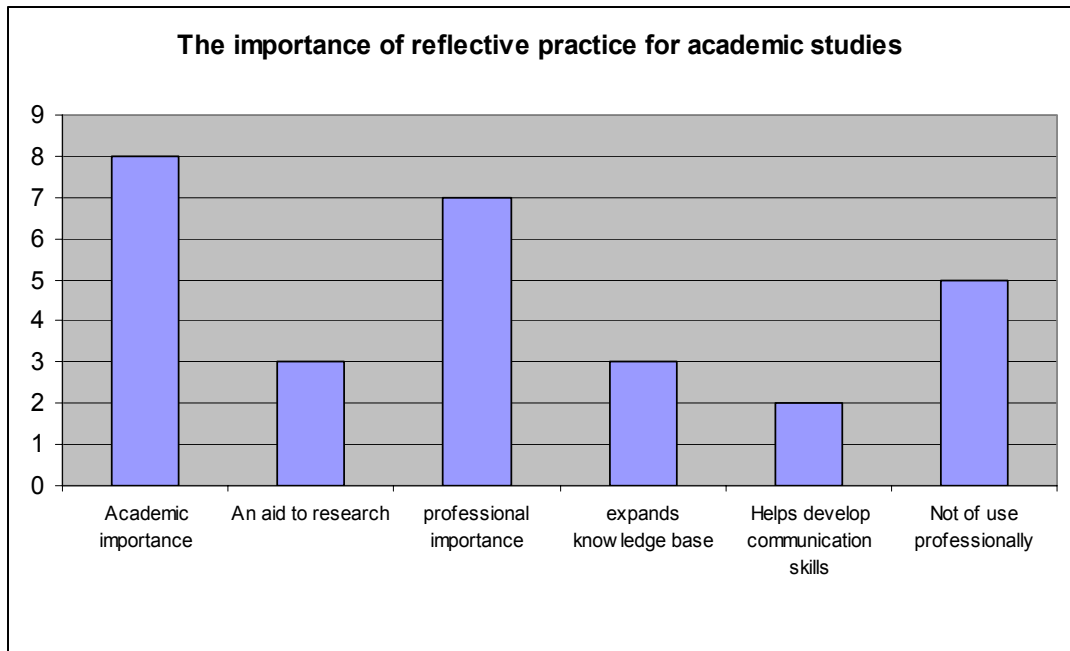


Figure 6-4 The Importance of reflective practice for academic studies

Table 6-12 shows how students rated the **importance** of reflective practice to their professional practice as paramedics. The results show a greater emphasis on importance to practice more so than for academic studies.

Table 6-12 The Importance of reflective practice to clinical practice

	Frequency
Very important	10
Quite important	12
No strong feelings either way	4
Total	26
No response	1
Total	27

Figure 6-5 shows that the most prominent aspect of the importance of reflective practice for clinical practice is that it helps to improve practice.

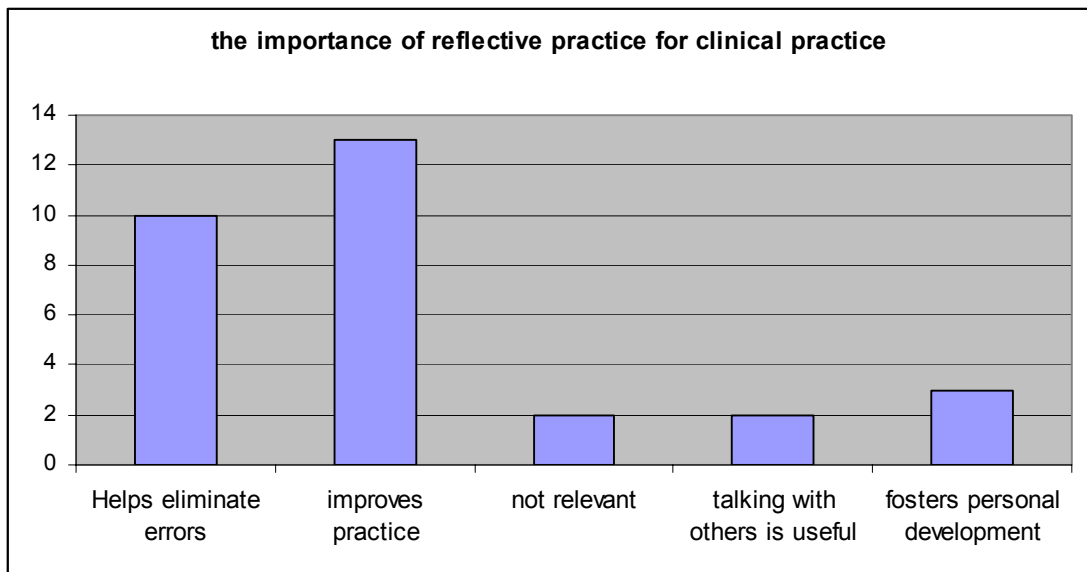


Figure 6-5 The importance of reflective practice for clinical practice

Figure 6-5 concurs with Figure 6-2 which shows that improvement to practice is rated as being both useful and important.

6.2.4 General Views of Reflective Practice

Question 9 asked student for further comments about reflective practice in relation to academic studies and clinical practice. Less than half of the sample (12) responded to this question.

The following is a selection of comments which support the quantitative and qualitative data that reflective practice is generally both *useful* and *important* to paramedic students' academic studies and clinical practice as follows: (the other comments not selected generally relate to assignment/assessment issues which were not a part of this research).

Respondent A: *“There is no clear method for ambulance staff to undertake reflective practice. Much of the research methods are from nursing practice which cannot be directly transferred. Hopefully this research will help”*.

Respondent B: *“Excellent learning process”*.

Respondent C: *“The use of journals to help with reflective practice could be championed during the 3 yr course”*.

Respondent D: *“Discussions about experiences as well as documenting them would be more helpful”*.

Respondent E: *“I believe that for clinical practice reflection is needed but for academic study thoughts and feelings are inappropriate”*.

It is interesting to note that the data so far show that students have not indicated any issues regarding their own understanding of reflective practice.

6.3 Reflective Practice Related to Students’ Learning Styles

This section identifies the distribution of learning styles within the sample and the relationships to students’ views of reflective practice. For example, do the Reflective Observers (Watching Types) respond more favourably to reflective methods of learning such as observing and thinking back rather than ‘hands-on’ concrete experiences?

Kolb (1984 p68) describes the four learning preferences as:

- concrete experience (feeling)
- reflective observation (watching)
- abstract conceptualisation (thinking)
- active experimentation (doing)

In order to discover what kind of learners the students are each was asked to complete a Learning Styles Indicator. Out of the 27 students 26 completed this task.

The results for the LSI in Table 6-13 and Figure 6-6 show the distribution of learning styles within the sample.

Table 6-13 Distribution of Sample according to Learning Styles

Doer	Watcher	Thinker	Feeler	Unknown
12 (44.4%)	6 (22.2%)	5 (18.5%)	3 (11.1%)	1 (3.7%)

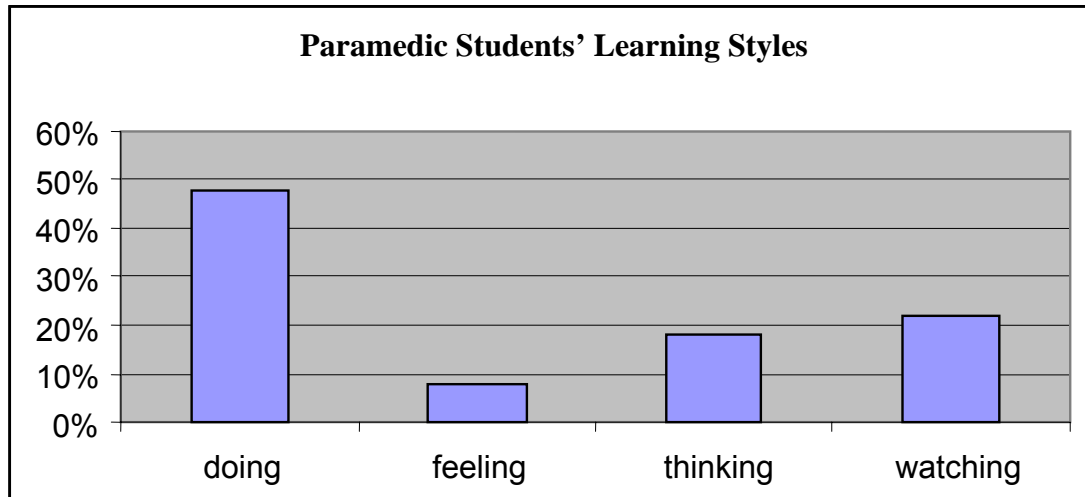


Figure 6-6 Distribution of the Sample according to Learning Styles

As seen in Figure 6-6 the majority of students scored themselves as ‘Doers’.

Further analysis demonstrates the breakdown of learning styles by gender and age as shown in the tables below:

Table 6-14 Learning styles for male students by age

Age (years)	Doer	Thinker	Watcher	Feeler
18 to 25*	4	4	1	3
26 to 35	2	1	0	0
Total	6	5	1	3

*1 No response

Table 6-15 Learning styles for female students by age

Age (years)	Doer	Thinker	Watcher	Feeler
18 to 25	6	0	5	0
26 to 35	0	0	0	0
Total	6	0	5	0

These results show that the male students appear to be distributed across the four of learning styles. On the other hand the female students learning styles are concentrated in the ‘Doer’ and ‘Watcher’ categories.

Looking at the characteristics of the sample neither age nor gender was found to significantly influence the students views of reflective practice as shown in the following examples.

- a. Using Mann – Whitney U test showed no significant difference between gender and the importance of reflective practice to academic studies [significant level, 2 tailed, 0.163, $p = 0.005$].
- b. Using Kruskal- Wallis Test there showed no significant difference between learning styles and the importance of reflective practice to academic studies [significant level, 0.776, $p = <0.005$].

Due to the relatively small numbers in each group of the other learning styles (Figure 6-6) brief descriptions for each group incorporating the qualitative data are presented and discussed in sequence.

6.3.1 Learning Styles Classifications according to Kolb (1984)

The ‘Doer’ group $N=12$ which comprised equal numbers of males and females is classed as ‘Active Experimenters’ according to Kolb (1984).

With regard to the students' understanding of reflective practice the majority in this category describe reflective practice that is generally comparable to the dimensions of Gibbs (1988) Cycle as shown in Table 6-16.

Table 6-16 'Doers' understanding of reflective practice

Category	Frequency
Looking at past practice	50%
Learning for future practice	83.3%
Evaluating positive and negative aspects	33.3%
Structured analysis	33.3%
Feelings	25%

The dimension of 'conclusion' (synthesis) in Gibbs' cycle is not explicit. The majority however, agreed that reflective practice was both useful and important for clinical practice although 5 out of the 12 'doer' category were not in favour of written reflection (synopsis) e.g. *"Useful. Have learnt from some of the larger assignments, but less so from the smaller synopsis"*.

"Somewhat useful. Tend to reflect on jobs automatically without having to write a 1000 word account."

As would be expected with this style of learning the majority (8) rated discussions with others as the method used for reflective practice. Kolb (ibid p69) states that active experimenters *"emphasises practical applications as opposed to reflective understanding"*.

6.3.2 Reflective Observation (Watching) (N=6)

This group identifies with Kolb's (1984 pp68-69) descriptions, i.e. the reflective observer whose focus is on *"understanding the meaning of ideas and situations and relying on their own thoughts and feelings to form opinions"*.

With regards to understanding of reflective practice the majority of this group said that it was for looking at the past and for future practice. This emphasis on personal learning from reflective practice is demonstrated in the following examples:

- (1) *“Looking at my own practice and learning for future practice”.*
- (2) *“Reflective practice is where the individual relates back to their own practice and reflects upon that practice to improve their practice in the future”.*
- (3) *“In academic studies reflective practice allowed me to assess my progression through my academic studies”.*
- (4) *“It benefits clinical practice as it made me think about alternative ways of practicing”.*
- (5) *“Very important. It makes you think about jobs more”.*

This group identifies the range of methods described by the other groups but includes a wider range e.g. *“done by just thinking in your head”* *“research”* *“written assignments”* and *“reading”*.

6.3.3 (Feeling) (N = 3) Concrete Experience

The three students in this group agreed with the usefulness and importance of reflective practice to academic and clinical studies with a preference for collaborative reflection. The following examples resonate with some of Kolb’s (1984 p68) descriptions of this category for concrete experience i.e. *“their abilities to relate to people and being involved in real situations”*. The following examples highlight this:

- (1) *“Able to discuss with colleagues how best to treat patients and then adapt to future working practices”.*
- (2) *“Speaking about the job with crew mate after it has happened. “Involve crew mate when making decisions based on the reflective practice”.*
- (3) *“Helps to analyse events on the “road”.*

6.3.4 (Thinking) (N = 5) Abstract Conceptualisation

Understanding of reflective practice

All students in this group said that it involved looking at past practice and cited the range of reflective methods shown in Figure 6-3. Kolb's (1984 p69) description of this category suggests that the 'thinking style' is associated with '*systematic planning and analysing of ideas*'.

This concept is demonstrated in the following students' views of reflective practice:

- (1) *"Formal analytical way to aid understanding of past and future experiences and developmental process"*.
- (2) *"By this I mean that I have explored an area of my practice that has come to my attention (in detail)"*.
- (3) *"A revision and consideration to professional practice whereby structured recommendations can be thought and considered to improve practice used on previous experience"*.

Usefulness for academic study

All but one of this group agreed it was useful/very useful again highlighting analysis as a benefit e.g. *"It has encouraged critical analysis of my work in practice"*.

"In the learning stage I have found it useful to analyse past events and it has given me motivation to further my own knowledge of certain situations".

These responses again concur with Kolb's description of the thinking style.

Usefulness for clinical practice

Notably in this group only one person found it less useful for clinical practice than for academic studies i.e. *"I have not found any specific benefits to reflection in clinical practice but I am sure if the right situation arises I will find it beneficial"*.

Importance to academic studies and clinical practice

All in this group agreed that it was either quite important or very important, e.g.

- (1) *“It is significant to consider previous experiences and to improve for the future”.*
- (2) *“It facilitates learning through all aspects e.g. academic studies”.*

6.3.5 Overview of Learning Styles Analysis

Looking at the distribution of learning styles of paramedic students and their views of reflective practice applications, the data suggest that there are links to Kolb’s (1984) four classifications although overall there are very little differences among the groups regarding its usefulness, importance and methods used. The ‘doers’ who were the largest group in the sample did however show a dislike for written work.

6.4 Discussion

This phase of the investigation aimed to explore two key areas of reflective practice with a sample of full time third year paramedic students. The discussions focus on the following: 1) students’ understanding of reflective practice and its application to their academic studies and clinical practice and 2) the relationship between individual learning styles and its influence upon the students’ views of reflective practice.

6.4.1 Students’ Views of Reflective Practice

As indicated in the results section from question 3 of the survey pertaining to the students’ views of reflective practice, the categories of the responses identify five themes linked to understanding of reflective practice, i.e. it is about reviewing past practice, future practice, addressing positive and negative outcomes, a structure for analysis and thinking, and personal/ professional development.

This suggests that generally what the majority of this group of students say largely mirrors the components of Gibbs’ (1998) reflective cycle and the definition by Reid (1993) possibly influenced what they had been taught in the curriculum as shown in the mapping in Table 6-17 below.

Table 6-17 A theoretical comparison of students' views of reflective practice

Examples of categories from students' responses	Gibbs Cycle (1988)	Reid (1993)
"Looking back at what has been previously experienced."	Description of what happened	Review and describe practice experience
"Also expressing feelings"	Thoughts and Feelings	
"What went well or bad"	Evaluation (Good and Bad)	Evaluate
"Analysing what you have done"	Analysis	Analyse
	Conclusion (what else)	Inform Learning
Improve future practice	Future action	

However, the students' views prior to graduate practice that reflective practice is also a personal and professional developmental concept goes beyond those of Gibbs' and Reid (ibid) and other popular definitions that emphasise the cognitive aspects of learning suggesting that it is additionally seen as a value added concept as well as a learning process .

It is interesting to note that none of the students described reflective practice in terms of what happens during practice i.e. *reflection-in-action* (Schön 1983) or as pre-action (anticipatory). The majority of third year students in this study viewed reflective practice as retrospective ("*past practice*") and prospective ("*to advance future practice*"). Benner's (1984 pp 25-26) study of nurses concluded that competent nurses (equivalent to the paramedic students in this study) do contemplate future situations and ignore those that are not considered important. It is not possible to say whether or not Benner's findings apply to paramedic students but is perhaps a research for question for further study (discussed in chapter 9).

6.4.2 Utility and Importance of Reflective Practice

Exploring the concept further the students were asked (Q 4 and 5) to state their views about the usefulness of reflective practice to their academic study and clinical practice. In the previous chapter (5) the third year paramedic students had indicated (100%) that reflective practice was useful to both. Although the majority in this group agreed that reflective practice was both useful and important to their academic studies and clinical work, some emergent resistance to written reflection (written synopsis) was identified e.g. *“Feel there is no need to write down my reflections”*; *“it just seems to be a way the lecturers can get essays out of you”*.

The resistance to written reflection is noteworthy given that the literature encourages this form of reflective practice so widely. Rolfe et al (2001 p41) observed that there was *“widespread reluctance”* in nursing to reflective writing because of the practical nature of the job. It is reasonable to suggest that this may be also true for paramedic practitioners who work to medically tested pre-prescribed protocols/guidelines that require minimal writing in day to day practice. This is supported in the results which paramedic students identify ‘talking to others’ as the favoured reflective practice method. A key point of interest here however, is that the students view reflective practice as a way of improving practice and as a safety net for ‘eliminating errors’. The latter especially accords with paramedic protocols which are scientifically tested to avoid errors. Thus reflective practice is seen as having practical and safety utilities in paramedic education and practice similar to treatment protocols which gives practitioners legal protection. Safe practice is paramount in the clinical field.

Question 6 asked students to list the ways in which they undertook reflective practice and to rank these in highest to lowest order of usefulness. Unlike previously (study 2 chapter 5) where the majority of students cited Gibbs’ Cycle as the reflective framework they had used, the majority of this group of third year students identified ‘talking to others’ more so than written formats such as learning journals. Yet it is interesting to note that the basis for paramedic practice is written protocols. Even though students appear to value the use of written reflective formats such as essays and journal keeping nearly a third of the sample appeared resistant to documentary evidence of reflective practice. This may possibly be indicative of a verbal culture that exists in paramedic practice similarly highlighted in nursing by Rolfe et al (2001).

6.4.3 The Impact of Learning Styles on Understanding and Applications of Reflective Practice Concepts

The distribution of learning styles in the sample ranged across those described by Kolb (1984) of *doing, watching, thinking and feeling*. However, because of the relatively small sample sizes of the different sub-groupings statistical analysis was found to be problematic. The focus on the group of ‘Doers’ as the largest group was however, considered to be interesting as reflective learning could potentially be opposed to their favoured learning style when compared to the ‘watching’ or the reflective observer group.

The results showed that the nearly half the sample according to Kolb’s Learning Styles were categorised as active experimenters (doers). One relevant area to the research investigations at this juncture was to find out whether or not this group would be less positive about reflective practice than the Reflective Observer (watching) group. This was not found to be the case although the different groups showed close alignment to Kolb’s learning styles classifications. The results overall showed that regardless of learning styles the majority of students described reflective practice meanings aligned to the dimensions in Gibbs’ Cycle and indicated that reflective practice was both useful and important to their academic studies and clinical practice. This may be the result of what they had been taught rather than their own views although it was anticipated when designing the research that an anonymous questionnaire might lead to more open and critical responses especially at this final stage of the students’ academic study.

It is proposed however, that the majority of students in this study scored themselves as active experimenters (doers) and it is likely that paramedic work possibly attracts this type of learner more so than the other learning styles earlier tested. Campeau’s (1998) study of the distribution of learning styles and preferences among Emergency Medical Assistants (EMCAs) similarly found that the majority of the sample studied (40%) were convergent in their learning styles. i.e. those who Kolb (1984 p76) says prefer practical problem solving and technical tasks.

Overall given the uneven numbers of the four different styles distribution in the sample any further meaningful comparisons remain primarily descriptive rather than significant. Further studies using different methodologies and other (LS1’s) with larger samples

outside this research are recommended. However, the conclusions of research by the Learning and Skills Research Centre (LSRC) concerning the reliability and validity of LSI's on the whole are acknowledged. It purports that "*In the current state of research-based knowledge about learning styles there are real dangers in commending detailed strategies to practitioners because the theories and instruments are not equally useful and because there is no consensus about the recommendations for practice*" Coffield et al (2004 pp 118-119). Cassidy (2004) has further emphasised this point for higher education contexts. In light of these concerns the limitations to the findings of learning styles applied to this research are acknowledged. However, as a sub-theme of this research on reflective practice the use of the chosen LSI as an initial descriptive tool is reasonably justified for initial explorations and a basis for informing further research.

6.5 Chapter Summary

This study with a group of third year paramedic students set out to further explore what students in their own words understand by the term reflective practice and what views they held about its application to their academic studies and clinical practice. Also it was necessary to identify whether or not there were any relationships between what they said they understood and their individual learning styles. These are important issues to identify for achieving effective learning and teaching outcomes. The third year of study is particularly significant for the evaluation of such curricula outcomes to ensure that students have achieved the appropriate levels of reflectivity prior to graduate practice transfer.

From the quantitative and qualitative data obtained it emerged that reflective practice appears to be a useful tool for students' learning related to their academic and practice contexts. The majority of the students regardless of their self scored learning styles also rated reflective practice similarly regarding its use and importance to their learning and practice even though the majority of this sample (over 50%) scored themselves as 'doers'. Overall the students' definitions of reflective practice correlate to the six components of Gibbs' Cycle thus representing an ideal theoretical definition. The alignment of the students' definitions to Gibbs' cycle could however, be the result of the students' learned responses to what they had been taught in the curriculum rather than their independent views although this is contradictory to the results in Figure 6-3 which suggest that Gibbs' cycle is not their preferred reflective tool. However, given that

Gibbs' cycle was not the only model or framework taught in the curriculum it is possible as discussed in chapter two that Gibbs' cycle provides a simple format to follow and that students may find it easier to use and less demanding than other frameworks. Overall, it is also re-iterated that the students' responses may have been influenced by the fact that they were in an academic setting and not the clinical practice context when questioned about their views of and methods used for reflective practice. Consequently, there remains a need for grounded empirical evidence of reflective practice application in a clinical practice context through independent observations to establish what processes occur and how this relates to what the students have described it to mean. In summary, there is an outstanding problem of what constitutes reflection-in and on- action beyond students' written responses and how this may be better understood and interpreted for the paramedic context. This aspect was found to be a major gap in the literature and commensurate with the intended research outcomes this is addressed in the next chapter.

CHAPTER 7

Study 4 – Reflective Practice in Action: A Simulation Learning Environment

7. INTRODUCTION

This chapter concerns the final study in this research that seeks to further explore reflective practice as it applies to the context of undergraduate paramedic students and their learning experiences. Unlike the previous studies this study was conducted in a clinical simulation setting familiar to the students in order to clarify how final year paramedic undergraduate students apply reflective practice concepts in a work related context.

In the previous study it was identified that students may have learned to define reflective practice in ways that are aligned to those provided in the literature and from what they have been taught about it. Overall the data so far suggest that students believe they understand reflective practice and that they are able to use it. They also agreed that it was both useful and important to their academic studies and clinical practice. This finding was shown to be the case regardless of individual characteristics such as age, gender and learning styles. However, the mainly quantitative results so far do not demonstrate how reflection is applied in a practice context hence a need for the further development of the research methods to answer the main research question more fully.

In this phase of the research a perceived need was identified to establish how paramedic students reflect *on* practice following their participation in simulated clinical scenarios and importantly to determine how this links to the processes that occur *during* the scenario based experiences; currently the evidence in this research so far has relied on self - reported views of students only. These issues to be addressed pertain to the applications of Schön's (1983) ideas of reflective practice as they present in a specific practice context. The work of paramedics in the pre-hospital setting is unique and

moreover paramedics have a highly defined set of practice guidelines/protocol to follow for the management and treatment of emergencies commonly encountered in day to day practice. Paramedics also work to time critical outcomes based on best medical/scientific evidence of patient responses and survival rates so there is an important question regarding what they actually do when they are faced with an emergency paramedic situation i.e. do they comply solely with specified guidelines as they are expected to or do they show evidence of “thinking on their feet” as argued by Schön? Additionally, what are the observable processes and actions that occur *during* and *after* an episode of practice that might be indicative of reflective practice and how do they influence the students’ learning? These are central to the main research question.

The other issue pertains to the usefulness of simulation as an educational tool for reflective learning during and after participation in clinical scenarios. Simulation based learning is recommended by Schön (1983 p37) as a safe context where students could be coached to become reflective practitioners i.e. in a virtual world but without “*the risks of the real one*”. Numerous studies in nursing e.g. Nehring and Lashley (2004) have since documented the benefits of using simulation as a teaching method for undergraduate nursing students and more recently the benefits to reflection as a post simulation activity has been highlighted (Fanning and Gaba 2007).

The use of simulation observations in this study was to establish with reflective practice “*whether the effect is representative of what happens in everyday life*” (Brewer 2000 p12). This aspect remains a gap in the literature and this study aimed to provide an explanation concerning the lack of consensus about reflective practice so widely reported in the literature as identified in the earlier chapters of this submission. Investigating reflective practice in a grounded way is imperative for both effective curriculum evaluation and development of the students’ professional practice. While it is clear at least from the QAA context that paramedics must “*adopt reflective and inquisitive attitudes applying rational processes*” and “*reflect on, and review, practice*” (QAA (2004 Sections B2, B4) it is less clear how such abilities are manifested and how they should be developed. Indeed what reflective practice abilities actually mean or look like in the practical context for which they are primarily intended remain largely unexplored.

Currently the learning/teaching processes for reflective practice before and after a clinical simulation scenario are as yet underspecified for the undergraduate students in this study in that the learning experiences generally follow the briefing/debriefing format of informal discussions that occur in the real practice settings. Therefore it is unknown whether or not students' actually utilise a framework such as Gibbs' (1988) reflective cycle iteratively in their practice apart from their written claims in summative assessments.

In particular little is known about if, and how reflection processes are applied by paramedic students in practice or what descriptors are indicative of reflective practice-as found in the literature and curriculum outcomes. This is also the case for many other health care disciplines. Exceptionally one study in medicine looking at reflective thinking among primary health care doctors and their clinical practice identified that a structure of reflective practice does exist which correlates to Dewey's (1933) five dimensions of reflective thinking (Mamede and Schmidt 2004). Paramedic work is largely located in primary care settings.

As proposed in the previous chapters it is unknown how reflective practice influences and interrelates to the learning of paramedic students beyond what they say. Thus the justification to investigate whether or not reflective practice can be independently observed and measured as they occur during and after practice and indeed how it co-exists in the context of a guidelines/protocol approach to paramedic clinical practice. It is anticipated that the outcomes of this study will inform future curriculum design and implementation strategies of reflective practice including simulation learning in paramedic sciences and provide initial descriptions of reflective practice structures from the students' perspectives. As previously stated in this submission this aspect is lacking.

For this study it was considered that video recorded simulation scenarios might offer the most realistic opportunities for initial empirical observations that could be categorised and defined to identify reflective practice structures relevant to the paramedic students' learning context. Further it represents a naturalistic setting which is valid to the learning and teaching developments of reflective practice outcomes in the undergraduate paramedic and other health care curriculum.

7.1 Method

This study involved the recording and subsequent analysis of students' participation in clinically based simulated scenarios. A process of '*Less-Structured Observation*' was used to collect and analyse qualitative and quantitative data of students' clinical actions in a near as possible natural context of practice. This approach is said to be "*characterised by flexibility and a minimum of pre-structuring*" (Foster 1996, p 61).

The observation data that comprised video recordings of simulated scenarios were transcribed and thematically coded involving a second independent researcher. Simulation activities from selected scenarios were calculated to give an overall number of occurrences then coded into subcategories that were statistically analysed using SPSS (details in section 7-2).

A total of seven full episodes of non participant observations were video recorded in the university's simulation centre with a total of 22 final year paramedic students and conducted over a two month period. The purpose was to observe and record the students' actions and interactions as they naturally occurred in a life-like setting. The simulation activities were part of the students' normal timetabled sessions thus providing minimal researcher intrusion.

7.1.1 Video Observations Procedure

The data collected in this study consisted of videotapes of students' clinical actions and communications used during simulated scenarios and the debrief sessions that followed these scenarios. Activity types (psycho-motor and inter-personal) were calculated to give an overall number of occurrences during and after each episode of simulated practice. Four different simulation scenarios were recorded and coded. These scenarios varied in length between 10 and 20 minutes depending on the severity of the cases and the responses of the students involved. Students began the scenarios by working in pairs as they would in a real situation and were in most instances joined later by a second pair (crew) when the simulated scenario was modified to depict more complex complications such as haemorrhage or cardiac arrest. This format of the simulated process mirrors that of realistic representations in emergency situations where students are expected to follow the guidelines prescribed by JRCALC (2006).

Each of the simulated scenarios used were adult clinical emergencies that paramedics are expected to encounter in their daily practice. The general actions that would be expected as a response to these scenarios are as follows:

Paramedics will typically:

- Survey the scene for safety.
- Conduct a primary survey consisting of checking the patient's airway, breathing and circulation, disability, and exposure for examination (ABCDE) while simultaneously give any immediate treatments, and
- Conduct a secondary survey involving a fuller examination of the patient.

The sequences of interventions are time-critical and can be concurrent. The scenario is intentionally either quickly resolved successfully or it is modified to become more complex requiring additional paramedics being called to the scene. The patient is then either transported to hospital or discharged elsewhere appropriately.

The sequence of events is depicted in the algorithm shown in Figure 7-1.

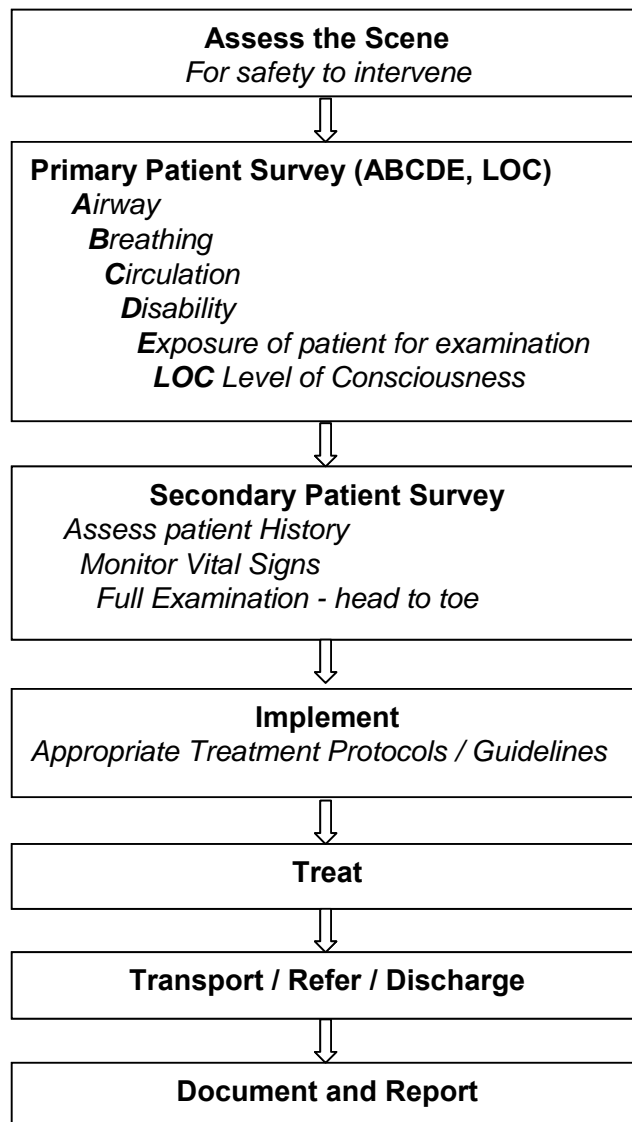


Figure 7-1 Representation of Paramedic Operational Algorithm

Scenario 1

The first scenario concerned a 34 year old male who was involved in a road accident and was knocked off his motorbike. Presenting complaints included a headache and pain in his right lower leg. The patient is fully conscious at the start of the scenario and is lying by the roadside. As an outcome of the scenario the two paramedics in attendance should correctly diagnose head and leg injury. The patient is treated at the scene then later transported to hospital for further care.

Scenario 2

The second scenario concerned a 69 year old female who had fallen over on the pavement. The patient has had a history of Cardiac Problems. Her current medication included Glycerine Trinitrate (GTN) tablets for pain when necessary. At the start of the scenario the patient is cold, clammy, and sweating but conscious. She later has a cardiac arrest and dies. This scenario is designed to involve a second crew in attendance.

Scenario 3

The third scenario involved a 45 year old male patient who began ‘choking’ whilst dining in an Indian restaurant. He is accompanied by a friend. At the start of the scenario, the patient is conscious, but is struggling to breathe and is distressed. As an outcome of this scenario the two attending paramedics should successfully treat the patient at the scene with adrenaline for anaphylaxis.

Scenario 4

The fourth scenario involved a 20 year old male who has been found collapsed on the street. Presenting injuries include a stab wound to the left side and a gunshot wound to the right thigh. At the start of the scenario the patient is conscious and in pain. The scenario is modified so that the patient suffers heavy bleeding and loses consciousness. This scenario requires a second crew and transport of the patient to hospital for further treatment.

7.2 Coding Scheme

Two sets of coding schemes were used for data analysis based on content analysis methods which measured the frequency of activities and emergent categories viz:

a) During the simulation of the scenario and **b)** The after scenario debrief.

Clinical actions and communication emerged as the two categories of activities for the coding of data that could be analysed to identify any emergent structures that relate to *reflection-in- action* and *reflection-on action* type activities.

7.2.1 Coding actions during the scenario

Each action recorded during the simulation exercise was coded in 3 layers using a coding scheme based on an initial viewing of the data and on the primary survey, secondary survey and treatment guidelines as followed by UK paramedics.

The first layer (Table 7-1) describes whether a coded action was ‘clinical’ in nature. These were further sub-categorised as ‘Primary’ and ‘Supplementary’ clinical actions and coded throughout the duration of the simulated scenarios. These layers are explained further.

A primary clinical action (PCA) involves direct physical contact with the patient and a supplementary clinical action (SCA) is defined as actions that require non-physical interventions.

Table 7-1 Coding Scheme for Clinical Actions – (Primary and Supplementary)

Sub category	Description	Examples
Primary Clinical Action	When a Paramedic is directly performing a clinical procedure	administering an injection, giving oxygen, applying a neck brace
Supplementary Clinical Action	An action which is not a specific clinical procedure	social interactions, communicating with the patient, peers and bystanders

The second layer of coding focused on describing in greater detail the clinical actions performed during the scenario. Three elements were based on UK paramedic guidelines for practice (JRCALC 2006 Clinical Practice Guidelines) i.e. Primary Survey, Treatment and Secondary survey as described in Table 7-2.

Table 7-2 Coding Scheme for Primary, Secondary Survey and Treatment

Sub-category	Description	Examples
Primary Survey	Primary survey of key medical signs and symptoms	Checking the scene for safety to proceed, checking the airway, breathing, circulation, disability (ABCDE).
Treatment	Para- Medical Intervention	Giving oxygen, intubating the patient, giving medication, putting on a splint
Secondary Survey	Secondary Survey of other possible medical concerns	Looking for additional signs like cuts and bruises, injuries, swellings, any pain, and further history from the patient

A third layer of analysis was used to code aspects of communication both with the patient and fellow paramedics that occurred throughout the scenario. To assess the qualitative dimensions of communication the categories of verbal communication (utterances) were transcribed defined and their frequency counted using SPSS.

Table 7-3 describes the 2 types of patient communication coded – *asking* and *informing/describing*.

Table 7-3 Coding scheme for patient communication

Patient Communication Categories	Description	Examples
Asking	Asking about the patient's condition	<i>"When did it start? How are you feeling?"</i>
Describing/Informing	Telling the patient what is being done	<i>"We're going to give you an injection"</i>

Table 7-4 shows the variety of different types of peer communication coded throughout the scenario. These categories include *conferring*, *directing practice*, *asking questions/uncertainty* and *clinical description*.

Table 7-4 Coding Scheme for peer communication during the simulated scenario

Peer communication subcategory	Description	Examples
Conferring	Talking to each other generally	“No idea what I’m doing”
Directing practice	Giving out instructions	“Use a splint, support the head”
Asking questions / Uncertainty	Asking what to do	“How much adrenaline should we give?”
Clinical description	Describing the patient’s presenting condition	“He’s not breathing”

Table 7-5 includes extraneous actions that were not otherwise codable within the format as laid out above. These were all coded as relating to ‘simulation aspects’ e.g. where the unreality of the simulated situation impinged on the students’ communications. The incidence of occurrences in this category was used as one source to investigate the validity of the simulation method as a teaching/learning strategy.

Table 7-5 Coding scheme for actions which arose due to the nature of the simulation

	Description	Example
Simulation Aspects	When something related to the simulation arises	“Can’t find the pulse on the mannequin”

7.2.2 Coding of reflection following simulation (Debrief session)

A similar coding scheme was used for the debrief session to capture how students reflected after the simulated scenarios by using two different layers of analysis. The first layer (Table 7-6) focused on whether the statements being made related to specific technical clinical issues (TCI) of the scenario, or whether they were making statements which focused on the non technical (NTCI) aspects of the scenario. This layer also included ‘personal views’ that was separate from clinical aspects of the scenario. The second layer of coding focused on whether or not their statements could be coded into the components of Gibbs’ (1988) cycle that informs reflection-on-action.

Table 7-6 Categories for coding the debrief period- post simulation

Sub-category	Description	Examples
Technical Clinical Issues (TCI)	Refers to specific aspects of primary and secondary survey and treatment	Airway, breathing, pulse, blood pressure, drug administration.
Non technical clinical issues (NTCI)	Clinical statements not directly related to following protocols/guidelines or doing a specific medical procedure	Patient communication, peer communication
Personal Views	Non-clinical statements	Personal opinions of things e.g. “no point hanging around”

Table 7-7 Coding of statements made during the debrief session using the components derived from Gibbs' (1988) cycle

Sub Category (based on Gibbs' cycle 1988)	Description	Example
Description	Describing the scenario (Who, what, when)	Details of the patient being treated e.g. diagnosis and treatment given
Thoughts/Feelings	What they thought and felt at the time	"I was thinking" "I thought that" "I felt that"
Evaluation	What was good/bad/positive /negative	"It went well" "Its difficult"
Analysis	Making sense of the situation (factual)	"Problem with splint" "No compromise with the airway" "It might be circulation"
Conclusion	What else could have been done?	"Could have done" "Should have done"
Future Action	What would you do next time if the situation arises again	"Next time I would/could"

7.2.3 Inter-Observer Validity of Coding Systems

A subset of the data (3 sessions) from the scenarios and debrief sessions were coded by a second rater to provide an estimate of the reliability of the coding scheme. For each of the elements coded a significant level of agreement was found between the first and second rater, indicating the high reliability of the coding scheme.

This is shown below in Table 7-8. (See Appendix E for further details)

Table 7-8 Inter-rater agreement of action during and after simulation

	Percentage agreement	Cohen's Kappa	p-value
Scenario:			
Primary/Supplementary Action	81%	.627	<.001
Primary Survey, secondary survey, treatment	76%	.679	<.001
Peer Communication	82%	.703	<.001
Patient communication	87%	.83	<.001
Debrief:			
Technical / Non-technical / Personal Views	97%	.95	<.001
Gibbs Cycle elements	90%	.87	<.001

7.3 Results

The results are broken down into the following sections: (1) Analysing the actions performed *during* the Simulation exercises and (2) Analysing occurrences in the Post-simulation sessions i.e. *after* the simulated exercises.

7.3.1 Simulation

In this section the following aspects are described quantitatively: (1) how often the students engaged in primary and supplementary action (2) how often they engaged in the primary survey, secondary survey and treatment aspects (3) how often they engaged in patient communication and (4) how often they engaged in peer communication. These various actions were identified to make it possible to identify patterns of the students' activities that could be linked to reflection-in and on-action.

7.3.2 Primary and Supplementary Clinical Actions

Across all the recorded simulations 242 actions were coded. Chi-square testing was used to measure the relationship and frequency between the two categorical variables Primary Clinical Actions (PCA) and Supplementary Clinical Actions (PCA) as described previously in Table 7-1.

Figure 7-2 below shows that a significant majority of the actions carried out in the simulation exercises were primary clinical actions (PCA), $\chi^2 (1) = 17.2, p < .001$ (i.e. when a paramedic student is directly performing a clinical procedure such as giving an injection, giving oxygen or applying a neck support).

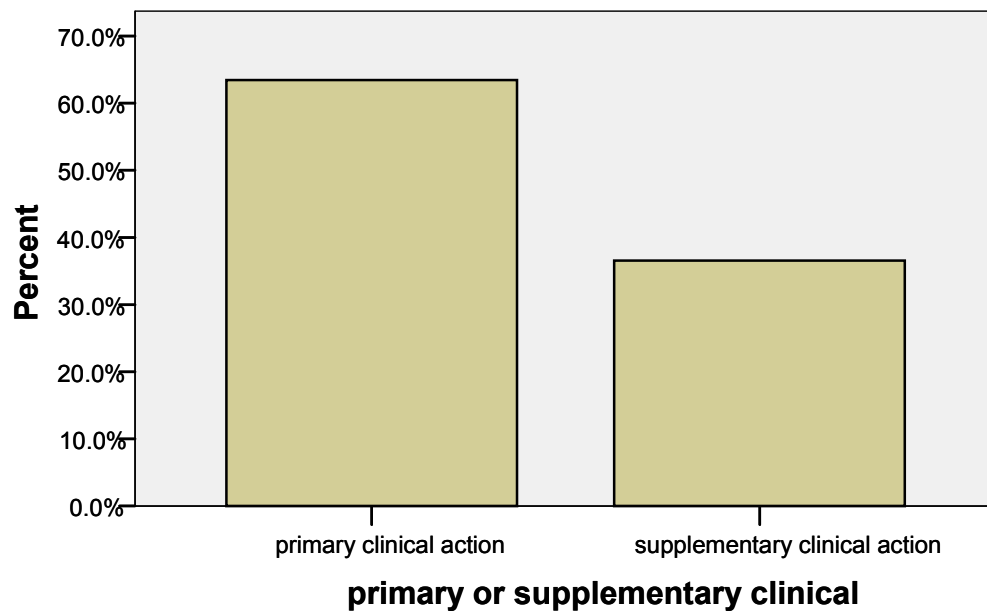


Figure 7-2 Percentage of actions during simulation that were primary and supplementary clinical actions

7.3.3 Primary Survey, Treatment, Secondary Survey

Regarding the second layer of coding Figure 7-3 below shows the incidence of primary, secondary survey and treatment undertaken by students whilst *in action*.

Chi-Square analysis showed that ‘treatment’ and ‘secondary survey’ were the most common categories coded, $\chi^2 (6) = 10.85, p = .004$.

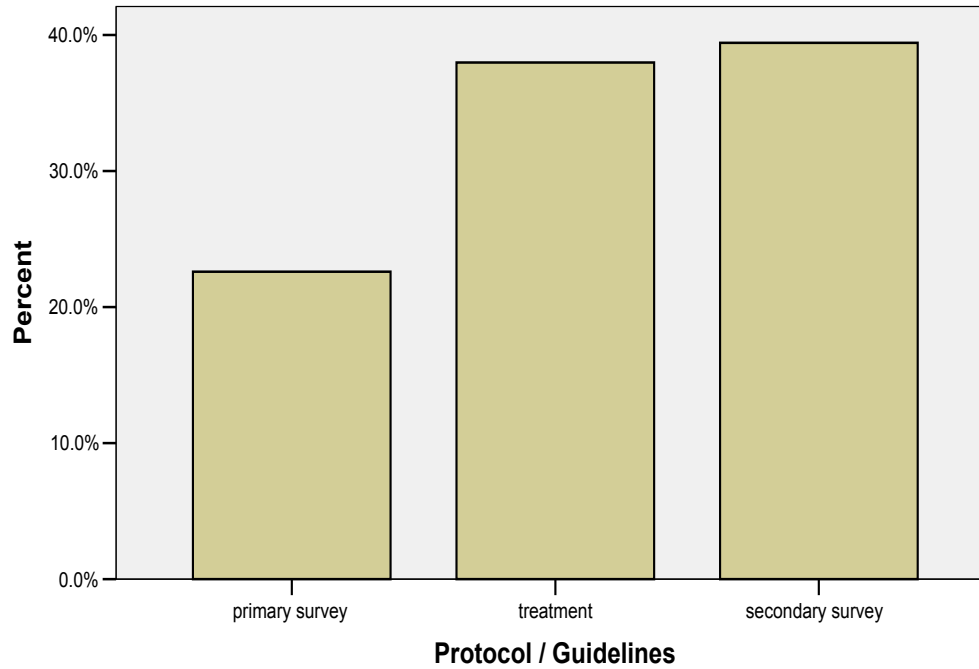


Figure 7-3 Incidence of primary survey, treatment, and secondary survey

7.3.4 Supplementary Clinical Actions

This aspect comprises two categories i.e. peer and patient communication and is explored separately.

7.3.4.1 Patient Communication

Throughout the simulation sessions seventy four instances of patient communication were coded. Figure 7-4 below shows that paramedics engaged in both asking the patient questions, and telling them about their condition, on a roughly equal basis. The percentages shown are for all the scenarios observed.

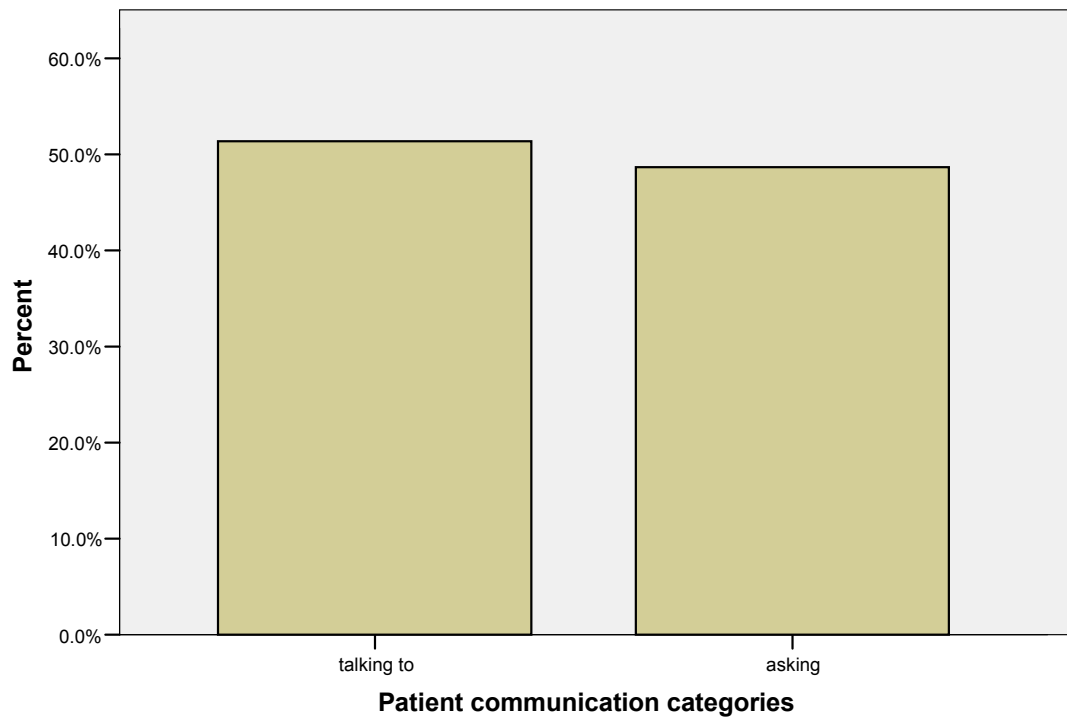


Figure 7-4 How often students engaged in ‘talking to’ and ‘asking’ the patient within the patient communication category

7.3.4.2 Peer Communication

Seventy eight instances of peer communication were coded. Peer communication was broken down into 4 categories as shown in Figure 7-5. ‘Directing practice’ (i.e. giving instructions to fellow paramedic) was the most frequently coded type of peer communication, $\chi^2 (3) = 12.87, p = .005$. The second notable category relates to asking questions of colleagues or when uncertain about the next action.

It is important to note that the categories of communication coded gives an overall percentage for all four scenarios observed based on group dialogue of two or more persons.

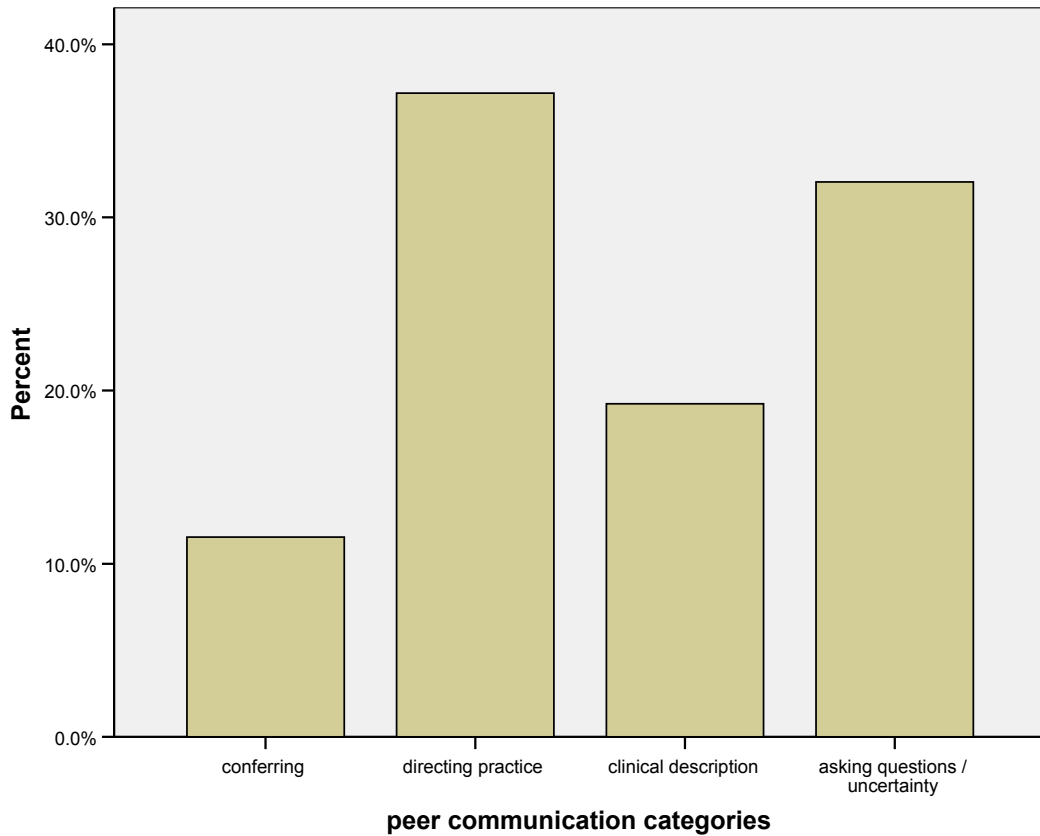


Figure 7-5 Incidence of peer communication subcategories

The emphasis on ‘directing practice’ suggests a greater adherence to a protocol approach although it is possible that ‘asking questions/uncertainty’ could be driven by reflection-in-action.

7.3.5 Debrief sessions (Post Simulation)

There were seventy eight instances of debrief comments recorded and analysed in the following layers: (1) whether the statements focused on technical clinical issues (tci) or non technical clinical issues (ntci) (2) (3) personal views of events and how the statements correlated to the six components of Gibbs’(1988) reflective cycle and.

Technical Clinical issues refer to specific aspects of primary and secondary survey and treatment (Airway, Breathing, Pulse, and Blood Pressure).

Non technical clinical issues refer to statements not directly related to a specific medical procedure e.g. relating to communication and teamwork and when stating personal thoughts/feelings of events e.g. “no point hanging around”.

Figure 7-6 below (representative of *reflection-on-action*) shows significantly that the paramedic students focused more on technical clinical issues (TCI) than non-technical clinical issues and personal views ($\chi^2 (1) = 29.84.68, p < 0.001$).

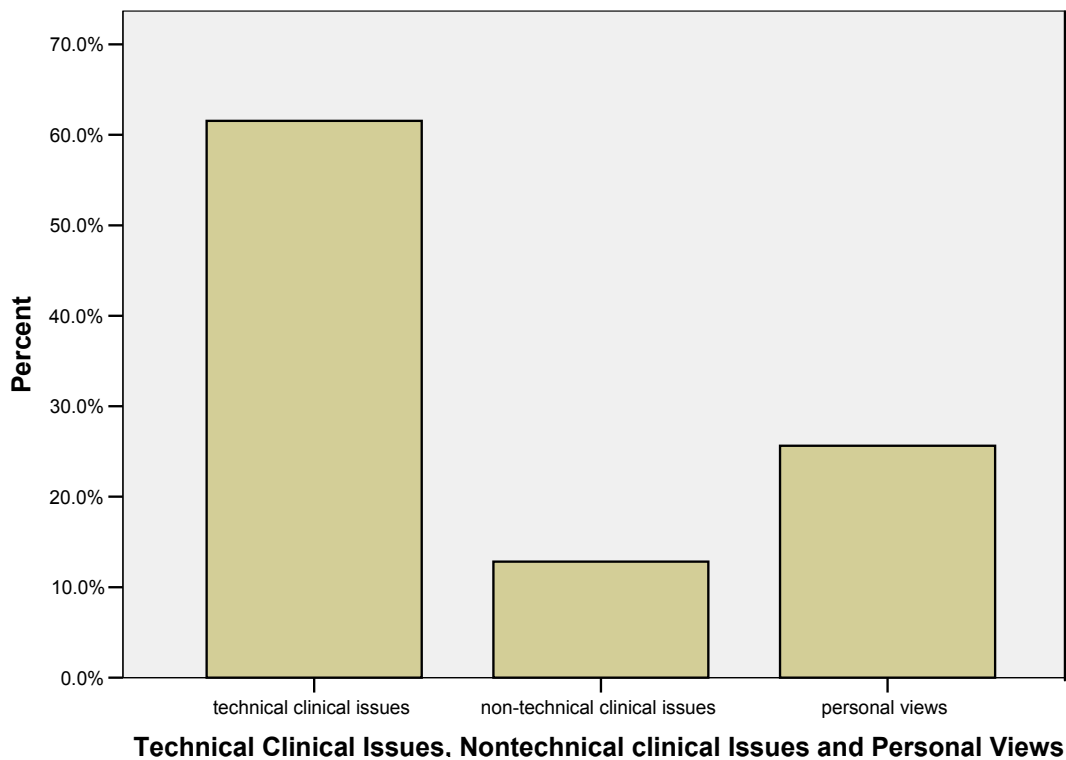


Figure 7-6 Percentage of times debrief remarks focused on technical clinical issues, non-technical clinical issues and personal views

7.3.5 Use of Gibbs' (1988) Reflective Cycle

Figure 7-7 shows how often comments made during the debrief session were coded into one of the categories of Gibbs' (1988) i.e. *description, feelings, evaluation, analysis, conclusion and future action*. The most commonly coded items were analysis, thoughts/feelings and evaluation, $\chi^2 (5) = 11.74, p = 0.02$.

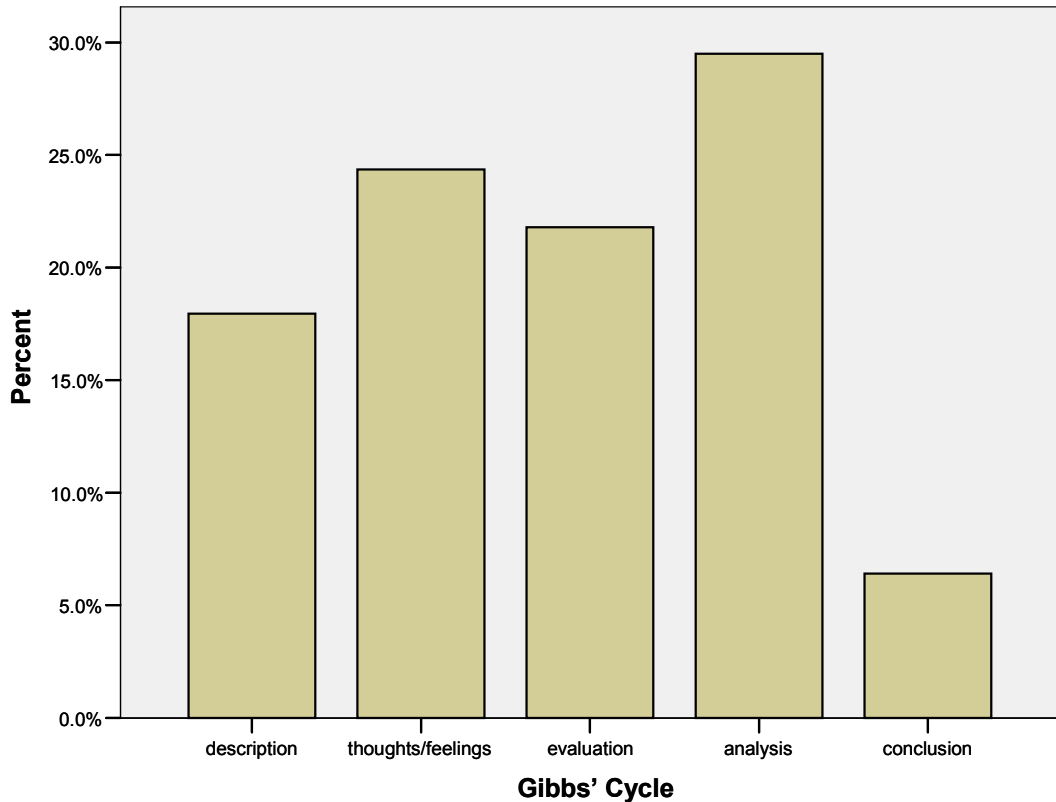


Figure 7-7 Percentage of debrief comments using the six components of Gibbs' Reflective Cycle

Figure 7-7 above shows that in debrief situations ('reflection-on-action') students utilise five aspects of the reflective stages in Gibbs' cycle with most emphasis on 'analysis' and least on 'conclusion'. The dimension of 'future action' is missing altogether which raises an important learning issue for third year students. These results concur with Figure 7-6 which when looked at alongside each other indicate a tendency by students to focus more on scientific problem solving (technical reflection) which may be characteristic of paramedic practitioners in the day to day field of clinical practice.

7.4 Discussion

Building on the outcomes of the previous studies, this phase of the research sought to explore two main issues related to the main research question. First to clarify how reflective practice interrelates to the learning of third year undergraduate paramedic students in a practical way and second to establish the utility of simulation scenarios as

an educational tool for achieving reflective practice outcomes in a university learning environment.

These questions concur with Schön's ideas (1987 p37) ideas for development of the reflective practitioner who advocates the development of such abilities in students through a "*practicum - a setting designed for the task of learning a practice in a context that approximates a practice world*".

This investigation which aimed to explore Schön's proposals of reflection during and after action was identified as an important facet to gain firsthand evidence of activities that inform reflective practice in a life like practice context. As a result it has been possible to describe actions and processes that occur during and after paramedic students' simulation experiences of clinical scenarios that may be indicative of reflective practice learning. The following discussions explore the key concepts of reflection-in and on-action arising from the simulation observations of the students.

7.4.1 Reflection During Action (Primary and Supplementary Clinical Actions)

Schön (1983) suggested that reflection-in-action is a process of spontaneous on the spot thinking. The analysis of processes that emerged during the simulation exercises were categorised to show that three main types of interventions occur during practice, i.e. (a) primary clinical actions (b) primary and secondary surveys accompanied by clinical treatment and (c) communication with the patient and peers.

Looking at the first layer of coding the results indicated that *during* the scenarios paramedic students spent the greater proportion of their time (60%) engaged in primary clinical actions, i.e. directly involved in the administration of therapeutic medical treatments and interventions for example, giving injections and administering oxygen.

These results suggest that the majority of actions that students perform are clinical actions which are prescribed by approved 'guidelines' more so than an independent course of action indicative of on the spot thinking characterised by *reflection-in-action* described by Schön (1983). The results also show (Figure 7-3) that the greater proportion of activities follow the algorithmic sequence of the primary/secondary surveys and treatment interventions, again giving a clear indication that prescribed

JRCALC guidelines are largely adhered to. However, it is possible that as part of students' thinking during practice there is also room for reflection i.e. they may actively reflect and as a result decide that it is safer to follow guidelines. Consequently reflection-in-action may not necessarily be about an alternate course of action but also about conscious thought to reflect-in-action and proceed in a pre-determined manner. Guidelines unlike strict protocols are however, designed to allow some flexibility where on the spot decisions sometimes require alternate actions in the best interest of the patient. Not all paramedic care fits neatly into specific protocols or guidelines and was indeed recognised as a major driver for incorporating reflective practice in the paramedic curriculum. The extent and impact of the non-protocol/guidelines interventions may be worthy of further explorations outside the scope of this research.

7.4.2 Reflection During Action (Communication)

Reflective communication has become increasingly recognised as part of clinical practice e.g. in nursing (Johns 2004) and in teaching where it is proposed that *"knowledge in action is manifest in the conversations that take place between the practitioner and his or her setting"* (Clarke 1995 p244). Communication has also been described as a key ingredient in doctor-patient relationships and fundamental to the goals of therapeutic interventions and that the exchange of information consists of information giving and seeking (Ong et al 1995). So how does this apply to pre-graduate paramedic students?

A key non clinical action that occurred during the simulated practice exercise was that of communication. Looking further at the 'Supplementary Clinical Actions' which is part of the assessment and treatment processes, the results suggest that paramedic students do not rely solely on guidelines to inform their practice. Verbal communication was significantly interwoven with clinical actions. The results of the coded activities showed that the students spent 40% of their activities engaged in communication with the patient and their peers. The different range of communication e.g. *asking, directing and conferring* suggests that although students follow guidelines/protocols in the main other supporting thought processes occur. Formal paramedic interventions therefore seem to rely on dialogue for effective co-ordination of clinical interventions with the patient and between peers to supplement their clinical actions.

So how does communication including its different patterns during practice indicate evidence of reflectivity? The literature on discourse analysis describes “*talk as action*” and “*language as a social practice*” (Wood and Kroger 2000 p4) both of which are inherent in paramedic practice and therefore important to understand how it informs their reflectivity. Further, on the subject of reflective communication in the health care context Johns’ (2004 p204) states that “*communication weaves together practice to ensure that care is continuous, consistent and congruous within and across practice settings*”. Thus communication becomes reflective action. However, whether or not the different types of communication that occur in paramedic practice are as a result of reflection-in-action or a learned response is difficult to say at this point.

Either way it appears that whilst guidelines are useful paramedics cannot rely solely on them (Jones and Cookson 2001). The implications for learning and teaching suggest that paramedic students need to be made consciously aware that *supplementary clinical actions* especially different types of communications with patients and peers are integral to the other clinical interventions. It is an important mechanism for linking ‘thinking’ and ‘doing’ simultaneously thus a key issue to consider for reflective practice education.

The results particularly inform the type of communication skills that need to be emphasised for learning and teaching clinical aspects of emergency care management, for example effective interviewing techniques of the patient and bystanders. Whereas verbal communication with the patient was categorised either as ‘asking’ or ‘informing’ the patient, the range of communication strategies with the student peers was more varied e.g. giving instructions, conferring and describing. This suggest that as a clinical situation is unfolding a number of thought processes are simultaneously manifested in different communication formats to supplement clinical actions. However, communication as it occurs could also be driven by the sequencing of the relevant protocol/guidelines as well as reflection-in-action which may be difficult to separate.

Crawford et al (2006 p33) identify that “*verbal communication is a diverse and complex activity*” although Burnard’s (2000 p19) views on the ‘outer experience of the self’ concludes that “*the words and phrases we use are a potent means by which we convey our thoughts and feelings to others*”. It is reasonable to conclude therefore that the different forms of communication identified in this study could be indicative of

reflection *during* action- albeit not clear cut. Although it was not the intention of this research it is suggested that another way of finding out what factors drive the patterns of communication in paramedic clinical interventions could be achieved through a different research method such as a phenomenological approach in the field setting.

7.4.3 Patterns of Communication During Action

Two categories of communication were analysed according to patient and peer communication. The exchanges between the students and the 'patients' as shown in Figure 7-4 highlighted categories of information 'giving' and 'seeking'.

When looking at the categories of peer communication (Figure 7-5) a significant result is that of directing practice e.g., "*give oxygen to help*", "*get the scoop*", "*check pulses*", "*compare left and right pedal pulses*" and "*need to call second crew*". These instructions during action appear to indicate thinking processes along the guidelines/protocols or 'technical rationality' route criticised by Schön (1983) more so than the concept of intuitive and the gut feeling responses characteristic of *reflection-in-action*. Nevertheless the pattern of communication that emerged from the data analysis indicate an orderly systematic and directive approach to practice appropriate to the emergency nature of the situations that are highly aligned to a 'guidelines' informed approach. This does not mean to say that reflection-in-action does not co-exist with such approaches therefore in the paramedic context at least Schön's criticisms and assumptions of this type of approach may be misguided.

'Questioning' also emerged as a notable category of peer communication. Dewey (1933, p 265) describes thinking as "*questioning*" which if it is true, says something about the following results. Over 30% of the students' communication involved questioning their peers e.g. "*Did we have the right equipment?*", "*time to shock again?*", "*set up a saline drip?*". This pattern of questions also suggests that some uncertainty exists during practice which was verbalised by the students and may be indicative of the level of students' reflective status. On the other hand Wyatt's (2003 p3) ethnographic study of experienced paramedics involved in clinical judgement making found that that in routine cases experienced paramedics "*managed efficiently with barely a word spoken*". Wyatt's findings suggest that verbal communication decreases with experience and this could be a useful follow up study with the students

post-qualifying. This phenomenon has already been studied in nursing by Benner (1984) who identified that the expert practitioner no longer relies on rules and guidelines for practice for making connections to their practice. The implications for this research are that patterns of activities relevant to undergraduate paramedic students have now been established and can become the basis for studying how and why the patterns of communication change later during qualified practice.

7.4.4 Reflection-on-Action (Post Simulation Debrief)

The first layer (Table 7-5) focused on whether the statements being made related to the specific technical clinical issues of the scenario or whether they were making statements which focused on the non technical issues. The second layer of coding focused on whether or not their statements could be coded into the components of Gibbs' (1988) cycle i.e. *description, thoughts and feelings, evaluation, analysis, conclusion and future action*.

Looking back at the results for the first debrief layer of coding in Figure 7-6 it can be seen that the students focused more on technical clinical issues e.g. "*problems with oxygen supply*", "*didn't check the pupils*". What emerges here suggests that students consistently focused more on technical clinical issues after an episode of practice similarly to during practice where they focused on primary clinical actions. Taylor (2000 p172) states "*that questions about clinical procedures can be answered quickly and effectively through technical reflection*". This result is nevertheless surprising given that in contemporary practice students are taught to adopt a more patient-centred and holistic approach to care rather than the traditional 'task orientated approaches' such as the clinical tasks described above. This does appear to highlight a dilemma for students in applying theory to practice and something that educators need to be aware of and resolve if effective reflective learning is to be achieved. Debriefing is opportune.

Debrief post simulation is an important aspect of the students' learning regarding the wider knowledge and skills developments for professional practice such as communication and inter-personal skills. As with reflection during simulation the results indicated that students do also reflect on the non-technical aspects of the experience e.g. the importance of leadership in dealing with an emergency situation "*good having someone in control*". They also include personal views about the situation

e.g. “*trying to do 18 things at once you end up doing nothing*”. So there is an argument that technical reflection exists alongside non-technical reflection, although the literature, notably Schön juxtaposes these two dimensions that have been widely accepted in some disciplines such as nursing and may be misleading.

7.4.5 Reflection-on-action (Gibbs’ Cycle)

With regards to the second layer of coding the debrief materials, as indicated in Figure 7-7 it emerged that this group of paramedic students did not use all the components of Gibbs’ reflective cycle i.e. *description, feelings, evaluation, analysis, conclusion and future action*. The coded themes suggest a particular pattern for paramedic students in a debriefing situation. Notably, that students engage most in the ‘analysis’ or sense making aspects of their simulated practice i.e. “*check pulses*”, “*check for danger*”, “*no compromise with the airway*”. Such an emphasis suggests a pragmatic approach to reflection-on-action which mirrors the process of reflection that similarly emerged during action. This is not a criticism.

The following explanation by Wellington and Austin (1996 p309) concludes that in such situations (i.e. debrief), students “*tend to focus on the immediate demands of the group or on the task at hand*” and “*their pedagogy is often eclectic but shallow*”.

The authors (ibid) also allude to particular orientations that individuals adopt towards reflective practice in immediate situations viz, ‘*technical*’ and ‘*dialectical*’ in favour of imposed organisational structures. However, this may also be due to ways in which the debrief process is conducted post simulation where the emphasis is on technical clinical issues and tutor led, or a reflection of what happens in the real day to day practices.

The de-brief approach that emerged with the paramedic students is similar to Peters (1991) DATA model of reflective practice (*describe, analyse, theorise, act*) which is a pragmatic model. A significant finding did however highlight that students only refer to the ‘conclusion’ dimension of Gibbs’ cycle minimally i.e. 5% of the time which does not reflect what they are taught in the curriculum. This suggests that the reflective process afterwards lacks ‘synthesis’ of ideas which are important measurable indicators of what has been learnt, reconceptualised and how this might influence future practice. Again this may be due to how the facilitation of the debrief process as observed was

conducted. Debrief did not appear to explicitly draw out these outcomes and should therefore be more formalised within future learning/teaching simulation strategies.

The need for undergraduate students to achieve higher levels of thinking such as synthesis is a key curricula outcome for higher education. Therefore the role of tutors/trainers in creating opportunities for this to materialise is crucial to reflective practitioner developments. As Moon (1999 p165) points out reflection by itself does not simply “*happen*” but it can be encouraged if the right conditions are structured. Similarly it is proposed from this research that technologies by themselves do not promote reflectivity so the role of the tutor/instructor is vital if deeper reflectivity appropriate to curricula outcomes are to be achieved.

In fact no mention of ‘future practice’ was found in the data analysis yet future practice is also key element in many other popular reflective frameworks such as Dewey (1933) Kolb (1984) and Boud et al (1985). That is not to say that students do not think about how future practice may be informed by reflecting on past experiences as shown in Figure 6-1 of the previous study. An issue does arise however, which begs why is future action not verbalised when it can give immediate feedback about what has been learnt? Reflection as a concept has increasingly been criticised for being too introspective (McCabe and Timmins 2006). This is significant for educators who are reminded that “*reflective practice thrives in an environment of open communication*” (Osterman and Kottkamp 1993 p178). Hence the added value of debrief as a reflective tool.

The partial use of Gibbs Cycle in the debrief process is further interesting for curricula outcomes and may apply elsewhere not just to paramedic students. Students in this study are nevertheless required to clearly identify their reflective learning from practice situations and to clearly specify implications for future practice. This finding suggests that what students write and what they say and do may be different as found in studies of written learning journals. It also significantly informs how the processes of reflection on practice could and should be managed more effectively, not just locally but at other universities and wherever reflective practice is featured in paramedic education. This is addressed further in section 7.5.

7.4.6 Reflective Simulation

As explained earlier simulation learning at UH is an essential part of students' learning and clinical skills development latterly validated and approved by the QAA (2004).

Looking at the effects of simulation as a separate layer of coding (Table 7-4) the data identified only two out of seventy four instances of content analysis recorded during simulation that suggested awareness of an unreal situation, i.e. "*Its a bit strange talking to the mannequin, bit weird*" and "*its easier in real life*".

Conversely in the debrief post simulation (reflection-on-practice) six out of seventy eight vignettes of comments referred directly to the effects of simulation learning, e.g. "*Like a real patient*", "*talked to the patient all the time*", "*grab his head*", "*tell him not to move*". This finding supports Schön's (1987 p37) views for the development of students as reflective practitioners "in a virtual world". Also looking at Figure 7-4 and Figure 7-5 it can be seen that students spent roughly an equal proportion of time talking to the 'patient' as with their peers.

This leads to an overall conclusion that although simulations are approximations of reality it was found in this study that paramedic students immersed themselves to a realistic extent which validates the use of intermediate/high fidelity simulators for multiple curricula outcomes. This includes specific clinical skills and essential interpersonal skills such as team work and communication e.g. "*good teamwork*", "*good communication*", "*good handover*". At the same time missed opportunities for fuller reflective learning were highlighted.

Finally, simulation provides a safe learning environment which is risk free as opposed to dealing with patients in the real settings. The data provided rich ecological validity of what is representative of real world practice. However, if full reflective abilities (as depicted in Gibbs' cycle for example) are to be developed explicitly to include the higher order thinking skills such as 'synthesis' of learning, simulation scenarios need to be formulated around focused learning so that synthesis of learning and future action are overtly articulated. This requires a framework that can be used by both tutors/facilitators and students to ensure these outcomes are addressed appropriately. A new pedagogic framework is proposed in Chapter 8 and further proposals/recommendations are also discussed in the final chapter (9).

7.5 Reflective Practice: A Revised Pedagogy for Reflective Practice

This phase of the study has identified that the reflective practice actions as observed both during and after an episode of practice involves personal learning plus collaborative action and dialogue.

The data analysis has identified that paramedic students also adopt a technical approach to reflection after practice which mirrors the clinical emphasis during practice.

However, this may be confounded by the findings in this study that the reflective process post practice is currently underspecified thus students do not fully engage in a full cycle of reflective learning as depicted in Gibbs' cycle as students at this stage should do. Consequently students emphasise some aspects such as 'analysis' at the expense of other dimensions such as 'conclusion'.

Returning to the wider literature it remains apparent that there is no conclusive method about how reflection should be taught or learnt (McCabe and Timmins 2006). Also that for students reflection is a difficult thing to do and without focus and guidance it is consequently a limited activity. The findings of this study justify the need for a new framework that can be used by students and tutors for both personal and collaborative purposes particularly in a simulation setting to maximise the reflective capacity of paramedic students. These are important indicators of the extent to which reflective practice learning outcomes in the paramedic curriculum are being achieved.

7.6 Chapter Summary

In order to achieve the overall aims of the research this 4th study sought to identify a grounded approach to reflective practice appropriate to the learning experiences of undergraduate paramedic students. The context of a simulation setting has produced initial descriptors of reflection-in and on- action concepts as they are applied by third year students. From the results obtained so far it appears that technical reflection is a dominant feature of the students' practice although it is not possible to identify whether or not the drivers for this are inherent in the protocol/guidelines approach to practice.

This would require further studies. However, in the interim a baseline for communication patterns among students as a feature of reflective practice has been established. Similarly, the validity of simulation as an educational tool has been upheld although the potential for debrief as an effective tool for reflective learning appears to need further development.

CHAPTER 8

Discussion

8. INTRODUCTION

This discussion chapter reviews and evaluates the overall investigations that were undertaken in this research for the study of reflective practice applied to the learning experiences of undergraduate paramedic students. It provides an overview of the different phases of the research carried out and a summary of the findings. This is followed by proposals for the future development of reflective practice learning and teaching in undergraduate paramedic education.

8.1 Overview

The purpose of this research was to establish ‘to what extent does reflective practice in the paramedic curriculum influence the students’ academic and clinical learning leading to graduate practice?’ This involved exploring the students’ understanding of reflection concepts and its practical application in a clinical context. In particular there was a need to identify correlations with the works of key theorists and relevance to their relevance to the paramedic curriculum including Dewey (1933) who emphasised the need for positive attitudes towards reflective thinking, Schön’s (1983, 1987) concepts of ‘*reflection in and on practice*’ and Kolb’s (1984) theory that some learners may be more reflective in their learning than others. It was also necessary to identify how reflective practice is manifested not only in what students write about it but also how it emerges in a professional work-related context that could inform theory-practice relationships within the paramedic curriculum . Other relevant variables explored included issues such as structured reflection, attitudes to reflective practice, the use of reflective tools, learning styles relationships and simulation based learning.

As an example of curriculum innovation it was identified in the literature review that reflective practice in the paramedic curriculum had not previously been evaluated in this

way either locally or elsewhere. Paramedic science is an emerging and developing discipline within higher education over the last decade and reflective practice has become formally endorsed as a prescribed competency and benchmark for professional practice. As such this research was considered both timely and justifiable.

The research consisted of four different studies which utilised a mixed methods approach (qualitative and quantitative) that were designed to enhance the credibility and validity of the data in a developing field of higher education. Informed by the literature these methods were considered to be most appropriate for exploring reflective practice in an innovative curriculum context in order to provide a whole picture of reflective practice evaluation, i.e. following a period of “critical trialling” previously discussed. Details of specific methods for each phase of the study have been addressed in chapters 4-7 respectively.

However, although the focus and context of the study have been with undergraduate paramedic students the overall findings are relevant to other health disciplines including medicine, nursing and other allied health professionals who work in emergency care settings. It provides an initial basis for comparisons and further studies.

8.2 Aims and Outcomes Achieved

In summary this study aimed to:

- (1) Investigate paramedic students’ perceptions, understanding of, and attitudes to reflective practice concepts concerning their academic work and its application in a clinical context.
- (2) Explore the students’ individual learning styles relationships to their views of reflective practice.
- (3) Inform curriculum approaches and outcomes for reflective practice in learning and teaching in undergraduate study.
- (4) Create new interpretations of reflective practice specific to paramedic contexts.

The following outcomes were achieved:

- (1) Identification of paramedic students' perceptions of and attitudes to reflective practice concepts concerning their academic studies and clinical work.
- (2) The application of reflective practice in a clinical context.
- (3) Correlations of students' perceptions to key theorists' concepts of reflective practice i.e. Dewey's (1933) and Schön's (1983), Kolb's (1984).
- (4) Critical analyses of students' learning styles relationships to reflective practice methods.
- (5) Evaluation of Clinical Simulation learning applied to reflective practice concepts in the paramedic context.
- (6) Refinement and redefinition of reflective practice concepts including a new pedagogic framework that supports effective learning and teaching strategies for reflective practice developments in the undergraduate curriculum.

8.3 General Review of the Investigations

The first of four studies involved a foundation study with a whole population of nursing undergraduate students at academic levels 1-3 to develop the subsequent studies with the paramedic students. The rationale for this was to study a sample of students whose characteristics such as age, level of study and university status were the closest to the paramedic students thus enabling some general comparisons of the data. A survey was conducted to ascertain the students' perceived understanding, attitudes and learning styles relationships to reflective practice concepts relevant to their studies and clinical work. The results showed that the majority of nurses (female) perceived that they understood the meaning of reflective practice and related concepts such as structured reflection. They also agreed that it was important to their academic studies and clinical work. Age was not found to be a significant factor. The majority also indicated positive attitudes to the potential applications of these concepts and indicated that these were as important as other methods although they scored a preference for 'hands on' experience.

Although it was not possible from this first study to say what the students understood reflective practice to mean, the results nevertheless provided initial general descriptions of the nursing students' perceptions of reflective practice concepts and provided a basis for comparison with the paramedic students. The first study also highlighted the need for two additional questions for the subsequent investigations with the paramedic students. First, the need for filter questions was identified to accommodate the views of the mixed sample of paramedic students who, unlike the full time nursing sample included qualified part time students who were following a different curriculum pathway thus the issue of contingency responses had to be addressed. Second, as the basis for the follow up studies with the paramedic students and to explore the research question more fully, the need for further explorations on the *use* of reflective practice methods was identified hence the modified questionnaire.

8.3.1 General Review Phase 2

The second study set the scene for gaining initial insights into paramedic sciences where reflective practice as a concept for learning and teaching with this professional discipline remains largely unexplored. Building on the results of the foundation study a revised survey consisting of a twenty item questionnaire was conducted with a whole population sample of paramedic students in their first, second and third years of undergraduate study that similarly aimed to explore their understanding of and attitudes to reflective practice concepts.

The importance and use of relevant reflective learning methods applied to their academic learning, clinical practice and learning preferences were also explored as part of the revised survey. i.e. to find out what reflective tools had they used and how effective these were to their learning. The results of this survey showed that as with the nursing students a majority (97%) of the paramedic student sample (mainly male) indicated that they believed they understood the term reflective practice and sub-concepts such as structured reflection. Majorities also believed that reflective practice could be useful both for their learning (83%) and practice (83%). Statistical analyses showed that age was not a significant influencing factor regarding their perceptions although compared to the nursing students they appeared more favourable towards reflective ways of learning such as 'thinking back and observing'.

Further comparisons between nursing and paramedic students revealed significantly that nursing students had more positive attitudes towards 'structured reflection' than paramedic students. Whether or not this is a gender issue it is difficult to say as there may be other interrelated factors that are 'discipline' and or cultural/social specific to the two groups. This would need to be explored as a separate research investigation. However, the results for both the nursing and paramedic groups showed that students who said they did not understand the term 'structured reflection' had negative attitudes towards it and were also least likely to perceive it important to their practice. Although, this may be considered a logical response the results do nevertheless re-enforce the theoretical premise that there is an important link between positive attitudes and understanding of a subject. Consequently this result is relevant is for informing the learning and teaching of reflective practice. The importance of positive attitudes as a pre-requisite for reflective thinking had been earlier highlighted by Dewey (1933). Boud et al (1985) also highlighted negative feelings as a barrier to reflection. It is acknowledged however, that negative feelings can be a barrier to other learning processes and not just reflective practice.

8.3.2 General Review Phase 3

The third study focused on groups of third year paramedic students to identify explicit definitions and views about the applications of reflective practice concepts in their own words. As a curriculum requirement for these students there is realistic expectation that at the end of three years that they must be able to demonstrate explicit knowledge, skills and attributes associated with reflective practice outcomes for both academic studies and clinical practice i.e. "*typically the graduate paramedic will be able to critically reflect on their performance and practice*". The range of responses from the final year students indicated that at this stage students were able to give ideal theoretical definitions as proposed by key authors such as Reid (1993) and Gibbs'(1988). These are aligned to the 'intellectual skills' specified as learning outcomes in the paramedic curriculum, e.g. review, analyse and evaluate. The students also considered reflective practice to be both useful and important to their learning experiences. From what the students have said it is reasonable to conclude that this is a positive outcome for reflective practice in the paramedic curriculum. However, it is also interesting to note that reflective practice is described as a 'retrospective' activity i.e. *after* a clinical event with no reference or differentiation to something that could also occur *during* a clinical

situation even though students are taught about both aspects. In this sense the students' views of the reflective learning concepts as defined by Dewey (1933) and Schön (1983) are limited. Although the common sense definition of reflection suggests that it is an after event (passive) activity, reflection as an educational concept has also been suggested to be an active concept (Schön 1983) and a 'pre-activity' concept (Greenwood 1993). These dimensions would need to be more explicit in learning/teaching approaches if students are to widen their scope of reflectivity.

8.3.3 Learning Styles Relationships

As an outcome of the literature review it was identified that a gap existed between reflective practice applications and learning styles concepts. Only a handful of writers in nursing had raised the question, e.g. Bulman and Schutz (2004 p132) who identified that "*the issue of learning styles is not one that has generally been pursued by nurse researchers*".

In the first three studies of this research attempts were made to identify whether or not any significant relationships existed between the two concepts. Using both descriptive measures through the surveys (Ch 4 and 5) and a Learning Style Indicator (Ch 6) the results showed that regardless of self-scored learning styles the majority of students similarly described reflective practice meanings aligned to the dimensions in Gibbs' (1988) Cycle, (*description, thoughts and feelings, evaluation, analysis, conclusion and future action*). The majority also indicated that reflective practice was both useful and important to their academic studies and clinical practice. This was found to be the case in study 3 (Ch 6) even though the majority of that sample scored themselves in the 'Active Experimenter' category and who according to Kolb (1984 p69) would be more strongly orientated to "*practical applications as opposed to reflective understanding*".

This aspect may benefit from further studies with larger samples of students and taking into account current concerns about research on learning styles' in the literature regarding the validity of learning styles measurements such as Kolb's LSI as highlighted by Coffied et al (2004) and Cassidy (2004).

8.3.4 Simulation Learning and Reflective Practice: Phase 4

The first three studies of this research had shown that students believed they understood the term reflective practice and third year students were able to give ideal theoretical definitions of its meaning. The fourth study explored the processes that third year students engage with during and post simulation scenarios to gain first hand independent evidence of what may or may not be construed as reflective practice. Additionally, this study aimed to identify how the key constructs of popular reflective practice theories in particular Schön's (1983) ideas of reflection-in and on-action emerged in a reflective practicum - in this case a university based clinical simulation context.

Looking at representative third year groups the results showed that the ways in which students engage in reflective practice do not necessarily follow a full cycle of reflectivity as would be expected at this stage of their study thus a theory-practice gap. This has important ramifications for the design and delivery undergraduate learning and teaching in this area, in particular the way the simulation processes are structured - thus highlighting an important role for tutors and instructors. The need for a new pedagogic framework was identified.

8.3.5 Summary of Key Findings

The following sections provide an outline of the areas for discussion of the research findings.

8.3.5.1 Students' Understanding of Reflective Practice Concepts

Paramedic undergraduate students similar to nursing students on an equivalent curriculum pathway believe that they understand the meaning of reflective practice including related concepts such as structured reflection even though the literature suggests that the term lacks clarification. This could be the result of what students had been taught, however structured reflection as a terminology is not defined within the paramedic curriculum or elsewhere. Rather, it is implied in the literature that structured forms of reflection include formats such as written learning journals and reflective frameworks/cycles. Therefore the students' belief that they understood its meaning possibly derives from the literature rather than what they had been taught.

8.3.5.2 Learning Styles Relationships and Attitudes to Reflective Practice

According to the learning styles instrument used students' views about reflective practice were not found to be influenced by their individual learning styles. Paramedic students generally had a positive attitude towards reflective practice.

8.3.5.3 Students' Definitions of Reflective Practice: A Post Experience Concept

Students defined and described reflective practice as a retrospective process only commensurate with reflection-on-action concepts, i.e. after an experience.

8.3.5.4 Students Use of Reflective Practice Methods Students

Students overall indicated that they use the dimensions of Gibbs' (1988) reflective cycle as one of the main frameworks to assist their learning i.e., *description, thoughts and feelings, evaluation, analysis, conclusion and future actions*, although by the third year paramedic students seem to prefer discursive methods. In third year practice (oral debrief after an event) students focus most on '*analysis*' and least on '*conclusion*'. '*Future actions*' are completely omitted in dialogic debrief sessions.

8.3.5.5 Students Use a Technical/Rational Approach to Reflective Practice

Students viewed reflective practice as a tool for informing practice similar to prescribed protocols/guidelines. During and after practice third year paramedic students' focused mainly on *primary clinical* and *technical* issues thus demonstrating a greater adherence to prescribed practices rather than evidence of on the spot thinking.

8.3.5.6 Communication as a Key Indicator of Reflection During Action

In the simulation context, verbal communication emerged as a key supplementary action to direct clinical actions during practice. The different types of verbal communication used in interactions with the patients and peers during practice are now coded into categories that can inform possible external representations of reflection-in-action.

8.3.5.7 Simulation Learning as a Reflective Practicum

Simulation learning using clinical scenarios offers realistic potential for developing reflective practice learning and teaching strategies. However, the post simulation processes (debriefing) need to be facilitated in a more structured way to encourage

students to ‘synthesise’ and inform future learning more explicitly. A new pedagogic framework for reflective practice offers an alternate solution.

8.4 Critical Discussions of Findings

The more detailed discussions follow the sequence of the findings as listed in the summary above.

8.4.1 Students’ Understanding of Reflective Practice Concepts

The range of meanings ascribed by paramedic students to definitions of reflective practice (Ch6) i.e. what is your understanding of reflective practice? suggests a concept that is similar to the views conveyed by other writers e.g., Boud et al (1985 p19, Reid (1993 p305). These include, *reviewing, evaluating, analysing, and personal learning*. Notably the inclusion of ‘*professional development*’ as an added dimension of reflective practice suggests that students see reflective practice as a much broader value added concept beyond cognitive processes alone. Research into ‘the structure of reflective practice in medicine’ (Mamede and Schmidt 2004) highlighted similar views by doctors and concluded that the development of professional expertise is well fitted to reflective practice concepts. These findings suggest there is an emerging need to reconsider the meaning of reflective practice to encompass the contextual nature of its applications in contemporary health care practices and other educational disciplines.

As a new definition grounded within the findings of this study, I propose therefore that reflective practice may be re-defined as: ‘*A focussed learning strategy for understanding and examining practice experiences for different learning purposes including personal ,collaborative and professional development*’. This new definition is justified on the grounds that it supports reflective practice as described by the students and underpinned by the context and the multiple dimensions that influence their learning and practice such as collaborative learning. It establishes a relationship between practice, experience and learning. More specifically this definition extends the scope of reflectivity to promote ‘focus’ so that reflection activities can be prioritised according to appropriate learning needs. Focus and priority sit well in the paramedic context which is often complex and can be perplexing for students to know where to begin with reflection or what they should be reflecting upon. Further it is recognised that it is not realistic or possible to reflect on everything and this new definition can act

as guide to steer the students towards different reflective purposes i.e. whether or not the issue is practice related or for independent learning.

8.4.2 Paramedic Students' Views of Reflective Practice – a Post Experience Concept

The emphasis in the literature both in popular definitions and use of reflective methods has focused on what happens after an event for example, and has been defined as: “*thinking back on what we have done*” (Schön 1987 p.26) and “*a process of reviewing an experience of practice in order to describe, analyse, evaluate and so inform learning from practice*” (Reid 1993, p.305). As a pre-dominant theme in the literature the idea of a post event activity is also captured in other popular models and frameworks including Kolb’s Cycle (1984) and is indeed mirrored in Gibbs’ (1988) Cycle which begins with “what happened”. The results of Study 3 showed that the idea of reflective practice as a post experience activity significantly matches the students’ views.

So why do students see reflective practice entirely as a retrospective activity? It may be argued that by literal definition reflection is a retrospective concept. However, the literature suggests that it has to do with how reflection is taught where the emphasis in teaching is on post experiences. Boud (2001 pp 9-18) for example, asserts that the scope of reflection needs to be extended away from the conventional idea that reflective practice takes place only after something has occurred and suggests an orientation of the students to other modes of reflection i.e. anticipatory as well as during and after experiences. Greenwood (1993) had previously criticised Schön for failing to consider pre-reflective learning. Tate (2004, p10) on the other hand states that “*reflection-on-action* is the process more likely to be used when teaching students because *reflection-in-action* is the more advanced skill.

It was however, possible in study 4 (Ch 7) to show that activities during practice can be distinguished from those which occur after practice in a way that can better inform the teaching/learning of reflective practice. Arguably reflection-in- action is not well understood nor easily observed and measured.

It is more likely therefore that teaching is based on theoretical assumptions of reflective practice notably the influences of Schön (1983 p62) who implied that the structure of *reflection-in- action* is variable and complex. It seems that the literature (including

Schön and others) has consigned reflection-in-action as a complex process characterised as ‘tacit’, ‘knowing in action’ and ‘thinking whilst doing’. Consequently this might explain the reluctance by educators to explore it. Such widespread acceptance has resulted in little empirical work to try and understand *reflection-in-action* more deeply i.e. to establish ways in which it is possible to recognise and record the process of reflection-in-action as it unfolds in lifelike situations such as clinical settings. Yet reflective practice has been widely accepted as a credo by many professional disciplines including nursing and teaching and appears to rely on ‘what occurred’ as the basis for future learning. Further, a recent meta-synthesis study of qualitative research in nursing by Gustafsson et al (2007 p161) concluded that “*the assumptions about RP were predominantly based on theory*”. Hence there is a need for more grounded evidence to promote reflective practice and support the uniqueness of paramedic work rather than the blanket approaches uncritically borrowed from other disciplines such as nursing.

8.4.3 Towards an Understanding of Reflection-in-Action: A Paramedic Context

As discussed previously Schön’s (1983,1987) notions of reflection-in-action or thinking whilst in the midst of doing something is little understood. Notably this is largely because Schön does not say how this is done especially where time factor is crucial to actions as inherent in paramedic emergency care interventions. This research has shown that it is possible to begin to reconstruct and deconstruct the complex process of *reflection during action* by categorising some of the actions that occur during a life-like situation. These actions have been identified as primary clinical actions (PCA) and supplementary clinical actions (SCA) that can now be tested and critiqued further. It has also been possible to refine these categories of PCA and SCA by identifying distinct layers in these categories of which communication emerges as a key indicator of reflection-in-action. These findings provide a useful practical guide for alerting and focusing students on some of the types of actions and processes that occur *during practice* that could enhance the authenticity of their reflective learning afterwards.

This guide might also reduce the inevitable ‘lag’ in reflective learning which occurs after an event (Garvin 2000) and enable a closer integration of theory to practice. The categories of PCA and SCA identified during practice could also be used *before* action as a ‘briefing’ strategy to focus on specific, knowledge, skills and attributes learning outcomes appropriate to the students’ academic levels of study.

This research has identified that there is need to connect reflective practice in a more focussed way. Current random and casual approaches as observed after simulation do not fully support reflective practice thus missed learning opportunities. By connecting reflective activities, *before, during and after* practice there can be greater opportunities for sequencing the learning processes. Sugerman et al (2000 p10) suggest that “*reflection activities should be appropriately sequenced within the learning experience*”. In the paramedic clinical field which operates a verbal debriefing culture, I therefore propose that for undergraduate students *reflective de-briefing* is more likely to be successful if preceded by a process of *pre-reflective briefing*. Such an approach is more likely to lead to better connectivity, continuity and authenticity of reflective learning. This proposal does however depend on the skills and commitment by all who support the development of reflective practice whether in an academic or other setting.

8.4.4 Learning Styles and Reflective Practice

The literature remains little explored in this respect. So does the concept of ‘style’ matter concerning reflective practice applications for learning and clinical practice in paramedic work? Based on the results of this research the answer is at best descriptive. However, considering the ever changing health care needs it is clear that contemporary paramedic practice increasingly requires practitioners to demonstrate outcomes associated with all styles of learning i.e. *feeling, thinking, watching and doing* and are therefore worthy of further explorations.

The results of study four (Ch7) suggested that the majority of paramedic students in the study regardless of learning style rated reflective practice similarly concerning its usefulness and importance for learning and academic studies. Interestingly this was shown to be the case from a sample where the majority were scored as ‘doers’. However, given the small sample (n=27) and the LSI used the results are at best descriptive and any generalisation of the findings should be cautious. The results should be regarded as a formative outcome of the research permitting simple descriptions only. As a sub-problem of the main research this was the original intention. At the time of this study other major research into LSI’s (including Kolb’s) cast doubts about the reliability and validity of the psychometric measurements of many of these instruments (Cassidy 2004). The limitations of the methodologies used to assess learning styles links in this study are therefore acknowledged and the use of a more robust study using a more

appropriate instrument such as the Vermont (1992) LSI designed for specific use in higher education and a larger sample of students is recommended.

8.4.5 Students Use of Reflective Practice Methods

In the second study (Ch 5) the majority (90%) of paramedic students showed that the reflective tool most used was Gibbs (1988) reflective cycle. In study three with the third year students the content analysis of their descriptions mirrored all the components of the cycle, i.e. (*description, thoughts and feelings, evaluation, analysis conclusion and future action*). However, during the simulation study (Ch 7) the group of third year students observed did not explicitly use all of the components as previously described.

It is interesting to note that the previous group of third year students in study 3 (Ch6) had indicated a greater preference for discursive methods more so than Gibbs' cycle. Nevertheless, regardless of which cohort by this stage and level of study all students should be able to demonstrate synthesis of learning as they are taught to do. The partial use of Gibbs' Cycle by the students as observed during the debriefing sessions highlighted that the full reflective processes were not fully interrogated in discursive situations. The greater emphasis was on 'analysis' and the least on 'conclusion' with total omission of 'future actions' suggests that the higher order thinking skills representative of re-conceptualisation of what has been learnt are not being articulated or shared in a collective debrief context. Consolidation of learning is important to ensure appropriate transfer of learning in future situations and evidence should be obtained verbally and in written formats. Relying on written evidence alone in reflective assignments is not the most valid way for ensuring effective learning transfer especially as several paramedic students in this research highlighted reluctance to reflective writing. This has implications for curricula outcomes, i.e. ensuring that conclusions (synthesis) and the transferability of new learning skills can be appropriately demonstrated by students in debrief situations as well as in written formats.

A pertinent question for future research could explore why students use the reflective model only partially when debriefing yet they have been taught by this stage to use reflective models fully and correctly. This is further puzzling given that in study 3 (Ch 6) students were able to give ideal theoretical definitions of full reflectivity. In the absence of post debrief interviews with the students it is not possible to say why this

may be the case. This was not an intention of the study and would entail a separate investigation. Returning to the literature it is however, it is reasonable to conclude that the formal requirements of written reflections are more prescriptive than informal debriefing, consequently students are likely to respond more fully to the former especially as it frequently carries a pass/fail grade. Rowntree (1987) has long established that assessment values such as pass/fail criteria have significant influences on the students' behaviour.

In the debrief sessions observed students were not compelled to state their views. This is unlike written formats where the use of the full reflective cycle including conclusions and future learning must be stated. That is not to say the students do not think about those aspects when debriefing. Benner's (1984) research has shown that a feature of the competent nurse (equivalent to the third year paramedic students in this study) is the tendency to focus on situations that are perceived to be most important. Others have argued that 'conclusion' and 'future actions' possibly force students to look for alternate actions when none might be needed (McCabe and Timmins 2006 p172). This is highly unlikely as every situation is different and can be improved however small. The more likely case is that there is a lack of empirical evidence to support the use of reflective models for personal or professional benefit (Carroll et al 2002). This suggests that reflective practice models should be grounded in practice if they are to be effective.

From a curriculum point of view the significant use of 'analysis' by the students possibly indicates a greater tendency towards practical problem solving of physical care interventions rather than wider cognitive and psycho-social considerations. It may also mean that an analytical approach is a genuine replication of what actually occurs in the field of day to day clinical practice (simulation is described as a realistic representation of reality). However, students are expected to demonstrate effective reflective learning abilities that are transferable to the work place including wider skills than analysis alone. Contemporary paramedic practice demands more holistic care approaches.

8.4.6 Students Use a Technical/Rational Approach to Reflective Practice

A key feature of Schön's (1983,1987) works (if not the key feature) has been the criticism of the 'technical rationality' as a model of problem solving which he claimed did not adequately address "*real world problems*" (1987 p 3-4). Schön's concept of

technical rationality has neither been rigorously tested nor does it seem to be the case in specific practice contexts. The results of the simulation data in study four (Ch 7) showed that both during and after the simulation scenarios students did focus more on the clinical/technical aspects of practice, however this was interwoven with non-technical aspects of care. The proportion of time students engaged with supplementary clinical actions, non technical issues and personal issues suggests that they do also depend simultaneously on other approaches such as communication and their personal thoughts for informing their knowledge and skills when dealing with complex and routine clinical situations. Indeed it is also possible that students do actively reflect outside the technical approach whilst in the midst of practice yet consciously decide to follow the protocol/guidelines route for the simple reason that it is the best course of action for securing the best care outcomes. It is suggested therefore that to categorise 'technical' rational approaches as non-reflective is simplistic and can be misleading.

For future developments of reflective practice in the paramedic curriculum it may be helpful to reconsider the methods that emerged from the observations of students. The results of the simulation study show that the reflective approaches used by students are more closely aligned to the 'synthetic model' proposed by Loudon (1991) i.e. it is used as one of many pathways for reflection that includes technical, personal and problematic interests. The data analysis of the simulation study suggests that final year students focus on technical clinical issues. This is useful to know for curriculum design and implementation to ensure that the psycho-social aspects of care are not neglected consequently a more holistic model of reflection as described by Ghaye and Lillyman (1997 pp33-35) might be encouraged, especially at the point of transfer to graduate practice - if not before.

Meanwhile, although not wholly supportive of technical reflection by itself, Taylor (2000 pp 145-173) acknowledged the use of 'technical reflection', adding that "*technical reflection can provide quick answers about clinical questions*" which in the case of paramedics and the nature of emergency responses is critical. Where time is a crucial factor technical reflection may be appropriate although not all paramedic interventions are about quick answers. It could be useful to compare the practices of experienced paramedics who may inform this aspect more fully.

8.4.7 Reflective Communication During and After Action

Effective communication in health care has been increasingly recognised as a highly important measure to enhance patient care and prevent harm. Further, the concept of ‘dialogue’ is described by Schön (1987 p163) as a condition of the ‘*reflective practicum*’ and development of reflection- in-action. This research identified communication as a significant reflective practice indicator (RPI) when coded as actions during and after the simulated scenarios. Derived from the wider literature there was good support for this outcome. Wood and Kroger (2000 p4) in their views of discourse analysis argue that “*language must be seen as action*”, and “*If we consider utterances in context, we can identify other functions*”. From the content analysis of the students’ videoed actions that were coded during the simulation scenarios (Ch 7) communication emerged as the key supplementary action alongside the primary clinical actions. The coding also informed the sub-categories, types and frequency of communications that took place giving an indication of the accompanying thought processes that are linked to action. The results also showed that the categories of *conferring, directing, describing, questioning, asking and telling* have important implications for patient care outcomes and peer-learning. Two categories of information ‘giving’ and ‘receiving’ were identified as being similar to that found in studies of doctors’ communication (Ong et al 1995).

The corollary of all of this and the findings of study 4 (Ch7) show that communication is a key part of reflective practice infrastructures in paramedic practice particularly during practice. The results of study 4 have also provided a valid foundation on which communication in paramedic sciences could be developed further for reflective practice and other patient care outcomes similar to medicine, where numerous studies on communication patterns have been empirically tested in a variety of situations. The use of the Roter Interaction Analysis System RIAS (Roter and Larson 2002) for example, has been used in pre-operative Anaesthesia (Kindler et al 2005), Tele-medicine (Miller and Nelson 2005) and conversation sequences involving simulated patients (Langewitz et al 2003). These areas are all relevant to paramedic practice.

The findings of communication categories (PCA and SCA) in study 4 compare favourably to the two coding categories in the RIAS viz: Socio-Emotional responses -

which include personal remarks, social conversation and Task –Focussed responses which include asking questions and giving information.

The case for better understanding the applications of communication to real world settings is amply justified in light of the findings in this research. As a result an integrated approach to learning and teaching strategies is recommended to achieve a better balance in all aspects of care delivery. Contemporary paramedic practice is increasingly moving in the direction of guidelines to allow flexibility of practice rather than the traditional stringent protocol approaches, hence a greater reliance on communication strategies with the patient and peers as supplementary clinical actions. Even the best guidelines and protocols, however well conceived, cannot deal with the nuances and complexities that arise out of paramedic care interventions.

Therefore an understanding of how communication emerges in practice could better inform curriculum structures for the development of reflective practice. Communication as an academic subject is generally taught as a primary graduate skill in the curriculum. The need for a theme or sub-theme of ‘reflective communication’ in the undergraduate curriculum has therefore emerged from this research.

8.4.8 Simulation as a Reflective Practicum

The use of simulation has previously been explained and justified as a method for reflective practice learning teaching and research enquiry. Schön (1987 p170) advocates the use of a ‘*virtual world*’, “*one which enables the student to operate at low risk*”. The growing body of literature suggests that simulation using intermediate and high fidelity technologies is legitimate and can become a sound learning, teaching and assessment methodology for many clinical procedures and human factors development in health care e.g. nursing and medicine (Gaba 2004, Alinier et al 2006).

With regards to the efficacy of simulation as an educational tool the findings in this research showed significantly that simulation mirrors real world practice. This finding is supported in the analysis of the qualitative data in Study 4. A key finding relates to what behaviours occur during practice that may be manifest of ‘reflection-in-action’. A similar pattern emerged post simulation to describe ‘reflection-on-action’. The findings are grounded in what the students say and do thus providing a sound basis for firsthand

theory building and better informed pedagogy of reflective practice concepts as they apply in the specific learning context of paramedic students. The results overall indicate that paramedic students focus more on 'technical reflection' on clinical aspects of their role. This is not a criticism as no one form of reflection can be regarded as being better than another. However, technical reasoning alone is not sufficient. Students need to address the wider non technical graduate skills such as teamwork and inter-personal skills that are integral to clinical interventions.

Looking at the results especially the debriefing process following clinical simulation, there is an identified need for restructuring the process to ensure that there are closer links to appropriate learning outcomes that should indicate whether or not the reflective issue under scrutiny is technical or non- technical. This should then relate back to the preparatory or pre-reflective outcomes to ensure consistency with what the intended outcomes were in the first place.

'Briefing' should become the basis for de-briefing to enable comparisons and evaluations to identify how successfully the original intentions had been met (Pearson and Smith 1985). As Schön (1987) identifies it is difficult to say exactly what a student has learnt from a 'practicum' although some of the dimensions can be identified through the use of learning outcomes. Additionally, every attempt should be made to transfer this approach in the real practice context where students are placed as part of their clinical learning experiences. In such learning and teaching situations this means that there should be clarity and continuity for both instructors and learners to focus on the specific outcomes for reflective practice. A simple standard for practice could be implemented for a more focussed development of reflective practice as follows: (1) Outline the scenario algorithm (2) Identify the relevant learning outcomes (knowledge, skills and attitudes) to be achieved and (3) Specify the tutor and student roles.

8.4.9 The Role of Tutors/Instructors in Briefing and De-Briefing

Schön (1987) emphasised the idea of a coach/facilitator as a significant factor in the development of students as reflective practitioners. This means that the role of educators and clinicians in developing the students' reflective abilities is crucial to ensure that simulation opportunities are fully explored.

The use of reflective practice methods for debriefing in this research has shown that students need to be guided towards fuller reflectivity. Debriefing is a valuable reflective tool but limited if learning opportunities are missed. Tutors and other educators thus have an important role in helping the students to draw ‘conclusions’ and identify ‘future actions’ where appropriate to ensure that the full development of reflective thinking is achieved by students. ‘Conclusions’ are the pedagogic indicators of how learning has progressed, however students by themselves are not always able to make such connections. According to Vermunt (2005 p 208), “*the most important influencing factor is the way instruction and teaching are conducted*”. Consequently the de-briefing process needs to be more effectively structured if significant benefits are to be gained from experiential learning methods such as simulations.

From the students’ perspectives other relevant issues emerged in study 4 (Ch7) that need to be considered for reflective practice learning i.e. a) personal learning and b) collaborative learning needs. From the data analysis it was noted that personal and professional developments identified by the students extend beyond the confines of learning outcomes. As such opportunities should be provided for students to pursue their personal learning and reflective ideas independently. Paramedic practice in real world settings requires practitioners to work alone and collaboratively and this should be mirrored in curriculum strategies. There needs to be clearer guidance that promotes both types of needs. A structure that supports both individual and collaborative reflectivity such as the ‘Joint Action Framework’ in the next section is recommended.

8.5 Summary: A Revised Pedagogy for Reflective Practice in the Paramedic Curriculum

The findings of this research with third year students (Ch 6 and 7) identified a need for revised approaches to reflective practice learning and teaching activities that have resulted in a re-definition of reflective practice. The reflective practice indicators identified during and after practice suggest the need for a more focused, objective and balanced reflective approach by students. This should not be difficult to implement as this research has shown that the majority of paramedic students were positive about reflective practice and agreed that it was both useful and important to their practice.

The role of tutors has been highlighted in several instances and especially in a simulation environment where reflective practice, before, during and after practice can

be best developed in a focused way for more effective transfer to graduate practice. The revised pedagogy proposed includes a clearer understanding of reflective practice structures through a re-definition of its meaning in the paramedic curriculum that are grounded and in a practice context.

8.5.1 The Joint Action Framework

The 'Joint Action Framework' grounded in a specific context supports the academic and scholarly justification of its construction and its validity. It supports a new definition of reflective practice that has emerged from this research i.e. reflective practice is:

'A focussed learning strategy for understanding and examining practice experiences for different learning purposes including personal ,collaborative and professional development.'

Drawing from the literature the Joint Action Framework is embedded in the theoretical paradigm of 'situated learning' (Lave and Wenger 1991) and the three underpinning concepts in the Joint Action Framework are: (1) Context, (2) Focus and (3) Reflective Action. It also accommodates and guides both personal learning and collaborative learning for reflective practice encouraging reflexivity as well as reflectivity.

Another supporting feature of the 'Joint Action Framework' is its potential for linking prospective as well as retrospective reflective learning opportunities. Contemporary paramedic practice needs both. Anticipatory reflection in particular is less well developed although it is ideally suited to 'briefing' processes in a simulation setting. These two dimensions of reflective practice learning are both distinct yet interconnected. The 'Joint Action Framework' brings together the notion of 'collective reflection' to include others e.g. tutors, clinicians and peers and aligned to the current concept of "*productive reflection at work*" (Boud et al (2006 p36). Moreover, the framework reflects situated learning in the health care context i.e. collaborative learning as well as individually- this is a valid curricula outcome for reflective practice. Reflective practice as a social process also reflects the reality of the paramedic professional contexts that have increasingly become multi-disciplinary consequently students need to develop such skills effectively in preparation for graduate practice. Kemmis (1985 p149) stressed that reflection was not "value-free" and that it was inextricably linked to the social contexts in which practitioners function. More recently

Lucas and Tan (2007) concluded that the development of a reflective capacity for undergraduate students includes the work of others including peers and lecturers.

As an inter-dependent model the 'Joint Action Framework' implies that reflective learning like other forms of learning is neither a 'stand alone' concept nor merely a process of two opposites i.e. reflection *during* and *after* practice.

This Framework proposed is intended to facilitate reflective practice learning, teaching and professional development in a more manageable and objective way. Moreover, it supports both 'instructivist' and 'constructivist' models of learning and teaching that can help students to make connections with previous experiences and the development of new knowledge. Paramedic practice needs both. The framework amply supports the different pedagogic methods linked to appropriate learning outcomes.

However, given the wide range of reflective frameworks/models available over the last twenty years it is debatable why another framework might be needed especially when it has been identified in this thesis that students only follow such structures partially. The 'Joint Action Framework' is different. It provides a structure that links the multiple dimensions of the reflective milieu of paramedic students' academic work and clinical practice in an integrated way, yet it is focussed and needs based. The framework is both contextual and conceptual and builds on the works of key theorists Dewey (1933) and Schön (1983, 1987). However, it is recommended in this thesis that the theoretical framework was derived from the research data and should be tested further (see 9:6).

Additionally, it is proposed that Paramedic practice is grounded in guidelines/protocols that generally follow an algorithmic pattern and the 'Joint Action Framework' adopts a similar structure as shown in Figure 8-1.

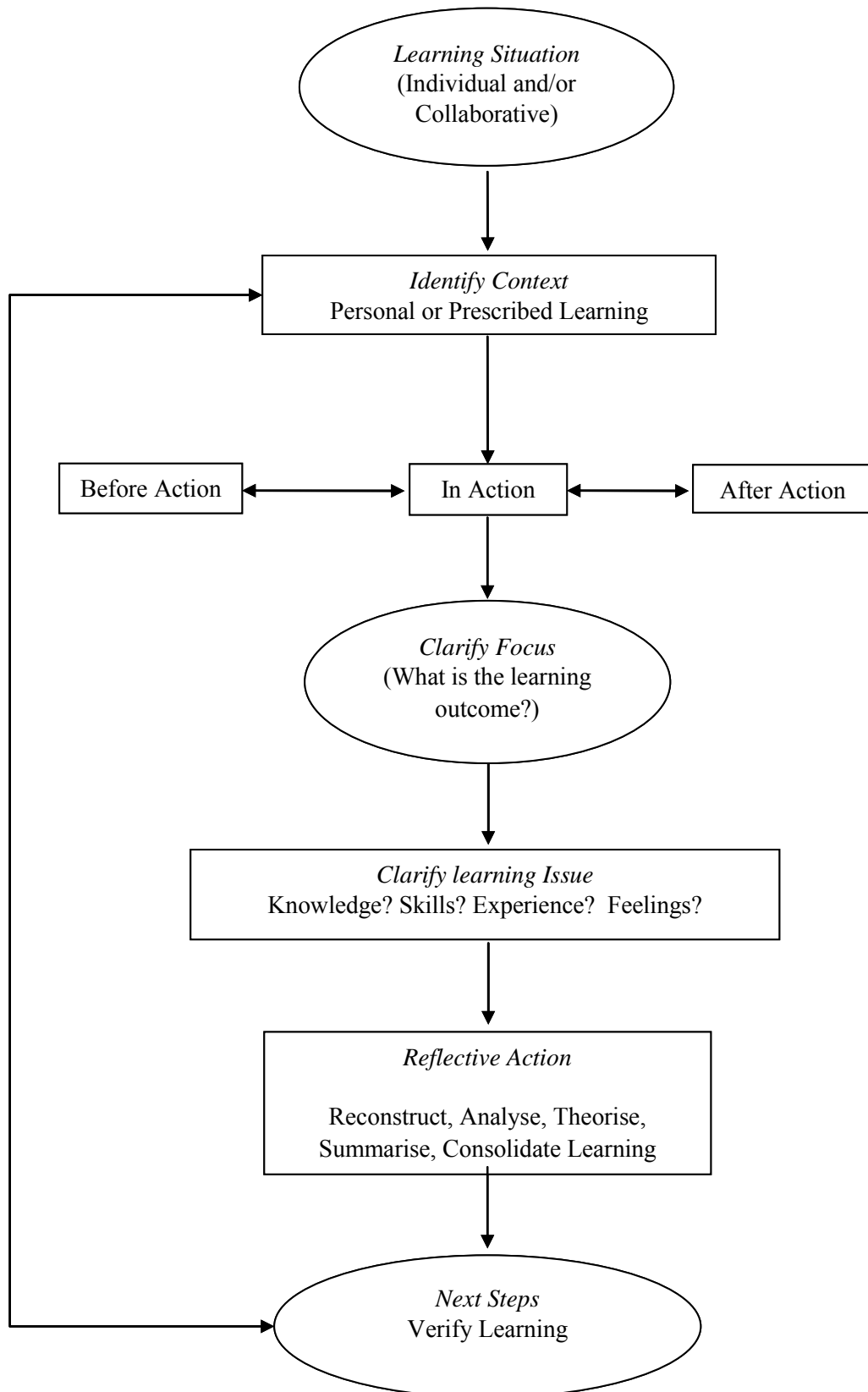


Figure 8-1 Reflective Practice for Situated Learning: The Joint Action Framework

8.5.2 Reflective Practice using the Joint Action Framework

The following example utilising the framework is proposed to support individual learning and/or peer group learning that can be facilitated by a tutor for multiple teaching/learning purposes including briefing and debriefing sessions with paramedic students. Either way it could be used for instructional purposes whether in the classroom or a clinical context to address the following curricula learning outcomes:

- a. Students will typically have a knowledge and understanding of assessment strategies for management of the unconscious patient.
- b. Students will typically reflect on their performance and practice.

Learning situation – Assessment of the Unconscious Patient

Focus: Knowing the differences in the use of the Glasgow Coma Scale (GCS) for adults and children.

- **Before Action:** Students acquire knowledge and skills of the Glasgow Coma Scale (GCS).
- **During Action:** Students are required to demonstrate correct use of the GCS for the assessment of an unconscious patient i.e. for an adult or child appropriately.
- **After Action:** Review and reflect upon the applications of the Glasgow Coma Scale following an episode of practice.
- **Reflective Action:**

Reconstruct: Define and describe the learning situation giving details of the unconscious patient scenario (real or hypothetical).

Analyse: Examine the actual use of the GCS and constituent parts i.e. items and their scoring (Eye Opening, Motor Response, Verbal Response).

Theorise: Explore underpinning theories and concepts of the GCS and inter-relationships to paramedic guidelines and practice when applied to an unconscious adult and child.

Summarise: Synthesise and extrapolate new learning from the reviewing assessment of the unconscious patient using the GCS.

Next Steps: Decide what further action is needed for verifying the reflective learning, i.e. how is the new learning to be applied in future and through what route? i.e. individual and/or collaborative. The reflective process is then either concluded or revisited if needed.

8.5.3 Summary

This purpose of this chapter was to evaluate the overall outcomes of the investigations carried out to explore reflective practice as applied to the learning experiences of undergraduate paramedic students. A number of summary points have emerged.

First, that this research was timely and justified given the growing prominence of reflective practice in paramedic sciences and its historical transitions to higher education. Second, that the research methodology comprising a triangulation approach was justified for its inclusion of grounded explorations of reflective practice unlike the majority of studies found to date.

Discussions of the extensive literature review and findings of the four studies conducted for this thesis concluded that understanding and application of reflective practice to the students' learning contexts could be more effectively developed through a revised curriculum approach than that which currently exists. This conclusion is supported by the overall evidence from the data which indicated that a structure of reflective practice does exist within the students' learning contexts and that it correlates to theoretical definitions of reflective practice in the literature. However it is limited in application.

Students emphasise technical reflection that could benefit from clearer guidance towards the achievement of fuller reflectivity which is essential to learning and health care practice outcomes. This can be achieved as paramedic students in this research

have been shown to have positive attitudes towards reflective practice and consider it useful and important to their learning. Simulation learning and a new pedagogic framework have emerged as appropriate supporting mechanisms towards more effective reflective practice learning.

There is also a need for further studies to inform reflective practice in the Paramedic curriculum and is addressed in the final chapter.

CHAPTER 9

Conclusions, Summary and Future Studies

9. INTRODUCTION

This final chapter concludes and summarises the thesis followed by discussions on the contributions to knowledge and recommendations for future research.

9.1 Thesis Summary

This thesis supports an alternative approach to the implementation of reflective practice to the learning experiences of paramedic undergraduate students through a revised pedagogy. As an emerging discipline within higher education reflective practice is integral to education, clinical practice and professional development. The need for a revised pedagogy has emerged from grounded evidence of the students' learning experiences where it has become evident that an understanding the context of paramedic work is significant to the applications of reflective practice. As such many of the key assumptions about reflective practice derived from the literature do not wholly apply.

Unlike other studies this research has used a mixed methods approach including both quantitative and qualitative data involving four separate studies. Most of the studies found in the literature especially in nursing had used single methods and these were mainly qualitative relating to specific aspects of patient care outcomes. The exact reasons for this are unknown, however it had been earlier suggested in the nursing literature that quantitative methods “*may seem contradictory to the philosophical basis of reflection that argued against such technical rational approaches*” Duke and Appleton (2000 p1559).

In contrast the triangulation approach to this research has informed an accumulative understanding of reflective practice applied to the learning experiences of paramedic students that would not have resulted from adopting a single method approach.

From the findings of studies 3 and 4 an existing structure of reflective practice among undergraduate paramedic students has been identified that correlates with the concept of technical reflection in paramedic practice. This is unlike that of medicine where recent research found correlations of reflective practice to Dewey's stages of reflective thinking. The findings regarding paramedic students as a different discipline therefore enables a clearer understanding for future curricula developments as proposed in Chapter 8 to ensure that technical reflection is not developed at the expense of a more holistic model of reflectivity that is commensurate with contemporary pre-hospital care. Additionally, the findings supported a re-definition of reflective practice and a new pedagogic framework for promoting more effective learning and teaching purposes.

9.2 General Conclusions

Reflective practice, although a popular concept in higher education and ubiquitous in the literature over the last twenty years continues to retain its popularity despite the reported lack of clarity and consensus of meaning. From the extensive literature reviewed (Ch 2) it is apparent that many of the key theoretical ideas surrounding reflection-in- and on-action concepts are not empirically tested. In short, there is a lack of evidence that reflective practice is an effective proven strategy for the education of health care practitioners including paramedic sciences. However, it has been demonstrated in this thesis that this situation can be improved by explorations of reflective practice in specific contexts.

The four phases of this research exploring the applications of reflective practice to the learning experiences of paramedic students have produced some new and relevant findings that could better inform paramedic and other health care curricula for future developments. For example, students believe that they understand the concept but this is limited to something that happens primarily after an event or experience. Also it was found in the processes observed that the debrief simulation context lacked full reflectivity and could be better scaffolded by having a clearer learning/teaching focus. Communication in particular was identified as a key reflective practice indicator that helped to inform the findings that 'Technical Reflection' is a significant activity both during and after the students' practice. This could be a discipline related characteristic where time factor can be crucial to care outcomes, however technical reflection is not

synonymous with a holistic model of care and the wider critical thinking required for clinical practice.

These findings may be relevant to other disciplines that work in similar ways, where complexities and unexpected problems are characteristic of their clinical work and reflective practice is professionally benchmarked, e.g. medicine and physiotherapy. The findings of the research have also identified that there is need for a greater understanding of any new discipline to higher education such as para-medicine. This is essential for the development of sound pedagogies and productive learning from reflective practice in order to expand its body of knowledge and clinical skills.

Further, this research has emphasised the importance of curriculum evaluations of educational innovations such as reflective practice in higher education if they are to be more effectively embedded for learning and work-related applications.

9.3 The Contributions to Knowledge

This section describes and discusses the specific and general contributions to knowledge that I have made as a result of the research study into reflective practice in the undergraduate paramedic curriculum.

This thesis defends a refinement of reflective practice concepts and new pedagogic approaches to its application in the paramedic curriculum. The following are the areas within which the contributions have been made:

- Reflective practice structures applied to undergraduate paramedic students.
- Reflective Practice Indicators (RPI's) for reflection during and after practice.
- A refinement and re-definition of reflective practice.
- A new pedagogic framework for further development and testing of reflective practice learning and teaching outcomes.
- Simulation learning as an educational tool for reflective practice developments.

9.3.1 Reflective Practice Structures as Applied to Undergraduate Paramedic Students

As a result of the surveys and observations undertaken it has been possible for the first time to identify a structure of reflective practice specifically applied to paramedic students. Two emergent structures discussed are as follows:

- a. Technical Reflection, and
- b. Characteristics of Reflective Practice.

9.3.2 Technical Reflection

I have identified that a significant structure to emerge from the students' practice is that of a 'technical' approach to reflectivity. That is not to say that clinical technical approaches lack reflectivity. This has been a particular flaw in Schön's (1983) assumptions in which he positions technical approaches as polar opposites to reflective approaches. While there is a need to be alerted that "*Questions about clinical questions can be answered quickly and effectively through technical reflection*" (Taylor 2000 p172) this does not represent the whole learning milieu of reflective learning situations. Contemporary practice in paramedic health care interventions cannot rely on technical issues alone that require quick fix question and answer solutions. Consequently technical reflection would not best serve either practitioner or the recipients of their care. As a practical curriculum issue students therefore need to be aware of the non-clinical issues that simultaneously interweave with practice such as communication skills and reflect on these more fully to understand the wider nuances of practice beyond the quick answer solutions approach.

Communication as a practice action is as important as other forms of actions especially in health care. If reflective communication helps to ensure *continuity, consistency, congruence and collaboration* in care delivery (Johns 2004 p 204) then communication patterns as external indicators of reflective practice should be seriously considered for how they might complement the more flexible 'guidelines' approach to contemporary practice. For example, in some trauma and non-trauma clinical situations there may be a need for more communication and less emphasis on the technical aspects of care. Study 4 also showed that the emergent pattern of peer communication was significantly greater than that of patient communication. As an important contribution towards this

finding, I have identified new ways to inform curriculum design development and implementation of ‘communication skills’ as a theme which is a key graduate outcome. This can be achieved by constructing appropriate learning activities and outcomes for developing and categorising specific skills identified in the study such as ‘informing’, ‘questioning’ and ‘directing’.

9.3.3 Characteristics of Reflective Practice

I have identified (Ch 6) that students’ understanding of reflective practice incorporates four dimensions, i.e. reflective practice is about *structure, process, purpose and outcomes* and that it is also for personal and professional development. These dimensions suggest that for the students, reflective practice has certain features and characteristics that amount to more than a simple combination of ‘reflection-on-practice’. The students identified professional development as an important dimension alongside academic and clinical practice. This finding also demonstrates that reflective practice is not a single concept. It is shaped by other factors such as the students’ independent or “*epistemic assumptions*” of its meanings (Lucas and Tan 2007 p19).

As identified in the research educators need to establish what these assumptions are as they apply in specific contexts instead of the current blanket approaches to reflective practice. The contextual nature of practice to emerge with paramedic students suggests that this could be variable for other different professional disciplines.

9.3.4 Reflective Practice Indicators (RPI’s) for Reflection During and After Practice

In study four (Chapter 7) I have demonstrated that it is possible to measure, categorise and ascribe meanings to the actions that occur during and after practice that could be indicative of reflective practice action. Derived from the context of the students’ learning environment this would suggest good ecological validity of the research findings, i.e. it is representative of the real context.

The classifications of ‘Primary Clinical Actions’ (PCA), ‘Supplementary Clinical Actions’ (SCA), ‘Technical Clinical Issues’ (TCI), ‘Non-Technical Clinical Issues’ (NTCI) and ‘Personal Views’ have shown that paramedic students emphasise the clinical technical aspects of their work. Again this could also be the case for other health care disciplines that embody a more scientific approach to their practice.

It has been shown that paramedic students also significantly follow prescribed guidelines according to National Prescribed Standards of the Joint Royal Colleges Ambulance liaison committee (JRCALC) and the Ambulance Service Association (ASA). These are well tested and to ensure consistency of practice but they do not preclude the need for reflective practice. Although such models have been criticised by Schön (1983) for reliance on scientific approaches for technical problem solving, this research has identified that there are also non-technical and supplementary actions that exist within a 'guidelines' approach to practice. Schön's criticisms and others who see technical approaches as isolate from reflection are therefore unfounded in the paramedic students' learning context.

9.4 Refinement and Redefinition of Reflective Practice

A key theme in the literature is the ongoing problem of unclear definitions and meanings of reflective practice. From the variety of definitions in the literature, I concur with Boud et al's (1985) idea of reflection as a 'generic term'. However, there is a need to extend the concept beyond experience alone. The new definition proposed earlier (p180) emphasises the contextual nature of reflective practice. This extends beyond current popular definitions that take a narrower perspective e.g. that it about thinking "*whilst in the midst of action*" or "*after the fact in tranquillity* (Schön 1987 p26). The new definition is intended to widen the scope of reflectivity for learning as well as for teaching purposes.

The definition also accommodates a free association of ideas that students may wish to engage in reflectively whether it is before, during, after or outside practice to inform learning. Reflection as a form of thinking and learning is not limited to the confines of a particular incident nor is it time framed. Sold in this way to students it becomes a mere task that could promote passive learning. The new definition also implies a concept that may be used more widely by students than for formal learning only i.e. reflective learning could also be triggered by personal interests that may be additional to a given learning situation.

9.4.1 A New Pedagogic Framework for Reflective Practice learning and Teaching Purposes: The Joint Action Framework

The literature review highlighted that many of the models/frameworks used to promote reflective practice are idealistic. In this research the use of Gibbs' reflective cycle (1988) by paramedic students was found to be only partially used when applied in a practice context. This suggests a limited development of the full desired reflective capacity for academic and clinical outcomes by third year students who are required to demonstrate synthesis of learning and evidence of future revised future actions.

I have identified this disjuncture to be partly due to how the de-briefing process post simulation occurs. The students' approach to reflective practice at this level may also be a replication of real world processes in how the discipline operates. If this is the case then reflective practice does not achieve the full reflective capacity as described by key theorists, notably Dewey. The mismatch between the ideal definitions given by the students (study 3) and the process observed (study 4) means that students and tutors need to follow a structure that leads to some consensus of what is to be learnt. This fits well with paramedic work where structures (guidelines) are in place to ensure consistency and effective care outcomes. This approach could lead to shared meanings between learners and tutors - something that has been criticised in the literature as missing.

The Framework I have designed links different activities and reflection in a more focused way than other frameworks appear to do. It represents connectivity of concepts and contexts that apply to both learning and teaching. The individual and dual perspectives of the new framework may be appropriately utilised by teachers/trainers and students in a reflective environment such as simulation settings. The ultimate goal is reflective action. Based on the findings of the study and observations of others that students generally do not find it easy to reflect (Johns 2004), I have structured the Framework from a curricula and individual perspective by integrating learning outcomes as the basis for focused reflection. This aligns more with Dewey's (1933) ideas of a systematic approach rather than the random informal approaches that students identified. Also it is structured in a linear way but could be iteratively used if needed.

9.5 Reflective Learning Through Simulation

I have identified that Clinical Simulation is an effective mechanism for reflective practice learning and teaching. The results of study 4 (Ch 7) showed that reflective actions both during and after practice significantly portrayed the reality aspects of real world practice. Students appeared to wholly immerse themselves in the simulation session.

The effects of simulation as a separate layer of coding when analysed showed that only **two** out of seventy five instances of content analysis during simulation suggest awareness of an unreal situation, i.e. *“It’s a bit strange talking to the mannequin, bit weird”* and *“it’s easier in real life”*. Conversely in the debrief post simulation (reflection-on-practice) **six** out of seventy eight sets of comments referred positively to the effects of simulation learning, e.g. *“Like a real patient”*, *“talked to the patient all the time”*, *“ grab his head, tell him not to move”*. Thus the use of simulation for reflective practice learning and teaching appears to be validated. As a further suggestion these statements about the simulation activity itself could be more effectively linked if used in the context of the ‘Joint Action Framework’ which is designed to focus and align such issues to identified learning outcomes. For example, students can be guided to explore the statements to identify whether they are related to knowledge, skills, attitudes or feelings arising from the simulated scenarios

9.6 Additional Contributions

As a result of the diverse studies and methodologies explored a number of relevant additional contributions have emerged.

9.6.1 The Role of Attitudes and Learning Styles Relationships

The importance of a positive attitude to reflective learning has been amply discussed in the preceding chapters of this research. A significant finding has shown correlations between understanding of structured reflection and negative attitudes towards it more so with paramedic students than their nursing peers. This may possibly be either a gender or a discipline/cultural issue that merits further exploration. The importance of a positive attitude to reflective thinking is advocated by key theorists, especially the early proponents i.e. (Dewey 1933, Boud et al 1985) and has implications for planning learning and teaching strategies to promote reflective practice. The implications are that

teaching/learning strategies must consider that not all students are positively disposed towards some reflective practice concepts e.g. structured reflection, as such education strategies must be designed to engage students positively with the subject as an important starting point. Whereas it is common for teachers to ask students what they already *know* about a subject (prior knowledge) it should also be similarly possible to ask students not only what they already know about reflective practice but also how they *feel* about it. This would allow tutors to identify the negative concerns at an early stage and promote more positive approaches. A similar argument applies to the issues of learning styles.

This research has shown that regardless of learning style, reflective practice was considered to be useful and important to paramedic students' learning experiences. However, a case has been made for further studies. The general education principle of understanding learner characteristics for reflective practice development according to the literature remain understudied and has been highlighted here.

9.6.2 Resistance to Written Reflection

It was reported in the literature that reflective writing in paramedic courses remained a contentious issue, in particular the reluctance to write (Jones 2004). This issue was confirmed in study three (Ch 6). As an unexpected outcome in study four (Ch 7), analyses of the qualitative data showed a notable resistance to 'written' forms of reflective practice e.g. "*not always relevant*", "*feel there is no need to write down my reflections*". These comments suggest that by the third year of study paramedic students have changed their views about the utility of reflective practice structures from a theoretical to a more practical approach to reflection. Thus an issue has arisen which appears to show that as some students progress to graduate practice the preference for discursive methods of reflection increases. This may be due to the influences of real world practices where pre-prescribed pro-formas are used that require a mainly tick box approach, or the preference for 'doing' might also explain the reluctance to write. This is not considered to be a negative issue since there is no evidence to say that written reflection is a more effective measure of reflection. However, this finding of resistance to reflective writing should be explored further with students to establish why this is the case given that the basis of paramedic practice is of a structured written nature.

9.6.3 Reflective Practice: A Theory – Practice Gap

I have demonstrated through both the qualitative and quantitative methods in this research that what students say they understand about reflective practice and how they apply the concepts can be different. This suggests a theory-practice gap which was highlighted in study three (Ch 6) and the observation study (Ch 7). Although students were able to describe a full reflective cycle of learning, the findings showed that students did not overtly engage with the final stages, i.e. ‘conclusion’ and ‘future action’ in a practice context. Yet students are required to write these elements in summative work submitted for assessments. Consequently, it reiterated that if the process of reflective practice is to be meaningfully authenticated educators need to have a firsthand understanding of not only the concept of reflective practice for academic outcomes but also the applications in a practice context by students. Relying on written reflections alone is therefore not wholly recommended for theory-practice integration.

9.7 Summary

The purpose of this thesis was to explore reflective practice as it applies to the learning experiences of paramedic students. The thesis has shown that reflective practice although reportedly lacking clarification in the literature, can be better understood through a re-definition grounded in a specific context.

The outcomes of the research have generated new descriptions and understandings of categories of reflective actions, such as communication patterns, that can inform and integrate its applications and future developments in a more cohesive way than presently exists. Consequently, I have shown that transferring reflective practice outcomes from nursing to paramedic students without the consideration of contextual understanding does not appear to have been the best decision for curriculum planning.

There is an identified need for programmes to have a clear conceptual and contextual focus for reflective practice in order to avoid different interpretations by teaching staff. Similar problems have been highlighted in teacher education (Lee and Tan 2004). By focusing on final year students who were about to qualify as fully fledged practitioners, I have identified that paramedic students emphasise ‘technical reflection’ that is grounded in practical problem solving. If these findings are to be transferred to the work

context then there are curricula issues to be addressed for future reflective practitioner developments.

Importantly, students need to fully demonstrate critical thinking about the other aspects of their work e.g. communication skills that are important supplementary actions for practice and not just technical competencies alone.

Overall it is concluded that a better understanding of reflective practice in the undergraduate paramedic curriculum is more likely to lead to effective curriculum design for Continuing Professional Development purposes (CPD) if a continuum of reflective practice development can be identified and grounded in the context of this discipline and at the start of the education process.

9.8 Recommendations for Future Studies

This section outlines and discusses the areas that could benefit from future studies including benefits to the students, health care providers and importantly the patient as the *raison d'être*.

9.8.1 Extended Research of Students' Understanding and Applications of Reflective Practice

This thesis identified that the majority of students say they understand the meaning of reflective practice and related concepts such as structured reflection. Given the disjuncture found in what students say and how they apply reflective practice in a practice context it would be interesting to extend this work to the other allied health disciplines for example, pharmacy, physiotherapy, radiotherapy, etc. to identify and compare the structures that exists within the different disciplines. Further studies could also include a series of comparative case studies, for example, participant observations and analysis of the students written reflective assignments. Triangulation of the data is recommended to overcome the limitations of single studies found in the literature.

Given the importance of the tutor's role highlighted in this research, further studies exploring their understanding and applications of reflective practice to their teaching approaches could help to clarify whether or not they do indeed share meanings of reflective practice with students. It would also be helpful to explore the appropriateness

of teaching/learning methods for reflective practice developments both in a university setting as well as the real clinical practice settings to further ascertain how the students' learning are influenced.

The need for further research focussing on reflective practice teaching/learning methodologies cannot be overemphasised especially where there is currently limited empirical evidence to support its understanding and implementation. The current growth and development of reflective practice more widely in UK paramedic education especially suggest that further research is imperative to future learning strategies.

9.8.2 Further Testing of the Technical Reflection Model

Having proposed a new conceptual framework for reflection *before, during and post action*, a series of clinical observations using the layers of coding identified in study 3 (**PCA, SCA, TCI, NTCI**) for follow up studies could be undertaken when the students are in actual clinical placements (as opposed to the simulated setting). This would further validate categories of communication as a research instrument and the attendant findings of this thesis. The same layers of coding could now be used for further studies in the field of reflective practice developments at pre and post-graduate levels of paramedic work to test whether or not the technical approach varies and if so, how, when and why. The expansion of paramedic programmes UK wide makes it possible to accommodate wider studies across other institutions using experimental approaches.

In particular patterns of communication identified and coded from the undergraduate students during practice (e.g. *conferring, directing, asking, telling etc*) could be used to test the direct effects on care interventions. These codes achieved high inter-rater reliability thus valid for further tests to develop a paramedic communication interaction analysis system similar to the Roter Interaction Analysis system (RIAS) used in medicine. Currently to the best of my knowledge this idea remains unexplored for paramedic practice.

9.8.3 Longitudinal Studies and Comparative Studies

This research was concerned with undergraduate students who do not represent the vast range of paramedic practice that exists outside the curriculum context of a in a single institution. Further, that the experiences of undergraduate students including third years

are limited and therefore the findings are limited to that context. Based on the works of Benner (1984) in nursing it is known that practitioners progress from novice to expert practice over a period of time and the practitioners are often unaware of the transformation processes to the different stages. Acknowledging the limited experiences of third year students a series of follow up studies with the students post qualifying could be conducted to identify whether or not their understanding and applications of reflective practice concepts have changed and whether or not variables such as age, gender and experience have any significant influences. In this way an original continuum of novice to expert practice or similar classifications in paramedic sciences as a unique discipline could be soundly established. Additionally, since the design of this research project, there are now ample opportunities for comparative studies with other higher education institutions who are hosting similar curricula for reflective practice outcomes in paramedic sciences.

9.8.4 Experimental Research of the ‘Joint Action Framework’

The hypothesis to be tested is that use of the ‘Joint Action Framework’, if used by students’, is more likely to lead to focused reflective practice than current approaches. This would necessarily involve comparisons of control groups of students who currently use other frameworks e.g. Gibbs’ cycle, and experimental groups given the new framework. Students could also be encouraged to use the framework pre and post debriefing in the simulation environment, where dedicated resources are well placed to support reflective practice. This of course requires a commitment by educators as well as the students. The example given in Chapter 8 demonstrating assessment of the unconscious patient is a well recognised aspect of daily paramedic practice and is a recommended starting point. This approach has the potential to lead to more concrete measurements and evaluations of specific learning outcomes based on the premise that focused reflection using the new framework is more manageable and realistic.

The need for further empirical evidence to support reflective practice is vital in paramedic sciences and other disciplines if it is to be truly embedded in the curriculum for both theory and practice integration rather than a fashionable concept borrowed uncritically from the literature.

9.9 Limitations of the Research

The limitations of this research mainly concern the generalisability of the findings owing to the fact that all the four studies conducted and the data collection took place in a single higher education institution with a unique population sample involved in an example of curriculum innovation. Consequently the conclusions reached may only be applicable to the population of undergraduate paramedic students studied in that particular curriculum context. As such the findings cannot be used to explain the reported lack of clarity regarding definitions of reflective practice found in the literature.

In addition as earlier highlighted in chapters 4 and 5 the use of predominantly closed questions for initially surveying the students' perceptions of reflective practice resulted in limited analyses and findings. Hence, a missed opportunity has been identified that could have possibly yielded substantial data to illuminate the students' understanding of reflective practice across all levels of study including those who were part-time and already qualified as paramedics. Reflective practice concerns paramedics at all levels of clinical practice therefore using wider explorations and different methodologies for the further investigations of reflective practice influences in paramedic sciences are strongly recommended.

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Appendix A

Students' Information and Consent

APPENDIX A1

STUDENTS INFORMATION SHEET – Study 1 Research Project

Evaluation of Reflection Practice To Teaching and Learning in Nursing and Paramedic Education

Dear Student,

The increasing emphasis on reflective practice continues to evolve and expand within nursing and other disciplines. The Department of Nursing and Paramedic Sciences have been instrumental in developing this subject for the last five years.

Over the coming months I am intending to undertake a research project to study how reflective practice benefits learning and teaching.

I would appreciate your co-operation in assisting with the attached questionnaire. Your responses and views are very important and will be used to develop the study further.

Any information you provide will remain strictly confidential. All the information you provide will be protected by an anonymity number and guarded by another member of the academic staff who will ensure that your identity is not known to me.

A written report on the outcomes of the questionnaire will be produced, however no personal details such as name or sex, will be used to identify you in any way.

Your decision to participate is entirely voluntary and is not part of your course.

Please do not hesitate to ask me any questions that you may have about the study.

Thank you for your interest and support with this questionnaire.

Indra Jones
Senior Lecturer
Department of Nursing and Paramedic Sciences
Tel- 01707-285917
E-mail i.jones@herts.ac.uk
10.12 .2000

APPENDIX A2

STUDENTS INFORMATION SHEET – Study 2 Research Project

Evaluation of Reflective Practice To Teaching and Learning in Paramedic Education

Dear Student,

The increasing emphasis on reflective practice continues to evolve and expand within nursing and other disciplines. The Department of Nursing and Paramedic Sciences have been instrumental in developing this subject for the last five years. Over the coming months I am intending to undertake a research project to study how reflective practice benefits learning and teaching.

I would appreciate your co-operation in assisting with the attached questionnaire.

Your responses and views are very important and will be used to develop the study further. Any information you provide will remain strictly confidential. All the information you provide will be protected by an anonymity number and guarded by another member of the academic staff who will ensure that your identity is not known to me.

A written report on the outcomes of the questionnaire will be produced, however no personal details such as name or sex, will be used to identify you in any way.

Your decision to participate is entirely voluntary and is not part of your course.

Please do not hesitate to ask me any questions that you may have about the study.

Thank you for your interest and support with this questionnaire.

Indra Jones - Senior Lecturer
Department of Nursing and Paramedic Sciences
Tel- 01707-285917
E-mail i.jones@herts.ac.uk

April 2001.

APPENDIX A3

STUDENTS INFORMATION SHEET – Study 3 Research Project

A Study of Reflective Practice in Paramedic Sciences

Dear Student,

Reflective practice in paramedic sciences continues to develop as an essential professional requirement. Over the coming months I am intending to undertake a research project to determine the application and effectiveness of reflective practice to paramedic education and clinical practice.

I would like to ask you if you are willing to take part in this study.

If you agree, your participation will include the need for you to complete a short learning styles inventory (LSI) and a questionnaire initially. This should take no more than 30-40 minutes. At a second stage, a smaller number of you if willing might be recruited to undertake more in depth discussions with me to follow up your responses from the LSI, questionnaire and other reflective practice activities in more detail.

All verbal and written and recorded information given by you will be kept securely locked and stored by me and not used for any other purpose other than the above study. When the data is analysed and written up I will ensure that nothing is written or said that could lead to you being identified as the source. No personal details such as name, age or sex will be used in the study to identify you in any way. To guarantee your anonymity and responses, you will be given an assigned numerical code which will be held by an independent administrator to ensure that your identity is not known to the researcher.

At a later stage if you are selected for follow up discussions this will be done using your anonymity number, however, at this point it will be necessary to break the numerical code for the study to proceed. Again this will be done through an independent administrator to ensure that your identity only becomes known to the researcher if you agree to take part. If you do not wish to proceed to this stage please indicate your intention at the end of page 4 of the questionnaire. Please do not feel obliged to take part in the study nor is it necessary for you to offer a reason if you do not wish to participate. Your decision to participate or not will not influence your position

as a student during your time at the university or subsequently. You are also free to withdraw from the study at time that you wish without giving reasons or explanations.

Please do not hesitate to ask me any questions that you may have about the study.

Thank you for your interest and support with this study.

Indra Jones
Fellow in Learning and Teaching
Tel- 01707-285917
E-mail i.jones@herts.ac.uk
Date: 25.06.04

Student Information Sheet for Study 4.

Research Project –A study of Reflective Practice in Paramedic Sciences

Dear Student,

Thank you for agreeing to part in this case study about the application of reflective practice to paramedic education and clinical practice. The purpose of the study is to develop knowledge and understanding of how reflective practice processes and procedures apply to paramedic education and clinical practice. It is anticipated that the study outcomes will enable the researcher and others to ultimately develop the most effective learning and teaching methods for reflective practice outcomes in paramedic sciences.

Your participation in the study is entirely voluntary. You are not obliged to answer the questions and you may withdraw at any time from the study without giving reasons or explanations.

Your personal details and everything you say will be treated as strictly confidential by me. When the data is analysed and the findings are written up I will ensure that nothing is written or said that could lead to you being identified as the source .

Thank you for your interest and co-operation with this study.

Indra Jones
Fellow in Learning and Teaching
Faculty of Health and Human sciences
Tel 01707-285917
e-mail: i.jones@herts.ac.uk

CONSENT FORM

I understand the purpose of the study and that my participation is strictly voluntary. I know that I have the right to withdraw at any time without giving reasons or explanations and I have been assured that this will not affect my position as a student or subsequently.

I am aware that the study will involve providing information which will be documented and audio tape recorded , the security and confidentiality of which has been assured by the researcher.

I have also been assured that my identity will not be revealed during the study or when the findings are written up.

I know that if I have any queries about the study at any point I have the contact details of the researcher and the opportunity to ask questions.

Respondent's Signature..... Date.....

Researcher's Signature Date.....

APPENDIX A4

STUDENTS INFORMATION SHEET – Study 4 Research Project

A Study of Reflective Practice in Paramedic Sciences

Dear Student,

I am currently undertaking a PhD to determine the application and effectiveness of reflective practice to paramedic education and clinical practice.

The purpose of the study is to develop knowledge and understanding of how reflective practice processes and procedures apply to paramedic education and clinical practice. It is anticipated that the study outcomes will enable the researcher and others to ultimately develop the most effective learning and teaching methods for reflective practice outcomes in paramedic sciences.

As part of my project, I would like to undertake some written observations of your simulation exercises in order to describe the process and identify how reflective practice unfolds in a practice setting. I am therefore seeking your written and verbal consent in order to proceed.

If you agree and when the data is analysed and summarised I will ensure that nothing is written or said that could lead to you being identified as the source.

No personal details such as name, age or sex, will be used in the study to identify you in any way. All verbal and written information recorded will be kept securely locked and stored by me and not used for any other purpose other than the above study.

Please do not feel obliged to take part in the study nor is it necessary for you to offer a reason if you do not wish to participate. Your decision to participate or not will not influence your position as a student during your time at the university or subsequently.

You are also free to see relevant copies of the transcriptions that I make or to ask me any questions that you may have about the study.

Thank you for your willingness and support with this study.

Indra Jones - National Teaching Fellow
Asst. Director (Learning and Teaching)
Tel- 01707-285917
E-mail i.jones@herts.ac.uk

Date: 22.03.07

CONSENT FORM

(Reflective Practice in Paramedic Sciences)

I understand the purpose of the study and that my participation is strictly voluntary. I know that I have the right not to be observed without giving reasons or explanations and I have been assured that this will not affect my position as a student or subsequently.

I am aware that the study will involve providing information which will be documented, the security and confidentiality of which has been assured by the researcher.

I have also been assured that my identity will not be revealed during the study or when it is written up.

I know that if I have any queries about the study at any point I have the contact details of the researcher and the opportunity to ask questions.

I understand that the study is designed in accordance with the University of Hertfordshire's Guidelines for Reflective Practitioner Work:

(<http://www.herts.ac.uk/secreg/upr/pdf/ASA2-V6-table-1Sep06.doc>)

Researcher's Signature Date.....

Respondents Signatures..... Date.....

Dates consent given – 22/03/04
– 24/04/07
– 01/05/07
– 08/05/07

Appendix B

Questionnaire 1 and Additional Data for Study 1

APPENDIX B1

1. How old are you?

18 to 25 years	<input type="checkbox"/>
26 to 35 years	<input type="checkbox"/>
36 to 45 years	<input type="checkbox"/>
46 to 60 years	<input type="checkbox"/>

2. Are you?

Male	<input type="checkbox"/>
Female	<input type="checkbox"/>

3.

Number of O Levels or GCSE above Grade C

Number of A Levels

4. Do you have a degree?

No	<input type="checkbox"/>
Yes	<input type="checkbox"/>

If Yes, please state your degree type and if applicable the classification obtained

BA	<input type="checkbox"/>	Class	<input type="checkbox"/>
BSc	<input type="checkbox"/>	Class	<input type="checkbox"/>
MA	<input type="checkbox"/>		
MSc	<input type="checkbox"/>		

5. Do you hold any other Educational Qualifications?

No	<input type="checkbox"/>
Yes	<input type="checkbox"/>

If Yes, please state below

6. Do you hold any professional qualifications?

No	<input type="checkbox"/>
Yes	<input type="checkbox"/>

If Yes, Please state below

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7. How long have you been in nurse training at UH?

Years	<input type="text"/>	<input type="text"/>
Months	<input type="text"/>	<input type="text"/>

<input type="text"/>
<input type="text"/>

8. Are you attending courses this year on a full-time or part-time basis?

Full-time	<input type="text"/>
Part-time	<input type="text"/>

1
2

9. What is your current level of study?

Level 1	<input type="text"/>
Level 2	<input type="text"/>
Level 3	<input type="text"/>
Level 4	<input type="text"/>

1
2
3
4

10. Had you heard about Reflective Practice before commencing your current course?

No	<input type="text"/>
Yes	<input type="text"/>

1
2

11. Do you believe that you understand what is meant by the term Reflective Practice?

No	<input type="text"/>
Yes	<input type="text"/>

1
2

12. From what you understand about Reflective Practice so far could it be useful to....

your learning?

No	<input type="text"/>
Yes	<input type="text"/>
Not sure yet	<input type="text"/>

1
2
3

your practice?

No	<input type="text"/>
Yes	<input type="text"/>
Not sure yet	<input type="text"/>

1
2
3

13. Do you believe that you understand what is meant by the term Structured Reflection?

No	<input type="text"/>
Yes	<input type="text"/>

1
2

If Yes, which of the following would you include/exclude in your description of Structured Reflection...

	Include	Exclude
Thinking on your own	<input type="text"/>	<input type="text"/>
Discussion with a tutor/supervisor	<input type="text"/>	<input type="text"/>
Talking to a colleague	<input type="text"/>	<input type="text"/>
Using a written journal	<input type="text"/>	<input type="text"/>
Using a framework	<input type="text"/>	<input type="text"/>

<input type="text"/>
<input type="text"/>
<input type="text"/>
<input type="text"/>

14. Please indicate how strongly you feel about Structured Reflection by circling the appropriate rating

i. Positive

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	<input type="checkbox"/>
----------------	-------	---------	----------	-------------------	--------------------------

ii. Relaxed

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	<input type="checkbox"/>
----------------	-------	---------	----------	-------------------	--------------------------

iii. Confident

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	<input type="checkbox"/>
----------------	-------	---------	----------	-------------------	--------------------------

iv. Unsure

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	<input type="checkbox"/>
----------------	-------	---------	----------	-------------------	--------------------------

15. How would you rate your ability to use Structured Reflection?

Non-existent	<input type="checkbox"/>	1
Poor	<input type="checkbox"/>	2
Just Acceptable	<input type="checkbox"/>	3
Good	<input type="checkbox"/>	4
Very Good	<input type="checkbox"/>	5

16. If you have used Structured Reflection before do you agree that it is an important part of nursing practice, (please tick one option)

Strongly Agree	<input type="checkbox"/>	1
Agree	<input type="checkbox"/>	2
Neutral	<input type="checkbox"/>	3
Disagree	<input type="checkbox"/>	4
Strongly Disagree	<input type="checkbox"/>	5

17. Please indicate the importance of the following in your learning by circling the appropriate rating

i. Learning through observing practice experience

Not at all important	Not very important	No strong feelings either way	Quite important	Very important	<input type="checkbox"/>
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ii. Thinking back – mulling over and revisiting past experiences

Not at all important	Not very important	No strong feelings either way	Quite important	Very important	<input type="checkbox"/>
----------------------	--------------------	-------------------------------	-----------------	----------------	--------------------------

iii. Learning from studying theory, books, lectures etc.

Not at all important	Not very important	No strong feelings either way	Quite important	Very important	<input type="checkbox"/>
----------------------	--------------------	-------------------------------	-----------------	----------------	--------------------------

iv. Trying out things for yourself – hands on experience

Not at all important	Not very important	No strong feelings either way	Quite important	Very important	<input type="checkbox"/>
----------------------	--------------------	-------------------------------	-----------------	----------------	--------------------------

18. Please add any further comments you would like to make about Reflective Practice and Structured Reflection related to Nursing.

Date of Completion of Questionnaire:
Thank you for your assistance

Indra Jones
Senior Lecturer
Nursing and Paramedic Sciences
10.12. 2000

APPENDIX B2

This appendix includes data from the questionnaire in the Foundation study with Nursing Students study not included in the main body of the thesis.

Subject's Educational Profile

Figure 1 shows how many subjects achieved GCSE/O levels above a C - a majority of the students achieved at least 1 GCSE above, with a mean of 7.55 (standard deviation = 3.12) GCSE's for those who replied – 6 students did not provide data, and as with the main body of the thesis, a -99 code is entered here, as shown in figure 1 below.

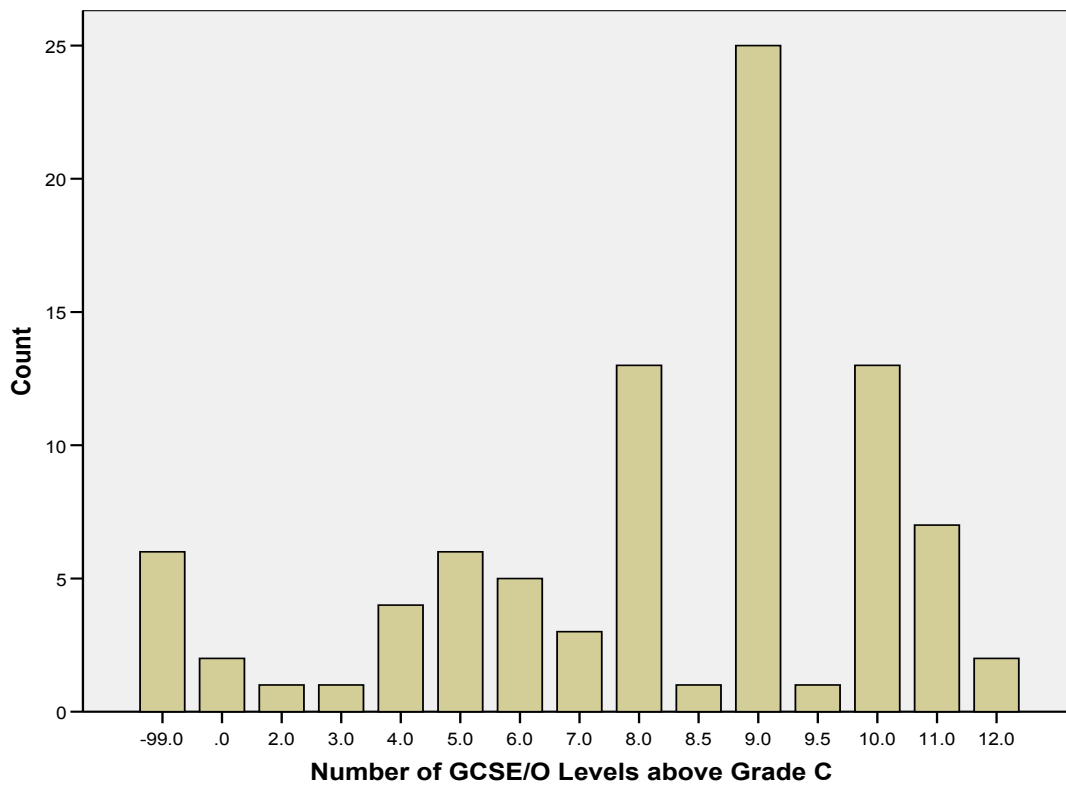


Figure 1: Number of GCSE's/O levels above Grade C achieved by subjects

Figure 2: Below shows the number of A levels attained by the students. The mean number of A levels attained was 2.3 (standard deviation = 1.61)

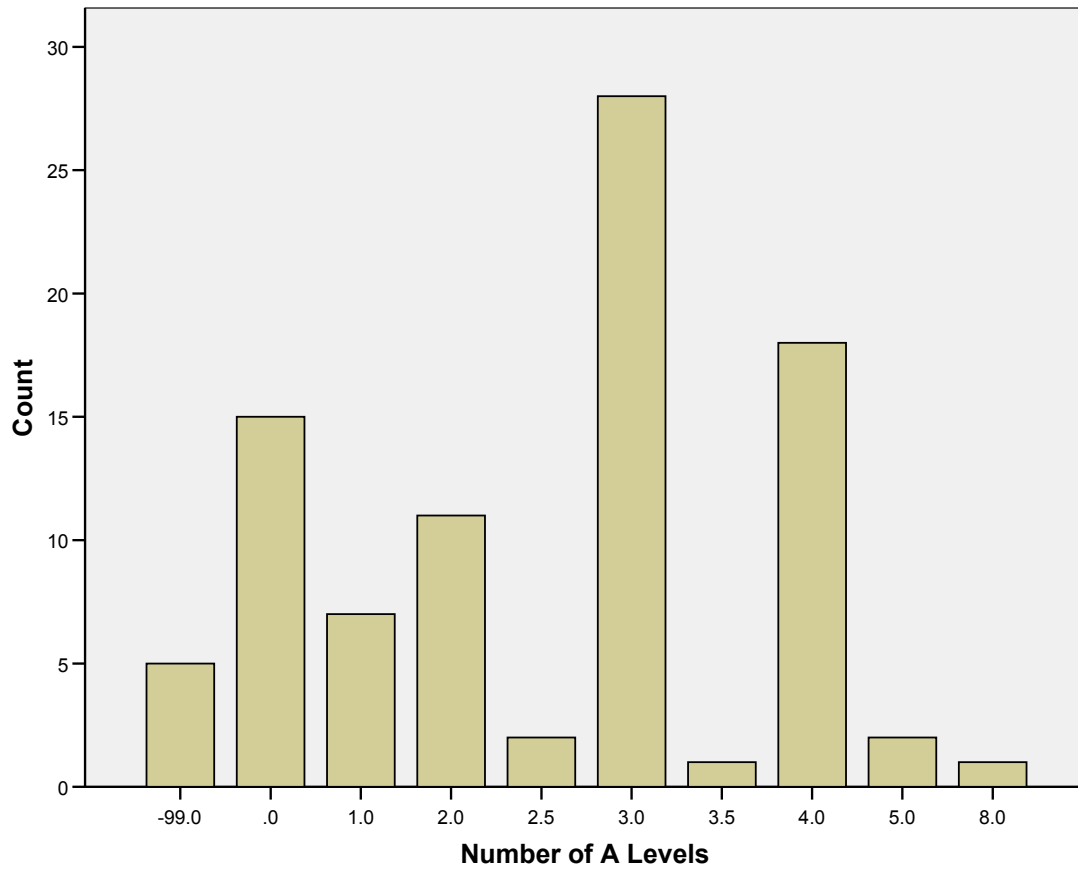


Figure 2: Number of A levels achieved by students

Figure 3 indicates the number of students who previously had degrees prior to undertaking the nursing course. A majority did not. For those who did, tables 1 and 2 show the type of degree and the classification, where possible. Students had already achieved BScs and BAs, all achieving second class honours

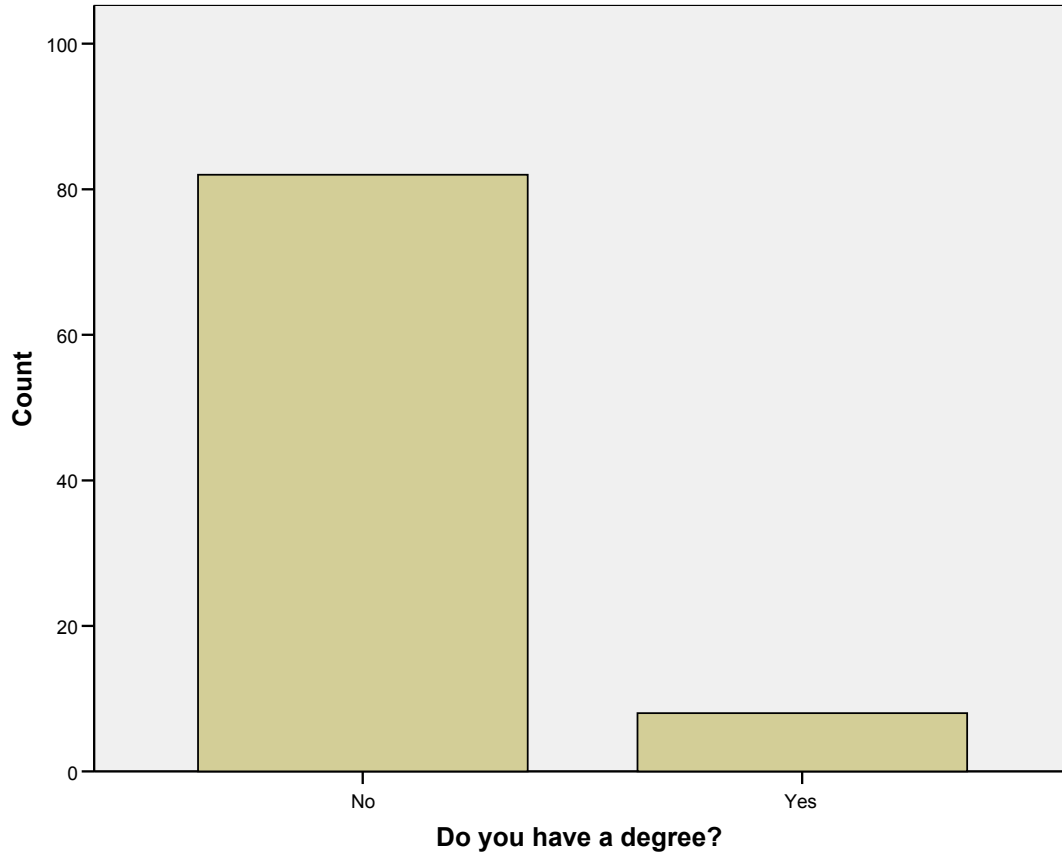


Figure 3: Do you have a degree

Table 1: What type of degree students have

If Yes, please state your degree type (Degree Type)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	BA	5	5.6	62.5	62.5
	BSc	2	2.2	25.0	87.5
	Other	1	1.1	12.5	100.0
	Total	8	8.9	100.0	
Missing	Not Applicable	82	91.1		
Total		90	100.0		

Table 2: Classification Obtained in the degree course

and if applicable the classification obtained (Degree Classification)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Upper Second	3	3.3	37.5	37.5
	Lower Second	5	5.6	62.5	100.0
	Total	8	8.9	100.0	
Missing	Not applicable	82	91.1		
Total		90	100.0		

Other educational qualifications?

Table 3 shows the number of students holding other educational qualifications – over a third of the students held other educational qualifications, as catalogued in table 4, with a variety of different types of qualifications (most commonly various forms of BTEC being evident)

Table 3: Do you hold any other educational qualifications

Do you hold any other Educational Qualifications?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	55	61.1	63.2	63.2
	Yes	32	35.6	36.8	100.0
	Total	87	96.7	100.0	
Missing	-99	3	3.3		
Total		90	100.0		

Table 4: Type of qualification gained

(Other educational qualifications) If Yes, please state below

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-98	56	62.2	62.2	62.2
	-99	2	2.2	2.2	64.4
	(B) Duke of Edinburgh	1	1.1	1.1	65.6
	Access Certificate; City and Guilds in Information Technology	1	1.1	1.1	66.7
	Access Certificate	1	1.1	1.1	67.8
	Access to Social Work	1	1.1	1.1	68.9
	Advanced GNVQ Health Social Care (Distinction)	1	1.1	1.1	70.0
	Advanced GNVQ in Health and Social Care (Distinction)	1	1.1	1.1	71.1
	AS General Studies - technically half an A-level	1	1.1	1.1	72.2
	BTEC HNC in Social Care (Management)	1	1.1	1.1	73.3
	BTEC National Certificate in Childhood Studies	1	1.1	1.1	74.4
	BTEC National Diploma in Health Studies (Science)	1	1.1	1.1	75.6
	BTEC National Diploma, Higher National Diploma, NVQ II	1	1.1	1.1	76.7
	BTEC ND? in Caring Services	1	1.1	1.1	77.8
	BTEC Science/Preliminary Cert Social Care	1	1.1	1.1	78.9
	BTEC; Foundation year Science. 95 credits BSc Physics.	1	1.1	1.1	80.0
	Diploma	1	1.1	1.1	81.1
	Diploma in Higher Education	1	1.1	1.1	82.2
	Diploma in Sports Therapy	1	1.1	1.1	83.3
	Equivalent for Greece (GCSE/A Level) 17.25 out of 20?	1	1.1	1.1	84.4
	GNVQ Advanced	1	1.1	1.1	85.6
	GNVQ Advanced (Distinction), equivalent to 2 A Levels	1	1.1	1.1	86.7
	GNVQ Advanced Health and Social Care	2	2.2	2.2	88.9

		Frequency	Percent	Valid Percent	Cumulative Percent
	GNVQ Advanced Health and Social Care (Merit)	1	1.1	1.1	90.0
	GNVQ Health and social care Adv	1	1.1	1.1	91.1
	GNVQ Health and Social Care	1	1.1	1.1	92.2
	GNVQ Information Systems (IT)	1	1.1	1.1	93.3
	HND Biomedical Sciences	1	1.1	1.1	94.4
	Irish Leaving Certificate and Junior Certificate	1	1.1	1.1	95.6
	PCSC, CandG 7306	1	1.1	1.1	96.7
	RSA Computer Studies; RNI First Aid	1	1.1	1.1	97.8
	RSA II Computer Studies	1	1.1	1.1	98.9
	Learning Cert. Commented 'equivalent' next to A Levels	1	1.1	1.1	100.0
	Total	90	100.0	100.0	

Professional Qualifications

Table 5 shows the number of students who had other professional qualifications under their belt beforehand; a majority in this case did not have any other professional qualifications.

Table 5: Professional qualifications gained

(Professional Paramedic Qualifications) If Yes, Please state below

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid -98	83	92.2	92.2	92.2
-99	1	1.1	1.1	93.3
ASA Assistant Teachers	1	1.1	1.1	94.4
ASET Care Practices	1	1.1	1.1	95.6
Obtained overseas, Diploma in Clinical Medicine	1	1.1	1.1	96.7
Registered Midwife	1	1.1	1.1	97.8
RSA Text Processing II and III (Distinction); Word Processing II and III (Distinction); Studied for Diploma in Legal Practice	1	1.1	1.1	98.9
Teacher	1	1.1	1.1	100.0
Total	90	100.0	100.0	

How long have you been in training at UH

Table 6 shows how long students had been studying at UH with all but 1 student having spent between 0 and 3 (e.g. the normal duration of the course)

Table 6: Length of time spent studying at UH

How long have you been in nurse training at UH? (Years)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	29	32.2	32.6	32.6
1	37	41.1	41.6	74.2
2	21	23.3	23.6	97.8
3	1	1.1	1.1	98.9
14	1	1.1	1.1	100.0
Total	89	98.9	100.0	
Missing -99	1	1.1		
Total	90	100.0		

Full or Part Time?

Finally, Table 7 shows that all the nursing students were attending on a full-time basis.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Full-time	90	100.0	100.0	100.0

Table 7: **Are you attending courses this year on a full-time or part-time basis?**

Appendix C

Questionnaire 2 and Additional Data for Study 2

APPENDIX C1

EVALUATION OF REFLECTIVE PRACTICE

Anonymity number

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1. How old are you?

18 to 25 years	<input type="checkbox"/>
26 to 35 years	<input type="checkbox"/>
36 to 45 years	<input type="checkbox"/>
46 to 60 years	<input type="checkbox"/>

2. Are you?

Male	<input type="checkbox"/>
Female	<input type="checkbox"/>

3.

Number of O Levels /GCSE above Grade C	<input type="checkbox"/>
Equivalent GCSE above grade C	<input type="checkbox"/>
Number of A Levels	<input type="checkbox"/>

4. Do you have a degree?

No	<input type="checkbox"/>
Yes	<input type="checkbox"/>

If Yes, please state your degree type and if applicable the classification obtained

BA	<input type="checkbox"/>	Class	<input type="checkbox"/>
BSc	<input type="checkbox"/>	Class	<input type="checkbox"/>
MA	<input type="checkbox"/>		
MSc	<input type="checkbox"/>		

5. Do you hold any other Educational Qualifications?

No	<input type="checkbox"/>
Yes	<input type="checkbox"/>

If Yes, please state below

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2

6. Do you hold any professional paramedic qualifications?

No
Yes

1
2

If Yes, Please state below

7. How long have you been in practice?

Years
Months

8. Are you attending courses this year on a full-time or part-time basis?

Full-time
Part-time

1
2

9. What is your current level of study?

Level 1
Level 2
Level 3
Level 4

1
2
3
4

10. Had you heard about Reflective Practice before commencing your current course?

No
Yes

1
2

11. Do you believe that you understand what is meant by the term Reflective Practice?

No 1
Yes 2

If No, please go directly to Question 13

12. From what you understand about Reflective Practice so far could it be useful to:

your learning?

No 1
Yes 2
Not sure yet 3

your practice?

No 1
Yes 2
Not sure yet 3

13. Do you believe that you understand what is meant by the term ‘Structured Reflection’?

No	<input type="checkbox"/>
Yes	<input type="checkbox"/>

1
2

If No, Please go straight to question 14

If **Yes**, which of the following would you include/exclude in your definition of Structured Reflection...

	Include	Exclude	
Thinking on your own	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Discussion with a trainer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Talking to a colleague	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using a written journal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using a framework	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. For each of the following please indicate with an “X” how you currently feel about structured reflection.

i. Positive	Negative										
<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table>									<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> </tr> </table>		<input type="checkbox"/>
ii. Clear	Unclear										
<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table>									<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> </tr> </table>		<input type="checkbox"/>
iii. Relaxed	Tense										
<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table>									<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> </tr> </table>		<input type="checkbox"/>
iv. Sure	Unsure										
<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table>									<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> </tr> </table>		<input type="checkbox"/>
v. Easy	Difficult										
<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table>									<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> </tr> </table>		<input type="checkbox"/>
vi. Useful	Not useful										
<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table>									<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> </tr> </table>		<input type="checkbox"/>

15. How would you rate your ability to use Structured Reflection?

Very Poor	<input type="checkbox"/>
Poor	<input type="checkbox"/>
Adequate	<input type="checkbox"/>
Good	<input type="checkbox"/>
Very Good	<input type="checkbox"/>

1
2
3
4
5

16. If you have used Structured Reflection before do you agree it is an important part of paramedic practice? Please tick one of the following. *If not please go to Question 17*

Strongly Agree	<input type="checkbox"/>
Agree	<input type="checkbox"/>
Neutral	<input type="checkbox"/>
Disagree	<input type="checkbox"/>
Strongly Disagree	<input type="checkbox"/>

1
2
3
4
5

17. Please indicate the importance of each of the following in your personal learning by **circling** the appropriate rating below:

i. Learning through observing practice experience

Not at all important	Not very important	No strong feelings either way	Quite important	Very important	<input type="checkbox"/>
---------------------------------	-------------------------------	--	----------------------------	---------------------------	--------------------------

ii. Thinking back – mulling over and revisiting past experiences

Not at all important	Not very important	No strong feelings either way	Quite important	Very important	<input type="checkbox"/>
---------------------------------	-------------------------------	--	----------------------------	---------------------------	--------------------------

iii. Learning from studying theory, books, lectures etc.

Not at all important	Not very important	No strong feelings either way	Quite important	Very important	<input type="checkbox"/>
---------------------------------	-------------------------------	--	----------------------------	---------------------------	--------------------------

iv. Trying out things for yourself – hands on experience

Not at all important	Not very important	No strong feelings either way	Quite important	Very important	<input type="checkbox"/>
---------------------------------	-------------------------------	--	----------------------------	---------------------------	--------------------------

18. Please indicate which of the following reflective tools you have used by ticking in the left hand column.

	Which have you Used? <i>(Please Tick)</i>
John's 1992	<input type="checkbox"/>
Driscoll 1994	<input type="checkbox"/>
Boud et al 1985	<input type="checkbox"/>
Gibbs Cycle1988	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

19. If you have ticked other in question 18 please name or describe the method below

20. Rate the following reflective tools as they best assist your learning, from 1 to the least effective, to 5 to the most effective

	<i>(Please rate your choices)</i>
John's 1992	<input type="checkbox"/>
Driscoll 1994	<input type="checkbox"/>
Boud et al 1985	<input type="checkbox"/>
Gibbs Cycle1988	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

APPENDIX C2

Paramedic Data (Study 2) Chapter 5

This section features the data in the second study, involving the paramedic group, which has not been included in the main body of the text.

Educational Qualification

Table 1 below shows the number of GCSE's attained by subjects, with students ranging from 0 to 14 GCSE, with a mean of 5.93 GCSE's above grade C (standard deviation = 3.99)

Table 1 Number of GCSE/ O levels above Grade C

Number of GCSE/O Levels above Grade C

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	29	21.8	21.8	21.8
1	2	1.5	1.5	23.3
2	4	3.0	3.0	26.3
3	6	4.5	4.5	30.8
4	4	3.0	3.0	33.8
5	10	7.5	7.5	41.4
6	10	7.5	7.5	48.9
7	6	4.5	4.5	53.4
8	11	8.3	8.3	61.7
9	19	14.3	14.3	75.9
10	23	17.3	17.3	93.2
11	1	.8	.8	94.0
11	6	4.5	4.5	98.5
13	1	.8	.8	99.2
14	1	.8	.8	100.0
Total	133	100.0	100.0	

Table 2 shows the number of A levels achieved, with a mean of 1.82 (standard deviation = 1.7)

Table 2: Number of A levels achieved

Number of A Levels

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	49	36.8	36.8	36.8
	1	15	11.3	11.3	48.1
	2	13	9.8	9.8	57.9
	3	1	.8	.8	58.6
	3	28	21.1	21.1	79.7
	4	3	2.3	2.3	82.0
	4	18	13.5	13.5	95.5
	5	5	3.8	3.8	99.2
	7	1	.8	.8	100.0
	Total	133	100.0	100.0	

Table 3 shows the number of students who had degrees prior to starting their studies in the paramedic course. Seven subjects had previous degrees, of which 2 were BA's and 7 were BSc's – with 2 of the students stating they achieved upper seconds (the rest did not record the final grade they attained)

Table 3: Do you have a degree

Do you have a degree?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	126	94.7	94.7	94.7
	Yes	7	5.3	5.3	100.0
	Total	133	100.0	100.0	

Table 4: What type of degree?

If Yes, please state your degree type (Degree Type)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	BA	2	1.5	22.2	22.2
	BSc	7	5.3	77.8	100.0
	Total	9	6.8	100.0	
Missing	Not Applicable	124	93.2		
Total		133	100.0		

Table 5: classification of degree

And if applicable the classification obtained (Degree Classification)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Upper Second	2	1.5	100.0	100.0
Missing	-99	7	5.3		
	Not applicable	124	93.2		
	Total	131	98.5		
Total		133	100.0		

Table 6 states that 73 of the students had other educational qualifications. These are catalogued in Table 7.

Table 7: Do you hold any other educational qualifications?

Do you hold any other Educational Qualifications?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	54	40.6	42.5	42.5
	Yes	73	54.9	57.5	100.0
	Total	127	95.5	100.0	
Missing	-99	6	4.5		
Total		133	100.0		

Table 8

Other educational qualifications) If Yes, please state below

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-99	3	2.3	2.3	2.3
		58	43.6	43.6	45.9
	1 Advanced GNVQ	1	.8	.8	46.6
	2 AS levels	1	.8	.8	47.4
	A/S in Music, BTEC National Diploma in Health Studies (Science)	1	.8	.8	48.1
	A/S level Environmental Science; Diploma in Paramedic Sciences	1	.8	.8	48.9
	Advanced GNVQ Health and Social Care - Distinction	1	.8	.8	49.6
	Advanced GNVQ Health and Social Care	1	.8	.8	50.4
	Advanced GNVQ Health and Social Care Distinction	1	.8	.8	51.1
	Advanced GNVQ Health and Social Care, First Aid Certificate	1	.8	.8	51.9

	Frequency	Percent	Valid Percent	Cumulative Percent
Ambulance Technician	2	1.5	1.5	53.4
B-TEC National Diploma in Mechanical Production Engineering	1	.8	.8	54.1
BSL (sign language) Stage 1 GNVQ health and Social Care	1	.8	.8	54.9
BTEC	2	1.5	1.5	56.4
BTEC Acute Emergency Care	1	.8	.8	57.1
BTEC HND in Management	1	.8	.8	57.9
BTEC in IT	1	.8	.8	58.6
BTEC National Diploma in Health Studies	2	1.5	1.5	60.2
BTEC National Diploma in Science (Health Studies)	1	.8	.8	60.9
Cambridge University Certificate of Computer Literacy	1	.8	.8	61.7
Cert Ed Para Science	1	.8	.8	62.4
Cert Ed Paramedic Science	1	.8	.8	63.2
Cert Ed.	1	.8	.8	63.9
Cert HE Para Sci	2	1.5	1.5	65.4
Cert in HE	1	.8	.8	66.2
Cert Para Sci	1	.8	.8	66.9
Certificate and Diploma in Paramedic Practice	1	.8	.8	67.7
Certificate in Higher Education in Paramedic Science	1	.8	.8	68.4
Certificate in Management with NVQ4	1	.8	.8	69.2
Certificate in Paramedic Science	1	.8	.8	69.9
Certificate in Theology	1	.8	.8	70.7
Certificate of Higher Education	1	.8	.8	71.4
Certificate of Higher education in Paramedic Sciences	1	.8	.8	72.2
Certificate of Sixth Year Studies (SYS?) in Biology and Art	1	.8	.8	72.9
City and Guild	1	.8	.8	73.7
City and Guilds	1	.8	.8	74.4
City and Guilds Carpentry and Joinery	1	.8	.8	75.2
City and Guilds Certificates. Diploma	1	.8	.8	75.9
City and Guilds Info tech.	1	.8	.8	76.7

	Frequency	Percent	Valid Percent	Cumulative Percent
City and Guilds level 3	1	.8	.8	77.4
City and Guilds Photography (923); 3 x O Level Grade at A Level	1	.8	.8	78.2
City and Guilds x 3	1	.8	.8	78.9
Dip HE Para Sci	2	1.5	1.5	80.5
Dip Para Sci	1	.8	.8	81.2
Diploma Computer science	1	.8	.8	82.0
Diploma HE Paramedic Science	1	.8	.8	82.7
Diploma in Nutrition	1	.8	.8	83.5
Diploma of Vocational Education - Arts and Media	1	.8	.8	84.2
Diploma Para Science	1	.8	.8	85.0
First Aid at Work, Lifesaver Plus, RSA?	1	.8	.8	85.7
GNVQ Advanced Health and Social Care course	1	.8	.8	86.5
GNVQ Advanced Health and Social Care, A/S Human Biology	1	.8	.8	87.2
Health Science Access Course Award	1	.8	.8	88.0
Higher School Certificate (A-level Equivalent) = 5	1	.8	.8	88.7
HNC Building Studies	1	.8	.8	89.5
HNC Electronics Engineering	1	.8	.8	90.2
HND in Leisure and Recreation (Distinction), BTEC in recreation and Tourism (Merit)	1	.8	.8	91.0
IHCD Paramedic	1	.8	.8	91.7
IHCD Technician, Cert Emergency Medical Care	1	.8	.8	92.5
IHCD Technician, IHCD Paramedic	1	.8	.8	93.2
NC health Science, HNC Health Care	1	.8	.8	94.0
NVQ Level 2 Playwork	1	.8	.8	94.7
NVQ Level 3 in Administration	1	.8	.8	95.5
Open Univ Effective Manager/Accounts	1	.8	.8	96.2
Peer Educator	1	.8	.8	97.0
Pharmacy assistant qualification	1	.8	.8	97.7
Radiographic Assistant; Uni certificate; Diploma Stats and Calculation; Qualified ambulance technician	1	.8	.8	98.5

	Frequency	Percent	Valid Percent	Cumulative Percent
RSA Awards, Sport teaching	1	.8	.8	99.2
Sports leadership/coaching award	1	.8	.8	100.0
Total	133	100.0	100.0	

Professional qualifications

Table 9 shows that just over half the students had previous professional paramedic qualifications that are catalogued in Table 16 – a majority of these were from the IHCD.

Table 9: Professional paramedic qualifications

Do you hold any professional paramedic qualifications?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No	66	49.6	49.6	49.6
Yes	67	50.4	50.4	100.0
Total	133	100.0	100.0	

Table 10: Type of qualification

(Professional Paramedic Qualifications) If Yes, Please state below

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid -98	1	.8	.8	.8
-99	3	2.3	2.3	3.0
	65	48.9	48.9	51.9
? Ambulance Service Institute	1	.8	.8	52.6
IHCD	10	7.5	7.5	60.2
IHCD Ambulance Aid Instructor, IHCD Ambulance Driving Instructor, IHCD Paramedic	1	.8	.8	60.9
IHCD Ambulance Technician	1	.8	.8	61.7
IHCD Ambulance Technician and IHCD Paramedic and RGN	1	.8	.8	62.4
IHCD Ambulance Technician, IHCD Ambulance Paramedic	1	.8	.8	63.2
IHCD Course	1	.8	.8	63.9
IHCD Miller?, IHCD Paramedic	1	.8	.8	64.7

	Frequency	Percent	Valid Percent	Cumulative Percent
IHCD Para Certificate	1	.8	.8	65.4
IHCD Paramedic	7	5.3	5.3	70.7
IHCD Paramedic (SR Para), IHCD Ambulance Tutor, IHCD Ambulance Driving Tutor, IHCD Facilitating Staff	1	.8	.8	71.4
IHCD Paramedic Certificate, IHCD Instructor Certificate	1	.8	.8	72.2
IHCD Paramedic State Registered	1	.8	.8	72.9
IHCD Paramedic, 'HITS'	1	.8	.8	73.7
IHCD Paramedic, IHCD Paramedic Instructor	1	.8	.8	74.4
IHCD Paramedic, IHCD Paramedic Tutor, IHCD Driving Instructor, PHTLS Instructor, PHPLS Instructor, ALS Instructor	1	.8	.8	75.2
IHCD Paramedic; ALS	1	.8	.8	75.9
IHCD Paramedic; IHCD Technician and Advanced Driving	1	.8	.8	76.7
IHCD PHTLS ALS. MIMMS?	1	.8	.8	77.4
IHCD Qualified Ambulance Technician	2	1.5	1.5	78.9
IHCD Qualified Instructor	1	.8	.8	79.7
IHCD Technician and Paramedic course	1	.8	.8	80.5
IHCD Technician/Paramedic award	1	.8	.8	81.2
IHCD, NHSTD, Cert Ed Para Sci	1	.8	.8	82.0
IHCD/SR Para	1	.8	.8	82.7
Instructor (IHCD), PALS, PHTLS Instructor, IHCD Paramedic Cert ed Para	1	.8	.8	83.5
Military Paramedic CMTI, HSE Offshore Paramedic	1	.8	.8	84.2
NHCD Paramedic	1	.8	.8	85.0
NHSTA Paramedic, PHTLS, PPHTLS	1	.8	.8	85.7
NHSTD Paramedic	1	.8	.8	86.5
NHSTD Paramedic Certificate	1	.8	.8	87.2
NHSTD Paramedic, PHTLS and PHPLS Provider	1	.8	.8	88.0
NHSTD, IHCD, SR Para, Cert Para	1	.8	.8	88.7
Paramedic Instructor	1	.8	.8	89.5

	Frequency	Percent	Valid Percent	Cumulative Percent
Paramedic, Professional Registration, ASL	1	.8	.8	90.2
Qualified Ambulance Technician	6	4.5	4.5	94.7
Red Cross First Aid at Work	1	.8	.8	95.5
Registered Paramedic	2	1.5	1.5	97.0
S.R. Para. IHCD Instructor. PHTLS Instructor.	1	.8	.8	97.7
SR Para, IHCD Ambulance Aid Tutor	1	.8	.8	98.5
State Registered Paramedic	1	.8	.8	99.2
Trainee Qualified Ambulance Technician	1	.8	.8	100.0
Total	133	100.0	100.0	

Appendix D

Questionnaire 3, LSI and Inter- Rater Data for Study 3

APPENDIX D1

Reflective Practice Survey
PS3 Cohort 2001

ID Number

OFFICE
USE
ONLY

1. What is your Age Group? (Please tick one of the boxes below).

- 18 to 25 years
- 26 to 35 years
- 36 to 45 years
- 46 to 60 years

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

- 1
- 2
- 3
- 4

2. Are you? (Please tick one box).

- Male
- Female

<input type="checkbox"/>
<input type="checkbox"/>

- 1
- 2

3. Reflective practice is considered to be a helpful learning tool.
In your own words please state briefly in the space below what you understand by the term reflective practice.

4. Overall how would you rate the usefulness of reflective practice to your academic studies ? (Please tick one of the boxes below).

Useful	<input type="checkbox"/>
Somewhat useful	<input type="checkbox"/>
Very useful	<input type="checkbox"/>
Not very useful	<input type="checkbox"/>
Not useful	<input type="checkbox"/>
Not sure	<input type="checkbox"/>

1
2
3
4
5
6

Please comment briefly on the reason for the choice you have ticked to question 4.

5. Overall how would you rate the usefulness of reflective practice to your Clinical Practice ? (Please tick one option).

Useful	<input type="checkbox"/>
Somewhat useful	<input type="checkbox"/>
Very useful	<input type="checkbox"/>
Not very useful	<input type="checkbox"/>
Not useful	<input type="checkbox"/>
Not sure	<input type="checkbox"/>

1
2
3
4
5
6

In the space below please comment on the reason for the choice you have ticked to question 5.

6. Please list below the ways in which you undertake reflective practice.

7. From your list above please rank from a - f the usefulness of methods to you. ('a' being the most useful)

a		1
b		2
c		3
d		4
e		5
f		6

8a. Please rate the importance of reflective practice to your academic studies. (Please tick one box).

Not at all important	Not very important	No strong feelings either way	Quite important	Very important	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

In the space below please comment briefly on the choice you have ticked.

8b. Please rate the importance of reflective practice to your clinical practice.
(Please tick one box).

Not at all
important

Not very
important

No strong
feelings either
way

Quite
important

Very
important

In the space below please comment briefly on the choice you have ticked .

9. Please add any further comments you would like to make about Reflective Practice related to your academic studies and Clinical practice.

Date of completion of Questionnaire: _____ 25.06.04

Thank you for your time and assistance.

Indra Jones
Fellow in Learning and Teaching
Faculty of Health and Human Sciences
University of Hertfordshire

APPENDIX D2

**University Of Hertfordshire
Faculty of Health and Human Sciences
School of Paramedic Sciences**

Cohort: PS 2001

Student Number:

Date: 25. 06. 04

The Learning Style Indicator (Adapted June 2004)

**(Original Source: donclark@nwlinc.com
<http://www.nwlinc.com/~donclark/hrd/kolb.html>
Created May 28, 2000. Updated October 24, 2000)**

What kind of learner are you?

In order to begin to understand what kind of learner you are, you can complete the following Inventory. Remember there is no right or wrong answer.

Read each statement carefully in Sections 1 and 2.

Each of the statements has two parts .Please place a tick at the end of the part that best describes how this statement applies to you.

Answer honestly as there are no correct or incorrect answers. It is best if you do not think about each question too long, as this could lead you to the wrong conclusion.

SECTION 1

Please tick (✓) **EITHER** an AE or a RO next to each of the **9** statements below, depending upon which part of the statement mostly closely describes you.

1. **(AE)** I often produce off-the-cuff ideas that at first might seem silly or half-baked. ---
(RO) I am thorough and methodical. ---
2. **(AE)** I am normally the one who initiates conversations.---
(RO) I enjoy watching people. ---
3. **(AE)** I am flexible and open minded.---
(RO)I am careful and cautious---
4. **(AE)** I like to try new and different things without too much preparation.
(RO) I investigate a new topic or process in depth before trying it.---
5. **(AE)** I am happy to have a go at new things.---
(RO) I draw up lists up possible courses of actions when starting a new project.---
6. **(AE)** I like to get involved and to participate.---
(RO) I like to read and observe.---
7. **(AE)** I am loud and outgoing.---
(RO) I am quite and somewhat shy.---
8. **(AE)** I make quick and bold decisions.---
(RO) I make cautious and logical decisions. ---
9. **(AE)** I speak slowly, after thinking.---
(RO) I speak fast, while thinking. ---

Total of **AEs** - _____. Total of **ROs** - _____. The one that has the larger number is your task preference.

SECTION 2

Please tick(✓) **EITHER** an AC or a CE next to each of the **9** statements below, depending upon which part of the statement mostly closely describes you.

1. **(AC)** I ask probing questions when learning a new subject.---
(CE) I am good at picking up hints and techniques from other people. ---
2. **(AC)** I am rational and logical.---
(CE) I am practical and down to earth. ---
3. **(AC)** I plan events down to the last detail.---
(CE) I like realistic, but flexible plans.---
4. **(AC)** I like to know the right answers before trying something new.---
(CE) I try things out by practicing to see if they work.---
5. **(AC)** I analyze reports to find the basic assumptions and inconsistencies.---
(CE)I rely upon others to give me the basic gist of reports.---
6. **(AC)** I prefer working alone.---
(CE) I enjoy working with others.---
7. **(AC)** Others would describe me as serious, reserved, and formal.---
(CE) Others would describe me as verbal, expressive, and informal.---
8. **(AC)** I use facts to make decisions.---
(CE) I use feelings to make decisions.---
9. **(AC)** I am difficult to get to know.---
(CE) I am easy to get to know.---

Total of **ACs** - _____. Total of **CEs** - _____. The one that has the larger number is your thought or **emotional preference**.

So what is your learning style ?

Each preference (high score) from the two above sections are used to determine your learning style:

If you are a *AE* and *CE* then you are a **Doer** (*Concrete Experience* and *Active Experimentation*)

If you are a *RO* and *CE* then you are a **Watcher** (*Reflective Observation* and *Concrete Experience*)

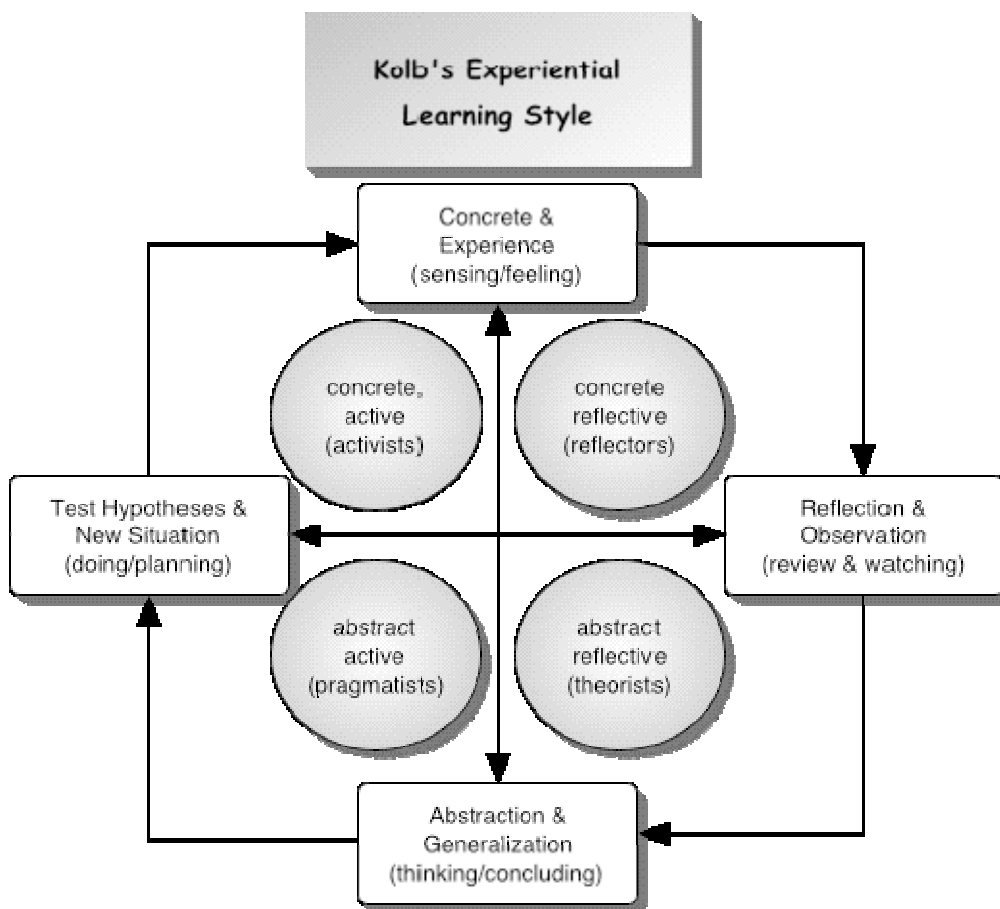
If you are a *RO* and *AC* then you are a **Thinker** (*Abstract Conceptualization* and *Reflective Observation*)

If you are a *AE* and *AC* then you are a **Feeler** (*Abstract Conceptualization* and *Active Experimentation*)

Note that you learn in **ALL** four styles, but you normally learn best by starting in and using one style the most.

Kolb's Learning Style Inventory

The basis of Kolb's *Learning Style Inventory* (Kolb, D. A. 1984) is the need for learning to be grounded in experience. Kolb's four stage theory uses a model with two dimensions. You can think of the first dimension, as shown in the model below, running horizontally and it is based on *task*. The left end of the dimension is **doing** the tasks (performing), while the right end is **watching** the task (observing). The second dimension runs vertically and is based upon our thought and emotional processes. The top of the dimension is **feeling** while the bottom of the dimension is **thinking**.



Learning Model

These four positions on the two dimensions describe a four-step learning model or process (note that each position is represented by a blue coloured box in the above diagram). Note that if we only fell along ONE dimension, we would have one of four learning styles:

Feeling or Sensing (*Concrete Experience*) - perceive information. This dimension represents a receptive experience based approach to learning that relies on feeling based judgments. They generally find theoretical approaches to be unhelpful and prefer to treat each situation as a unique case. They learn best from specific examples in which they can be involved. These learners tend to relate to peers, not authority (they are people persons - they want to get along with others, not be bossed around). Theoretical readings are not always helpful while group work and peer feedback often leads to success. Planned activities should apply learned skills. The instructor acts as coach/helper for this self-directed autonomous learner.

Watching (*Reflective Observation*) - reflect on how it will impact some aspect of our life. These individuals rely heavily on careful observation in making judgments. They prefer learning situations such as lectures that allow the role of impartial objective observers. These individuals tend to be introverts. Lectures are helpful to this learner (they are visual and auditory). This learner wants the instructor to provide expert interpretation. They look for an instructor who is both a taskmaster and a guide. This learner wants their performance to be measured by external criteria.

Thinking (*Abstract Generalization or Conceptualization*) - compare how it fits into our own experiences. These individuals tend to be more oriented towards things and symbols, and less towards other people. They learn best in authority-directed, impersonal learning situations that emphasize theory and systematic analysis. They are frustrated by and gain little from unstructured "discovery learning" approaches such as exercises and simulations. Case studies, theoretical readings and reflective thinking exercises help this learner. Very little else helps this learner.

Doing (testing in new situation or *Active Experimentation*) - think about how this information offers new ways for us to act. These individuals learn best when they can engage in such things as projects, homework, or group discussions. They dislike passive learning situations such as lectures. These individuals tend to be extroverts. This learner wants to touch everything (kinaesthetic or tactile). Problem solving, small group discussions or games, peer feedback, and self directed work assignments all help this learner. This learner likes to see everything and determine their own criteria for the relevance of the materials.

Learning Style Dimensions

These two lines intersect each other and form four quadrants (represented by the pink circles in the above diagram). These quadrants form the four personal learning styles (These four quadrants represent a more complex model of learning styles as they are based upon two dimensions):

Theorists (or Assimilator) like to learn using *abstract conceptualization and reflective observation* (lecture, papers, analogies) and like to ask such questions as "How does this relate to that?" Training approach - case studies, theory readings, and thinking alone. Their strengths lie in their ability to create theoretical models. They tend to be less interested in people and less concerned with practical applications of knowledge. They are often more concerned with abstract concepts. Theorists are often found in research and planning departments. This learning style is more characteristic of basic science and mathematics than applied sciences.

Pragmatists (or Converger) like to learn using *abstract conceptualization and active experimentation* (laboratories, field work, observations). They ask "How can I apply this in practice?" Training approach - peer feedback; activities that apply skills; trainer is coach/helper for a self-directed autonomous learner. The pragmatist's greatest strength is in the practical application of idea. They tend to be relatively unemotional. They prefer to deal with things rather than people. They tend to have narrow technical interests and quite often choose to specialize in the physical sciences.

Activists (or Accommodator) like to learn using *concrete experience and active experimentation* (simulations, case study, homework). They tell themselves "I'm game for anything." Training approach - practicing the skill, problem solving, small group discussions, peer feedback; trainer should be a model of a professional, leaving the learner to determine her own criteria for relevance of materials. Their strengths lie in doing things and involving themselves in new experiences. They are called accommodators because they excel in adapting to specific immediate circumstances. They tend to solve problems intuitively, relying on others for information. Accommodators are often found working in marketing and sales. The accommodator is at ease with people but is sometimes seen as impatient and pushy. This learner's educational background is often in technical or practical fields such as business.

Reflectors (or Diverger) like to learn using *reflective observation* and *concrete experience* (logs, journals, brainstorming). They like time to think about the subject. Training approach - lectures with plenty of reflection time; trainer should provide expert interpretation - taskmaster/guide; judge performance by external criteria. Their strengths lie in an imaginative ability. They tend to be interested in people and emotional elements. People with this learning style tend to become counsellors, organizational development specialists and personnel managers. They have broad cultural interests and tend to specialize in the arts. This style is characterizes individuals from humanities and liberal arts backgrounds.

Examples

1) Learning to ride a bicycle:



Reflectors - Thinking about riding and watching another person ride a bike.



Theorists - Understanding the theory and having a clear grasp of the biking concept.



Pragmatists - Receiving practical tips and techniques from a biking expert.



Activists - Leaping on the bike and having a go at it.

2) Learning a software program:



Activists - Jumping in and doing it.



Reflectors - Thinking about what you just performed.



Theorists - Reading the manual to get a clearer grasp on what was performed.



Pragmatists - Using the help feature to get some expert tips.

3) Learning to coach:



Pragmatists - Having a coach guide you in coaching someone else.



Activists - Using your people skills with what you have learned to achieve your own coaching style.



Reflectors - Observing how other people coach.



Theorists - Reading articles to find out the pros and cons of different methods.

4) Learning algebra:



Theorists - Listening to explanations on what it is.



Pragmatists - Going step-by-step through an equation.



Activists - Practicing.



Reflectors - Recording your thoughts about algebraic equations in a learning log.

APENDIX D3

Inter-Rater Data for study 3 / Qualitative study – First and second coding of open ended questionnaire data.

Question	Subject Number	First Coder	Second Coder
What do you understand by the term reflective practice?	2	Looking At Past Practice, Learning For Future Practice, Structured Analysis For Professional/Personal Development	Looking At Past Practice, Learning For Future Practice, Structured Analysis For Professional/Personal Development
	5	Looking at past practice, learning for future practice, Feelings	Looking at past practice, learning for future practice, Feelings
	9	Looking at past practice, Evaluating positive and negative Structured analysis Professional/Personal development	Looking at past practice, Evaluating positive and negative Structured analysis Professional/Personal development
	15	Looking at past practice, Evaluating Positive and Negative, Learn from real life	Looking at past practice, Evaluating positive and negative, learning for future practice
	16	Looking at past practice, Learn for future practice, Evaluating positive and negative, Professional/personal development	Looking at past practice, Learn for future practice, Evaluating positive and negative, Professional/personal development
	20	Looking at past practice, Learning for future practice, Evaluating positive and negative, Structured analysis	Looking at past practice, Learning for future practice, Evaluating positive and negative, Structured analysis

Question	Subject Number	First Coder	Second Coder
How is reflective practice useful for academic studies?	2	Helps improve knowledge	Helps improve knowledge
	5	Helps improve practice, Helps improve knowledge, Explore areas in depth	Helps improve practice, helps improve knowledge
	9	Helps improve practice	Helps improve practice
	15	Don't like synopsis / written component	Don't like synopsis / written component
	16	Don't like synopsis / written component	Don't like synopsis / written component
	20	Helps improve knowledge	Helps improve knowledge
Usefulness of reflective practice to clinical practice	2	Not useful	Not useful
	5	Helps improve knowledge base, Improves practice	Helps improve knowledge base, Improves practice
	9	Improves practice, Helps avoid errors	Improves practice, Helps avoid errors
	15	Improves practice	Improves practice
	16	Verbal discussion would be better	Verbal discussion would be better
	20	Improves practice, helps avoid errors	Improves practice, helps avoid errors
Reflective tools used	2	Gibbs cycle, Talking to others	Gibbs cycle, Talking to others
	5	Research/reading, Self-analysis	Research/reading, Self-analysis
	9	Talking to others, Self-analysis, Research/reading	Talking to others, Self-analysis, Research/reading
	15	Talking to others, Self-analysis	Talking to others, Self-analysis
	16	Gibbs cycle, Talking to others	Gibbs cycle, Talking to others
	20	Talking to others, essays	Talking to others, Essays
Importance of reflective practice to academic studies	2	Important academically, not of use professionally	Important academically, Not of use professionally

Question	Subject Number	First Coder	Second Coder
	5	Expands knowledge base	Expands knowledge base
	9	Important academically	Important academically
	15	Not answered	Not answered
	16	Important academically, Professional importance	Professional importance
	20	Professional importance	Professional importance
Importance of reflective practice to clinical practice	2	Helps highlight errors	Helps highlight errors
	5	Useful for improving clinical practice,	Useful for improving clinical practice, Leads to discussion with colleagues
	9	Helps highlight errors	Helps highlight errors
	15	Helps highlight errors	Helps highlight errors
	16	useful for improving practice, personal development	Helps highlight errors, Personal development
	20	Useful for improving clinical practice	Useful for improving clinical practice
Further comments	2	Ambiguous nature of the tools/methods	Ambiguous nature of the tools/methods
	5	Not answered	Not answered
	9	Not answered	Not answered
	15	Not answered	Not answered
	16	May work best as group process	May work best as group process
	20	Not answered	Not answered

Appendix D4

Q3 Reflective practice is considered to be a helpful learning tool. In your own words please state briefly what you understand by the term reflective practice

Respondent	Data
1 W	Looking at my own practice and learning for future practice.
2 T	Reflective practice is the analysing of past practice experiences in a formal way which aims to aid professional development and help the practitioner to understand what has happened and learn on the experiences to advance further practice.
3 F	Looking back at what has been previously experienced and finding ways in which practice could be improved.
4 D	Learning from real life situations. Highlighting good and bad practice with an aim of improving future patient care.
5 D	Reflective practice is about reflecting on experiences gained in a practical setting. It involves reviewing thought and feelings about the experiences, things you did during the experience, things you could have done to improve the way you dealt with the experience and how you would deal with the situation should you come across it again.
6 D	Reflecting on 'what went wrong' and 'what went right' with practice undertaken in general. It is to help avoid falling into those same mistakes that 'went wrong' previously.
7 D	It is standing back from the situation and analysing it. Then use that analysis to decide if what you had done was appropriate and if not, change your procedure.
8 D	Analysing work that you have done and how you could improve and learn from it. Also expressing feelings etc.

Respondent	Data
9 T	Stepping back out of yourself and analysing your performance and skills/abilities and identify strengths and weaknesses both within yourself, others and the system and equipment used. These are compared with 'gold' standards and theory. It is a method of self-improvement.
10 T	I understand reflective practice to be a piece of work or study that has been instigated by an aspect or event that has occurred in my practice. By this I mean that I have explored an area of my practice that has come to my attention (in detail).
11 D	Reflecting upon clinical practice and how it can be improved.
12 T	I believe reflective practice is a teaching and development methodology that allows personal and professional development by focusing on events/incidents that have occurred in order to benefit future practice and develop professionally.
13 D	The ability to step outside your mode of thinking and to analyse many interrelated areas of you practice for the better.
14 T	A revision and consideration to professional practice whereby structured recommendations can be thought and considered to improve practice used on previous experience.
15 W	Looking back on things you've done and evaluate what went well or bad, and lessons learnt from your experiences.
16 W	Reflective practice provides the opportunity to look back over previous experiences and learn from them. Whether good or bad, enabling continued professional development.
17 D	Retrospective analysis of events that occur within practice so that greater knowledge and alternative treatment pathways can be researched.

Respondent	Data
18 W	A retrospective look at our experiences, whether good or bad in order to learn from them and progress.
19 D	Studying practices to identify strengths and weaknesses to improve practice in general.
20 D	Reflecting and looking back over a job at work, taking it to pieces and assessing what was good or bad or what might be improved in order to improve practice in the future.
21 D	Learning from what you do, in order to improve what you do, the care you give. Also includes learning and evaluating other people's practice i.e. your "crew mate" Good way to improve and achieve best practice. Share your findings/thoughts/experiences with others.
22 F	Retrospective – looking back on what has been done and drawing from that experience. Prospective – What will be done in the future, thinking about it before it happens? Reflecting in action, whilst it is happening. Reflecting on action.
23 W	Thinking about a situation you have been involved with, analysing your actions and considering different ways in which the situation could be handled in the future.
24 D	To look back at past events and evaluate events and actions.
25 NK	A "step back" from a given task to accurately analyse and assess to ensure the most efficient and effective method was undertaken, by use of relevant literature.
26 F	NR

Respondent	Data
27 W	Reflective practice is where the individual relates back to their own practice and reflects upon that practice in order to improve their practice in future.

Q4 Usefulness of reflective practice to **academic studies**

Respondent	Data
1 W	Somewhat useful. Generally ok, but some elements e.g. synopsis seem pointless.
2 T	Useful. In the learning stage I have found it useful to analyse past events and it has given me motivation to further my own knowledge of certain situations.
3 F	Useful. Improve practice and patient care. Facilitate improved learning experiences.
4 D	Useful. Have learnt from some of the larger assignments, but less so from the smaller synopsis.
5 D	Useful. It's a good way for looking at good and bad points of practice and can help improve the way you work in the future. It allows you to research into areas that you may not previously have known or understood and use the new information to better knowledge.
6 D	Useful. To eliminate mistakes previously made and to choose the best working practices for the future.

Respondent	Data
7 D	Not very useful. I found we did too many reflective studies and that I ended up losing enthusiasm and writing the same thing in every essay.
8 D	Somewhat useful. Tend to reflect on jobs automatically without having to write a 1000 word account. Writing an account though helps you draw out more and research/learn.
9 T	Very useful. It has encouraged critical analysis of my work in practice; this has identified my strengths and weaknesses and facilitated improvements.
10 T	Somewhat useful. Recently, I have undertaken a piece of reflective work that has made an aspect of my paramedic training easier and has put me at an advantage regards my knowledge base. It has also allowed me to develop my academic writing as I am interested in the topic chosen.
11 D	Not useful. I feel I reflect upon work during work & feel there is really no need to write down my reflections.
12 T	Somewhat useful. I believe the principle of reflection is good and sound but it has been restrained due to being a purely academic exercise for academia sake with the constraints of word count??? and topic focuses.
13 D	Very useful. Without reflective practice, it is very difficult for yourself to progress. R.P. has enabled me to view positive and negative encounters with clarity.

Respondent	Data
14 T	Not very useful. Having the designated time and assistance to consider reflection during the busy academic course.
15 W	Not very useful. Because in my head I've looked back and learnt from my mistakes – I don't need to write it down in an essay.
16 W	Somewhat useful. The way in which we have been asked to document has been unclear during the university course. Therefore I have gained little from the task.
17 D	Somewhat useful. I have used the tool to gain further information on clinical procedures and treatment programs rather than analysis my thoughts and feelings into the event.
18 W	Somewhat useful. Initiates 'thinking' and alternative ways to practice in the future, improving writing style and research abilities.
19 D	Somewhat useful. Useful to learn of other people.
20 D	Somewhat useful. In some cases reflective practice has helped me to identify weaknesses in practice and evaluate methods by which to improve by using research. In this way it has made me more aware of current research.

Respondent	Data
21 D	Somewhat useful. Sometimes there are better ways of assessment/writing. People could always make up a scenario and what's that achieving?? Relies on people being honest.
22 F	Very useful. In practice, good things and bad things happen. They can only be changed if the people involved are aware of the factors. The good points can be made better and the bad points can be made good. Before this occurs reflective practice must be taught.
23 W	Very useful. It helped to gauge if I was writing at the appropriate level (i.e. Level 1, 2 or 3).
24 D	Very useful. Aid in adapting skills and methods.
25 NK	Not very useful. I reflect without needing to look at literature to understand the best method. Reflective practice is a quest to gain a jumble of references to achieve a grade. Reflection is a subconscious method.
26 F	Somewhat useful. Helps to analyse events on the 'road' with an academic underpinning of knowledge.
27 W	Useful. In academic studies reflective practice allowed me to assess my progression through my academic studies.

Q5 Usefulness of reflective practice to **clinical practice**

Respondent	Data
1 W	Very useful. Helped me learn about particular clinical problems because I had to research them.
2 T	Not sure. I have not found any specific benefits to reflection in clinical practice but I am sure that if the right situation arises I will find it beneficial.
3 F	Useful. Improve practice and patient care. Facilitate improved learning experiences.
4 D	Useful. Have learnt from some of the larger assignments, but less so from the smaller synopsis.
5 D	Useful. It allows you to improve knowledge base and this improves treatment of the patient and patient care.
6 D	Useful. Clinical practice can be v. exacting therefore avoiding mistakes is paramount to good/safer procedures; this can be achieved by reflexive practice.
7 D	Somewhat useful. You change the way you do things so that it works better but this is usually done 'in practice' rather than from writing essays

Respondent	Data
8 D	Somewhat useful. Tend to reflect on jobs automatically without having to write a 1000 word account. Writing an account though helps you draw out more and research/learn. Useful to refer to when writing statement for coroner etc.
9 T	Very useful. It has encouraged critical analysis of my work in practice; this has identified my strengths and weaknesses and facilitated improvements. It has facilitated professional and personal development.
10 T	Somewhat useful. It has allowed me to perform certain skills better as I have the underpinning knowledge
11 D	Not useful. I feel I reflect upon work during work and feel there is really no need to write down my reflections.
12 T	Somewhat useful. I believe that if the reflective process was more interactive formatively it would greatly develop practice but it has now become purely academic with reduced clinical relevance due to referencing and academic writing style restrictors placing on it that stifles its clinical relevance.
13 D	Very useful. Enabled me to progress further than what I felt capable of before.
14 T	Somewhat useful. Consideration is given to how I practice especially when attending a call which was difficult or was uncertain.

Respondent	Data
15 W	Somewhat useful. Because it's clinical practice it's relevant to your career and the way you work
16 W	Very useful. It is better suited to practice in the clinical field and perhaps verbal discussions about experiences would be more beneficial.
17 D	Useful. As stated in question 4, I have researched and gathered information from different associations like the British heart foundation to widen my knowledge.
18 W	Useful. Reflecting on a particular case, especially if that case was disturbing in any way is an excellent coping mechanism. Helps individuals to 'talk' through their practice and gain other views on how to improve, or that you done the best you could have.
19 D	Not very useful. Not always time or relevant in pre-hospital care.
20 D	Somewhat useful. In some cases I have identified weaknesses and found ways to improve these.
21 D	Very useful. I think it's very beneficial to reflect on practice, but its not always appropriate or too time consuming to do properly.

Respondent	Data
22 F	Very useful. In practice, good things and bad things happen. They can only be changed if the people involved are aware of the factors. The good points can be made better and the bad points can be made good. Before this occurs reflective practice must be taught.
23 W	Very useful. It benefits clinical practice as it made me think about alternative ways of practising.
24 D	Somewhat useful. Aid in adapting skills and methods.
25 NK	Somewhat useful. Without thinking about what I did I wouldn't get to be a better paramedic. However, spending 4 days finding references for an account is not.
26 F	Not sure. Still need time to take reflective practice and initiate it within full time clinical practice.
27 W	Useful. In some of my practice I felt it enabled me to go through the jobs I found difficult to find a course or change of action which may have helped improve that situation.

Q6 Please list the ways in which you undertake reflective practice

Respondent	Data
1 W	Gibbs cycle Talk to colleagues. Research. Keep a journal. Revision of protocols.
2 T	1 – formal essay form using Gibbs cycle. 2 – Discussing situations with myself in a private environment. 3 – Discussing situation with colleague.
3 F	After emergency patient interactions discussing how we dealt with the situation and ways that could improve the process if it were to occur again. Journal – written evidence. Talking between crew members. Group discussion.
4 D	Describe experience. Highlight good and bad practices. Research specific practice. Conclude with action plan for future practice.

Respondent	Data
5 D	Mentally after a job I look at things I can change. Discussing it with others. Researching facts.
6 D	Debrief at the end of a call out. Scenarios in class and amongst friends to recall what others may have done in some situations. Textual – research and descriptive work.
7 D	In-practice. On-practice. Essays. Discussions with tutors/colleagues/friends.
8 D	Write journal of unusual/emotional calls. Use Gibbs reflective cycle. Discuss with colleagues.
9 T	Outside of academic study I tend to analyse performance where I feel there is an issue, anything from communication issues, to serious clinical skills. Where I am unsure of something or found a particular aspect difficult I tend to read around the topic and/or discuss it with work colleagues.
10 T	1 – Academically in University in the form of essays. 2 – Verbal discussion with crewmate. 3 – Light reading if topic has highlighted an area.

Respondent	Data
11 D	By using the reflective cycle by GIBBS (1988), normally through a thinking process, rather than writing it down.
12 T	Academic assignments. Crew/class discussions. Instructor/lecturer led discussions. Personal diary and notes.
13 D	Quiet thinking. Talking with family/close friends. Religion.
14 T	Conscious thought of call. How I may improve. Writing down notes/key words to improve upon. Talking to others.
15 W	Evaluate each job after you've done it and how you could have improved it for the next time. Done by just thinking in your head. Talk to colleagues.
16 W	Assignments using Gibbs cycle– Examples of jobs undertaken. Sharing different skills i.e. communication, leadership, health promotion, research. Discussion with colleagues.
17 D	Normally using the Gibbs reflective cycle – academically. With crew mates. And further research on the internet for unsolved issues.

Respondent	Data
18 W	Discussion with classmates/colleagues. Diary. Essay- formal.
19 D	Gibbs. Personal experience. Professional experience. New methods (research).
20 D	Reflective accounts. Discussions with crew mate, training officer or colleagues.
21 D	Reflective accounts. Discussions with colleagues who have/haven't had experience. Thoughts to yourself.
22 F	Speaking about the "job" with crew mate after it has happened. Quietly reflecting "in practice". Involve crew mate when making decisions based on the reflective practice.
23 W	Talking over jobs with colleagues, discussing what was good and bad about them. Reading up about specific conditions/procedures after being exposed to them on the road. Writing using a framework. Reading the clinical bits in the LAS news (the job study parts of it).

Respondent	Data
24 D	Discussion with work colleagues. Essays.
25 NK	Reflective accounts. Synopsis (100 words!). Thinking. Discussion with more experienced colleagues.
26 F	Every 3 months will try and use reflective practice with the template taught from University. This will in turn be used as CPD for the HPC.
27 W	With crews. In written form – in essays, in diaries. With family and friends. With colleagues and tutors.

Q8a Importance of reflective practice to academic studies

Respondent	Data
1 W	Quite important. It has been important for this degree, but in the grand scheme of things I wouldn't bother unless I had to.
2 T	No strong feelings either way. It is important to achieve the grade but I don't really benefit from it professionally.

Respondent	Data
3 F	Very important. It has improved my practice and communication skills, adapting my knowledge gained at uni to best practice.
4 D	Quite important. R.P. is part of every years marked assignments. Strong University emphasis on needs for R.P.
5 D	Very important. It's very important because it allows research to be carried out increasing knowledge base.
6 D	Very important. Imp. to recognise any areas where you went wrong in practice which can be researched using academic resources (library) and have extra time to do this.
7 D	Not very important. I believe the other subjects were more relevant to the job we aim to do.
8 D	No strong feelings either way. Another way of assessment. More clinical than some other work. Good way to express feelings about jobs.
9 T	Very important. It facilitates learning though all aspects e.g. academic study.
10 T	Quite important. If reflective practice is explained to the student and understood. A cycle and framework can be used as a structured guide to explore, in depth, area that is beneficial to practice.

Respondent	Data
11 D	Quite important. Reflection is important to improve clinical practice.
12 T	Very important. Its major academic importance is due to major constituent of assessed practice rather than encouraging learning and research.
13 D	Quite important. Not as important to clinical studies.
14 T	Quite important. It is significant to consider previous experiences and to improve for the future. The difficulty in finding the time to consciously think or write down thoughts proves difficult.
15 W	Not very important. It just seems to be a way in which lecturers can get essays out of you.
16 W	Very important. It is important as it helps continue our professional learning. Perhaps different methods work for different people. I'm sure I have learnt a great deal from doing the assignments.
17 D	No strong feelings either way. I don't believe that a structured method in writing can best serve the need to reflect.
18 W	Quite important. Writing style improves!

Respondent	Data
19 D	Very important. Good learning tool.
20 D	No strong feelings either way. It has helped me to assess jobs and utilise current research, however I feel that assessment by mentors at work has been just as, if not more important (placements on the road).
21 D	No strong feelings either way. Well its important to learn/know how to reflect, but not essential to be graded for it, its individual after all.
22 F	Very important. The process of reflecting needs to be constantly used and developed in order to be good at it, as with any skill.
23 W	Very important. It makes you think about jobs in more detail and it helps with bioscience too, as you have to read around conditions etc. It makes you aware of other ways of practicing which is not necessarily "London". It keeps you up to date "ish" with innovation within the ambulance arena.
24 D	No strong feelings either way. Not quite sure how this relates to academic studies as well as work placements.
25 NK	Quite important. Only to get a grade and pass.
26 F	No strong feelings either way. Helps with identifying areas of interest to study academically at some depth.

Respondent	Data
27	No strong feelings either way.
W	No strong feelings about topic.

Q8b Importance of reflective practice to clinical practice

Respondent	Data
1	Quite important.
W	If I don't understand something I need to revise I would look at what I had done in practice.
2	Quite important.
T	It is more important to further my own knowledge and to learn from difficult situations.
3	Very Important.
F	Improved patient care with new working practices and clinical guidelines introduction. Able to discuss between colleagues how best to treat patients and then adapt to future working practice.
4	Quite important.
D	Can improve patient care from learning from previous experiences.
5	Very important.
D	Very important because it can improve work styles and patient care.
6	Very important.
D	Need to understand why a procedure did or did not work as effective future treatment is at stake if there is no recognition of why skills are not working. This can be done through reflective practice.

Respondent	Data
7 D	Quite important. Must always analyse “jobs” to make sure you provide best possible patient care.
8 D	No strong feelings either way. Do it automatically.
9 T	Very important. It facilitates identification of strengths/weaknesses and possible improvement.
10 T	Quite important. It allows clinical practice to become more advanced due to expert underpinning knowledge.
11 D	Very important. Reflection is important to improve clinical practice.
12 T	Very important. I think reflection should be a major part of practice allowing personal and professional development and learning but is highly restricted by academic constraints.
13 D	Very important. Gives greater scope and clarity to your development, progression and fulfilment.
14 T	Quite important. It improves practice and allows you to consider mistakes made in the past.
15 W	Quite important. Learn from your mistakes.

Respondent	Data
16 W	Very important. It is important; it helps to improve my professional clinical skills. Learning from experience is the only way to improve.
17 D	Quite important. Different methods of treatment for best practice can be found.
18 W	Quite important. For professional development. Learning from others.
19 D	No strong feelings either way. Not relevant in call situations, not really time in pre-hospital care.
20 D	Quite important. Helped my find better ways of practising.
21 D	Very important. Essential to improve your care.
22 F	NR
23 W	Very important. It is important in providing the best possible patient care.
24 D	Quite important. Because we can learn from past experiences and events and improve on them.

Respondent	Data
25	Quite important.
NK	Only in terms of writing out tedious essays.
26	No strong feelings either way.
F	Has helped to clarify issues from different scenarios. Pre hospital care is very dynamic and the treatment of a patient may be undertaken in many different ways. Reflection helps identify which areas may be improved upon to advance patient care.
27	No strong feelings either way.
W	No strong feelings about topic.

Q9 Further comments about reflective practice in relation to academic studies and clinical practice

Respondent	Data
1	Can see the relevance of it, but most of the assignments were ambiguous or seemed pointless.
W	
2	There is no clear method for ambulance staff to undertake reflective practice. Much of the research methods are from nursing practice which cannot be directly transferred. Hopefully this research will help!
T	
3	Excellent learning process.
F	
4	Some practitioners may benefit from group reflective practice. In this way you can share experiences and discuss different approaches.
D	

Respondent	Data
10 T	If reflective practice is explained as it has in my case it is a useful learning tool. If it hasn't been explained like it has in my other colleagues it leads to confusion.
12 T	The theory and principle of reflection is good and my own personal reflection is useful but restraining it as academic/assessed assignment is stifling and has little benefit for practitioner or profession.
14 T	R.P. has significantly helped me through University but I do think we consciously think reflectively in everyday life. By having taught sessions it allows one to bring this to the front of your memory.
16 W	Discussions about experiences as well as documenting them would be more helpful.
17 D	I believe that for clinical practice reflection is needed but for academic study making thoughts and feelings are inappropriate.
23	I think that talking/discussing events in groups with a mix of experience is just as important in developing professional practice.
25 W	Synopsis of 100-200 words does not even give ample time to discuss the situation.
26 F	The use of journals to help with reflective practice could be championed during the 3 yr course.

Appendix E

Inter- Rater Data for Study 4

Inter-rater reliability

Study 4 – Simulation Data

Table 1: First and second coding of Simulation Data – Primary or Supplementary Clinical Action

Original Code	Second Code
supplementary clinical action	supplementary clinical action
supplementary clinical action	supplementary clinical action
primary clinical action	primary clinical action
primary clinical action	primary clinical action
supplementary clinical action	supplementary clinical action
supplementary clinical action	supplementary clinical action
primary clinical action	primary clinical action
primary clinical action	primary clinical action
supplementary clinical action	supplementary clinical action
supplementary clinical action	supplementary clinical action
primary clinical action	primary clinical action
supplementary clinical action	supplementary clinical action
primary clinical action	supplementary clinical action
primary clinical action	primary clinical action
primary clinical action	primary clinical action
primary clinical action	primary clinical action
primary clinical action	primary clinical action
primary clinical action	supplementary clinical action
primary clinical action	supplementary clinical action
primary clinical action	primary clinical action
supplementary clinical action	supplementary clinical action
primary clinical action	supplementary clinical action
primary clinical action	primary clinical action
primary clinical action	primary clinical action
primary clinical action	primary clinical action
primary clinical action	primary clinical action
primary clinical action	primary clinical action
primary clinical action	primary clinical action
primary clinical action	primary clinical action
supplementary clinical action	supplementary clinical action
supplementary clinical action	primary clinical action
supplementary clinical action	supplementary clinical action
supplementary clinical action	supplementary clinical action
primary clinical action	primary clinical action
primary clinical action	primary clinical action

Original Code	Second Code
action	
supplementary clinical action	primary clinical action
primary clinical action	primary clinical action
supplementary clinical action	supplementary clinical action
supplementary clinical action	supplementary clinical action
primary clinical action	primary clinical action
primary clinical action	primary clinical action
primary clinical action	primary clinical action
supplementary clinical action	primary clinical action
primary clinical action	primary clinical action

Table 2: First and second coding of Simulation Data – Primary Survey, Secondary Survey, Treatment

Original Code	Second Coder
primary survey	primary survey
primary survey	primary survey
secondary survey	secondary survey
treatment	Treatment
not coded	not coded
not coded	not coded
treatment	Treatment
secondary survey	secondary survey
secondary survey	secondary survey
primary survey	primary survey
primary survey	primary survey
secondary survey	secondary survey
secondary survey	secondary survey
secondary survey	secondary survey
secondary survey	secondary survey
secondary survey	secondary survey
secondary survey	secondary survey
secondary survey	secondary survey
not coded	secondary survey
primary survey	primary survey
secondary survey	primary survey
not coded	not coded
secondary survey	not coded
not coded	Treatment
secondary survey	secondary survey
treatment	secondary survey
treatment	Treatment
primary survey	primary survey
not coded	not coded
not coded	not coded
secondary survey	primary survey
secondary survey	Treatment
secondary survey	secondary survey
not coded	secondary survey
not coded	not coded
not coded	Treatment
primary survey	primary survey
not coded	primary survey
secondary survey	Treatment
secondary survey	secondary survey
secondary survey	primary survey
not coded	not coded
not coded	not coded
treatment	Treatment
not coded	not coded
primary survey	primary survey

Original Code	Second Coder
primary survey	primary survey
primary survey	primary survey
primary survey	primary survey
not coded	Treatment
not coded	not coded
treatment	Treatment
primary survey	primary survey
secondary survey	secondary survey
treatment	Treatment
secondary survey	secondary survey
secondary survey	secondary survey
secondary survey	secondary survey
treatment	Treatment
not coded	primary survey
treatment	Treatment
not coded	not coded
secondary survey	secondary survey
treatment	Treatment
not coded	not coded
treatment	Treatment
secondary survey	secondary survey
treatment	Treatment
not coded	secondary survey
secondary survey	secondary survey
secondary survey	secondary survey
treatment	Treatment
secondary survey	primary survey
secondary survey	secondary survey
secondary survey	secondary survey
secondary survey	secondary survey
secondary survey	not coded
secondary survey	secondary survey
not coded	not coded
not coded	not coded
not coded	secondary survey
secondary survey	primary survey

Table 3: First and second coding of Simulation Data – Patient Communication Categories

Original Code	Second Code
talking	Talking
talking	Talking
talking	Talking
asking	Asking
not coded	Asking
talking	Talking
talking	Talking
asking	Asking
not coded	Asking
talking	Talking
talking	Talking
talking	Talking
not coded	Talking
not coded	Asking
talking	Talking
asking	Asking
asking	Asking
asking	Asking
asking	Asking
asking	Asking
asking	Asking
not coded	Asking
talking	Talking
talking	Talking
talking	Talking
talking	Talking
talking	Talking
asking	Asking

Table 4: First and second coding of Simulation Data – Peer Communication Categories

Original Code	Second Coder
conferring	Conferring
directing practice	directing practice
conferring	not coded
conferring	Conferring
conferring	not coded
conferring	not coded
directing practice	directing practice
clinical description	clinical description
directing practice	directing practice
uncertainty	Uncertainty
asking questions	not coded
uncertainty	Uncertainty
conferring	Uncertainty
conferring	directing practice

Original Code	Second Coder
conferring	directing practice
asking questions	Conferring
uncertainty	asking questions
conferring	Conferring
conferring	Conferring
uncertainty	Uncertainty
conferring	Conferring
uncertainty	Uncertainty
conferring	Conferring
directing practice	directing practice
clinical description	clinical description
directing practice	directing practice
directing practice	directing practice
not coded	not coded

Table 5: First and second coding of Debrief Data – Gibbs’ cycle Categories

Original Code	Second Coder
personal views	thoughts feelings
personal views	Evaluation
non-clinical	Evaluation
clinical	Description
clinical	Evaluation
clinical	Description
clinical	Conclusion
clinical	Analysis
clinical	Analysis
clinical	Analysis
clinical	Analysis
personal views	Analysis
clinical	Analysis
clinical	thoughts feelings
clinical	Description
clinical	Evaluation
clinical	Analysis
clinical	Analysis
clinical	Analysis
clinical	Analysis
clinical	Description
personal views	thoughts feelings
clinical	Description
clinical	Analysis
non-clinical	Evaluation
clinical	Analysis
clinical	thoughts feelings
personal views	Evaluation
clinical	Description
clinical	Description
clinical	Analysis
non-clinical	Evaluation

Original Code	Second Coder
personal views	thoughts feelings
clinical	Analysis
non-clinical	Description
personal views	thoughts feelings
clinical	Conclusion
personal views	thoughts feelings
clinical	Analysis
clinical	Analysis
clinical	Analysis
non-clinical	Description
personal views	thoughts feelings