



Nursing Students' Approaches to Learning and Clinical Decision- making

An Intervention Study

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This thesis is submitted in partial fulfilment of the requirements of London South Bank University for the degree of Doctor of Education: June 2017

Declaration

I hereby declare that this thesis is the result of my own independent work, except where I have indicated my indebtedness to other sources.

I hereby certify that this thesis has not been accepted in substance for any other degree, nor is it being submitted currently for any other degree.

A handwritten signature in black ink, appearing to read "Beverly Joshua". The signature is written in a cursive style with a horizontal line and an arrow pointing to the right at the end.

Beverly Joshua

Abstract

Approaches to Learning and Clinical Decision-making: An Intervention Study

The present and categorical correspondence between how students approach their learning and the way such approaches impact on the acquisition and augmentation of clinical decision-making skills is neither well understood, nor yet clearly established, in nurse education research. To address this gap, this study investigated the approaches to learning and the clinical decision-making of adult nursing students in their final year of training on two separate campuses of a central London university. Approaches to Learning Theory, promulgated by Martin and Säljö in 1976, and subsequently expanded and updated by Entwistle and colleagues, provided a theoretical lens and explanatory framework for this study. Acknowledging that the Approaches to Learning Theory adopts a hierarchy of three domains of approach, surface, strategic, and deep, it is argued that students' clinical decision-making should be improved by changing their predominant approach to learning from the surface or strategic to the deep approach. To test this hypothesis, a research intervention was implemented for a purposive sample of participants who adopted either the surface or strategic approach to learning. Consistent with the underpinning principles of the deep approach to learning, the intervention focused on enhancing engagement with learning, problem-solving, and critical thinking skills. A second survey of approaches to learning and clinical decision-making was administered after the intervention, and semi-structured interviews were conducted to further corroborate the statistical findings. Instruments for data collection comprised the Approaches to Study Skills Inventory for Students, known as the ASSIST (Tait et al, 1998), Jenkins' (1985) Clinical Decision-making Nursing Scale (CDMNS), and a short demographic questionnaire designed by the researcher. This research found that by altering the learning approach, consequent on the research

intervention, the adoption of the deep approach to learning enhanced clinical decision-making. Post-intervention findings revealed a strong positive correlation between the deep approach and clinical decision-making. Participants' disposition for the surface approach also decreased significantly. Male participants indicated an affinity for the deep approach in comparison to female students who predominantly adopted the strategic approach. The study concluded that by cultivating students' deeper engagement, underpinned by the intention to seek meaning and understand their learning, clinical decision-making was improved.

Acknowledgments

The pursuit of this Doctorate would not have come to fruition without the considerable support of others.

Immeasurable thanks to my supervisors for the guidance and encouragement you have given me over the years. Dr. Andrew Ingram: there are no words to adequately convey how grateful I am for your unwavering support. Your knowledge and wisdom has lifted me to new heights and continues to inspire me. Professor Nicki Martin: thank you for your advice with the many challenges encountered during this study. Professor Cliff Roberts: thank you for the statistical analysis guidance and your faith in my ability.

To Professor Ruud Halfens- Maastricht University: thank you for your direction with the statistical applications.

To Professor Sally Hardy- LSBU: I am grateful for your expertise with the qualitative analysis.

To Dr Keiron Spires, thank you for sowing the seed that led to this doctoral experience and for your assistance until the very end. Special thanks to my friend, Mrs Margaret Harper, for her critical reading of this thesis.

My sincere gratitude to all the student participants for without you, this research would not have been possible.

I am indebted to my family and friends for their love and support. To my son, Joshua, thank you for the joy you bring into my life, for teaching and amazing me with your knowledge and for being my reason to go on.

*I dedicate this thesis to my greatest teacher; my father, who taught me that
'Learning will free you'.*

*Maurice Joshua
(26th July 1929 – 20th August 1994)*

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List of Abbreviations

To avoid ambiguity, some key terms applied in this study, are listed below. The description provided is a working definition in this study alone.

Abbreviation	Description
ATL	Approach to Learning
BSc (Hons)	Bachelor of Sciences (Honours)
BHV	Bachelor of Sciences (Honours): Havering Campus
BSW	Bachelor of Sciences (Honours): Southwark Campus
BTEC	Business and Technology Education Council vocational qualification
CDM	Clinical decision-making
CDMNS	Clinical Decision Making Nursing Scale
CDSS	Computerised Decision Support System
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CIP	Cognitive Processing theory
DfEE	Department for Education and Employment
DH	Department of Health
DM	Decision-making
ERIC	Educational Resource Information Centre
GCSE	General Certificate of Secondary Education (GCSE) is subject specific, academic qualification awarded in secondary education in England, Wales and Northern Ireland.
HE	Higher Education
HNC	Higher National certificate equivalent to 1 st year of a degree
MEDLINE	Medical Literature Analysis and Retrieval System
NHS	National Health Service
NMC	Nursing and Midwifery Council of the United Kingdom
npn	No page number
PgDip	Post Graduate Diploma
QC	Queen's Counsel
RCN	Royal College of Nursing

RN	Registered Nurse
SAL	Students Approaches to Learning Theory
SPSS	Statistical Package for Social Sciences
UK	United Kingdom of Great Britain and Northern Ireland
UREC	London South Bank University Research Ethics Committee
VLE	Virtual learning environment
WHO	World Health Organisation

Statistical abbreviations (Pallant, 2013)

<i>A</i>	Cronbach's coefficient alpha
ANOVA	Analysis of Variance
<i>D</i>	sample effect size (Cohen, 1998)
<i>M</i>	Mean
<i>Mdn</i>	Median
<i>N</i>	Number of total sample
<i>n</i>	number in subsample
<i>p</i>	p value: indicates the significance of the outcome of a given test
<i>R</i>	Strength of relationship in correlation analysis
<i>r_s</i>	Spearman rho
SD	Statistical difference

Chapter 1: Introduction

1.1. Nurse education and decision-making

The essential goal of nurse education is to develop graduates who are able to think critically and make effective clinical decisions in order that competent care is administered, in the healthcare environment (Yildirim and Özkahraman, 2011; Thompson et al, 2013). On completion of the nursing course and entry to the professional register, nurses (RN) must be able to execute their professional judgement and clinical decision-making (CDM) skill in a range of healthcare environments (NMC, 2010). Their decision-making ability is expected to direct the provision of safe, evidenced-based nursing care to service users from diverse settings and with complex health related needs (NMC, 2010).

To support the transition from student nurse into professional nurse status, the Department of Health's (DH) Preceptorship Framework for Newly Registered Nurses, Midwives and Allied Health Professionals (2010), advises that experienced practitioners provide support to recent graduates during this challenging period. The preceptorship stage is defined by the Nursing and Midwifery Council (NMC) (2006) as, "... a period to guide and support all newly qualified practitioners to make the transition from student to develop their practice further" (p. 1). During this phase, newly qualified nurses are able to develop their confidence as independent professionals and refine their CDM and professional judgement whilst enhancing their competency skills.

In the United Kingdom (UK), the projected shortage of registered nurses may decrease the number of experienced nurses available to provide this preceptorship to newly qualified nurses (Royal College of Nursing (RCN) 2015). The qualified nurse deficit may reduce the expert guidance which forms a supportive foundation for recent graduates. The prediction highlights the need to optimise student nurses' ability to learn in order that their knowledge acquisition is maximised. In doing so the

capacity to transfer knowledge when making clinical decisions on qualifying and taking on their professional nurse role, may be strengthened. Nurse education in the pre-registration sector, needs to address these concerns.

1.2. Context and background to the study

Learning is situated not only in the practices and activities of the communities in which it takes place but also in the intellectual and ideological environment in which it is cultivated. For that reason, participants in this research study take on dual learner identities: the projective identity (Gee, 2007, p. 50; Burke, 2013) where participants are not yet [nurses] but are imagining themselves into that role” and also the associative identity, of being a student at university (Herrmann et al, 2016, npn, p. 12 of 16). It is therefore important, to take into consideration both the professional context into which these students will be inducted and the wider context of the higher education experience, which, being in the first instance, is more immediate than the projected practice learning context. Thus, may exert a more powerful influence, at this stage, on the way learners approach learning.

1.2.1. Approaches to learning in the higher education context

Identity formation in the higher education sector is informed by the ideology, practices and discourses of the institution of higher education as it is traditionally represented and by students’ participation in these discursive practices. This includes the operational practices of the Higher Education Institute (HEI), to which they belong. As part of the bigger system of reform within the higher education sector, the traditional values attached to the notion of belonging appear to be eroded and are replaced by ties which are called contractual agreements. Higher education discourses now seem to be shaped by dominant powers which appear not to principally be the politicians and education policy makers but the economists and business consultants. This model of commercially-co-opted constructs of teaching and learning reconstruct the pedagogy of those who teach and reconstitute the learning dispositions of learners to fit into the institutional business models, so that institutional rather than students’ individual learning needs and expectations are met.

Undoubtedly, the higher education climate is changing or is being changed and students' identities are now being built on the back of overriding directives in the higher education context. The 'Success as a Knowledge Economy' (Parliament. House of Lords, 2016) government white paper suggests that compelling new forces are brought to bear on how students approach their work and relocates learning in higher education into the economic context.

At the start of the new millennium, Hannan (2001) points out that "the prevailing logic is one of technological determinism, response to the demands of the market place and increased employability" (n.p., para 3). Since then this has hardened into the cultural norms that impact on the student's transaction with the learning environment and possibly act as constraining factors on the way the individual student thinks about, adapts and ultimately shapes their approach to learning.

We now appear to have reached a stage of development where the new entrepreneurialism shifts the focus away from the cognitive development of the learner, to learning for business and enterprise. The apparently far cry from the espoused goals of Millennialism means that education generally and HE in particular, has entered a new age heralded by the then Department for Education and Employment (DfEE, 1998) just before the turn of the century:

We have no choice but to prepare for this new age in which key to success will be continuous education and development of the human mind and imagination (p. 208).

This leads us to believe that a primary objective for educators and educational researchers should be precisely that, namely, "the education and development of the human mind and imagination", and that the Higher Education sector should be, as the hub of educational theory and research, the vanguard of such an undertaking. The assumption implicit in continuous education however, as a seamless progression through the tiers that comprise the educational structure and onwards into the work-related practice learning environment, has led to a somewhat narrowly-focused conception of development. This appears to be consistent with the notion of employability that figures so prominently on the higher education establishment

agenda, but may not necessarily be associated with the “development of the human mind” in its broader sense of a liberal education, hitherto the espoused purpose of higher education.

Further to this there now appears to be in practice, a narrow conceptualisation of innovation, which insinuates itself into accounts of learning through the application of new technologies, as opposed to new approaches to learning and reflecting on how to learn. This brings with it its own forms of dependency on technology-based approaches to processing information and organising and managing the production of knowledge (which some would call learning). “We are, we are told experiencing massive changes reflecting the impact of new technologies” as suggested by Hannan (ibid.). As we come up to the 2020s, we can see how this changes our conceptualisation of teaching and student approaches to learning when, for example, pedagogy is transformed (whether facetiously or not) into iPadagogy. The new technology, the iPad, appears to be is seen as the leader in the act of learning. As educators and educational researchers, we should question whether this is commensurate with the development of the human mind and imagination (DfEE, 1998). Sometimes the sheer weight of new initiatives blinds us, or at least deflects our attention away from the real issue which is the central purpose of this research, namely to shift learners’ focus away from associating learning as being technologically smart and competent at navigating through this medium. My study aspires to encourage students to immerse themselves into their learning so that the humanist interaction when deciding on patients’ care, improves. On the other hand, educators on the ground recognise the importance of developing the human mind, particularly in the context of practice learning which is central to this research, where imagination (DfEE,1998), “carefully woven with the experience of participation, can extend students’ identities beyond the boundaries of immediate engagement” (Morley, 2016, p. 162).

1.2.2. Approaches to decision-making in the nursing practice context

Considering the students’ prospective role transition in alignment with the projected mentorship deficiency, the rising increase of patient complaints of unacceptable care experiences indicates that care received contradicts the earlier expectations of the

nurse (Reader et al, 2014). The focus on nurse education and urgency to improve student nurses' CDM is also emphasised by the Mid Staffordshire public inquiry¹, authored by Sir Francis QC (Parliament. House of Commons, 2013). In response to the public inquiry of one thousand, two hundred unnecessary patient deaths at a single hospital Trust in the UK, this executive summary focuses on the educational provision of healthcare workers. Sub-standard nursing care resulting from inadequate and poor clinical decisions was established as the prime reasons for these deaths (ibid). As front line clinicians of patient care provision, nurses were identified as the significant contributors to the decisions that led to patients' deaths, in this investigation. Thompson et al (2013) echoes that eleven percent of British patients are harmed in care related situations per year and Francis (Parliament. House of Common, 2013) reports that of the substandard decisions made by healthcare providers "... 6% lead to permanent injury and 8% of patients die" (p. 1721). The NMC responded to Francis's (ibid) recommendations by increasing a focus on nurses' training, education and professional development. The Response to the Francis Inquiry (NMC, 2013) promotes a cultural change in nursing students' attitudes towards their learning. This directive also makes explicit that clinical decisions in relation to patient care need to be underpinned by competence, compassion and commitment, with the intention of preventing further untoward harm (NMC, 2013).

In contrast to Francis' findings (Parliament. House of Commons, 2013), the globally accepted focus of nurse education is, to embed evidenced-based knowledge with the intention of improving the quality of healthcare (Dowding et al, 2012). The Francis Report (Parliament. House of Commons, 2013) strongly suggests that nurses are failing to demonstrate the adequate transfer of the knowledge taught and acquired during the nurse education stage into the real world of clinical practice. Francis's (ibid) findings indicate that the founding vocational tenets of the nursing profession, which centre on caring and ensuring that patient safety is granted the utmost consideration, have clearly been disregarded by the very advocates to whom

¹ Mid Staffordshire public inquiry (Parliament. House of Commons, 2013) will in this study, be interchangeably referred to as the Francis Report (Parliament. House of Commons, 2013) or Francis (Parliament. House of Commons, 2013).

patient care has been entrusted. This violation of patients' trust demands that the next generation of nurses change the care rendered by addressing their attitude to their learning and how to make decisions at the point of care. Despite the plethora of research on nurses' CDM, there remains a shortfall in exactly what prevents nurses from improving this ability (Thompson et al, 2013). This suggests that the barriers which impact on the acquisition and transfer of the knowledge that nurses are taught be investigated. For nurse education providers and nurse teachers, trainers and instructors, the Francis Report (Parliament. House of Commons 2013) into the failings of the Mid-Staffordshire Hospital Trust, identified inexperienced and inappropriate clinical decision-making by nurses as a key factor in the Trust's failure to provide an adequate, or acceptable, quality of patient care. This must profoundly impact on their pedagogy and practice and how they evaluate the quality of the educational provision. Clearly, it raises serious questions about the present effectiveness of preceptorship post-registration (DH, 2010b) but, more importantly for this research, questions the current direction of nurse education and training and its curriculum imperatives in the higher education pre-registration context. These are the questions that the researcher in nursing studies must seek to answer.

The provision of care requires the nurse to make clinical decisions when assessing patients, formulate provisional diagnoses, plan and execute nursing care as well as evaluate the effect of the implemented care (Potter et al, 2013). Considering the breadth of competence all nurses regardless whether being experienced or newly qualified, have to demonstrate, nursing curricula needs to be rigorous and comprehensive in order to maximise students' knowledge and skill acquisition prior to qualifying. It is therefore incumbent on educators and researchers in nursing studies to find empirical evidence of innovative approaches to professional learning and development. This may impact positively on nurses' decision-making ability such that substandard patient care outcomes may be avoided. Therefore, this research proposes to examine whether student nurses' learning can be improved by intervening in how students approach their learning in order that their CDM ability, when caring for patients, improves.

My experience with students in the clinical area indicates that, tensions exist between the acquisition of knowledge that is taught and the ability to transfer this

learning when deciding on the optimal choice of care in the clinical setting. This study examines the mechanisms that enhance a student's ability to expand and embed the content of what is taught as well as improve the means of transferring this knowledge when participating in clinical practice. The aim of this research is to evaluate the impact of student nurses' trajectories towards their professional learning with the objective of transferring knowledge in relation to their CDM capability. This transformation of their professional learning development and clinical decision-making ability is ultimately aimed at improving patient care.

It is also widely documented that tensions exist with students' ability to transfer and apply the professional knowledge acquired in the higher education setting into the clinical practice domain (EL Hussein and Osuji, 2017). Despite the attention that has been granted to the acquiring and transmission of knowledge conundrum (Scully, 2011; Corlett, 2006; Rolte, 2001) this theory/practice gap is an ongoing challenge which nurse educators and nursing studies curriculum designers must continually aim to minimize. Although my research focuses on enhancing students' meta-learning and the adoption of the deep approach and does not principally address this issue, it offers a different perspective on the subject which will provide an important contribution to the debate on the disconnect between theory and practice.

1.3. The purpose of this research

This research will test an original approach to increase understanding of an under-researched learning context - approaches to learning (ATL) on student nurses and whether the adoption of the deep approach from the strategic and surface approaches, impacts on their clinical decision-making (CDM). In this professional learning context, this investigation will assess and compare the differences in the ATLs and CDM of undergraduate and Post graduate pre-registration nursing students. As an experienced nurse educator, my insight into pre-registration adult nursing students' CDM ability suggests that it appears to correlate with their ATL and those learners who indicate a preference for the deep approach seem better equipped to make sound clinical decisions. The ATL trichotomy comprises the deep, the surface and the strategic approach, any of which a student may adopt when learning. The deep approach is framed on the meaningful understanding of the

subject. The surface approach centres on memorising and rote-learning without meaningful engagement with the subject. The strategic approach is described as a 'goal orientated' approach adopted by students who are focussed on achieving the highest marks possible. Previous research on the approaches to learning has yielded contradictory findings: some indicate that the approaches to learning are dynamic and sensitive to development (Lindblome-Ylänne et al, 2013), whilst other studies suggest that students' approaches to learning are fixed and not open to change (Leitz and Matthews, 2010). I examine whether a correlation exists between pre-registration final year adult nursing students' ATL and their CDM. A further objective is to investigate whether students' approaches to learning can be improved by facilitating a specially designed educational research intervention to learners who adopt the surface and strategic approaches. The research intervention focuses on encouraging students to engage with their learning, and enhance their critical thinking and problem-solving ability. By initiating a change in their learning behaviour, students may gravitate to adopting the deep approach. Therefore the primary focus of this study is to encourage students to alter their approach to learning from the strategic and surface approaches to the deep approach. Despite the extensive research on the Approach to Learning Theory, to date, no empirical data was located which evidenced:

1. a relationship between pre-registration undergraduate and post-graduate nursing students approach to learning and clinical decision-making (CDM),
2. a relationship between the contextual variables that affect pre-registration undergraduate and post-graduate nursing students' approach to learning and CDM, in relation to the instruments used in this study (Coffield et al, 2004),
3. the effect of an educational research intervention on pre-registration undergraduate and post-graduate nursing students' approach to learning and whether this strategy affects the students' CDM (Thompson and Stapley, 2011),
4. the pedagogical implication of using learning inventories to measure this sample's ATL (Coffield et al, 2004).

Therefore, this research aims to provide the empirical evidence in order that the gaps relating to the shortcomings identified above are addressed. The findings from this research will benefit nursing students, inform pre-registration nurse education and the nursing profession. Although the present study is not expressly researching the implications of a correlation between approaches to learning and clinical decision-making for nurse teachers' pedagogy, undoubtedly the data presented here will provide evidence that may be used in further empirical studies of nurse educators' knowledge and beliefs systems about teaching and learning and best practice.

1.4. Personal perspective

To bring to bear a personal perspective, during my early academic studies amidst the apartheid era and faced with the higher education system's racial quota dictates in South Africa, I alternated between using a surface or at best a strategic approach, with the goal of changing and escaping the overwhelming constraints that one was subjected to. I consciously altered my approach after being made aware of the impact that the approach to learning has on one's knowledge and skill acquisition but more especially its effects on personal development. This change had a positive impact on my practice as an intensive care nurse practitioner and the care I administered to my patients in this acute care setting. Therefore, my reason for investigating this phenomenon is to a large extent founded on this transformative experience and the desire to empower students to uncover a higher learning potential. Echoing Joldersma and Deakin Crick's (2009) view, my aim is to assist learners emancipate beyond the confines of their habitual learning behaviours and develop the meta-cognitive ability to rise and adapt to challenges in making meaning of their learning along their personal academic journey.

Chapter 2: Review of the literature

2.1. Introduction

This chapter focuses on the research related to each of the components investigated in this study. The chapter commences with an overview of the strategy that was used to source literature. Thereafter, a critical review of the empirical literature on the approaches to learning (ATL) and clinical decision-making (CDM) follows. The focus throughout is on student nurses' ATL and CDM but, where relevant and pertinent, literature regarding students from other fields of study are also explored and included. The chapter concludes with the research question, hypotheses, aim and objectives that framed all subsequent parts of the investigation in addressing the apparent gap in knowledge determined from this literature review.

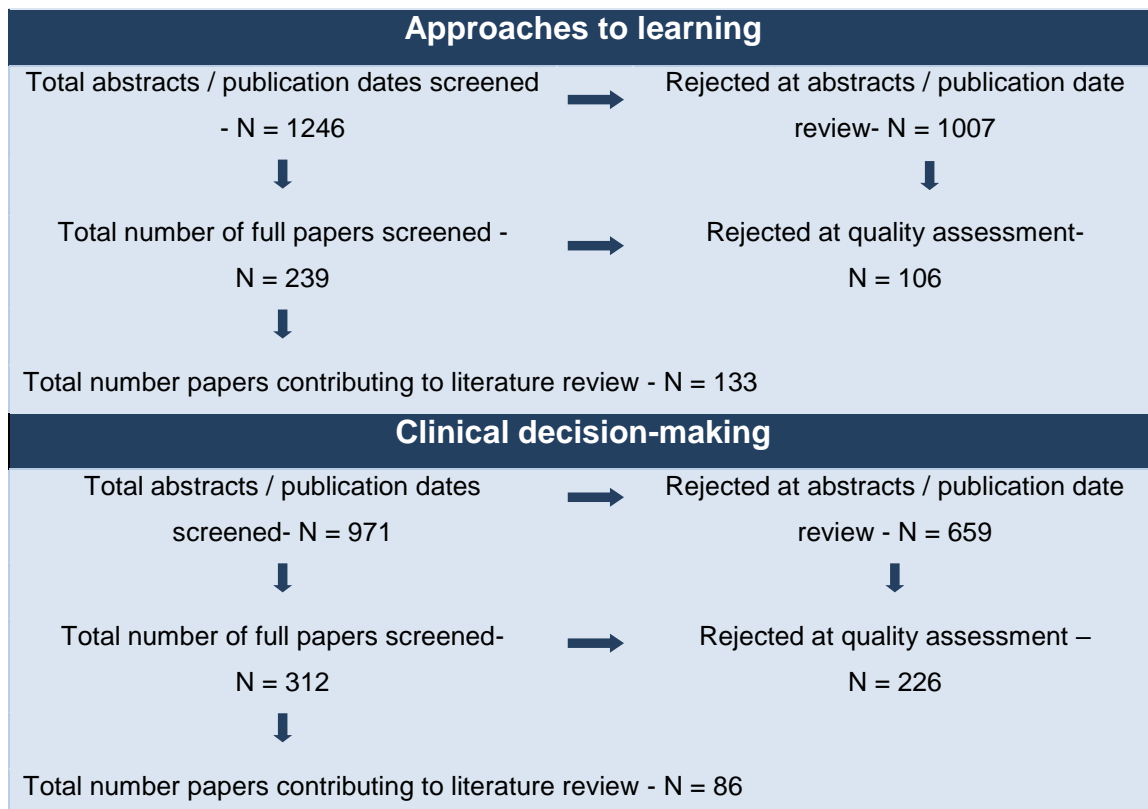
2.2. The literature review strategy

The terms 'student nurse and student' is used interchangeably throughout this thesis to describe the participants in this thesis. However, student nurses are also referred to as a 'nursing students' in the literature. As a result, all of these phrases were used as search terms and the associated phrases to source literature. Additionally, the associated phrases, nurse (nurs*) and student were used in combination with learning approach (learn*), approach, decision-making (decision*) and clinical judgment (clinic* judge*). All of these combinations of phrases using Boolean operators were entered into the databases: Pubmed®, CINAHL®, MEDLINE®, British Nursing Index and ERIC™.

With all database searches, English language and hardcopy full text availability were stipulated for practical reasons. A date restriction was imposed of no older than 2000 as at the time of commencing this research, this date would have meant that the research was already thirteen years old. With changes to nurse education and healthcare provision both in the United Kingdom and internationally, research that was older than the stipulated date, was regarded as less likely to be able to

meaningfully inform the development of this research. However, seminal work was excluded from this date restriction. From the literature identified and reviewed, the references that had been used were also reviewed and pertinent literature sourced for inclusion. The websites of the NMC, UK government and other significant UK agencies were accessed and relevant documents identified and included in the review of the literature. Considering the volume of studies undertaken globally on the ATL Theory, this research is limited to studies which primarily restrict the analysis to the ATL inventories by Tait et al (1998), Entwistle et al (2003) with the inclusion of Biggs (1979), to a lesser degree. Figure 1 summarises the literature search protocol.

Figure 1: Literature review protocol



Adapted from Cappelletti et al (2014), p. 454

2.3. Learning in higher education

Research into students' learning in higher education reveals that learning is a complex human activity that can be defined as the acquisition or pattern that is preferred when processing new information or experiences (Entwistle, 2001; Diseth

et al, 2010). Students' success in higher education is influenced by an array of personal variables, which include; age, gender, prior learning experience, learning motives, as well as situational factors, which incorporates the teaching strategies and methods of assessments (Diseth et al, 2010, Gürten et al, 2013, Richardson, 2013). Learning and acquiring knowledge therefore influences in the way students learn. This includes the learning environment, the quality of the teaching and the students' awareness of how their individual ability to learn can be influenced (Diseth et al, 2010, Postareff et al, 2015). Students enrolled in higher education should exhibit characteristics of adult learners rather than child learners on which traditional pedagogy is framed (Edosomwan, 2016). Knowles (1975), defines androgogical learning,

... as a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes (p. 18).

In line with the above principles, learners in higher education take responsibility for their learning and are actively involved in identifying their learning needs. These learners are expected to strategise how to overcome their learning deficits (Edosomwan, 2016). In higher education, learning is different to the pedagogical learning experiences of pupils in the compulsory learning sector (Jarvis, 2012). Teachers in compulsory education are directed by the national curriculum, which results in them exerting almost complete control over the pupils' learning experience (Edosomwan, 2016). For this reason, learning in the compulsory sector is less active and pupils are viewed as recipients and not active participants of their learning (Jarvis, 2012). The centrality of teaching in the primary/secondary educational divisions appears to place a greater focus on passively transferring foundational knowledge to the pupils. In comparison, teaching in higher education is directed towards engaging learners in becoming actively involved in their learning.

2.4. Preview of learning theories

Learning, however, is more complex and encompasses psychological as well as social factors (Driscoll, 2013). Ausubel (2000) explains that learning occurs when initial thoughts possess some significance and are associated with either a pleasing or untoward emotion, or alternatively when the learner recognises that the information is useful. Cognitive Information Processing theorists claim that the neurophysiology of learning is parallel to the computerised processing system of data storage and recall (Entwistle and McCune, 2004). These educational researchers argue that Cognitive Information Processing theory is the pedestal for learning theories which focus on knowledge retention and retrieval (Entwistle and McCune, 2004).

Drawing on the work of Craik and Lockhart's (1972) hierarchical categorizing of information-processing or levels-of-processing theory, Entwistle (2015) hypothesised that learners use different levels of classification when processing information. The deep and shallow levels of processing identified an individual's ability to retrieve the stored memory (Rose et al, 2015). Shallow information processing resulted from transient memory traces with superficial analysis. In opposition, deeper processing and comprehensive information analysis yielded a more resilient memory (Galli, 2014). Suggestions that students indicate an intention to either understand the subject content being learnt or alternatively to memorise the work, supplemented the deep/ shallow CIP theory (Marton and Säljö, 1976, Entwistle, 2015).

2.5. Higher education students' approaches to learning (ATL)

In our studies of university students, we have found marked inter-individual differences in the types of learning processes that students engage in when confronted with learning materials two different levels of processing to be clearly distinguishable which we shall call Deep level and Surface level processing (Marton and Säljö, 1976a, p. 7).

Marton and Säljö's (1976) seminal phenomenological research identified that students in higher education adopt distinctly different approaches to their learning.

This study presented a unique approach when compared to other methodologies as educational research during that era centred on psychology (Mogashana et al, 2012). Entwistle (1997b) supports that this study “has been arguably the most influential for thinking about student learning in higher education” (p. 783). This study was undertaken in naturalistic settings in order to evaluate real educational situations and has now been a firmly established concept in the educational research literature for several decades. These researchers aimed to understand individual participant’s perception of their learning as opposed to the perspective of the objective external observer (Entwistle, 1997a). This study demonstrated that when university students undertook an academic task, there was a variation in the way they tackled the task. The difference included a combination of the intention in commencing the task as well as the process used in undertaking the task (Marton et al, 1997). The variation was progressively refined through qualitative analysis and yielded a descriptive concept with two categories, namely, the Deep and Surface levels of processing. The defining intention in the learning led to the different learning processes (Marton et al, 1997, p.18) and the concept Approach to Learning was subsequently adopted as it succinctly captured the essence of this phenomenon. Entwistle and Ramsden (1983) cited in Postareff et al (2015) felt that the term processing was “too narrow as it did not include the intentional component of learning” (p. 316). Students either adopted a learning approach aimed at personal understanding of the new ideas and information or an approach that centred on reproducing the course material. With the latter, Biggs (1979) argues that, “... the student is concerned with reproducing signs of learning, that is, words used in the original text, rather than mastering what is signified, that is the meaning” (p. 383). This claim raises the concern that perhaps the appearance of having learnt the material, or of being viewed as knowledgeable, is of greater significance to these learners as opposed to learning the subject.

Marton and Säljö (1976) theorised that each individual ATL category is identified by a specific intention that generates learning processes that yield contrasting outcomes. The learning approaches are defined as intentions and motives that students have when undertaking a learning task. To achieve their learning intentions and motives, students use specific strategies to learn (Diseth, 2007, Gürten et al, 2013). The Marton and Säljö (1976) findings established that there was a variation in students’ conceptions of their learning, when engaging with the learning material.

Turner and Baskerville (2011) maintain that one's 'conception of learning' is the understanding of, or the belief that one knows, what needs to be learnt. Entwistle and Peterson (2004) drawing on Perry (1970), suggest that students' conceptions of learning developed as they progress through the years of academic study. If learning could be equated to acquiring knowledge, then the 'conception of learning' may be aligned to 'conception of knowledge'. Burton and Sztaroszta (2007) point out that "conceptions of knowledge and epistemological beliefs are interchangeable" (p. 25). In clarifying the concept of epistemological beliefs, Zhu et al (2008) drawing on Howard et al's (2000) definition, states that "epistemological beliefs are beliefs about the nature of knowledge and knowing" (p. 412). An equally important factor highlighted by Zhu et al (2008), is that a student's learning is driven by their epistemological belief. This may suggest that a student's epistemological belief or conception of learning has a significant influence on how they engage in everyday academic tasks. This argument may suggest that epistemological beliefs prescribe the learning strategies that students use when learning. In line with this reasoning, it is inferred that a student's ATL is directed by their epistemological belief (Burton and Sztaroszta, 2007).

Perry (1970) suggests that as students progress through their academic years in higher education, they gradually recognise that learning is more rewarding when they seek personal meaning by transforming the learning material into information within their own previous knowledge and understanding (Entwistle and Peterson, 2004). The Marton and Säljö (1976) distinction differs from Perry's longitudinal study which explored male liberal arts students' understanding and experience of learning in higher education (Brownlee et al, 2002). Perry's research "examined what individuals believe about how knowing occurs, what counts as knowledge, where it resides, how knowledge is constructed and evaluated" (Hofer, 2004 cited in Burton and Sztaroszta 2007, p. 56). He argued that students' epistemological beliefs about their learning ranged from naïve dualistic beliefs with the existence of absolute truths to a more sophisticated belief that knowledge was relative to different contexts. Perry claimed that learners who demonstrate a dualistic perspective about knowledge believe that absolute truths exist when expressed by an authority or expert (Burton and Sztaroszta, 2007). Learners then progress to accepting that knowledge is also open to the individuals' interpretations of the learning experience and that not

everything will be known with definite certainty. These findings reveal the hierarchical evolution from a naïve, dualistic belief to the sophisticated, commitment phase, where learners initially view learning as memorising knowledge. This reproduction of knowledge had to also be acceptable to the teacher (Zimmerman, 2012). When aligned to Marton and Säljö's (1976) study, learners in the naive dualistic phase adopt learning behaviours in line with the Surface Approach. These learners restrict their learning methods to memorising and limit their learning to the expected learning outcomes set by teachers or the curriculum. This troublesome acceptance of teachers being the arbitrators of knowledge, questions the learner's ability to advance beyond the learning outcomes that are set by teachers or the course curriculum. This suggests that instead of encouraging learners to progress beyond the bounds of the curriculum, teachers may unintentionally restrict learning by measuring learners as set by the learning outcomes.

Perry argues that as students progress through the academic years whilst in higher education, their learning is congruent to the course plan time frame. In progressing from the dualistic stage, students gradually recognise that learning becomes more rewarding when they seek personal meaning and transform the learning content by aligning the new knowledge to their previous knowledge and understanding (Moore, 1989). The epistemological beliefs that Perry describes, affects the ways students engage with the course (Burton and Sztarosza, 2007). The mode in which learners undertake their learning, describes the manner through which a student approaches their respective learning. The Perry model does bear some similarity to the Marton and Säljö (1976) ATL theory however, the differences in the methodological design are recognised. Perry's 'commitment phase' is perhaps comparable to the characteristics of the deep approach (Marton and Säljö, 1976). When considering Perry's time-frame paradigm, all final year students in higher education should have achieved the optimal 'commitment' phase of epistemological growth. This implies that all final year students should be adopting the deep approach. It may indicate that students on the final year of their courses should be able to demonstrate meaningful understanding of all the modules they have undertaken. In doing so none of the final year, higher education students, should indicate a preference for the surface approach. Although this reasoning is concerning and research has evidence to the contrary (Lindblome-Ylänne et al, 2013, Postareff et al, 2015) the learning

descriptors identified by Perry and Marton and Säljö are analytical categories which describe a prominent method of learning that the student uses to acquire knowledge. As such, each ATL describes a cluster of learning strategies used without an association to a learner's academic progress whilst enrolled on a course of study. Samarakoon et al (2013) comments that a fair number of final year undergraduate as well as Postgraduate students indicate that either the surface or strategic approach is their preferred learning approach. This compelling study contradicts Perry's claim that students in the final year of the course, having progressed to the 'commitment' phase, should all indicate the deep approach as their preferred ATL.

The Marton and Säljö's (1976) study identified that some students adopted an approach which involved their intention to understand the taught content as opposed to other students who primarily learnt to reproduce information as required by the assessment criteria. When engaging with the learning material, the learners applied individual approaches to interpret or interact with the information. This resulted in the identification of the deep approach and surface approach dichotomy. Thereafter, Entwistle and Ramsden's (1983) qualitative research at Edinburgh University explored students' experiences of studying and supplemented the Marton and Säljö (1976) model. Study findings indicated an additional approach was adopted by students who aimed at achieving the highest grades possible. The recognition of the strategic approach showed that some students combined components of both the deep and surface approaches, in order to attain their goal (Entwistle, 2001, Mogashana et al, 2012). The strategic approach is described as an approach used when students are driven by achievement and consequently aim to "maximise their grades for their own practical benefits and ego-enhancement" (Biggs 1979, p. 383). Entwistle and McCune (2004) observed that the learners' intention, and the strategies they use to process information as well as "... the complexity of interrelationships affecting different ways of learning" (p. 327), contributed to the Students Approaches to Learning theory (SAL). SAL Theory recognises that contextual variables, which include the learning environment as well as the students' preference for certain types of courses or teaching strategies, contributes to the preferred learning approach. The learning approach that a student adopts is affected by contextual variables, which have a reciprocal effect on their knowledge acquisition (Biggs and Tang, 2001, Entwistle and McCune, 2004). Therefore, a student's

approach to learning is neither inherent nor a static trait but instead, is open to transformation. Research assures that a student's approach can develop over the course of the higher educational learning experience (Entwistle and Peterson, 2004). This suggests that students can progress from an approach centred on memorising facts without any meaning, to an approach founded on meaningful understanding (Table 1).

Table 1: Defining features of the approaches to learning

Defining features of the approaches to learning	
Deep approach	
Intention →	to understand ideas for yourself
Seeking meaning by	
<ul style="list-style-type: none"> Relating ideas to previous knowledge and experience Looking for patterns and underlying principles Checking evidence and relating it to conclusions Examining logic and argument cautiously and critically Becoming actively interested in the course content 	
Strategic approach	
Intention →	to achieve the highest possible grades
Reflective organising by	
<ul style="list-style-type: none"> Putting consistent effort into studying Finding the right conditions and materials for studying Managing time and effort effectively Monitoring the effectiveness of ways of studying Being alert to assessment requirements and criteria Gearing work to the perceived preferences of lecturers 	
Surface approach	
Intention →	to cope with the course requirements
Reproducing by	
<ul style="list-style-type: none"> Studying without reflecting on either purposes or strategies Treating the course as unrelated bits of knowledge Memorising facts and carrying out procedures routinely Finding difficulty in making sense of new ideas presented Feeling undue pressure and worry about work Seeing little value or meaning in either courses or tasks set 	

(Entwistle et al, 2001)

Drawing on Säljö (1979) and Marton et al (1993), Turner and Baskerville (2011) contend that the ATL concept is different to a student's conception of learning. The former relates to what a student does when engaging with learning and the latter refers to what students think about their learning (p. 1). This position suggests that it is the student's conception of learning that steers how the student interacts with the learning process.

... the first two conceptions describe the learning by remembering factual information, usually by rote learning. Within this conception, education is seen as the process of accumulating the separate 'pieces' of knowledge provided, ready-made, from a teacher or other source. The third category introduces a marked qualitative change, as information is seen as having a purpose beyond acquisition: it also has to be applied. Development reaches a pivotal stage when learning is equated with understanding ... (Entwistle and Peterson, 2004, p. 411).

Entwistle and Peterson (2004) illustrate that learning progresses to a crucial point where just knowing about the subject, is insufficient. Instead, the learning needs to be entwined with understanding to enable the application of the learned knowledge. This research aims to encourage students to view learning beyond the acquisition of the subject material. To fill this gap in students' learning, this research intends to motivate students to increase their engagement with their learning, thereby change their dominant learning strategy so that they aim to understand and find the subject matter to be meaningful. By doing so, this may result in a reciprocal change in their conception of learning. In embracing this change, the transmission of their knowledge when making clinical decisions, may be enhanced. Based on this, my study aims at encouraging learners who adopt the surface and strategic approaches, to develop the characteristics of the deep approach, to ascertain if their clinical decision-making may improve. This research also aims to establish whether the deep approach does impact and improve student nurses' CDM.

2.6. Deep approach to learning

Research indicates that the deep approach is significantly related to “academic achievement” (Diseth et al, 2010, p. 335) and knowledge acquisition (Baeton et al, 2010; Lindblom-Ylänne et al, 2013). Entwistle (2003, npn, para. 8) states that:

... in the Deep Approach, the intention to extract meaning produces active learning processes that involve relating ideas and looking for patterns and principles on the one hand and using evidence and examining the logic of the argument on the other. The approach also involves monitoring the development of ones' own understanding.

The deep approach therefore is characterised by an intrinsic interest in learning accompanied by an intention to understand the subject matter, to think critically, to evaluate arguments and relate previous knowledge and experience to the new knowledge (Table 1).

Students who adopt the deep approach intend to understand the information better by reading astutely, by relating new ideas to other subjects, in addition to examining arguments and evidence before formulating a conclusion. This suggests that the deep approach could align with the Assimilation Theory (Ausubel, 2000). This theory conceptualises knowledge as a hierarchically ordered cognitive construction where material being learned is categorised under “anchoring ideas” in the cognitive structure (p. 102). The Assimilation Theory suggests that newly learnt material is metaphorically hung onto hooks of previously learnt knowledge within the cognitive structure (Ausubel, 2000). Learning is dependent on the integration of the new material to the already anchored existing ideas and demonstrated by the ability to relate recently learnt content to knowledge learnt previously (Ausubel, 2000). Ausubel claims that the assimilation of knowledge only occurs when learning is meaningful and meaningful learning is a result of the successful integration into cognitive structure (Novak, 2010). This perspective also suggests that the Assimilation Theory mirrors and may be congruent with defining elements of the deep approach (Marton and Säljö, 1976). Having attained this level of understanding, students can present ideas in a systematic organised manner and demonstrate the ability to relate and apply knowledge (Entwistle and McCune, 2004),

and as a result, higher quality learning outcomes are produced (Postareff et al, 2015). Empirical research confirms that positive correlations exist between the deep approach and academic achievement where the application of the knowledge was assessed (Cano, 2005; Reid et al, 2012). When aligned to this research's hypothesis, it is suggested that should student nurses be encouraged to adopt the deep approach, then their ability to relate and transfer the taught knowledge will be enhanced. Students' ability to apply their knowledge, when making decisions that result in appropriate patient outcomes may also improve.

Case and Marshall cited in Tight et al (2009), state that, "... students who were identified as using the deep approach were also seen to have qualitatively superior outcomes as well as greater recall of facts" (p. 13). This inference is questionable as the stated "qualitatively superior outcomes", does not clearly express how this hypothesis is measured. This undefended conjecture may be viewed as speculative lacking foundational basis. Additionally, the latter greater recall of facts appears to be the antithesis of understanding and instead, is contradictory to the attributes of the deep approach. In line with SAL Theory, being able to recall facts is instead parallel to rote learning on which the surface approach is founded (Marton and Säljö, 1976, Entwistle and Ramsden, 1983). To describe learners who adopt the deep approach as having an enhanced ability to recall facts without connecting and emphasising that recollection stems from an understanding of the subject, besides obscuring clarity between the approaches, appears to contradict the Marton and Säljö's (1976) Deep and Surface ATL dichotomy altogether.

Despite this criticism, Postareff et al (2015) claim that the "(D)eep Approach to Learning is a pivotal element of quality learning and is related to high quality outcomes and success" (p. 316). Diseth et al (2010), using the Approaches to Study Skills Inventory for Students (ASSIST)² (Tait et al, 1998) evidenced this claim when the academic achievement and ATLs of 1st year undergraduate psychology students, was investigated. The results yielded high scores for the deep and strategic approaches and low scores for the surface approach. These findings revealed that the deep and strategic approaches correlated to students' academic

² Approaches to Study Skills Inventory for Students (Tait et al, 1998) acronym is the ASSIST.

success. Students' experience of the course was also investigated and was found to correlate positively to the students' ATL. The researchers comment that the ATLs had a bi-directional effect on the students' academic achievement, and so the favourable learning experience also encouraged the adoption of the deep approach.

Sabzevari et al's (2013) research on the ATLs of undergraduate and postgraduate nursing students, using the Study Processing Questionnaire (Biggs, 1979), found that the deep approach scores were much higher than the scores of the surface approach. The deep approach scores of postgraduate students also exceeded that of the undergraduate students. The postgraduate students evidenced that the deep approach was their preferred learning approach in comparison to the undergraduate participatory group. These findings were congruent to previous studies undertaken within the same higher education institution (Shokri et al, 2006; Nejat et al, 2011). This assured the academic researchers of the rigour of their findings as well as their tutorship in sustaining the variables that contributed to the adoption of the deep approach at their institution. Incidentally, the investigation also yielded that the ages and marital status of participants were inversely correlated to the surface approach. The study concluded that younger, married undergraduate students had a greater propensity to adopt the surface approach when compared to the older, single postgraduate participant. In this setting, these findings imply that students with greater life experience and those who are not burdened with domestic related issues may have more time to invest in their learning and adopt the deep approach. In comparison, their younger, busier student peers reveal a stronger tendency for the surface approach. This deduction is further supported by Richardson's (2013) systematic review which explored the relationship between contextual and demographics in relation to students' ATL. Findings from thirty-one of the thirty-eight (82) studies reviewed indicated that "... older students tend to obtain higher scores than younger students on scales measuring the Deep Approach" (p. 74).

2.7. Surface approach to learning

Students employing the surface approach aim at learning the minimum required to pass (Entwistle, 2015). They opt to rote learn in an unrelated manner and personal interaction with the subject is limited. The student who adopts the surface approach

intends to avoid failure by memorising the learning material (Güerlin et al, 2013). These students lack a sense of purpose and have little interest in the course subject and so their intention is to just cope or engage minimally with the course (Entwistle and Peterson, 2004) (Table 1). Using the surface approach does have the potential to place risk on success. This may occur if the subject content that was rote learnt cannot be recalled when needed. Using the surface approach as the predominant learning strategy, may also fail learners when they are required to adapt the memorised content when solving problems in unfamiliar situations or when answering atypical, unanticipated questions. Hasnor et al (2013) investigated the relationship between the ATLs and academic achievement of students on an American based foundation programme using the ASSIST and results yielded a statistically significant inverse relationship between the variables. These findings evidenced that the increased use of the surface approach resulted in a decrease in academic achievement. This study identified that the adoption of the surface approach correlated with low levels of academic success (Cano, 2005; Gibjels et al, 2005, Reid et al, 2007). The research does not discuss these findings in relation to probable causes for these findings. However, the introductory commentary on the Malaysian compulsory schooling context identifies rote learning as a predominant learning approach advocated by school teachers and amongst other contributing factors, may have influenced these findings. The potential effect of the prior schooling experience, questions the influences on students affinity for an ATL in different learning settings. That certain students may not be open to embracing an alternate learning strategy in different learning situations needs to be considered. With such students, the change in learning strategy may be viewed as unsettling, despite being made aware of the known benefits of the approach that is being encouraged. Although the surface approach is considered to be the least desirable of the three ATLs (Richardson, 2013); this approach's founding 'memorising' characteristic may be advocated as a scaffolding technique to attain the more desirable deep approach. Entwistle and McCune's (2004) influential study investigating the relationship between the ATLs and assessments revealed that the course assessment has a persuasive influence on a student's learning. This research supported the earlier recognition of the strategic approach.

2.8. Strategic approach to learning

The notion of the deep and surface approaches was recognised at a time when other learning dichotomies were also identified. Ausubel et al (1968 cited in Entwistle, 2015), compared meaning and rote learning. Perry (1970) followed with the 'dualistic to commitment' learning paradigm. Despite these seminal contributions, these dichotomies did not explicitly consider the student who may adopt a hybrid approach, using selective elements from both the deep and surface approaches to maximise their academic achievement. Students who adopt the strategic approach are motivated to achieve the highest marks possible. They employ goal-orientated study strategies whilst organising their time and learning environment to achieve their goal (Biggs and Tang, 2011) (Table 1). This may require using components from both deep and surface approaches. These include memorising facts as well as ensuring understanding of basic principles, which is perceived to grant them maximum chance of academic success (Entwistle, 2015). Entwistle and Tait (1990) assert that students who use a strategic approach use the deep / surface approach permutation, based on a "competitive form of motivation ... combined with a vocational motivation ..." (p. 171). The student who adopts the strategic approach also focuses on the academic content, monitors the effectiveness of their studying and is alert to the corresponding assessment method (Entwistle, 2003). Diseth and Martinsen's (2003) comparative investigation between the ATLS and academic success of undergraduate psychology students reported a positive relationship between the strategic approach and academic achievement. Despite these students achieving the desired high grades, in line with the characteristics of their preferred approach, it may not necessarily reflect a comprehensive understanding of the subject content. With nursing students, this premise may influence the nurse's ability to make the correct clinical decision. Gürlen et al (2013) investigated the ATLS and academic achievement of undergraduate teacher education students using the ASSIST. Findings indicated a positive relationship between students' achievement and the strategic approach with the deep approach yielding a low correlation. The surface approach was negatively correlated indicating that the higher the surface approach score, academic achievement scores decreased further. The researchers concluded that the cultural perspective was a significant contributor for these results. Previous research has indicated that Asian students have a greater tendency to use

memorising as a learning approach as opposed to students from other cultural settings (Watson, 2000; Wong, 2004). This study also revealed that learning environments which encourage active student participation are positively correlated to the deep and strategic approaches. Students who adopt the surface approach indicated a strong preference for key note lectures and exams, with clear definitions and set learning outcomes. These findings suggest that active learning environments have a significant influence on the students' choice of ATL. The use of rigid assessment strategies may also restrict learning to the set course outcomes and discourage students from delving deeper into the subject.

2.9. Choice of approach to learning

The learning approach a student adopts depends on a variety of factors. These contextual variables include the student's perception of the teaching methods, the learning environment and academic quality (Richardson, 2003); the learning task, the specific demands of the academic assessment (Diseth et al, 2010); the organisation of the curriculum (Pimparyon et al, 2000, Entwistle and McCune, 2004) as well as the perceived value of the taught subject (Lindblome-Ylänne et al, 2013). Students' individual differences include the time allocated to study (Svensson, 1977; Richardson, 2003), previous academic successes and failures (Marton et al, 1993) and their personal intention to engage with the learning environment (Entwistle, 1998). These studies support that students' choice of ATL results from the dynamic interplay between the learning environments and their personal and situational factors, as opposed to being an inherent, fixed trait. The tendency to approach the learning in a certain manner, in relation to the learning opportunity, is therefore shaped by the students' attitude and aspirations, combined with the context of the learning situation. Based on this, students may be able to modify their ATL if encouraged to do so, or if they were aware of the evidence of the SAL Theory in relation to their personal academic achievement. Students' intentional re-orientation to an ATL, related to effective learning practices by seeking to understand the learning, demonstrates a self-regulating agency within the learner. In this learning context, agency refers to "the implicit or explicit sense of initiating and controlling events – the will and capacity to act and to influence" (Deakin Crick et al, 2015, p. 137). Being introduced and taught to embrace the elements of the deep approach,

students may be encouraged to take responsibility for the learning journey and establish themselves as agents of their own learning.

Interestingly, the later realisation of the strategic approach questions Marton and Säljö's (1976) findings. Despite participants being interviewed in their naturalistic setting, this seminal study failed to consider or reveal learners who utilise the complex interwoven fabric of both the deep and surface approaches. The omission questions the existence of other permutations of the ATLs. This suggests that students could also adopt a combined deep and strategic approach or a surface and strategic approach as opposed to indicating a preference for a single ATL. In contrast, an affinity for both deep and surface approach does not appear plausible as "it is not possible to focus and not to focus on meaning at the same time" (Diseth and Martinsen, 2003, p. 196). Teoh et al's (2014) investigation of Malaysian students' choice of ATLs agrees that, "(t)he Surface and Deep Approaches are mutually exclusive and no student would maintain both approaches simultaneously" (p. 11). However, a student may embed himself or herself into the subject with intense criticality. This in-depth engagement may result in the unintentional memorising of the subject. Although this seamless memorising may be a rare occurrence, it should not be discounted altogether. The student in this case, would be using elements of both the deep and surface approaches. These may include meaningful engagement with critical evaluation of the learning content as well as memorising the content (Table 1). Although I accept that the approaches are not used absolutely simultaneously, this does not negate that a student may adopt a combination of the deep and surface approaches in a relatively uninterrupted manner, virtually simultaneously, within a single learning context.

2.10. Criticisms of the Approaches to Learning Theory

Although the deep/surface Approaches to Learning Theory has gained extensive global recognition as being an acknowledged component of 'modern educational development', the model has also undergone intensive scrutiny. Richardson (2000) criticises that the theory is "a cliché in discussions about teaching and learning in higher education" (p. 27) with Haggis (2009) arguing that the concerns and challenges over the number of students who adopt the surface approach "remain

largely answered” (p. 378). In response, Entwistle (1997b) supports that from the coherent body of empirical research, the validity of the approaches to learning model arises from its capacity to explain a recognisable reality, combined with its ability to suggest interventions to improve engagement for both faculty and students.

However, it is worth noting, that as the ATL Theory gained popularity in academia, initial terminology gradually resulted in conceptual change. Habeshaw (2003) observes that the deep approach to learning was modified to be known as deep learning which eventually has been transformed into deep learners or processors. Similarly, the term surface approach to learning has been debased into surface learning which has progressed to surface learners (Habeshaw, 2003). However, in relation to this conceptual slippage, Marshall and Case (2005) argue that the ATLs are not characteristics of individual learners but rather describe a method that learners use when engaging with a learning task. To further explain, the theory of the ATL “captures students’ responses and adaptations to course contexts, rather than representing innate cognitive characteristics of a student” (Case and Marshall, 2004, p. 606). Hence, to label learners as being either deep learners or as surface learners is meaningless (Marshall and Case, 2005). It would be ethically and morally unsound to label a student by the approach they use, as the approach is a description of the learner’s learning strategy and not of the learner. The branding of learners by the ATL that they adopt may instead of enhancing engagement, have the opposite effect and discourage learning altogether (Entwistle et al, 2000).

In the original Marton and Säljö (1976a) study, the deep and surface approaches materialised from the context of students’ interaction with a particular learning task. As such, the concept of a student’s ATL is determined by the relationship between learner and the structure of the learning task. The SAL theory does not refer to developmental learning phases. Depending on the context of the learning task, the learner may adopt a deep approach in one and opt for the surface approach in another (Marshall and Case, 2005). Haggis (2003) asserts that the strategic approach is just “seen as the ability to switch between the Deep/Surface Approaches” (p. 91) as opposed to having any distinctive significance when compared to the deep/surface dichotomy. Although, I agree with Haggis (2003), that using the strategic approach is a combination of using elements from both the deep

and the surface approaches, the distinction lies in the student's ability to make this decision. By assessing the learning task and deciding that the strategic approach would enhance their learning and result in successful academic achievement, the learner uses a higher cognitive ability. This self-agency demonstrates a higher functioning capacity to choose the appropriate elements from the deep and surface approaches, to achieve their goals. Supporting this reasoning, Coffield et al (2004) drawing on Entwistle (1998) offers that "students using the strategic approach become adept at organising their study time and methods, attend carefully to cues given by teachers as to what type of work gains good grades." (p. 94). Haggis' (2003) criticism of the strategic approach as being an elementary mixing of the deep and surface approaches, does appear unsubstantiated when evaluated alongside Coffield et al's (2004) robust, systemic critique of students in post compulsory education.

Haggis (2003) claims that the deep/surface ATL theory may be accepted as reflecting the aims and ideals of higher education. The purpose of the current mass higher education system is further questioned. The critique progresses to claim that the model promotes "elite" (p. 97) assumptions about students' purpose as well as the factors that motivate their learning. Haggis (2003) argues that the ATL Theory is not reflective of mainstream learners in higher education. The goals of the deep approach which include meaningful engagement with the taught subject, to critically analyse and evaluate course material, are argued as not the goals that the majority of students in HE aim to achieve. Haggis (2003) claims that aiming to understand the subject is, instead, the goal of faculty in higher education. Although many students in higher education may not aspire to, express difficulties or demonstrate the agency in embracing the deep approach, it is essential that HE aim to encapsulate these goals. Marshall and Case (2005), building on from Barnett (1997), rationalize that it is these very goals that justify this distinction of higher in the trademark 'higher education'. This distinction "... do(es) not necessarily imply that the (goals) are elite" (p. 262), but perhaps, not similar to the goals in the students' previous learning stages. When the concept is analysed, higher education is a sub-species of education where students are exposed to a different learning experience, in comparison to learning in the compulsory education phase. Learning in higher education allows and encourages specific processes of learning which includes enhancing the concept of criticality to

take place (Keeling and Hersh, 2012). The higher education experience anticipates that an exclusive, identifiable personal development within the learner occurs. These emancipatory elements of higher education encourages the freeing of the learner's mind, thereby inspiring the learner to tread beyond the metaphorical boundaries in learning experiences imposed during the compulsory learning years (Ren and Deakin Crick, 2013) (See Section 2.1). Chan et al (2014) supports that the higher education learning experience results in the emergence of new self-empowerment within the learner. The higher education learning experience is different but it is not elite in the negative sense that Haggis (2003) proposes. Therefore, Haggis' claim that the aim of embedding the deep approach is only established to satisfy faculty, does not appear to be balanced. In response to this controversial claim, Chan et al's (2014) critical review 'What is the purpose of higher education?' concurs with Sullivan's (2011) position and asserts that, "the ultimate goal and purpose of higher education is to give students' complex knowledge, capacity in skilful practices, and a commitment to the purposes espoused by their community" (p. 6).

The above perspective accepts that these institutional goals are fundamental when the empowerment and development of students enrolled in higher education are considered. Although there are numerous obstructions to attaining these aims, faculty and higher education should not be discouraged from exposing learners to in-depth ways of thinking, of critical reasoning and of cognitive development. Should students graduate from higher education without learning skills and competencies beyond what is taught in the compulsory sector, then one questions what is the purpose of higher education experience? Instead of the flagrant disregard of the ATL model being a lofty ideal of higher education, if aligned to the barriers that obstruct students developing the higher cognitive skills that adult learners in higher education are expected to embrace, it could perhaps be used as a diagnostic tool (Case and Marshall, 2004). This insight may grant faculty the opportunity to discern the reasons why students find it challenging to comprehend and embody the fundamental value of the higher education learning experience. Entwistle's argument in 'Contrasting Perspectives on Learning' (Marton et al, 1997) acknowledges, that research on learning from which theories emerge, "must have ecological validity" (p. 11). To be credible, the specific theory should materialise from the actual research setting to which it is applicable (Entwistle, cited in Marton et al, 1997). The theory on students'

ATL does satisfy this criterion and explanatory value to the theory's utility (See Section 2.3). Coffield et al's (2004) influential systematic review supports further assessment on the theory's utility:

On the grounds of robustness and ecological validity, we recommend that the concepts developed by Entwistle ... and others, of Deep, Surface and Strategic Approaches to Learning ... be adopted for general use in post-16 learning than any of the other competing languages (p. 52).

It is also worth recognising, that studies following the Marton and Säljö's (1976) research, operationalised the ATL paradigm into inventories of learning (Biggs, 1979; Entwistle and Ramsden, 1983; Tait et al, 1998). Coffield et al (2004) upholds that from an extensive examination of learning inventories, the Tait et al (1998):

Approaches to Study Skills Inventory for Students (ASSIST) is useful as a sound basis for discussing effective and ineffective strategies for learning and for diagnosing students' existing approaches, orientations and strategies. It is an important aid for course curriculum and assessment design, including study skills support (p. 138).

The implementation of learning inventories has gained popularity in research on students' learning. Mogashana et al (2012) argues that learning inventories are recognised as tools to detect 'at risk' students. Measuring instruments are appealing to both faculty and researchers in education as they facilitate insight and understanding into students' engagement when undertaking academic study (Coffield et al, 2004). Although learning inventories have gained prominence, its ability to measure what it proposes needs careful consideration (Tait et al, 1998). Interpreting the findings should be granted foremost attention as the inventory may not adequately capture crucial nuances about students' learning, and as a result, the actual findings of the phenomenon may be skewed. The quantitative data collected using learning inventories would benefit from a research design that includes a qualitative element that expresses the learners' actual views of their personal study behaviours. The implementation of a mixed methods design would amplify insights on the phenomenon being investigated. In this manner, potential researcher bias

may be reduced, which consequently enhances the rigour of the study. Mogashana et al (2012), “critically interrogates” (p. 785) the validity and the reliability of learning inventories. Using a mixed methodological approach and the revised 18-item Approaches to Learning and Studying Inventory (ALSI) (Entwistle et al, 2002), the research evidenced that the learning inventory’s statements could be misleading and have multiple interpretations. The academically able South African participants from a “highly competitive chemical engineering course” (p. 785) were confused and misunderstood the meaning of the inventory statements. The inventory appears not to have considered the diverse African cultural perspectives. The researchers concluded that the findings were “eroded by these differences” (p. 791) by the multi-cultural participants’ interpretation. Mogashana et al (2012) concluded that despite these results, “inventories certainly have a role to play in supporting student learning” (p. 791) but to prevent misinterpretation, the data needs to be supported by other evidence. Coffield et al’s (2004) rigorous systemic review of learning inventories, agrees that:

... unlike other inventories reviewed in this report, those of Entwistle and Vermunt are the only two that attempt to develop a model of learning within the specific context of higher education (p. 92).

Despite this acknowledgment, Vermunt’s (1994) ‘Inventory of Learning Styles’ (ILS) is aimed specifically at students studying at universities and not other post compulsory education learning environments such as Further Education colleges (Coffield et al, 2004). However, it also “de-emphasises the interpersonal context of learning, as only undirected largely unsuccessful students see learning in terms of opportunities for social stimulation” (Coffield et al, 2004, p. 107). The significance of the affective domain’s contribution to the learning experience in higher education appears to be omitted (Witt, 2015). This omission may question or weaken the reliability of the framework. When compared to the ASSIST (Tait et al, 1998), the “ILS has not been used widely in post-16 intervention studies” (Coffield et al, 2004, p. 108). It is for these reasons, that the former inventory was better suited to answer the hypotheses in this study (see discussion in Chapter 2).

2.11. Barriers to learning in higher education in the 21st Century

Adding to the early discussion on the situational and personal factors that have an impact on learning in higher education (Section 2.2), the diversity related changes in the current student population also affects students' learning. Jaspal (2015), drawing from Buckridge and Guest (2007), claim that the "UK Higher Education has become increasingly diverse – the student population cuts across various social strata, including distinct ethnic, religious, linguistic and socio-economic groups" (p. 127). Although the acculturation offers a significant benefit to the diverse learning community, the difficulties of integrating also have an impact on students' learning (Jaspal, 2015; Young, 2016). Crawford and Candlin (2013) argue that, the cultural and linguistic diversity amongst nursing students interferes with both their verbal and written communication. These students experience a "difficulty with academic English which affects their academic performance" (p. 797). Moore et al (2013) agree that students from ethnic minority groups achieve fewer first or upper second class degrees compared to other student groups. Crawford and Candlin (2013) assert that these communication impediments affect both the theoretical and clinically related components of the course. This diversity associated difficulty may affect the mature, non-traditional student's ability to make sound clinical decisions at the point of care (Crawford and Candlin, 2013).

The widening participatory commitment that HE is regulated to endorse is an additional challenge to learning in higher education (Jaspal, 2015). Moore et al (2013) claim that, "... (w)idening participation students are not a homogeneous group. They may have a range of identities, diverse social characteristics and come from a variety of backgrounds" (p. 6). Bednarz et al (2010) explain that, "(t)raditional students generally have been young unmarried women entering nursing programs as first-time students soon after completion of their secondary education" (p. 253). These claims support that the likelihood of the mature student having family commitments, which may include spousal and parental responsibilities compared to their younger, single student peer, is greater. Young (2016) asserts that "nursing has more students with family responsibilities of which 7% have caring responsibilities" (p. 113). The impact of family obligations may conflict with the time and attention that a student may have to invest in their study. Moore et al (2013), building on O'Driscoll

et al (2009), reports that mature, non-traditional students over the age of 21 have “struggled to attain parity of esteem and to develop identities as authentic higher education students” (p. ii). Allan et al (2013) drawing on the RCN (2005) directive confirms that “in nursing, the number of such students is higher than in other disciplines: 46% of all students accepted to programmes being older than 26 years and 22% from ethnic minority groups” (p. 1069). Thus, non-traditional students may find identifying with their younger peers and integrating into the higher education community, a challenge to their learning experience. The hurdle is exacerbated by the older students’ “personal and social histories and competing identities, roles and responsibilities” (Jaspal, 2015, p. 132). These students may resort to isolating themselves from peers that disengages them from the collaborative learning experiences. Such coping strategies may affect their learning and academic success. Bednarz (2013) claims that in nurse education, there is an increase in non-traditional students. This diversity in the student demographic poses a significant challenge for nurse education.

In relation to earlier discourse, I argue that to achieve the objectives of higher education, the adoption of an ATL that fosters understanding, enhances engagement and encourages students to critically examine the subject, needs to be cultivated (Diseth et al, 2010; Entwistle, 2015). From my experience, undergraduate Adult Nursing students are given limited structured guidance on methods of how to learn effectively, nor are the merits of seeking meaning in their learning, reinforced. A review of the literature has failed to identify research that raises the undergraduate nursing students’ awareness of their individual ATL and its intricate relationship between knowledge acquisition and their CDM ability. Alerting students to this diagnostic foresight of their learning, the awareness may potentially give them the opportunity to enhance their engagement with the subject specific content and develop the criticality enhancing skills of the deep approach. This may ultimately help students to become more effective, agentic learners. It is anticipated that these foresights may reduce the barriers that obstruct nursing students’ ability to transfer knowledge that is taught into a demonstration of having learnt and understood the subject specific learning material, when actually making decisions in clinical practice.

2.12. Clinical decision-making context

Considering the knowledge and skills nurses need to know and demonstrate in order to make safe clinical decisions, developing an affinity for an ATL that will enhance knowledge being embedded and transferred from the classroom into actual clinical practice, will be beneficial for both student nurses and the patients they care for. The construct of clinical competence is complex and multi-faceted and nurses must be able to make decisions on how to manage patients with complicated conditions in a rapidly changing technological healthcare environment (Dicle and Durmaz Edeer, 2015; Canova et al, 2016). These clinical decisions are also convoluted and multidimensional as this process is informed by numerous streams of knowledge, which include the presenting symptoms, the patient's past medical history, data from current investigations, the provisional diagnosis and plan of care (Thompson et al, 2013). These factors intensify the intricacy of this phenomenon even further (Gillespie, 2010; Johansen and O'Brien, 2016). Thompson and Yang's (2009) typology of nurses' clinical decisions categorises the multi-dimensionality of this comprehensive process (Table 2).

Table 2: Decisions and clinical choices expressed by acute and primary care nurses

Type of Decision	Examples of clinical choices
Intervention/effectiveness: decisions that involve choosing an intervention	Choosing a mattress for a frail elderly patient admitted with an acute bowel obstruction
Targeting: decisions include choosing which patient will benefit most from the intervention	Deciding which patient should get anti-embolic stockings
Prevention: deciding which intervention is most likely to prevent the occurrence of a particular outcome	Choosing which management strategy is likely to prevent the recurrence of a healed leg ulcer
Timing: choosing the best time to deploy the intervention	Choosing when to begin asthma education for newly diagnosed asthmatic
Referral: choosing whom a patient should be referred to	Deciding if a leg ulcer is arterial or venous and needs medical or nursing management
Communication: choosing ways of delivering information and receiving information from patients, families or colleagues; includes communication of risks and benefits of interventions	Choosing a cardiac rehabilitation approach for an elderly patient post myocardial infarction who lives alone
Service organization, delivery and management: decisions concerning processes of service delivery	Choosing how to organize handover so that communication is most effective
Assessment: deciding that an assessment is required and what mode of assessment to use	Deciding to use the Edinburgh Postnatal Depression screening tool
Diagnosis: classifying signs and symptoms as a basis for a treatment strategy	Deciding whether thrush is the reason for sore and cracked nipples
Information seeking: the choice to or not seek further information before making a clinical decision	Deciding that a guideline for monitoring patients whose angiotensin-converting enzyme inhibitor was adjusted may be of use, but choosing to clarify with colleague
Experiential, understanding or hermeneutic: relates to the interpretation of cues in the process of care	Choosing how to reassure a patient who witnessed another patient arrest

Thompson and Yang (2009)

Bucknall (2000) cited in Thompson et al (2013), asserts that nurses make clinical decisions with multiple foci, which include diagnosing, intervening and evaluating care every 30 seconds. Thompson et al (2013) argues that decisions in healthcare,

are made in situations where the “information available to nurses is often incomplete or unclear” as key factors, which include investigation outcomes, are not always at hand (p. 1721). As a result, potentially essential information is unknown at the point of making the decision. Additional to being made within a frame of uncertainty, clinical decisions are also made with relative speed (Johansen and O’Brien, 2016). Thompson et al (2013) building on Hammond (1996) claim that within the healthcare context, rarely are decisions made singularly where one decision can be detached from the other decisions which will follow. Instead, within the dynamic patient care environment, the clinical decisions are embedded in decision-making cycles, where the actions of one decision impacts on another (Thompson et al, 2013). This sequential, cyclic nature of decision-making adds to the CDM complexity. These challenges reiterate that CDM is an integral component of nursing practice, which nurses as frontline clinicians, need to demonstrate constantly and effectively (Johansen and O’Brien, 2016).

Patients also expect and trust nurses to make decisions that are founded on ‘doing good’ as opposed to causing harm (Thompson et al, 2013). Escalating healthcare costs; the ageing population; current trends of delivering care and an incongruent nurse: patient ratio challenge the decision-making process even further. In the UK, this challenge is compounded by the changes in nurse education from diploma level to all graduate entry (NMC, 2010). The academic change resulted in a reciprocal increase in the expectation of the quality of the decisions nurses make. Clinical judgement and decision-making impacts on patient care therefore measures that may help nursing students improve their CDM skill need to be strengthened. The professional nurse regulator states that “graduates must be able to think analytically, use problem solving approaches and evidence in decision-making, keep up with technical advances and meet future expectation” (NMC, 2010, p. 4). When aligned to the ATLS, these attributes are typical characteristics of the deep approach. By implication, the professional regulator expects all student nurses to demonstrate qualities of the deep approach, at the point of professional registration. The NMC’s (2010) ‘Standards for Pre-registration Nursing Education’ directive states that students must demonstrate their ability to work as autonomous practitioners by the point of registration. Based on the expectation, nursing students need to be proficient decision-makers on completion of their course. Logan (2015), drawing on the RCN

(2014) 'Defining Nursing' report, points out that CDM is the attribute which "characterises nurses as autonomous, accountable professionals" (p. S21).

These expectations place greater emphasis on the development of CDM skills in nurse education curricula. Such focus may promote internalization and improve the quality of patient centred decisions (Dowding et al, 2012; Thompson et al, 2013). This study is founded on the claim that on completion of their course, nursing students need to be competent decision-makers. Competent CDM is also a benchmark in pre-registration education as registered nurses are accountable for their clinical decisions on professional council registration (NMC, 2010). To meet the professional bodies' and nursing employers' requirements, the need for a deeper understanding of the CDM processes and the educational strategies that strengthen this development, reinforces the need for this study (Edelen, 2011; Johansen and O'Brien, 2016).

2.13. Clinical decision-making conundrum

Research into nurses' decision-making is intricate and fraught with difficulty as the underpinning of how decisions are made is not a directly observable process. This makes measuring and reporting the CDM process difficult to carry out (Gillespie, 2010, Johansen and O'Brien, 2016). Edelen and Bell (2011), drawing on Simpson and Courtney (2002) defines CDM as a:

... systematic process of assessment of a repertoire of actions, evaluation and judgement-making that will contribute to the achievement of a desired outcome (p. 453).

This definition maintains that for a decision to be suitable, caveats need to be achieved. A thorough appraisal of the presenting situation is mandatory in order that the correct decision can be made. This stresses the complexity of the CDM process. Although Thompson and Stapley (2011) argue that, CDM is a process of choosing between alternatives or options, researchers agree that it is a complex, multifactoral process which encompasses data gathering and evaluation before a decision can be made (Ho et al, 2013; Canova et al, 2016). When unpicking the concept of decision-

making, an array of terms is used to describe the same phenomenon. These range from clinical judgement (Benner and Tanner, 1987, Thompson and Dowding, 2003a) to clinical reasoning (Grobe et al, 1991), clinical inference (Hammond, 1964, Wolf et al, 1996) and diagnostic reasoning (Radwin, 1990, Nurjannah et al, 2013) to clinical decision-making (Gillespie, 2010, Canova, 2016). The apparent lack of a universal or absolute definition of CDM also exists, as descriptions of CDM vary across the disciplines and professions. In addition to this interprofessional variability, Dowding and Thompson (2003) cited by Thompson et al (2013) claim that there is no clear description of “what constitutes a good decision or clear understanding of what makes a good decision process” (p. 349). Thompson et al (2013) clarify that judgements and decisions can be viewed as distinct entities, with judgements being the “assessment of alternatives” and decisions as “the act of choosing between alternatives” (p. 1721). In this study, CDM is portrayed as a single concept whereby the assessment of alternatives and the act of choosing between alternatives, are conflated and used interchangeably unless stated otherwise. Dowding et al (2012) endorses this claim, stating that judgement and CDM “are interlinked and individuals may make judgements and decisions through a variety of reasoning processes” (p. 350). In relation to clinical practice, decision-making is viewed as a professional choice of real life, situated practice rather than hypothetical activities or tasks to be undertaken (Thompson and Dowding, 2003a). Making a decision inevitably involves making an assessment of the future (Lamb and Sevdalis, 2011). In clarifying this claim, should a decision be deemed to be the most favourable alternative, then knowledge and awareness of the future or the situation following the decision is essential. A decision is realistically framed on a prediction of the future outcome otherwise choices will be made without any consideration for possible consequences of the decision (Ho et al, 2013).

The already challenging decision-making process becomes even more complex. The decision-maker needs to consider data from multiple current contextual information streams. Previous experience with the situation, collegial expertise, evidence relating to the presenting situation, a forecast of the inevitable outcome as well as the consequence of the decision, contribute to the decision-making process. Despite being guided by the various information sources when making decisions, Dowding and Thompson (2003) claim that one’s experience and hindsight may also have a

negative impact on one's decisions resulting in adverse outcomes. This is evident when new knowledge replaces that which was formerly accepted as the ideal. Although it is accepted that robust research should change former practices, this may not always be received without conflicting positions from practitioners. As a result, the updating of knowledge may perhaps increase the complexity of the decision-making process as opposed to adding clarity. These arguments could impact on the student nurse in the clinical environment. Canova et al (2016) claims that despite expectations, students' experience within clinical practice does not necessary make the CDM process easier. In support of this claim, Canova et al (2016), drawing from Banning (2008), assert that the decisions students are expected to make increase in complexity in line with students' academic progression. In line with this claim, final year students are expected to demonstrate an advanced level of CDM ability in comparison to 1st and 2nd year students. It could also be argued that final year students' CDM ability should be closer in equivalence to that of the qualified nurse. For these reasons, initiatives that may strengthen this skill with nursing students during their novitiate period of training, subsequently enhancing their CDM competence when qualified deserves investigation.

Although the study of the decision-making concept emerged from other academic disciplines which include psychology and economics, it is also applicable to nursing (Johansen and O'Brien, 2016). From an early perspective, Brunswick (1952 cited in Johansen and O'Brien, 2016) claimed that an "individual utilises infallible cues from the environment while trying to be as empirically accurate as possible in making judgements about objects or events" (p. 41). In this original normative decision-making paradigm, decisions are made in a framework of greater certainty. The problem that needs to be solved in the Brunswick framework is clearly defined and the decision-maker is fully conversant with all possible alternatives and corresponding consequences. It could be argued that the decision-maker's infallible ability to discern cues is an expectation that cannot be guaranteed with every decision-maker and in every circumstance. In this instance, the decision is based on the most optimal option. The normative decision-making theory framework, is concerned with how good a decision is, that is, its principal focus is on the outcomes of decisions without much consideration for how the decision is made (Dowding et al, 2012). Although this theory may apply to how decisions may be made in certain

sectors of healthcare, which include a pathology laboratory, it is argued that this framework would not be suitable in uncontrolled, organised chaotic environments such as in Accident and Emergency units. In such dynamic clinical environments, the immense variability in the number of patients, the myriad of presenting conditions and the response to treatment strategies results in a constantly changing situation. Thus, complete certainty of all the various problems and corresponding outcomes, would be less attainable. This paradigm omits decision-making in less controlled situations, such as clinical environments which involve patients whose medical pathologies are unpredictable and in a state of flux.

Decision-making theory then progressed to consider Hammond et al's (1967 cited in Johansen and O'Brien, 2016) claim, that "conditions of uncertainty" (p. 41) cannot always be avoided when making a decision. Hammond argued that the accuracy of the decision is aligned to the value that the decision-maker places on the cues that emanate from the situation (Johansen and O'Brien, 2016). This claim is problematic as it puts considerable stress on the decision-maker's ability and awareness of which cues are of greater significance and relevance to the situation, than others. As such, decisions made are reliant on the decision-maker's perception of the situation. It appears that Hammond's probabilistic functioning framework forces the decision-maker to make a decision despite not being fully informed of potentially significant factors which may impact on the outcome of the decision. Cook (2009) contends that this clinical Gestalt mechanism of decision-making could result in suboptimal decisions being made. Thompson and Yang (2009) maintain that, "in healthcare, uncertainty is pervasive, appears at each point of the patient journey and is inescapable" (p. 178). Although this decision-making framework may be accepted as appropriate in disordered circumstances with limited information, the exposure of patients to potentially untoward risk cannot be ignored.

Despite this criticism, the theory progressed with Hammond's (1981 cited in Cader, 2005) Cognitive Continuum Theory which focused on nurses' judgements as robust exemplars of combining information for a decision to be made (Thompson et al, 2013). Hammond claims that judgements which are made in situations of uncertainty are related to one's cognitive ability (Thompson et al, 2013). Hammond (2000 cited in Cader et al, 2005), states that a "judgement is a joint function of task properties

and cognitive processes” (p. 83). The task properties actually describe the process of combining information to make a judgement on the given situation (Johansen and O’Brien, 2016). Although Cader et al (2005) criticise Hammond’s failure to define cognition, Cader and colleagues accept that “(t)he main philosophical claim made by Hammond (1996) is based on a person being capable of both modes of cognition – intuition and analysis” (p. 399). Notwithstanding, that intuition and analysis as singular concepts appear to contrast to each other, Hammond denies that these processes are unrelated. He instead argues, that both contribute to decision-making process, as neither concept is “purely analytical or purely intuitive” (Johansen and O’Brien, 2016, p. 41). This claim perhaps suggests that analytical decision-making processes are in part, influenced by one’s intuitive judgment (See Sections 2.12.1 and 2). This may further imply that, intuition is not non-linear without rational awareness (Chassy and Gobet, 2011; Moylan, 2015) but also incorporates a logical, sequential element where “healthcare practitioners actively organise clinical perceptions into coherent construct wholes”, in line with clinical gestalt (Cook, 2009, p. 6). Hammond’s Cognitive Continuum Theory illustrates his claim using six categories dictated by two continua (Cader et al, 2005; Johansen and O’Brien, 2016). In this framework, the analytical decision-making process is used to make decisions when tasks are clearly defined and thus have a low uncertainty factor. In contrast, when decisions are made when tasks are unclear and with a higher uncertainty factor, intuitive processes are used to arrive at a decision. Thus, Hammond’s Cognitive Continuum framework describes a combined analytical and intuitive, quasi-rational approach to CDM.

2.14. Clinical decision-making models

When nursing decisions are made in a state of uncertainty, two clinical decision-making models appear to be used by practitioners to a considerable extent (Thompson and Yang, 2009; Johansen and O’Brien, 2016). These include the information-processing model and the intuitive-humanist model.

2.14.1. Information-processing (IP) Model

The information-processing (IP) model is an analytical model, which uses the hypothetico-deductive approach (Banning, 2008; Johansen and O'Brien, 2016). This scientific, linear approach is framed on the decision-maker, in this instance the nurse following a deductive, rational sequence of thought processes until a decision is reached. "(T)he experience of the decision-maker and his/her ability to identify situations", is fundamental to this model (Johansen and O'Brien, 2016, p. 42). The ability to recognise cues at the initial encounter with the patient is significant. Once identified, the nurse interprets these cues and generates a "tentative hypothesis specific to the information that has been generated" (Banning, 2008, p. 188). Considering that cue identification is the key component of this decision-making model, experienced nurses would have accumulated a wider knowledge base, which may imply that their acuity in identifying cues would be superior to that of novitiate students. This cue recognition ability could result in experienced nurses being more effective in information-processing decision-making compared to the nursing student at the point of qualifying (Thompson and Yang, 2009). The disparity supports this study's aims that encouraging the adoption of the deep approach during students' educative phase, may contribute to a more substantial knowledge base. The increased breadth and depth of knowledge may compensate for students' limited experience and could contribute to identifying cues when using this decision-making model. Although this analytical model is evidenced to enable nurses to make diagnostic deductions and generate provisional diagnoses (Banning, 2008, Johansen and O'Brien, 2016), the reliability of the decisions are dependent on the clinical decision-makers' experience and knowledge. To illustrate, Thompson and Yang's (2009) investigation compared the decision-making of nurses with no experience in a critical area to those with greater than three years of experience. The results revealed that "there was no difference in the reasoning processes of expert and non-experts" (p. 184). Although the experienced nurses were more confident in their responses to the care-related scenario questions, the accuracy of their responses were equivalent to that of the noviciates. The findings from this study evidenced that "being recognised as the all-knowing, confident professional decision-maker striving towards a certain outcome ... is often unfounded." (p. 183). This outcome establishes that being experienced did not have a positive impact on the

nurses' decision-making ability. Student nurses attending their novitiate lacked clinical experience therefore their intuitive reasoning ability was yet to develop, hence was limited. It may suggest that the nursing noviciates' accuracy rating may have instead resulted from a wider knowledge base in conjunction to using the hypothetico-deductive approach. In endorsing this claim, research recommends that "to encourage better decision-making, involves education" (p. 183). Incidentally, Manias et al's (2004) investigation of graduate nurses' decision-making when administering patients' medication yielded that hypothetico-deductive reasoning was identified as the prevalent approach used. The study concluded that a fair number of decisions were flawed and consequently exposed patients to significant risk. The authors recommend that strategies to enhance learning would improve graduate nurses' ability to make sound clinical decisions. Drawing on these findings, proponents for this scientific, analytical reasoning model agree that it provides a structured approach to decision-making and is also a measurable, credible theory to use in clinical practice (Thompson et al, 2013; Johansen and O'Brien, 2016). However, Johansen and O'Brien (2016) extending the work of Banning (2008) caution, that "this analytical approach assumes that existing knowledge is present" (p. 42). The successful implementation of the model is dependent on nurses' knowledge acquisition and understanding of the subject. Therefore, by encouraging the adoption of the characteristics of the deep approach, students' knowledge acquisition may improve which in turn, may strengthen their understanding of the subject. In line with Banning's (2008) claim, this strategy may enhance their CDM ability.

2.14.2. Intuitive-humanist Model

The alternate intuitive-humanist decision-making model is centred on the combination of nurses' clinical experience as well as the knowledge acquired from the situation and how this influences the decisions that are made (Banning, 2008; Johansen and O'Brien, 2016). More specifically, it:

... is that intuitive judgement that differentiates the expert nurse from the novice nurse, with the expert no longer depending upon analytical principles

to link his/ her understanding of the situation to appropriate nursing action (Johansen and O'Brien, 2016, p. 42).

In contrast to the information processing model, expert nurses do not fragment the task into discrete parts but rather use their experience to view the task as a whole. The rational sequencing and hypothesis generation are not utilised to assess the accuracy of the decisions (Banning, 2008; Moylan, 2015). Johansen and O'Brien (2016) state that in the intuitive-humanist model, "intuition is an intrinsic part of the decision-making process" (p. 42). Rew (2000) asserts "that for nurses, intuition is a component of a complex judgement, the act of deciding what to do in a perplexing, often ambiguous and uncertain situation" (p. 95). In comparison to the conscious, logical, sequential information processing model, the intuitive-humanist model's reasoning is based on instinct which is described as a gut feeling or sixth sense (Moylan, 2015). In relation to the different definitions of intuition which include "understanding without rationale" (Benner and Tanner, 1987, p. 23) as well as "rapid perception and understanding of the situation at hand with a lack of awareness of the processes involved" (Chassy and Gobet, 2011, p. 199), a scarcity of empirical foundation is evident. The scientific base to confirm that intuition exists appears somewhat lacking. Within this model, the decision-makers understanding of the problem or task is reliant on multiple mental, non-linear processes to occur simultaneously (Morsella and Baugh, 2010). In an instantaneous act, the decision-maker analyses, synthesises and recognises similarities in the problem, which are synchronised to tasks in previous experiences. In this fluid-like nonsequential manner, decisions are made. Thus, the information processing model is reliant on the nurse's perception of the situation. Rew (2000) further claims that this model of "intuitive judgment is a decision to act on a sudden awareness of knowledge that is related to previous experience, perceived as a whole and difficult to articulate" (p. 95). Although, when using intuitive judgement, the expert nurse has the ability to make decisions without being consciously aware and has the capacity for holistic understanding without evidence based rationale, the use of this model, if advocated for or replicated by student nurses with limited experience, is concerning.

The use of this model by noviciates may also result in unsafe clinical practice (Thompson et al, 2013). This argument implicitly implies that better decisions are

made when underpinned by in-depth knowledge and evidence to support the decision. Encouraging the adoption of a learning approach that equips student nurses with comprehensive understanding of knowledge needed to fulfil their clinical roles may strengthen their decision-making ability (Thompson and Yang, 2009).

In addition to the clinical decision-making models discussed, O'Neill et al's (2005) multi-dimensional model cited in Johansen and O'Brien (2016), introduced digital analysis to CDM. Banning, (2008) asserts that the model, uses a "computerised decision support system (CDSS) that uses both the hypothetico-deduction and pattern recognition as a basis of clinical decision" (p. 191). The significance of this module's multi-dimensional facility is the exceptional capacity to analyse numerous facets of data that includes a risk assessment and an appraisal of unique elements related to the patient's situation. A hypothesis with corresponding nursing actions is then generated (Johansen and O'Brien, 2016). Although the CDSS model has the advantage of processing large quantities of intricate data efficiently, is able to calculate difficult care-related algorithms, and has the facility to speedily re-check decisions, of greater significance is its reliance on the accurate inputting of data, relevant to the situation. The inputting of the data is further dependent on the assessment of patient or situation. Should the assessment of the patient or situation be flawed, this will affect the data that the decision is based on. This argument negates the effectiveness and accuracy of this decision-making option. Furthermore, robust evidence of the benefits of the CDSS in clinical practice is limited (Thompson et al, 2013).

In view of these challenges, Tversky and Kahneman's (1981) seminal study claims that the way "a decision is framed can be affected by how the information is presented, which in turn affects choices" (p. 454). Tversky and Kahneman's decision frame refers to the "decision-maker's conception of the acts, outcomes and contingencies associated with the particular choice" (p. 452). The authors' argue that "the frame that a decision-maker adopts is controlled partly by the formulation of the problem and partly by the norms, habits, and personal characteristics of the decision-maker" (p. 454). Tversky and Kahneman's description of the decision-maker could be aligned to Dowding et al's (2012) features of the decision-maker. With respect to these positions, the decision-making process involves a projection of

the outcome of the decision as well as to decision-makers' experience and ability. The evolving and expanding role of the nurse from the 20th to the 21st century is significantly different (Canova et al, 2016). In support of this claim, Thompson and Yang (2009) agree that "... the volume of decisions faced by nurses in clinical practice is substantial and an important aspect of the perceived complexity of clinical practice" (p. 170). Canova et al (2016) and Tversky and Kahneman's perspectives illustrate how the change in the healthcare landscape has affected the complexity of the decisions which has escalated the decision-making responsibility that is now placed on the nurse. These expectations are concerning especially when graduating nurses take on their role of autonomous practitioners on completion of their nurse education. Student nurses during their novitiate are still in the process of accumulating experience and their decision frame may not be able to support decisive conclusions on "the acts, outcomes and contingencies associated with the particular choice" as endorsed by Tversky and Kahneman (p. 452). On completion of the nursing course, the norms and habits which Tversky and Kahneman argue are significant in making decisions, when related to the optimal choice of care, are still evolving and yet to be established in the newly qualified nurse. As recently qualified nurses lack the experience, mechanisms to strengthen their knowledge should be reinforced, so that their decision-making ability may be maximised. This claim supports this study's hypothesis that the adoption of the deep approach may assist students improve their clinical decision-making ability.

2.15. Decision-making analysis

Dowding et al (2012) argue that the teaching of decision-making "varies between the purpose and field of application" (p. 354). These authors' advocate that to enhance understanding, normative decision-making should be separated from descriptive decision-making theories. The normative approach includes Subjective Expected Utility theory (Dowding and Thompson, 2009). This approach stipulates that the decision-maker "should maximize their expected utility" (p. 102) rationally, when evaluating the probability of the various outcomes before making the optimal decision. It is argued that this approach involves the assessment and identification of risk in relation to the decision. Moreover, to analyse decisions, an extensive risk analysis would have to be undertaken, to allow for potential risk factors to be

identified (Dowding and Thompson, 2009). Decision trees facilitate the analysis and the predictability of a probable event and each option is allocated a statistical value (utility) (Bae, 2014). This mechanism is commonly used to assist in making clinical decisions where the decision-making process is made specific by dividing or breaking it down into smaller components (Dowding and Thompson, 2003). As such, this fragmenting allows various streams of information to be analysed individually. Although this process has proven to be effective with medically related issues (Shaban, 2005), it appears to be less accurate when probable choices are based on societal or cultural norms (Clement, 2001 cited in Shaban, 2005). This approach appears to give little consideration to the reality of most decision-making situations especially where knowledge deficits of all the available alternatives, such as in nursing, exists (Shaban, 2005). Nonetheless, in clinical practice, risk assessment tools are used extensively to make decisions, for example, assessing the probability of a patient to develop pressure sores using the Waterlow Score (Aspinal et al, 2014). As this theory is dependent on the calculation of risk when knowledge of the situation is completely known, in line with earlier arguments on the conditions of uncertainty (Hammond et al, 1967 cited in Johansen and O'Brien, 2016, p. 41), its use in clinical practice, may be limited.

In contrast, descriptive decision-making theory centres on what “individuals actually do in practice” (Dowding et al, 2012, p. 354). This approach focuses on how individuals’ decisions digress from an option deemed as a “rational, axiomatically-based choice” (p. 354). Based on this, it is argued that the descriptive decision-making approach is associated with intuition, which earlier criticisms (Section 2.13.2) do not completely uphold as a supportive framework for noviciates. In line with this, Dowding et al (2012) advocate that the purpose of teaching CDM is to “move people away from their error-prone intuitive approaches to choice and closer to the rational ideal encapsulated in the normative model” (p. 354).

Additionally, the prescriptive decision-making theory explores mechanisms of improving the decision-making by scrutinising how these decisions are made and developing schemata to improve these decisions (Thompson and Dowding, 2003b). Considering the healthcare landscape, the prescriptive decision-making approach combines the use of the normative decision analysis approach to improve CDM

(Shaban, 2005; Bae, 2014). This research study embraces the prescriptive theory of decision-making as it aims to examine this population's CDM and explore whether their CDM may be improved by introducing a research intervention aimed at enhancing their ATL.

2.16. Clinical decision-making (CDM) research findings

Although CDM has been extensively investigated, studies exploring the effect of education on nurses' CDM are unconvincing; nonetheless, the following contribute to the current understanding of this topic. Garret's (2005) interpretative phenomenological cross-sectional investigation of final year student nurses' cognition of CDM yielded a response rate of 35% however, participants focused on the impact their decision-making had on their clinical practice as opposed to the cognitive processes involved in CDM. Peer pressure and participant discomfort during the focus group interviews is acknowledged to have affected the rigour of this study. Nonetheless, participants did disclose limited understanding of the actual CDM responsibilities expected of them when qualified and agreed that more knowledge was needed to assist with this process. Campbell's (2008) retrospective grounded theory study, aimed to gain an in-depth understanding of the CDM process on baccalaureate nursing students during patient care activities. The findings indicated that students experienced personal anxiety when ineffectual decisions were made. The participants also unanimously agreed that accuracy in CDM is fundamental and correlates with the patient's outcome. Although a larger sample from a variety of nursing programmes would have been beneficial, these findings illustrate that nursing students are aware that the decisions they make need to be correct as it impacts on the appropriateness of the care administered to patients. It is argued that students' anxiety stemmed from their recognition of being under-prepared which resulted in a lack of confidence when making decisions. Bjørk and Hamilton's (2011) cross-sectional survey which explored the perceptions of four thousand six hundred and fifty nurses CDM ability, indicated that the nurses "oscillated between analytical and intuitive modes of cognition during the decision-making" (p. 16). The quasi-rational CDM approach, in line with Hammond's (1981) Cognitive Continuum framework (Section 2.11) was predominantly used. The care-related task in this research questionnaire was well-defined and presented minimal

uncertainties as opposed to actual situated clinical practice. Additionally, having unlimited timeframe to respond to the questions, which represented patient related tasks, may have further contributed to the choice of CDM approach. The investigation also yielded that the CDM scores of younger male nurses with less clinical experience, were similar to female nurses with more than ten years of clinical experience. This discrepancy questions the association between gender and clinical experience in relation to CDM. As the male nurses had limited experience, their intuitive judgement would be less developed, in comparison to that of the experienced female nurse. Consequently, this may have influenced the use of a more analytical CDM approach. The male nurses may have also completed the nursing courses more recently, in comparison to the females who were already in healthcare employment. As a result, the male nurses may have drawn on the subject knowledge that they were recently immersed in during their nurse training when making a decision. Drawing on Bjørk and Hamilton's (2011) study, the male nurses' enhanced knowledge base may have been the factor that contributed significantly to the CDM process. However, the researchers confirm that the validity of the questionnaire used was not established thereby casting doubt on the rigour of these findings. Nonetheless, in spite of this evident weakness, these findings indicate that further research exploring how nurses' knowledge acquisition impacts on their CDM, is suggested.

Furthermore, Dowding et al (2012) claims that, "critical thinking is often considered to be a prerequisite of making good judgements and decisions" (p. 350). Drawing from Lyons (2008), Dowding et al (2012) defines critical thinking skills as a "dynamic, purposeful, analytical process that results in reasoned decisions and judgements" (p. 350). Drawing from these positions, critical thinking skills embody cognitive attributes and include analysis, inference and evaluation. Scheffer and Rubenfeld (2000) identified seventeen attributes of critical thinking, "analyzing, applying the standards, confidence, contextual perspective, creativity, discriminating, flexibility, information seeking, inquisitiveness, intellectual integrity, intuition, logical reasoning, open-mindedness, perseverance, predicting, self-reflection, and transforming knowledge" (p. 357). However, Scheffer and Rubenfeld (ibid) claimed that seven of the skills are utilised when applying the critical thinking concept to nursing practice (Table 3).

Table 3: Scheffer and Rubenfeld's (2000) Critical Thinking Attributes

Characteristics of critical thinking	
Cognitive skill	Definitions
Analysing	Separating or breaking a whole into parts to discover the nature, function, and relationships
Applying standards	Judging according to established personal, professional, or social rules or criteria
Discriminating	Recognizing differences and similarities among things or situations and distinguishing carefully as to category or rank
Information seeking	Searching for evidence, facts or knowledge by identifying relevant sources and gathering objective, subjective, historical, and current data from those sources
Logical reasoning	Drawing inferences or conclusions that are supported in or justified by evidence
Predicting	Envisioning a plan and its consequences
Transforming knowledge	Changing or converting the condition nature, form, or function of concepts among contexts

(Adapted from Lumney, 2010)

Drawing from this, critical thinking is used within the nursing profession to describe high level thinking skills related to competent clinical practice (Lumney, 2010, Dowding et al, 2012). Additionally, these authors claim that by developing and enhancing the critical thinking attributes (Table 3), it would improve nurses' CDM ability and reciprocally enhance their clinical competence. On evaluation, many elements of the deep approach can be aligned with critical thinking skills, thus, students who adopt the deep approach should make better clinical decisions. Table 4 illustrates a comparison of the critical thinking cognitive skills (Scheffer and Rubenfeld, 2000) and composites of the deep approach (Entwistle et al, 2001).

Table 4: Characteristics of critical thinking and the deep approach elements

Critical thinking aligned to the deep approach	
Critical thinking cognitive skill	Deep approach composite
Analysing	Examining logic and argument cautiously and critically
Applying standards	Checking evidence and relating it to conclusions
Discriminating	Looking for patterns and underlying principles
Information seeking	Relating ideas to previous knowledge and experience
Logical reasoning	Checking evidence and relating it to conclusions
Predicting	
Transforming knowledge	Examining logic and argument cautiously and critically; being aware of understanding developing while learning

(Adapted from Scheffer and Rubenfeld (2000 - Table 3) and Entwistle et al (2001 - Table 1)

Ho et al (2013) claim that ineffective decision-making ability hinders the transition from student nurse to professional nurse. Should nursing students be encouraged to adopt the deep approach, then their critical thinking skills may develop, which may positively influence their CDM ability. Building on this argument, it is further hypothesized that this will improve their clinical competence and that their transition into professional nurse roles may, accordingly, be smoother. Additionally, pre-registration nursing students are from diverse cultural and ethnic backgrounds as well as there being an increase in the non-traditional higher education student population (Bednarz et al, 2010; Jaspal, 2015) (See Section 2.9). This variability adds a further dimension to the learning environment with these students having to face extraordinary challenges. These impediments are the antithesis of positive learning environments which results in distracting students from focussing on their studies (Veal et al, 2012, Jaspal, 2015) and may threaten students' academic success and CDM performance. For these reasons, it is hypothesised that the adoption of the deep approach may help nursing students develop their critical thinking ability, which reciprocally may have a positive impact on their decision-making in clinical practice.

2.17. Clinical judgement and decision-making

In their systematic review of the literature on clinical judgement and decision-making published since Tanner's earlier review in 2006, Cappelletti et al (2014, p. 454) organise and analyse their data under Tanner's original five conclusions:

- Clinical judgments are more influenced by what the nurse brings to the situation than the objective data about the situation at hand.
- Sound clinical judgment rests to some degree on knowing the patient and his or her typical pattern of responses, as well as engagement with the patient and his or her concerns.
- Clinical judgments are influenced by the context in which the situation occurs and the culture of the nursing unit.
- Nurses use a variety of reasoning patterns alone or in combination.
- Reflection on practice is often triggered by a breakdown in clinical judgment and is critical for the development of clinical knowledge and improvement in clinical reasoning.

Cappelletti and her colleagues, however, recommend “the addition of a sixth conclusion”, which is nothing less than: “education strategies to improve clinical judgment may influence what a nurse brings to the situation” (p. 453). Yes, of course, the nurse educator would agree, even if it is not, perhaps, the most categorical or clinical of conclusions and not without some qualification:

... there is still no consensus in nursing on the best teaching method or even whether these skills can be taught. To reduce the current gap in knowledge and to work toward resolving this debate, researchers continue to try to deepen their understanding of clinical judgment and reasoning and the factors influencing these complex processes (Cappelletti et al, 2014, p. 453).

The phrase education strategies may, indeed, be found wanting: it is altogether too broad and, as Cappelletti et al (2014) caution, too easily conflated with instructional stratagem, or “teaching method” (p. 453), and that alone. Can professional judgement and CDM be reduced to a set of competencies or skills that can be taught? Answer – no, probably not. Undoubtedly, there are some basic skills in the process that can and should be taught but such a de-complexification of the cognitive processes involved flies in the face of current research and diminishes the role of strategic education intervention in nursing theory and clinical education (Kantar and Alexander, 2012; Seidi et al, 2015). The question that we ought to ask is: how are the underlying “factors” (p. 453) behind the decision-making process to be acquired, or learned, rather than taught? If we draw an analogy with the object of this research according to Cappelletti et al (2014), which is to “deepen our understanding of clinical judgment” (p. 453), then the emphasis in nurse education falls on deepening understanding and a curriculum that promotes the adoption of approaches to learning that best facilitates that deeper understanding.

Moreover, Coffield et al (2004) confirms that, “... (m)ost of the studies reviewed ... appear to have no empirical evaluations of changes to pedagogy arising from the use of the inventory” (p. 92). Furthermore, the evident lack of empirical evidence investigating nursing students’ ATL using the ASSIST (Tait et al, 1998), the influence of students’ personal demographics and previous academic achievements on their ATL, and whether these variables are related to their CDM, remains unanswered.

Nursing students' ATLs and CDM have previously been investigated as independent variables therefore this methodology of correlating, intervening and comparing the ATLs and CDM of these groups of students remains unknown. Furthermore, Thompson and Stapley's (2011) robust "systematic review of educational interventions to improve clinical decision-making and judgement in nurses found only limited evidence that existing strategies might be effective" (p. 1723). Thompson et al (2011) confirm that of the twenty-four studies reviewed, only seven yielded positive effects. Additionally, only two studies (Newsome and Tillman, 1990; Müller-Staub et al, 2008) examined decision-making and only the Newsome and Tillman's (1990) research focussed on undergraduate nursing students. These researchers also concluded that, "all the included studies were of poor quality" (Thompson et al, 2011, p. 1723). Thus, it is anticipated that this technique, in this context will reveal original insights and knowledge, which will advance understanding of this phenomenon. The gap in the current knowledge, evidencing the BSc (Hons) and PgDip student nurses' perceptions and comparisons of their CDM and the factors that may influence this core determinant of professional competence, has driven this research.

Drawing from the literature presented in this chapter, it was evident that a correlation of nursing students' approaches to learning, coupled with their clinical decision-making, has not been explicitly investigated before. Such an investigation would make an original contribution to knowledge. Consequently, the research question, hypotheses, aim and objectives were formulated to frame the study.

2.18. Research question

Do nursing students' approaches to learning impact on their clinical decision making?

To explore the research question, the following two research hypotheses were proposed:

2.19. Research hypotheses

1. There is a correlation between pre-registration Adult Nursing students' clinical decision-making ability and their approaches to learning.

2. Pre-registration adult nursing students' clinical decision-making skills can be improved by altering their predominant approach to learning from the surface and strategic approaches to the deep approach.

2.20. Research aim

To ascertain via a mixed method project, whether pre-registration adult nursing students' clinical decision-making can be improved through a study-specific educational research intervention that aimed to alter their approach to learning from learners who adopt the surface and strategic approaches to learners who adopt the deep approach to learning.

The research question and hypotheses led to the following objectives.

2.21. Research objectives

1. To identify the approaches to learning of final year pre-registration Adult Nursing students enrolled on:

- the Bachelor of Sciences (BSc (Hons) pathway and
- the Postgraduate Diploma (PgDip) pathway.

2. To assess the clinical decision-making ability of pre-registration Adult Nursing students on:

- the Bachelor of Sciences (BSc (Hons) pathway
- the Postgraduate Diploma (PgDip) pathway as measured by:
 1. a clinical decision-making nursing scale
 2. their own self-reported perceptions.

3. To identify whether there are correlations as well as to explore the differences between:

1. the personal demographics,
 2. the approach to learning and
 3. the clinical decision-making ability
- of pre-registration Adult Nursing students enrolled on :

- the Bachelor of Sciences (BSc (Hons) pathway and
- the Postgraduate Diploma (PgDip) pathway.

4. To determine whether an educational research intervention specifically designed for this project will encourage learners who adopt the surface and strategic approaches, to adopt the deep approach and affect the clinical decision-making ability of final year pre-registration adult nursing students enrolled on:

- the Bachelor of Sciences (BSc (Hons) and
- the Postgraduate Diploma (PgDip) pathway.

2.22. Chapter summary

This literature review has discussed students' learning specific to the higher education context, beginning with the Cognitive Informing Processing Theory and progressed to the Approaches to Learning Theory. The deep, strategic and surface approaches and studies relating to these approaches are evaluated. Criticisms of the approaches to learning in line with the barriers to students' learning in higher education that may obstruct the embracing of the deep approach, are also presented. Nursing students' learning is reviewed parallel to their clinical decision-making. Decision-making models relative to studies exploring critical thinking and clinical judgement are critiqued. From the in-depth engagement with the plethora of literature, it remained unknown whether the approach to learning that nursing students adopt influences their clinical decision-making ability, nor was a relationship between nursing students' approaches to learning and their CDM identified. This gap in the literature confirmed the research question (Chapter 2, Section 2.18) and guided the methodology, discussed in Chapter 3.

Chapter 3: Methodology

3.1. Introduction

The purpose of this research study is to add to the body of knowledge relating to the approaches to learning (ATL) of student nurses, in relation to their clinical decision-making (CDM) ability. This chapter discusses the procedures and methods used to conduct and analysis the data. The chapter begins with the research question followed by the epistemological stance, the methodological approach and research methods. Strauss and Corbin (1998) definite and compare the methodology as “a way of thinking about and studying social reality” (p. 3), as opposed to the method, which is “a set of procedures and techniques for gathering and analysing data” (p. 3). Therefore, the instruments used to collect data as well as the analysis of the quantitative and qualitative data are explained. Precautions taken to protect the rights of human subjects are also presented.

3.2. Pragmatic epistemology

Methodologically, the guiding paradigm for this research is the pragmatic approach. Whilst it is conceded that the pragmatic approach can be, and is used as a justification for a hybrid of quantitative and qualitative methods (Johnson and Onwuegbuzie, 2004) in pursuit of what works and this study is to an extent, substantively that. In this research it principally accounts for a more general belief system about the nature and purpose of research in the social sciences and the way in which, more specifically, the products of such research are purposively deployed to decide whether certain courses of action are, in practice, actionable (Morgan, 2007). My research is an interventionist study and concerns itself not with the abstract, or the metaphysical, or the philosophy of knowledge but with action and the application of knowledge in real-life contexts. Pragmatism, as Goldkuhl (2012) says, “... is concerned with action and change and the interplay between knowledge and action” (p. 136), which makes the pragmatic approach an appropriate “basis for research approaches intervening into the world and not merely observing the world”

(p. 136). Such is the orientation of the present enquiry, and the pragmatic approach underpins the way in which the research programme has been designed and structured. Goldkuhl (2012) continues:

Methodological pragmatism is concerned with how knowledge is created. Pragmatism emphasises the active role of the researcher in creating data and theories. Experimentation in the world is pivotal. The researcher is participating in practice in order to explore - through own actions or close observations of others' actions - the effects and success of different tactics (p. 145).

In brief, this research pursues similar, if not the same, goals: firstly, an exploration of how knowledge is created through a comparative study of learners' approaches to learning; secondly, implementation of a quasi-experimental educational research intervention to ascertain its success in the generation of powerful knowledge; and thirdly, the evaluation of its potential to improve the operationalisation of that powerful professional knowledge in the practice of clinical decision-making.

The pragmatic researcher recognises that researching at the interface of the natural sciences and the human sciences aims to reconcile the differences between statistically or data-driven on the one hand and ideationally or thematically-derived enquiry on the other. There are dimensions, or facets, of the mental adaptation to deep approaches to learning and of the cognitive processes involved in decision-making in the context of nursing praxis that defy the natural gravitation of the empiricist working primarily in the physical sciences towards an exclusively deductive-objective-generalizing approach (Morgan, 2007). This is where the pragmatist grasps the nettle, so to speak, namely, the issue of commensurability, and recognises the compatibility and complementarity of inductive-subjective-contextual approaches in the research process (Morgan, 2007), especially where impact evaluation may be concerned. However, the idea that commensurability must be taken at face-value and that "proportionate" and "coextensive" (Oxford, 2010) should be the overriding guiding principles in the mix of methods within the research design is not consistent, as I see it, with a pragmatist approach. Where the relative contribution of quantitative and qualitative methods is concerned, commensurate and

complementary, do not necessarily mean always in equal proportions: the weighting must be determined by what best works towards the actualisation of the aim and purpose of the research. Pragmatically, I stand by Symonds and Gorard's (2008) argument:

Drawing on Hammersley's perspective, we would argue that researchers should focus more on designing studies that best suit their research topic, no matter what types of methods are used, rather than making the assumption that triangulating qualitative and quantitative data as currently defined will necessarily be most effective (p. 15).

Triangulating qualitative and quantitative data in equal measure was not my primary goal. Whilst the value of capturing the impact of the research intervention on the participants is acknowledged in the qualitative phase of this research, I acknowledge that the extent to which it assumes importance in the research design in achieving the objectives of the research is to a lesser degree and is dependent on the approach in this inquiry. Working in the applied field of nursing professional practice and clinical decision-making as well as testing a research intervention for its efficacy, the substantive element of this research is firmly located in the area of applied research. Applied research employs predominantly empirical methods and statistical data. The relaxation of strict empirical methodological protocols is a matter of pragmatic consideration and the qualitative data is admitted as a relatively small, though credible source of useful supplementary data.

Epistemologically, this research paradigm is founded on pragmatism. The essence of the research question and the core of the hypothesis directed the focus of understanding the problem that this study intends to investigate. Therefore, I felt it was essential to understand the research question and accompanying objectives before the philosophical and the methodological implications were considered. In line with Onwuegbuzie and Leech (2005), the "research question should drive the method/s used" (p. 377). Kuhn (1962) cited in Feilzer (2010) asserts that a paradigm is an "accepted model or pattern" (p. 23), that directs the research. When reviewing significant research paradigms, the positivist notion of a single reality with the truth being the only and absolute truth that is expected and is confirmed by objective

investigation, underpins the quantitative research method. In contrast, the subjective enquiry rejects the single objective reality and based on this rationale; constructivists support qualitative research methods (Creswell and Plano Clark, 2011). However, between the measurable, objective, positivism, quantitative position to the subjective, constructivist/interpretivism, qualitative approach; it is agreed that the research paradigm directs the recommended research methods (Albright et al, 2013). It is also worth acknowledging that the paradigmatic stipulation to follow a specific research method may in fact restrain a researcher's scholarly curiosity. This may inadvertently result in obscuring key components of the phenomena from being explored. It was also considered that although the research question and the chosen methodology may reflect a researcher's epistemological stance; should the method be mono-focused, for instance, follow either the quantitative or alternatively the qualitative framework without any consideration of the co-existence of both paradigms in a single study, then besides, this imposing a constraint on a researcher, it may prevent the emancipatory impact of research and unconsciously reject significant findings from emerging (Johnson and Onwuegbuzie, 2004). Researchers (Guba and Lincoln, 1994) advocate that the quantitative and qualitative research paradigms and methodologies should remain separate entities and not be integrated, as mixing the methodologies would antagonise the methods and research findings. Nonetheless, despite the emergence of Howe's (1988) Incompatibility Thesis, where incompatibilists assert that the combining of methods is epistemologically incoherent; the expanding literature defending the mixing of the quantitative/qualitative paradigms, reassures that the benefits of its use outweighs the limitations.

Pragmatism on the other hand, offers a contrasting paradigm by circumventing the concern for truth and reality, thereby recognising that singular as well as numerous realities can mutually be open to empirical exploration (Creswell and Plano Clark, 2011). Thus, pragmatism aims to solve practical issues in the 'real world' (p. 20). A fundamental component of pragmatism is the process of 'knowing' or 'determining' the current situation and through intervention, allows for the restructure of a new, revised reality (Denscombe, 2008). Although in the past two decades, extensive discussion in social science research, epistemology has centred on the pragmatic approach, pragmatism as a philosophy has existed for 150 years with three

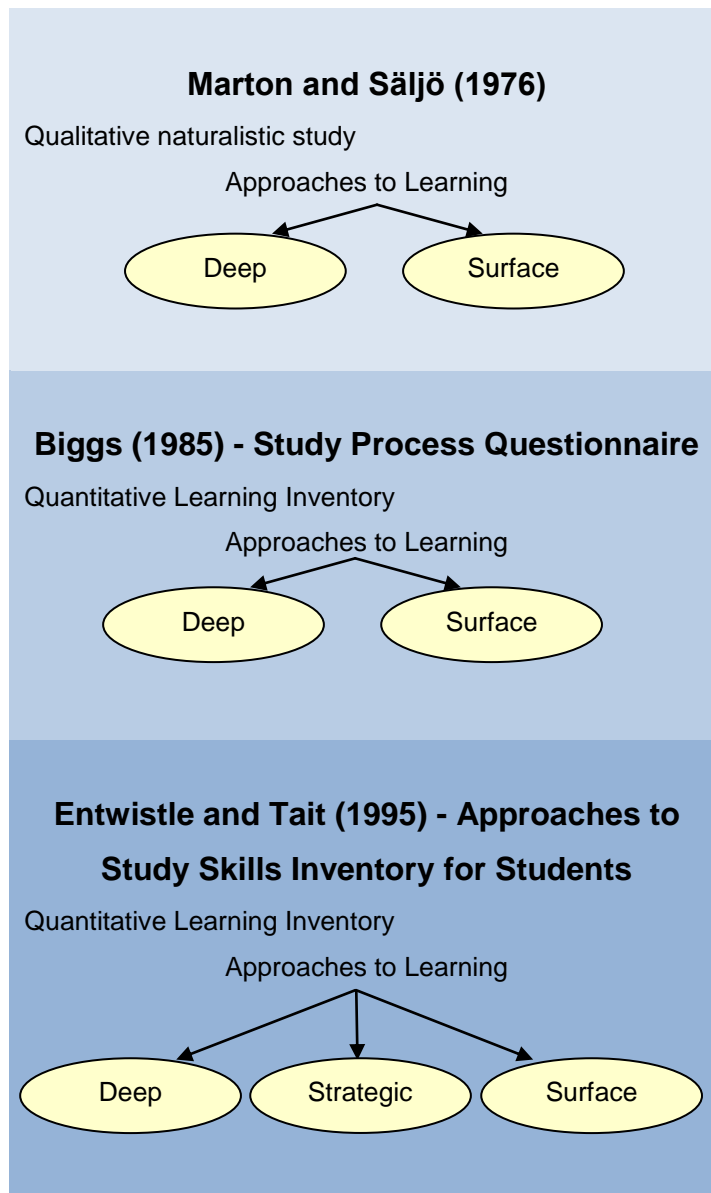
influential philosophers of the 20th century, William James, John Dewey and Richard Rorty, all acknowledged Pragmatists. Based on this acceptance, the underpinning approaches to learning philosophy of this research integral to a pragmatic approach, is to gain an understanding of the learning behaviours adopted by nursing students and find possible solutions to the obstacles that impede the transition of the knowledge taught when making clinical decisions. Pragmatism as viewed through Dewey's perspective is an action-oriented philosophy of science that examines the association between theory and practice without identifying a dualism between the two concepts (Peters, 2007). Although they appear as two separate entities, they are instead noted to be closely related as opposed to being disassociated (Peters, 2007, p. 356). In line with Dewey's viewpoint, this study explores the mechanism by which nursing students approach their learning, in addition to correlating these findings with how these students perceive their decision-making in the clinical patient-care environment. The unique aspect of this research examines the relationship between the students' engagement with the theoretical components and the demonstration of this transmission into the real world of clinical practice.

3.3. Overview of the research design

In line with the pragmatist framework, a mixed methods research design was used, being the most suitable approach to know the pre-registration Adult Nursing students' perceptions of their clinical decision-making in relation to their individual Approach to Learning. It was decided that this design would produce converging evidence resulting in a more compelling outcome than would have been produced by a single research method. The investigation of the relationship between the population's ATL and CDM variables incorporated a correlational model (Gall et al, 2007). This research design does not determine causality between variables but instead identifies the strength, extent and direction of a relationship should one exist between the variables being investigated (Polit and Beck, 2014). Moreover, this method facilitated the exploration of the impact of the specifically designed educational research intervention on the participants' ATL and CDM. Incidentally, research on students' learning originally commenced with a qualitative methodology, using interviews and later progressed to employing quantitative methods. Thereafter, the construction of inventories measuring the predominant ATL that a student

adopted emerged and gained popularity amongst researchers. The progression from qualitative research methodology to widely used key learning inventories is summarised in Figure 2.

Figure 2: Progression of approaches to learning inventories



As the corroboration of both qualitative and quantitative methodologies in a single longitudinal study focusing on pre-registration Adult Nursing students' ATL and CDM has not been investigated previously, this study may grant novel insights into this population's learning and CDM ability as well as the potential relevance to patient care and nurse education policy. Furthermore, these findings will contribute to the

body of knowledge for nurse education, in addition to achieving the doctoral thesis requirement of generating new knowledge.

Mixed-method studies are a combination of the qualitative and quantitative approaches in a research methodology of a single or multiphase study (Johnson and Onwuegbuzie, 2004) with the objective of preserving the strengths and reducing the weaknesses in both approaches (Bergman, 2009 cited by Creswell and Plano Clark, 2011). However, mixed methods research may also embrace more than the traditional qualitative/ quantitative dichotomy as numerous permutations or mixing can occur in the single study (Yin, 2006). In this education study, “the combination of experimentation and surveys – both being quantitative methods ... is an example of mixed methods research” (Yin, 2006, p. 42). Drawing from Yin (2006), assessing the effect of the quasi-experimental educational research intervention by quantifiably measuring its impact by re-surveying the sample, forms one combination of the mixed methods research design. In the real world setting, the phenomenon may be better understood when aligned to the participants’ qualitative views of the variables being explored. Similarly, on its own, the participants’ qualitative data may have provided limited understanding of the students’ learning behaviours and CDM ability as well as the cogency of the study invention without the substantial breadth of the quantitative data. A further justification for this intended triangulation of both quantitative and qualitative data as opposed to a mono-methodology is to increase the possibility of achieving findings that are trustworthy as participants may have reflected and re-considered their responses after completing the questionnaires (Creswell and Plano Clark, 2011). The qualitative, semi-structured interviews provided an opportunity for participants to clarify their actual perspectives on the variables being investigated. In this thesis, this is reflected in terms of Greene et al’s (1989) description of mixed methodology as complementarity, where, “different methods are used to assess different study components or phenomena, or to assess the plausibility of identified threats to validity, or to enhance the interpretability of assessments of a single phenomenon” (p. 257). Additionally, the participants application of their CDM ability and experiences in the real world of clinical practice would have been missed, had the qualitative element been omitted. May (1993) agrees that semi-structured interviews suit research where the participants’

perception and personal experiences will grant further insight into the variables under scrutiny, as with this research.

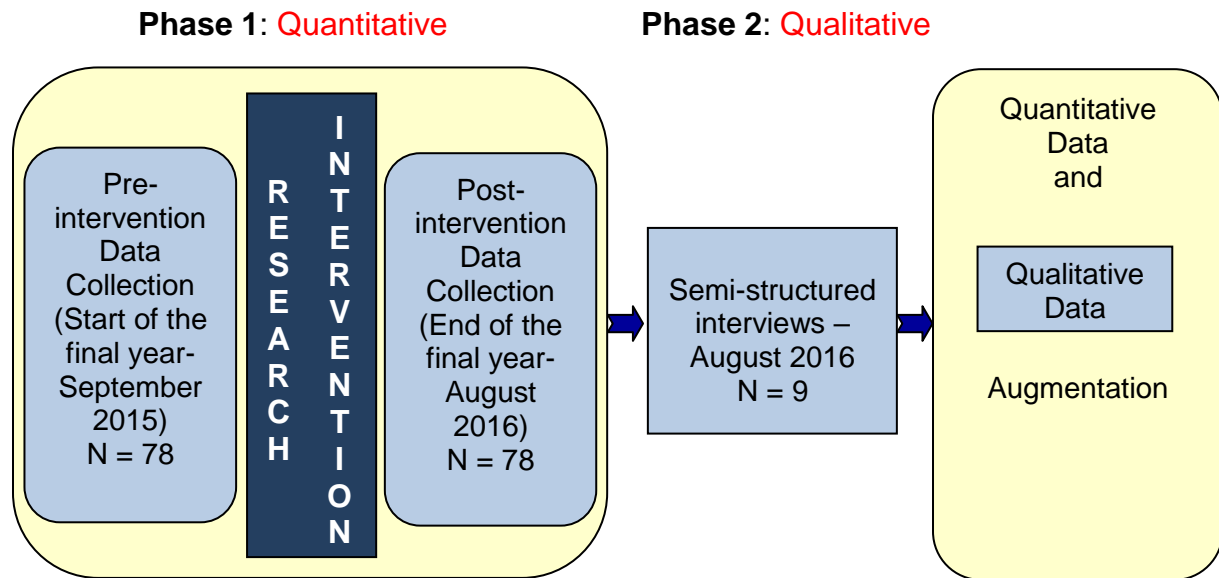
Admittedly, mixed method research design was initially viewed as a limitation which I was hesitant to embark on as the expectation of being knowledgeable with both methods, appeared challenging. I was concerned that this would also result in lengthening the research time-frame and delay the study's progression. The original perception of the mixed methods design being a barrier has now developed into an appreciation for the multimodal undertaking. I now realise that this decision has granted me personal exposure and has provided an opportunity to train in qualitative methodology. Furthermore, as most social science researchers are essentially trained or prefer, either qualitative or quantitative research methods, this combination of methods encourages researchers to penetrate the compartmentalisation of methodological expertise by facilitating collaboration with other researchers. This opportunity has emphasised an appreciation for the substantial differences in the methods' strengths (Creswell et al, 2004).

The underlying logic of mixing is that neither quantitative nor qualitative methods are sufficient in themselves to capture the trends and detail of the situation. When used in combination, both quantitative and qualitative data yield a more complete analysis, and they complement each other (pp. 7-12).

This longitudinal study therefore aligns with Creswell's (2007) claim that, "mixed methods research is a research design in which the researcher collects, analyses and mixes (integrates or connects) both quantitative and qualitative data in a single study or a multiphase program of inquiry" (p. 119). From the numerous mixed methods design typologies (Greene et al, 1989), this research is framed on Wisdom and Creswell's (2013) "... sequential embedded" design (p. 3), comprising two consecutive phases with the quantitative data collection followed by the collection of qualitative data. Aligned to Wisdom and Creswell (2013), the "qualitative data collection phase was incorporated after the implementation of the research intervention and Post-Intervention data analysis to help explain the results. In this way, the qualitative data augments the quantitative outcomes" (p. 3) (Figure 3). Quantitative research is a formal, objective, systematic process in which numerical

data are used to obtain information about the world. In this study, the quantitative phase was used to describe the participants' demography as well as identify each participant's learning approach and their CDM ability. This method included the correlation between participants' ATL and their CDM, as well as determining whether a relationship existed between the participatory groups ATL and CDM.

Figure 3: Mixed methods schematic representation



³

Furthermore, this research method permitted an exploration of whether a relationship existed amongst the participants' demographic variables, their individual ATLs and CDM. Additionally, the purposive administration of the research intervention to learners who indicated a preference for the surface and strategic approaches following the initial data collection, divided the quantitative data collection points. The Post-intervention analysis provided insight into the effectiveness of, alternatively the inadequacy of the content and/or implementation of the research invention on final year adult nursing students.

Qualitative researchers, on the other hand, study subjects in their natural settings, trying to make sense of, or explain, phenomena in terms of the meaning people bring to them (Denzin and Lincoln, 2000). Cooper and White (2012) state that “qualitative researchers are interested in understanding what those interpretations are at a

³ The research intervention took place in January 2016. *n* = 62 attended.

particular point in time and in a particular context” (p. 7). It involves an interpretive, naturalistic perspective, which in essence, informs on how individuals’ experience and interact with their social world by their answers to the research question (Thomas, 2006). In this study, participants’ responses during the semi-structured interview questions granted further understanding on the participants’ experiences when engaging with their learning as well as explored their ability to transfer the taught knowledge when making decisions in clinical practice.

Moreover, the qualitative information provided further insights into the dynamics of the individual’s perception of the phenomena, that is, how the participants approach their learning and whether the learning approach correlates to and/ or has an impact on their CDM. More specifically, the mixed methodology captured nuanced data that was not specific within the quantitative component (Entwistle and Peterson, 2004). It is anticipated that insights which emerge from this mixed methods study may encourage students to engage with an approach to learning (ATL) that best supports their transmission of the theoretical knowledge when making decisions in the clinical practice. Additionally, findings may contribute to the teaching-learning process by advising teachers to accommodate students’ use of different approaches to learning, enhance individualised interaction between the teacher and the student, strengthen the course feedback provision as well as assist teachers when addressing students’ learning concerns. Therefore, the combination of the strengths of the two types of data would grant a deeper understanding of how the learning approaches adopted by pre-registration adult nursing students’ impacts on their CDM ability with the aim of improving the care rendered to patients by this population. Additionally, the longitudinal design that facilitated the participants’ learning behaviours to be captured as they progressed through the final year of the nursing course, enriched by the mixed methodology, contributed to the understanding of the ATL theoretical phenomena being researched.

The next section discusses the methods of data collection in relation to the:

- description of the instruments used
- Justification for its use
- Sampling technique
- Validity

- Reliability
- Credibility and
- Analysis

3.4. Methods

3.4.1. Instruments used

Prior to submitting the ethical application to the University's Research Ethics Committee (UREC) to request approval to undertake this study, permission to use the ASSIST (Tait et al, 1998) (Appendix 4) and Clinical Decision Making Nursing Scale (CDMNS) (Jenkins, 1985) (Appendix 5) were established. A scrutiny of the BSc (Hons) and PgDip courses' module guides and recommended reading lists, followed by consultation with my peers and supervisory team, it was recognised that minor terminology on the CDMNS required updating, in order that the questionnaire is aligned with contemporary phraseology that the participants were familiar with. For example: professional literature was changed to journal articles and clinical instructor was changed to mentor in practice. These changes were then subjected to the scrutiny of my peers and supervisors and on their unanimous approval, were the changes made to the CDMNS. These amendments were further approved by UREC (Appendix 2).

Thereafter on their entry to the final year of the programme, all participants were requested to complete the package of Phase 1: Pre-Intervention questionnaires on each of the concepts being investigated:

1. Approaches to learning (ASSIST) (Tait et al, 1998) (Appendix 7),
2. Clinical Decision-Making Nursing Scale (CDMNS) (Jenkins, 1985) (Appendix 8) and
3. Demographic questionnaire (researcher constructed) (Appendix 6).

Approaches and Study Skills Inventory for Students (ASSIST)

The self-reporting Approaches and Study Skills Inventory for Students (ASSIST) developed at the Centre for Research on Learning and Instruction, University of Edinburgh (Tait et al, 1998), was used to quantify, categorise and measure the participants' ATL. The ASSIST is founded on a deep and surface approach to learning dichotomy combined with Entwistle and Ramsden's (1983) strategic approach to learning. The purpose of ASSIST (Tait et al, 1998) is;

... to meet the needs of teaching staff who want to use it to try to identify students who are experiencing difficulty with their studies, or who want to investigate the ways which their teaching is influencing their students' learning ... (p. 269).

To achieve this, the inventory measures three constructs:

1. Conception of learning;
2. Approaches to studying and
3. Preferences to different types of courses and teaching.

In this study, only the Approaches to studying component was used. Notably, the ASSIST tool has evolved through successive versions (Entwistle et al, 1985; Tait et al, 1998; Entwistle et al, 2000), however the version used in this study can be found in Tait et al, (1998). The ASSIST eliminated the subjective element of the questions asked as well as my theoretical stance and interpretation of the findings (Creswell and Plano Clark, 2011). The fifty-two (52) multiple choice items are grouped into thirteen (13) subscales. The subscales focus on the three ATLs under different orientations to studying, namely:

1. meaning orientations (centres on the deep approach),
2. achieving orientation (centres on the strategic approach) and
3. reproduction orientation (centres on the surface approach) (Table 5).

Table 5: ASSIST scales with itemised subscales

Approaches to Study Skills Inventory for Students (ASSIST)	
Scale	Subscale
Deep approach	Relating Ideas Use of evidence Interest in ideas Seeking meaning
Strategic approach	Time management Alert to assessments Achieving Monitoring effectiveness Organised studying
Surface approach	Unrelated memorising Syllabus-boundness Fear of failure Lack of purpose

(Tait et al, 1998)

Pallant (2013) states that the extent of an “instrument’s reliability is reflected in a Cronbach’s alpha (α) value of equal to or above 0.7 as a minimum measurement” (p. 101). The reliability of the ASSIST was evaluated in a study of eight hundred and seventeen students from ten universities in the UK (Coffield et al, 2004). The reliability coefficients for the three ATLs: deep approach ($\alpha = 0.84$), strategic approach ($\alpha = 0.80$) and the surface approach ($\alpha = 0.87$) were yielded. More recently and congruent to this study design, Brown et al (2016) used only the Approaches to studying component of the ASSIST and reported good internal consistency scores with Cronbach’s alpha coefficients of ($\alpha = 0.83$) for the deep approach, $\alpha = 0.89$ for the strategic approach and $\alpha = 0.76$ for the surface approach. These findings thereby testify to the reliability of the ASSIST.

Clinical Decision-making Nursing Scale (CDMNS)

The CDMNS was created by Jenkins (1983) to “examine decision-making as an element of the curricular process by developing a self-report measure to assess how students perceived themselves making clinical decisions” (Jenkins, 1985, p. 33). The self reporting instrument comprises 40 items which is rated on a 5 point Likert scale. The CDMNS requests students rate their decision-making behaviour used when caring for patients. Responses range from 1 (Never) to 5 (Always) with potential total score value ranging from 40 (indicating a low CDM ability) to 200 (refers to high CDM ability) (Jenkins, 2001). The scale’s 40 items are further divided into 4 subscales with 10 items in each subscale which relate to different CDM behaviours (Table 6). Each subscale has a maximum of 50 and the higher the overall CDM score value, the more positive the perception of one’s clinical decision-making ability (Jenkins, 2001).

Table 6: Clinical Decision-making Nursing Scale (CDMNS) Subscales

Clinical Decision-making Nursing Scale	
Subscale A	Search for Alternatives
Subscale B	Canvassing of Objectives and Values
Subscale C	Evaluation and Re-evaluation of Consequences ⁴
Subscale D	Search for Information and Unbiased Assimilation of New Information ⁵

(Jenkins, 1985)

Subscale A – ‘Search for Alternatives’: The decision-makers actions in this phase of the process focuses on the context of the situation and autonomous practice.

This reflected in Items 1 and 30:

1. If the decision is vital and there is time, I conduct a thorough search for alternatives.
30. I do not ask peers to suggest options for my clinical decisions.

⁴ Subscale C will be written as ‘Evaluation of Consequences’ in this thesis

⁵ Subscale D will be written as ‘Search for Information’ in this thesis

Subscale B – ‘Canvassing of Objectives and Values’ centres on the decision-maker’s professional values and attitudes regarding diversity as indicated in Items 9 and 40.

9. I assist clients in exercising their rights to make decisions about their own care.

40. The client’s values have to be consistent with my own in order for me to make a good decision.

Subscale C - ‘Evaluation of Consequences’ focuses on the decision-maker reviewing and reconsidering their action. Assessing and deliberating over possible outcomes are reflected in Items 13 and 26.

13. I don’t always take time to examine all the possible consequences of a decision I must make.

26. When examining consequences of options I must choose, I am aware of the positive outcomes for my client.

Subscale D - ‘Search for Information’ questions the decision-makers perspective on using evidence-based practice as supported by Items 4 and 11.

4. Looking for new information in making a decision is more trouble than it is worth.

11. I listen to or consider expert advice of judgement, even though it may not be the choice I would make.

Jenkins (1983) based the conceptual paradigm for the CDMNS on Janis and Mann’s (1977) Conflict Model of Decision-Making framework. Content validity of the CDMNS was established through several methods. These included an intensive literature review, scrutiny by panel of five expert nurses and finally the pilot testing with thirty senior nursing students (Jenkins, 1983; 1988). This resulted in the initial forty-four itemed instrument being revised to the current forty-itemed tool as four items that yielded low item-to-total co-efficient were discarded. Therefore after numerous evolutions and adjustments, the internal consistency reliability of the CDMNS was established with a sample of one hundred and eleven nursing students and yielded a

Cronbach's alpha coefficient of 0.83 (Jenkins, 1985, p. 225). This certifies to the CDMNS' reliability and as a result, has been used in over ninety research studies (Giroto, 2000, Canova et al, 2016), in addition to being highly acclaimed as an optimum instrument in assessing student nurses' clinical decision-making (Waltz and Jenkins, 2001).

Personal demographic questionnaire

Participants also completed a personal demographic questionnaire (Appendix 6) which requested information about the participant's age, gender, the nursing programme pathway and campus that the participant attended. The participant's healthcare experience and highest academic qualification prior to commencing the nursing course were also requested. The survey questions were based on its possible influence on the independent ATL and dependant CDM variables. Suggestions from supervisors and academic colleagues prompted minor revision to the wording and organisation of questionnaire.

3.4.2. Educational research intervention

All learners who indicated a preference for the surface and strategic approaches following the Phase 1 – Pre-Intervention data analysis were invited to participate in the research intervention workshops (Appendices 13 and 14). Learners, who identified the deep approach as their preferred approach to learning, were not invited to participate. The workshops were scheduled on both the University's London based and the suburban campuses and participants were invited to attend workshops on the campus of their choice.

The research intervention centred on enhancing students problem-solving and critical thinking skills and engagement with their learning (Table 7). Hattie et al (1996) state that educational interventions are classified as cognitive, metacognitive or affective stratagems. Cognitive interventions focus on developing or enhancing task-related skills, such as note taking, and summarising. In comparison, the metacognitive interventions involve strategies on planning, implementing, learning about one's personal studying effort and understanding the effect of one's learning behaviour. In contrast to both cognitive and metacognitive strategies, the affective

interventions are founded on such non-cognitive learning attributes which included motivating and encouraging students (Hattie et al, 1996). In this study, the research intervention included the cognitive, metacognitive and affective foci. The research intervention workshop topics comprised literature searching and critiquing research, critical thinking and problem-solving skills, examination preparation strategies and discussions on enhancing engagement with their learning. A group of experienced academics from the University's Adult Nursing Department reviewed and found the research intervention workshop programme to be comprehensive and academically sound. Minor recommendations regarding the length of the time-tabled sessions and timing of the workshops in alignment with the cohorts' course plan were considered and amended accordingly. The research intervention workshop programme and learning materials were approved by UREC prior to implementation (Table 7).

Table 7. Research Intervention Indicative Timetable

Research Intervention Workshop- Day 1: Indicative Plan/ Timetable		
Timing	Subject / Heading	Activity / Content
0.00 – 0.15	Introduction	<ul style="list-style-type: none"> • Ideally the room will be organised so that students are working on tables in small groups • Inform on safety procedure [fire alarms], location of toilets. • Aims and objectives of workshop
0.15 – 0.30	Icebreaker	<ul style="list-style-type: none"> • To be planned • Allow students to open discussion about themselves with each other.
0.30- 1.15	Note-taking and note-making	<ul style="list-style-type: none"> • Why write notes?’ • ‘Reusing notes’ • Techniques for note-making and note-taking Include: <ul style="list-style-type: none"> • Linear • Patterned, mind-mapping • Cornell or 3-column note-taking • Provide an article for students to practice at taking notes from, using one of the techniques shown
1.15-1.30	Break	
1.30-2.30	Increasing ‘ <i>engagement</i> ’ with your learning	<ul style="list-style-type: none"> • Small group discussion • Reflective exercises • Feedback
2.30-3.15	Lunch Break	
3.15- 4.15	Essay Writing	<ul style="list-style-type: none"> • Planning • Punctuation • Referencing • Plagiarism
4.15-4.45	Break	

4.15-4.45		Break
4.45- 5.40	Exam Preparation	<ul style="list-style-type: none"> To discuss memory and ways of using it in revision To develop strategies for time management during revision To look at common revision pitfalls and how to overcome them How to plan to succeed Planning a revision timetable How to 'mind map' During the Exam - running out of time/ Pacing yourself
5.40- 5.50	<ul style="list-style-type: none"> Evaluation 	
5.50- 6.00	<ul style="list-style-type: none"> Closing statements/Workshop ends 	

Supporting materials:

<ul style="list-style-type: none"> Lecture notes template White board markers Flip chart paper Post it notes AV media 	<ul style="list-style-type: none"> Pens/ writing paper/ Abbreviations for speed writing Note taking template for books / journals Cornell note taking examples 1 and 2 Snacks/ drinks/ sandwiches/ fruit
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Handouts to be developed:

<ul style="list-style-type: none"> Note-taking in lectures Connell note-taking Process handout and worksheet Verbal reasoning exercises Non-verbal reasoning puzzles 	<ul style="list-style-type: none"> Abbreviations to assist with note-taking Plagiarism self assessment Referencing quiz Exam timetable handout Evaluation form
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Research Intervention Workshop- Day 2: Indicative Plan/ Timetable

Timing	Subject / Heading	Activity / Content
0.00 – 0.15	Introduction	<ul style="list-style-type: none"> • Ideally the room will be organised so that students are working on tables in small groups • Inform on safety procedure [fire alarms], location of toilets. • Aims and objectives of workshop
0.15 – 0.30	Ice-breaker	Allow participants to re-engage with each other.
0.30- 1.30	Descriptive writing	<ul style="list-style-type: none"> • What is 'descriptive writing' • Descriptive writing approaches • Scenario and writing exercise
1.30-1.45	Break	
1.45-2.45	Critical thinking and critical writing connection	<ul style="list-style-type: none"> • What is 'critical thinking?' • Critical thinking and critical writing • Critical approaches when writing • Scenario and writing exercises • Differences between critical writing and descriptive writing • Think 'visually' – Rebus puzzle • Open discussion/ feedback/ answer questions
2.45-3.45	Lunch Break	
3.45- 4.45	Strategies for 'Being critical'	<ul style="list-style-type: none"> • Template for critical thinking (Cottrell, 2013) • Developing your academic voice • Lines of arguments • Use of quotations to support writing • Strategic use of paragraphs • Scenario and writing exercise • Anagram worksheet • Open discussion/ feedback/ answer questions

4.45-5.00		Break
5.00- 5.40	Aim to understand learning	<ul style="list-style-type: none"> • Discuss in-depth reading • Reading around topic • Correlation with previous learning • Test understanding of learnt content- diagrams/ flow charts of ideas • Discuss your argument , scrutinize for different perspectives • Open discussion/ feedback/ answer questions
5.40- 5.50	Evaluation and presentation of certificate of attendance	
5.50- 6.00	Closing statements/Workshop ends	

Supporting materials:

- | | |
|--|--|
| <ul style="list-style-type: none"> - Lecture notes template - White board markers - Flip chart paper - Post it notes | <ul style="list-style-type: none"> - AV media - Pens/ writing paper/ - (Snacks/ drinks/ sandwiches/ fruit) - Certificate of Attendance |
|--|--|

Handouts to be developed:

- | | |
|--|--|
| <ul style="list-style-type: none"> - Critical Thinking scenarios and exercises - Anagram worksheet | <ul style="list-style-type: none"> - Descriptive writing scenarios and exercises - Rebus puzzle- creative thinking exercise - Evaluation form |
|--|--|

The Post-Intervention data collection meetings were scheduled on both the University's campus sites, following the completion of the last clinical placement on the final year of the course. Participants were informed of the Post-Intervention data collection meetings by email (Appendix 17) as well a letter was posted to their personal home or postal addresses (Appendix 16), retrieved from the University's database. The questionnaire package comprised the ASSIST (Tait et al, 1998) and CDMNS (Jenkins, 1985) questionnaires which was re-administered to all participants present at the Post-Intervention data collection sessions.

3.5. Sampling

The target population consisted of all pre-registration nursing students on the final year of their nursing course between June 2014 and September 2015. This study was undertaken at a London based university with both an inner city campus as well as a suburban campus in an outer London borough. Potential participants were initially notified of the study by the online notice (Appendix 9) and attached Participant Information Sheet (Appendix 10) which was posted onto the University's virtual learning portal (VLE). This notice informed students of the dates, times and venues of the scheduled recruitment meetings on each campus site. The convenience sample consisted of nursing students from two different Adult Nursing programmes which included a 3-year Bachelor of Sciences (Honours) (BSc (Hons) programme and a 2-year Postgraduate Diploma (PgDip) programme. This timeframe captured cohorts: September 2012 ($n = 136$) and PgDip September 2013 ($n = 16$). Due to the constantly changing status of student numbers enrolled on these courses resulting from medical and personal interruptions, the target population was approximately 152 potential participants.

3.6. Ethical Considerations and protection of human subjects

Permission to access nursing students was granted by the Head of Department prior to requesting the University's Research Ethics Committee's (UREC) approval for this investigation (Appendix 3). The study only commenced on the written approval from

the UREC certifying that all additional requirements and refinements required, were satisfied.

Three weeks prior to the planned recruitment and data collection sessions, an online notice was posted on the University's VLE which informed students of the research study. The Participant Information Sheet (Appendix 10) and Consent to Participate form (Appendix 11) were attached to the electronic posting. These attachments allowed potential participants the opportunity to familiarise themselves with the proposed study prior to the data collection meeting. The ethical implications of undertaking research at the organisation where one is employed and additionally with the participants being taught by me, was acknowledged. Furthermore, I recognised that this may have led to coercion, abuse of power and a breach of confidentiality, which inadvertently could have led to distrust between the student nurse participants and the lecturer researcher. Notwithstanding these potential limitations, students were informed that anonymity and confidentiality would be observed (subject to any patient safety considerations that may have arisen during the interview phase of the data collection). Students were informed that names would be disassociated from the data and aliases and pseudonyms would be used. This reassurance clarified that respondent data would not include identifiers or any other information that could potentially be related to individual participants. Potential participants were also told that the collective results will be reported as aggregated data. All research data, including participants' consent forms are kept secure in a locked filing cabinet and on a password protected computer file in my office at the University and will be maintained for five years on completion of the project and me being awarded the Doctorate. Thereafter, all data will be destroyed and only aggregated data will be used in future studies that I may wish to undertake. Students were informed that participation or refusal would not impact upon their course of study and should they wish to withdraw, that they may do so at any point, without any penalty. Students were also informed that the interviews would take place on the participant's choice of campus, at a neutral location and at a mutually agreed date and time. At the time of data collection, I explained the proposed aim of the study, the data collection procedures as well as intended publication of the results. This was further re-inforced in the Participant Information Sheet that was posted online and also given to all students present. Once consent to participate was ascertained,

participants were requested to complete the questionnaires. There was little risk to participating in this research, which required approximately 30-40 minutes on both data collecting sessions, in addition to the participants who volunteered to attend the 30-40 minute interview.

3.7. Data collection method

A nonprobability convenience sample of nursing students on the BSc (Hons) and PgDip pathways at both the inner London and the suburban campuses completed the package of questionnaires; comprising the:

1. Approaches to Learning (ASSIST) (Tait et al, 1998)
2. Clinical Decision-Making Nursing Scale (CDMNS) (Jenkins, 1985)
3. Personal pre-training demographic questionnaire (researcher constructed)

at start of the autumn term on the final year of the Pre-registration Adult Nursing programmes. The questionnaire pack also included the Participant's Information Sheet (Appendix 10), Consent to Participate form (Appendix 11) and the Agreement to be contacted for an interview (Appendix 20) form, together with an envelope addressed to me. All participants were invited to read the Participant Information Sheet and to sign and return the Consent to Participate form should they wish to participate in the research. On receipt of the consent forms, students were requested to complete the Phase 1: Pre-Intervention questionnaires. Participants were asked to return the Agreement to participate in an Interview form, when handing in their completed questionnaires or at a later date, if they were willing to continue onto the Phase 2: Qualitative data collection stage. All measures to ensure the protection of human subjects were re-inforced prior to all data collection sessions.

On receipt of the completed questionnaires, a Certificate of Research Participation with the participant's name handwritten and signed by me was presented to all participants to include in their personal development portfolio (Appendix 12). This recruitment and retention strategy was replicated at all data collection sessions. The Certificate of Research Participation gave participants a tangible expression of my appreciation for their participation in my research. It was also a retention strategy as it contained the title of the study as well as my name and contact details, should they have any queries. Therefore, the certificate served as a method of potentially

reminding participants of their involvement and hopefully their commitment to the study.

At the Phase 2: Qualitative semi-structured interview stage, the purposive sampling strategy (Onwuegbuzie and Leech, 2007) was used and a total sample ($n = 9$) from the three ATL categories (Deep, Strategic and Surface) from the Phase 1 – Pre-Intervention data analysis, were invited to participate in an interview (Appendices 21 and 22). The intention of the qualitative element was to “obtain insights into the phenomenon ... therefore the qualitative researcher purposefully select(ed) individuals for this phase that increases the understanding of phenomena” (Onwuegbuzie and Leech, 2007, p. 242). This component explored participants’ individual perceptions of their CDM, the learning behaviours that they adopted, and their views of participating in this study.

Participants present at the Post-Intervention data collection meeting were given the Participant Information Sheet for the Interview Stage (Appendix 19) and informed that on receipt of their Agreement to be Interviewed form; they would be contacted in writing, if they were part of the first nine responses received. Students were made aware that the 30-40 minute interview would take place during the summer term following the Post-Intervention data collection meeting. The intention of using individual interviews as a qualitative data collection method in this study was to compare, verify and enhance understanding of the participants' perspective of their learning methods as well as to grasp their views on making decisions when in the clinical environment. I explained that the purpose of the interview was to explore their personal individual study behaviours and their perspective of making decisions when caring for patients. The participants’ perception of engaging with this research project was also included in the interview schedule (Appendix 24).

Balls (2009) asserts that by interviewing participants, researchers uncover those elements that may not be directly observable. These would include feelings, thoughts and intentions as well as situations that preclude the presence of an observer. Therefore, the purpose of interviewing participants in this study was to obtain insight into students’ lived experience of making decisions when caring for patients as well as the learning behaviours of final year nursing students. The

interview would also enhance awareness into students' experiences of making decisions at the point of care with patients. A semi-structured interview tool was developed to address questions relevant to this inquiry (Table 8). To ascertain this primary, qualitative data, the questions and probes for the interview schedule were developed following guidance from multiple sources. The interview schedule was compiled following a scrutiny of the literature on ATL theory and CDM, informal discussions with experienced academic peers who were involved in nurse education as well as my doctoral supervisory team. The questions were designed to elicit information needed to address the research question and the study's objectives. In addition to academic peers and my doctoral supervisory, the interview schedule was agreed by UREC.

Table 8: Interview schedule

Semi – structured interview questions

1. Can you describe what does the term clinical decision-making means to you?
2. How do you feel about making decisions in practice?
3. When making decisions in clinical practice, what helps you with making the decision?
4. How do you feel your learning has developed whilst on this course?
5. How has being made aware of the approaches to learning impacted on your learning?
6. How does your learning influence your clinical practice?
7. What do you think may help student nurses improve their clinical decision-making?

Individual semi-structured interviews were conducted on the University campus chosen by the participant to be most convenient. Participants' privacy during the interview was maintained by me pre-booking a meeting room at either of the University's campus sites. The room was booked for an hour which allowed ample time for the consent form to be read and signed, the interview to be conducted and for a post interview debrief. The University's meeting rooms are located away from classrooms and lecture halls, in addition to being restricted to faculty only. This constituted a neutral and safe location where the ensuing conversation could not be overheard, thus maintaining confidentiality (Grove et al, 2013). I reassured participants that there was no right or wrong answers and that no judgement would

be made in relation to the accuracy of their responses. The participants were expressly informed that they could say they did not wish to answer a question, needed take a break during the interview or wished to terminate the interview without the need to give an explanation. All interviews were audio-recorded and later transcribed verbatim by me. Orthographic transcription was used to capture participants' unspoken communication in addition to their comments which provided meaning to the narrative. These were analysed during the qualitative analysis stage (Clarke and Braun, 2013). Prior to commencing the interview, it was reiterated that the interviews would be typed verbatim and that all information would be confidential. Pseudonyms, chosen by participants were used to ensure anonymity and protect the participants' identity (Table 40). During the interview, when identifiable information was used, the disclosed information was replaced by the pseudonym during the transcribing process. Interviews only commenced once participants signed consent agreeing to participate (Appendix 23). Each interview session lasted between 30 - 40 minutes.

Transcribed interviews were returned to the participants for validation and to ensure accuracy. In summary, the participants were asked to share their perceptions and experience as students by describing the facilitators and barriers to their learning, the learning strategies they use, and their experience of making decisions in clinical practice. Kvale (2008) supports that self-reporting interviews are robust means of investigating others worlds and comments that,

... the force of the interview is its privileged access to the subjects everyday world. The deliberate use of the subjective perspective need not be a negative bias; rather the personal perspectives of the interviewees and interviewer can provide a distinctive and sensitive understanding of the everyday life world (p. 87).

Onwuegbuzie (2003) further adds that self-reporting allows for the expression of one's truth spaces. Although the strength of participants' authentic responses within this research is noted, limitations of this method are also acknowledged. A criticism of self-reporting stems from the difficulty of verifying the data, therefore participants' responses when interviewed or when answering questionnaires are usually accepted

at face value. The potential for selective memory, such as recalling or failing to remember experiences was considered as a possible limitation. However, the data collection points were scheduled during the final academic year of the nursing course and participants were still actively involved in theoretical and practical course components. Therefore it was anticipated that recollection of their study behaviours and clinical decision-making ability were current and may not have been burdensome to recall. Exaggerating experiences by presenting information or embellishing events as being more significant than in actual reality when responding to questions in the interview, was also taken into account. Draper (2016) drawing on Thorndike (1920) comment on the halo effect which participants may, when being interviewed use, should they assume that a more favourable response is expected by the lecturer researcher. Alternatively, participants may have felt that they would be viewed positively by the lecturer researcher if they expressed what they anticipated to be a more approved response (Draper, 2016). In this study, it was considered that the final year students may have articulated learning behaviours that presented them as having conscientious personalities and being studious learners, when this may not have been the case. Additionally, participants may have disclosed that they had no concerns when making clinical decisions, when in reality, making decisions in clinical practice causes them anxiety. Experiences may also be incorrectly described, misinterpreted, and their responses on the Likert scale questionnaires may as well have been affected. To compensate for this potential limitation, students were assured that questionnaires would be given a unique identifier and participants' personal details would be separated from the rest of the questionnaires in the package. Therefore, participant details and questionnaires would not be linked. Participants were also informed that their personal details, their unique identifiers and all questionnaires, would be locked securely, in the researcher's office. During the interview the participants were in direct contact with the lecturer researcher, and there was a greater potential for this personal contact to affect their responses. For this reason, when addressing potential participants about this research, my personal reasons for undertaking this study as expressed in Chapter 1 (Section 1.8) was emphasised. It was anticipated that this would reduce the threat of my dual role of academic and researcher and participants would feel comfortable to describe their positive as well as negative experiences of their learning approaches and of making decisions in the care setting.

3.8. Data Analysis

The data analysis methods aligned with the pragmatic approach (Peter, 2010) and is discussed in sequence with the distinct methodological phases detailed in Chapter 2.

3.8.1. Phase 1 – Quantitative data analysis

Pre-Intervention data analysis

On receipt of the questionnaires, a unique identifier was assigned to each participant, which was replicated onto every questionnaire received from that individual participant. Pseudonyms for the quantitative data were created based on the cohort that a participant belonged to as well as the campus that the participant was enrolled on. Participants enrolled on the BSc (Hons) pathway and based on the Suburban campus were assigned the prefix BHV followed by a numerical identifier as opposed to, participants on the Inner London campus, who were identified as BSW with the numerical identifier.

This was followed by a process of data reduction that necessitates that researchers code every item of the data by hand in preparation for computing and analysis. Coding is the process of transforming the information into symbols (Polit and Beck, 2014) however in this study, numbers were used. Once the coding frame was devised, the questionnaires were edited and all responses were given the corresponding code that was assigned to that question in line with the coding frame. This ensured that a numerical completeness to each question was maintained. Thereafter, the original mass of data obtained was reduced into a relatively smaller and more manageable set of constructs by separating the questionnaires, which was then more suitable for analysis (Polit and Beck, 2014).

The aim of the statistical analysis was to test hypotheses 1 and 2 (see Section 1.5). It was provisionally forecasted that this aim necessitates in-depth familiarisation with the dataset, in addition to analysing the data in a sequential fashion. The analysis was divided into distinct stages and commenced with the tabulation of the descriptive statistics. It was expected that this process would reveal general attributes, namely, the mean, mode, median, standard deviation and symmetry of the dataset (Pallant, 2013).

To evaluate the hypotheses, statistical testing was performed to identify-1. the preferred ATL of individual participants and participant groups and 2. the CDM measured by the decision-making scale of participants' own self-reported perception of their CDM. The ASSIST (Tait et al, 1998) and the CDMNS (Jenkins, 1985) scales were treated as both ordinal and interval data (Knapp, 1990). Thereafter multivariate analysis was implemented to investigate whether a correlation existed between participants' ATL and their CDM. This study also aimed to measure the demographic characteristics of the BSc (Hons) and PgDip students. Data was analysed by IBM Statistical Package for Social Sciences (SPSS) version 21.0 for Windows 10.

Analysis to determine participants' approaches to learning

Data analysis followed the stipulated guidelines recommended by the creators of the ASSIST inventory (Tait et al, 1998). The ASSIST inventory consists of fifty-two (52) items on a 5 point Likert⁶ Scale: (1= strongly disagree and 5 = strongly agree). Each approach (deep, strategic and surface) is further categorised into subscales (Figure 4). Scores of the three approaches to learning (deep, strategic and surface), are created by adding together the relevant sub-scales scores which contribute to each ATL. For example, the sub-scale 'Seeking Meaning' was produced by accumulating the participant's responses to the deep approach questions 4+17+30+43. Each sub-scale contains four items, thus allowing a maximum score of 20 and a minimum score of 4, provided the participant responds to every question. Subsequently, scores for the three approaches to learning (deep, strategic and surface) were ascertained following this algorithm. The largest score indicates that the participant has a greater propensity towards that specific ATL (Tait et al, 1998). To aid clarity; a participant who scores 46 on the deep approach, 38 on the strategic approach and 52 on the surface approach, was referred to as adopting a surface approach to learning.

Analysis to determine participants' clinical decision-making

In conjunction with the questionnaire description, detailed in Section 3.5.1, the CDMNS (Jenkins, 1985) is a forty (40) itemed questionnaire on a 5-point Likert-type scale with the following response categories: Always (A)= 5, Frequently (F) = 4;

⁶ A Likert scale (named after its deviser, Rensis Likert, 1932) provides a range of responses to a question or statement. Cohen et al (2007)

Occasionally (O) = 3, Seldom (S) = 2 and Never (N) = 1. The questionnaire is further divided into four subscales and each subscale consists of ten (10) items. Each item questions the respondents about their clinical decision-making when administering care in clinical practice. The CDMNS's analysing guidelines stipulates the scoring mechanism for the individual items (Jenkins, 1985). Twenty-two (22) of the items are rated positive and employ the above scoring format. The remaining eighteen (18) items (2, 4, 6, 12, 13, 15, 19, 21, 22, 23, 24, 25, 30, 31, 32, 34, 39, and 40) were rated as negative. Therefore when analysing, the negatively rated items, the frequency anchor was reverted to: Always (A) = 1 to Never (N) = 5. Potential scores for the entire questionnaire range from 40 - 200. Each subscale has a potential maximum value ranging from 10-50. Jenkins (2001) advocates that the value of the score is directionally proportional to one's clinical decision-making ability; therefore higher values are interpreted as a more positive perception of clinical decision-making. Thus, higher CDM scores indicate a stronger decision-making ability in clinical practice (Jenkins, 2001).

3.8.2. Phase 2 – Qualitative data analysis

Prior to the analysis stage, with supervisory input, I considered whether inductive Thematic Analysis (Braun and Clarke, 2006) or Constant Comparative Analysis (CCA) (Fram, 2013) would be the more suitable method of analysing the qualitative data. Additionally, the options of using either NVivo, an equivalent computer software or an alternative qualitative analysis strategy, in line literature (Braun and Clarke, 2006) which allowed for the most in-depth engagement with the data, was explored. Guided by the literature (Braun and Clarke, 2006), I anticipated that the process would begin with familiarising oneself with the data and then coding the transcripts to create categories. Thereafter, these categories were collated into themes and with abstraction, into wider concepts. To enhance credibility, the thesis discussion is as transparent as possible with the participants' original quotes embedded within the discussion (Chapter 6).

Table 9: Overview of methods used to answer the research question and objectives

Data Source	Sample	Recruitment and access	Approach used	Analysis
Objective 1: Identify the approaches to learning (ATL) of final year BSc (Hons) and PgDip adult nursing students				
ASSIST (Tait et al, 1998)	-Undergraduate BSc (Hons) students from Inner London and Suburban campuses -PgDip students	- University's Virtual Learning (VLE) portal - recruitment meetings on both Campuses	ASSIST's Scoring guide	Statistical analysis using SPSS (version 21) on - ATL subscale scores - participants preferred ATL -subscale influencing preferred ATL adoption
Interviews	9 students: - BSc(Hons) inner London x 3 - BSc (Hons)suburban campus x3 - PgDip x 3	-Informed via VLE and recruitment meetings on both campus sites. -Students who returned the 'Agree to be interviewed' form were contacted for interviews.	30-40 minutes, Semi-structured Interviews	Thematic Analysis or Constant Comparative Analysis
Objective 2 : Assess the clinical decision-making (CDM) ability of final year BSc (Hons) and PgDip adult nursing students				
CDMNS (Jenkins, 1985)	- Undergraduate BSc (Hons) students from Inner London and Suburban campuses - PgDip students	- University's Virtual Learning (VLE) portal and recruitment meetings on both campuses	CDMNS's scoring guide	Statistical analysis of - CDMNS subscale scores - each participant's CDMNS score - Highest and lowest scored subscale / participant group
Interviews	9 students: BSc(Hons) Inner London x 3 BSc(Hons) suburban campus x 3 PgDip x 3	Informed via VLE and recruitment meetings on both campuses. - Students who returned the 'Agree to be interviewed' form were contacted for interviews.	30-40 minutes, Semi-structured Interviews	Thematic Analysis or Constant Comparative Analysis

Objective 3 : Identify differences and correlations between personal demographics, the ATL and CDM of final year BSc (Hons) and PgDip adult nursing students.

- Demographic questionnaire - ASSIST ^(ibid) - CDMNS ^(ibid)	- Undergraduate BSc (Hons) students from Inner London and Suburban campuses -PgDip students	Informed via VLE and recruitment meetings on both campuses.	Demographic frequencies and ASSIST's and CDMNS's scoring guide	Statistical analysis of descriptive findings (mean, mode, median and standard deviation) correlated to ATL and CDMNS results
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Objective 4 : Assess the impact of the research intervention on the participants' ATL

ASSIST ^(ibid)	-Undergraduate BSc (Hons) students from Inner London and Suburban campuses -PgDip students	Informed via VLE and recruitment meetings on both campuses.	ASSIST's scoring guide on Post Intervention data	Statistical analysis of - ATL subscale scores - participants preferred ATL - subscale influencing ATL Preference
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Objective 4 : Assess the effect of the research intervention on participants' CDM

CDMNS ^(ibid)	-Undergraduate BSc (Hons) students from Inner London and Suburban campuses -PgDip students	Informed via VLE and recruitment meetings on both campuses.	ASSIST and CDMNS scoring guides on Post Intervention data	Post-Intervention analysis of - ATL subscale scores - CDMNS subscale scores -correlation between ATL and CDMNS scores
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3.9. Outcomes and possible contribution to knowledge

At the start of this study, the possible emergence of new knowledge below was forecasted:

1. The updating of the Clinical Decision-making Nursing Scale (CDMNS) (Jenkins, 1985) thereby making it relevant to the emerging generation of nurses.
2. The identification of and the differences in the approaches to learning and clinical decision-making between Adult Nursing students on the BSc (Hons) and PgDip programmes on entry and completion of the final year of the course. This will help curriculum development, teaching and learning strategies that support students' development on each course pathway.
3. The identification of correlations, facilitators and barriers to the development of clinical decision-making skills that may be used in Pre-registration nurse education within the University and clinical practice.
4. An evaluation of the effectiveness of the educational research intervention on final year nursing students' approach to learning and their clinical decision-making ability.

3.10. Chapter summary

This pragmatic longitudinal study used a mixed method, intervention, correlation design on a convenience sample of final year BSc (Hons) and PgDip nursing students to examine whether a relationship existed between students approach to learning and their clinical decision-making. The quantitative phase was divided by the facilitation of the education focussed research intervention, which a purposive sample of students who adopted the strategic and surface approaches at the Pre-intervention analysis, attended. This biphasic study had three data collection points. Quantitative data comprised a package of questionnaires and was collected at the beginning (Pre-intervention) and end (Post-intervention) of the students' final year.

Qualitative data collection instrument was a one-to-one semi-structured interview, which took place following the Post-intervention data collection. The study instruments comprised the ASSIST (Tait et al, 1998), the CDMNS (Jenkins, 1985) and a researcher-constructed demographic questionnaire.

Chapter 4: Data Analysis

4.1. Overview

The purpose of this research was to investigate final year nursing students ATL in relation to their CDM and to evaluate whether a study-specific educational research intervention would motivate students to adopt the deep approach to Learning as opposed to the surface and strategic approaches. This chapter represents a comprehensive summary of all data collected, which includes the quantitative and qualitative analytical processes used in this study.

4.1.1. Phase 1: Quantitative data analysis

The quantitative analysis comprised the participants’:

1. Demographic data:
 - Age
 - Gender
2. Characteristics of highest academic achievement,
3. Campus site, namely the:
 - Inner London campus
 - Suburban campus
4. Nursing course that each participant was enrolled on:
 - BSc (Hons)
 - PgDip
5. ATL (ASSIST, Tait et al, 1998) subscale scores,
 - collective group scores (Pre and Post-intervention)
 - individual participant scores (Pre and Post- intervention)
6. CDMNS (Jenkins, 1985) subscale scores,
 - collective group scores (Pre and Post-intervention)
 - individual participant scores (Pre and Post-intervention)
7. Correlation between ASSIST and CDMNS subscale scores:
 - Pre-intervention correlation
 - Post-intervention correlation

4.1.2. Phase 2: Qualitative data analysis

The qualitative analysis summary of the semi-structured interviews with participants at the final data collection process, follows thereafter.

4.2. Descriptive statistics

Descriptive analysis was employed to reveal general attributes of the dataset. Multivariate analysis was undertaken to investigate whether relationships existed between the distinct variables. Data was analysed by IBM Statistical Package for Social Sciences (SPSS) version 21.0 for Windows 10.

4.3. Sample

The adult nursing students were recruited during the transition week at the beginning of the final year of their nursing course from three cohorts, located on the University's two campus sites. This equated to a population of $N = 152$ final year student nurses, all of whom were invited to take part.

4.3.1. Size of recruited sample / Power calculation

In quantitative research, the size of the sample to ensure appropriate accuracy of the findings is recommended. This ensures that studies have a realistic chance of providing results from which conclusions can be generalised to the wider population. Seventy-eight (78) students consented to join this research study and completed the questionnaire pack comprising the ASSIST, the CDMNS and participant demographic questionnaires at the Pre-Intervention data collection sessions at both campuses. This yielded an overall response rate of 51% for the BSc (Hons) group and 50% for the PgDip cohort. Tabachnick and Fidell (2007) recommend that "calculating sample size requirements needs to consider the number of independent variables being measured" (p. 123). These statistical research authors endorse $n > 50 + 8m$ (where m indicates the number of independent variables in the study). In this study, measure of participants' approach to learning was the independent variable, therefore:

$$n > 50 + (8 \times 1 = 8)$$

$$n > 58$$

The recruited sample consisted of seventy-eight ($N = 78$) participants thereby satisfying Tabachnick and Fidell's (2007) sample size criterion for statistical analysis. Seventy ($n = 70$) participants from the BSc (Hons) cohort and eight ($n = 8$) PgDip students on the Adult Nursing programmes agreed to participate. The ongoing debate on sample size to ensure generalizability exists in the literature however Stevens (1996) cited in Acheampong et al (2016), recommends that for "social science research, about 15 participants per predictor are needed for a reliable equation" (p. 6). The two predictors in this study are approaches to learning and clinical decision-making, therefore based on Stevens (1996) and Tabachnick and Fidell (2007) a sample of 30 participants is acceptable. The recruited seventy-eight ($N = 78$) participants satisfied the recommended sample size quota from both statistical researchers hence the reliability criterion for generalizability was achieved. Considering 49% of the students chose not to participate, potential reasons for non-participation are discussed below.

Research participation overload

Students felt that they were inundated with offers to participate in research from various sources requesting for their participation in research projects and thus found this burdensome.

Students openly remarked at the recruitment meetings that they were already approached by several other academics to participate in their projects. They also commented that they were frequently receiving course and learning related survey questionnaires from the University and their host Trusts and were thus overwhelmed by being asked to participate in research and survey projects. Although this may have impacted on the recruitment to this study, I appreciated the students' candid feedback regarding research participation and agree that there is a lack of processes in monitoring requests by researchers to access students as participants. In this study, permission to access students as participants was requested and granted by the Head of Department (Appendix 3). However, at the time of data collection monitoring of requests for students to participate in research by either the University's Research or the Adult Nursing Department was not in place. The participants' qualitative statements regarding research participation indicated that research monitoring procedures need to be implemented. This institutional initiative

will prevent students from being inundated by requests to participate and exposed to research participant fatigue. It is therefore a recommendation of this research that the University should be vigilant to students experiencing research fatigue and proactively manage it.

Lack of personal value

Students felt that the research would not be of benefit to them as the research findings may be implemented with cohorts below them.

It was emphasised at the recruitment meetings and on the participant information sheets that exposure to thought-provoking questionnaires, will implicitly engage students to question their individual learning practices. This may encourage them to reflect on and perhaps consider changing their learning behaviours thereby potentially improve the quality of their learning. Additionally, students were assured that should they wish to know their individual Pre-intervention ATL, I would disclose this to each participant by email on completion of the 3rd data collection process. I highlighted that such information may motivate and inspire students to strive to adopt an ATL which is evidenced to produce more successful outcomes and develop their individual learning ability. This could potentially aid in all future studying they wish to embark on. However, there were no monetary incentives or compensation for participating in this research. Additionally, the inclusion of the Certificate of Research Participation presented to participants following each phase of the study for inclusion into their personal development portfolios, may have been viewed as having minimal benefit towards their nursing careers.

Longitudinal design increases personal commitment

The expectation to participate for the entire duration of the longitudinal study may have dissuaded participation.

In line with the study design, the recruitment meetings took place during the Transition Week at the start of the students' final academic year. On the academic course plan, it is during this specific week that in my Course Director capacity I hold a timetabled session with all students, in their respective academic years, to review and re-orientate to the University's Academic Regulations as well as the Nursing and

Midwifery Council (NMC) regulatory processes for nursing students. Historically, such meetings are not always received well by students, especially as they reflect on the academic and professional expectations of being a final year nursing student. Furthermore, during this week I, in my Course Director role, review the course plans and accompanying assessment schedule with all students. Therefore, the enormity of the final year modules, with the increase in academic standard of assessments, in addition to achievement of competencies on clinical placements, may have deterred participation. Furthermore, students may have felt that their increased academic workload could not justify participating in a study that was not a mandatory requirement to complete the course. Students may have also perceived that their time was better spent on their studies, which had a direct impact on them completing the programme.

Extensive questionnaires

The length of the questionnaire pack may have deterred students from participating.

At all recruitment meetings, I clarified the time it would take to complete the three questionnaires. Additionally, the relevance of completing the questionnaires in relation to answering the research question was explained in detail. Furthermore, I emphasised that completing the questions required the participant to either circle or cross (X) the desired option and therefore long, wordy explanations, which may have disconcerted some learners, were not required. The questions on each of the three questionnaires were reduced to 12 - 16 per page, in an attempt to encourage participation and completion of all the questions. I also formatted the questionnaires to include the Likert scale key at the top of every page of the questionnaire; participants therefore did not have to constantly turn to the beginning / initial Likert scale to cross check the response symbol with the key of the response options, when answering. At the end of every questionnaire, the participant was thanked for completing this section as I wanted to re-affirm my appreciation for participating in my research.

I also acknowledge that restricting the data collection to only the recruitment and data collection meetings limited the sample to students who attended the timetabled sessions on the various campuses. There were a number of students who did not

attend the initial data collection sessions therefore did not participate in the study. If these students had engaged with the research, they may have contributed significantly to these research findings. Considering that in this current age, when mobile phones with internet access and receiving emails are increasingly popular, I acknowledge that that response rate may have increased if the questionnaire pack had been emailed to students, giving them the option to participate and of either completing the questionnaires online, or to attend the scheduled recruitment session. Students could have been granted further choice to either submit their completed questionnaires online or via the School's Student Helpdesk.

4.4. Analysis to determine the approach to learning

Details on the analytic process to achieve each participant's scores for the Deep, strategic and surface approach to learning as advised by the creators of the Approaches to Study Skills Inventory for Students (ASSIST) (Tait et al, 1998) are discussed in Section 3.5.1. Likert scale data, as collected with the ASSIST is in between ordinal as there is a clear ordering of the variable as well as being interval variable data, as the five-point likert scale presents values for 'strongly agree', 'agree', 'neutral', 'disagree' and 'strongly disagree'. Bruin (2006) suggests that as it is not certain that the intervals between each of these five values are the same and equidistant, such data cannot be treated distinctively as an interval variable, but it is best accepted as an ordinal variable. Bruin (2006) supports that when statistically analysing in between data, it is reasonable to assume that the intervals between the variables are equally spaced.

4.5. Analysis of individual participant's approach to learning (ATL)

The ASSIST'S guidelines do not provide guidance to determine an individual participant's predominant ATL but rather reports on how to calculate the three ATL scores, comprising the deep approach score, strategic approach score and surface approach score on a participant's ATL profile. This resulted in me scrutinising the three scores and assigning participants into groups according to their highest subscale score. However, this simplified process presented a further issue as some

participants had equal scores on two subscales resulting in the participant's predominant ATL being unidentifiable. Researchers with statistical analysis expertise advocate the use of standard scores (Allen and Yen, 1979) which are formulated by calculating the difference from the medium score rather than from raw scores. In line with this guidance and reported use of this formula, standard or *Z* standard scores were determined for each participant on each of the subscales (Lindblom-Ylänne et al, 2013). This formula eliminated equal subscale score ties and yielded each participant's individual ATL. Results of the samples' three ATL are reported in Chapter 5, Section 5.3.1 and Table 13.

4.6. Statistical tests used

Pallant (2013) contends that ordinal (ranked) scales as well as categorical, interval data, such as the data collected in this study, is best analysed using non-parametric techniques. Furthermore, parametric T-tests were not considered as one could not assess that participants perceive the intervals between the items in the scales as being equidistant (Bruin, 2006) (Appendix 26). Therefore, the Kruskal–Wallis test - the non-parametric version of the one-way between groups Analysis of Variance (ANOVA) statistical test was advocated when two or three groups are being compared was applicable in determining whether differences existed between the participant groups' preferred ATL. Pallant (2013) confirms that although the Kruskal-Wallis Test would identify the differences between the three participatory groups, "it would not be able to reveal where the significant difference" was (p. 109). The ANOVA's non-parametric analogue, the Friedman Test was advocated to identify whether a significant relationship existed between the research variables (Pallant, 2013). The Wilcoxin non-parametric test was thereafter applied to reveal the specific components of the scale data that contributed to the Friedman Test findings. The Multivariate Tests identified statistical significant differences within the specific subscale element that contributed to the participants' preferred (highest) ATL score, (Pallant, 2013). All statistical tests are discussed in line with the results in Chapter 5 (Sections 5.3.1-6). Considering the number of tests involved in this type of analysis and the risk this carries for a type one error, Bonferroni adjustments were included within all the statistical analysis applications (Coolican, 2014).

4.7. Clinical Decision Making Nursing Scale (CDMNS) analysis to determine participants' CDM

In conjunction with the detailed description of the CDMNS (Jenkins, 1985) offered in Chapter 2, this forty-itemed questionnaire is divided into four subscales with a 5-point Likert-type scale comprising the following intervals: Always (A) = 5; Frequently (F) = 4; Occasionally (O) = 3; Seldom (S) = 2 and Never (N) = 1. Each subscale consists of ten (10) items which question the participants about their decision-making when administering care in clinical practice. Potential scores for the entire questionnaire range from 40-200. Each subscale has a maximum value which ranges from 10-50. Guidelines provided when scoring the individual items confirm that twenty-two (22) are rated positive and employ the above scoring format. The remaining eighteen (18) items (2, 4, 6, 12, 13, 15, 19, 21, 22, 23, 24, 25, 30, 31, 32, 34, 39 and 40) were rated as negative with the frequency anchors reverted to: Always (A) = 1 to Never (N) = 5 are applied. Jenkins (2001) advocates that higher values are interpreted as a greater perception of clinical decision-making ability. As detailed above, data collected with the CDMNS was analysed using non-parametric statistical analysis.

4.8. Phase 2: Qualitative analysis

Qualitative data explored the participants' learning approach and CDM experiences. This phase enabled the students' voice to be heard and encouraged participants to express their learning methods, perceptions of their study behaviours on their academic progress as well on their CDM experiences. After transcription and with agreement from the supervisory team, the interviews were subjected to inductive Thematic Analysis (Braun and Clarke, 2006) as opposed to Constant Comparative Analysis (CCA) that I had earlier contemplated (Section 3.9.2). This decision was made based on CCA is synonymous with Grounded Theory (Fram, 2013) thus conflicted with this study's methodology. Additionally, the CCA's rigid analytical processes commencing with the incident to incident comparison then progressing to concept to incident and finally, concept to concept analysis (Elliott and Jordan, 2010), appeared complicated for a researcher with limited qualitative research experience. Braun and Clarke (2006) claim that Thematic Analysis " ... is seen as the

foundational method of qualitative analysis and thereby engenders the development of core skills in qualitative research” (p. 78) supported this decision.

Thematic analysis was also selected as it is widely used in qualitative research and was free from an explicit epistemological rooting (Braun and Clarke, 2006). Therefore is applicable to several epistemologies. However, Braun and Clarke (2006) state that when using thematic analysis the research epistemology still needs to be transparent so that patterns in the data can be identified. This analytical strategy therefore enabled the participants’ reality to be visible.

Thematic analysis can be inductive or theoretical (Clark and Braun, 2013). Within the inductive thematic analysis framework, themes are derived from the data without being influenced by preconceived ideas. In comparison, the theoretical thematic analysis, preconceived ideas are aligned to specific data, whilst ignoring other data that is not perceived as relevant (Braun and Clarke, 2006). In this research no data were ignored in the thematic analysis process.

This inductive analytic method allowed significant themes inherent in raw data to emerge as opposed to a “deductive analysis which sets out to test whether data is consistent with prior assumptions, theories or hypotheses identified or constructed by the investigator” (Thomas, 2006, p. 238). Emerging themes were then organised to describe the participant’s comments in rich detail (Braun and Clarke, 2006). Desantis and Ugarriza (2000) describes that,

A theme is an abstract entity that brings meaning and identity to a recurrent experience and its variant manifestations. As such, a theme captures and unifies the nature or basis of the experiences into a meaningful whole (p. 362).

Moreover, Onwuegbuzie and Leech (2007) argue that thematic analysis infers a description of the participant’s “truth space” (p. 241), which in this situation, is accepted to be the participant’s feelings, actual experiences and opinion of their learning behaviours as well as of making decisions in the clinical environment.

In comparison to the structured quantitative data analysing framework for the ASSIST and CDMNS questionnaires, the qualitative thematic analytical phase had no defined constraints. Incidentally, thematic analysis is criticised for its lack of apparent consultation of guidelines (Braun and Clarke, 2006) and described as a trivial, inconsequential method (Teddlie and Tashakkori, 2003). Therefore, a professorial academic colleague with an extensive research profile and longstanding experience in undertaking thematic analysis assisted me with this technique. The six stage thematic analysis guidelines advocated by (Braun and Clarke, 2006) (Table 10) were followed thereby ensuring that a consistent and credible framework was adhered to.

Table 10: Qualitative analysis framework used

Thematic Analysis Framework		
	Phase	Description of process undertaken
1	Familiarising yourself with the data	By transcribing the data (if necessary), reading and re-reading the scripts as well as making notes of initial ideas.
2	Generate initial codes	Code interesting features of the data systematically across the data set and collate data that is relevant to each code.
3	Searching for themes	Collate codes into potential themes by grouping all data relevant to each potential theme.
4	Reviewing themes	Check if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2) thereby a thematic map of the analysis is generated.
5	Defining and naming themes	Undertake ongoing analysis to refine the specifics of each theme and the overall story that the analysis expresses. Thus clear definitions and names for each of the themes are generated.
6	Producing the report	This is the final opportunity for analysis. Select vivid, compelling extract examples which need a further, final analysis to ensure that it is relative research question and literature. Finally, produce a scholarly report on the analysis.

Adapted from Braun and Clarke (2006, pp. 87-93)

4.9. Data organisation

The process commenced with the transcripts being read repeatedly to engender familiarity with the data. This in-depth engagement with the raw data, allowed for coherent themes comprising concepts, behaviours and phrases (Section 5.6.1), to be identified. The themes were then collated into multiple categories. Eventually, eighty-four ($n = 84$) Level 1 categories emerged when all the interviews were analysed. The iterative process resulted in production of smaller, more defined subcategories, which allowed for greater discrimination and differentiation between the emerging categories (Braun and Clarke, 2006). Eventually twenty ($n = 20$) emergent thematic categories (Section 5.6.1), which were linked by the underlying meanings of the categories into sub-themes, were formed (Graneheim and Lundman, 2004). Categorical themes were continually subjected to newly formed

categories until no new themes or subcategories could be identified. This process resulted eventually into five ($n = 5$) themes (Section 5.6.2, Table 41).

4.10. Validity and Reliability

Researchers aspire to produce valid and reliable knowledge. Furthermore, consumers of research need to be assured that research findings can be trusted. Research validity questions how the findings match reality or how congruent the findings are with reality. Reliability therefore refers to the extent to which research findings can be replicated (Houghton et al, 2013). In this study, validity and reliability were maintained through careful attention to the study's conceptual framework, the data collection processes, how the data was analysed and interpreted, in addition to the presentation of the findings. The following strategies were used to ensure validity, reliability and trustworthiness in this study.

In line with Lincoln and Guba's (1985) criteria for trustworthiness, measures were implemented to preserve the credibility, transferability, dependability and confirmability of the research. Dependability was strengthened by using the interview guide, in addition to all interviews being conducted by the same interviewer, namely myself. On completion of the interviews being transcribed verbatim, a professorial academic colleague assisted me with this analysis. We discussed and challenged the emerging themes until a consensus was reached. Field notes were conscientiously documented throughout the analysis process, in order to achieve confirmability. To achieve the transferability criteria, the participants' demographic data and verbatim extracts from the interviews, are presented in the Results and Discussion Chapters of the study (Houghton et al, 2013).

4.10.1. Internal Validity

Triangulation

The main purpose of triangulating was to confirm and ensure completeness of the data (Casey and Murphy, 2009). Multiple sources of data which included two administrations of survey questionnaires at the Pre and Post-intervention stages, as well as semi-structured interviews were collected at specific points during the study

to augment the emerging findings (Houghton et al, 2013). In line with the study's aims and objectives, obtaining information in this manner was critical to the understanding of how nursing students approach their learning and of their perceptions of making decisions when caring for patients.

Qualitative data checks

Credibility of the research findings is aligned to trustworthiness and that the findings together with recommendations can be trusted and implemented in practice (Anney, 2014). Credibility requires that the participants' reality be accurately captured (Creswell and Miller, 2000) and is presented using thick description (Anney, 2014, Creswell and Miller, 2000). The credibility of what has been captured and presented can be checked through a member-checking strategy by participants reviewing the results to ensure that their authentic responses were captured (Bryman, 2012). Lincoln and Guba (1985) claim that member checking is "the most crucial technique for establishing credibility" (p. 314). In this study, interview transcripts were checked against the interview recording and amendments were made, where necessary. This ensured that the transcripts were accurate accounts of the interviews in addition to this enhancing familiarisation, in line with the initial stage of the Thematic Analysis (Braun and Clarke, 2006). Thereafter, the transcripts were sent to the interviewees to check for accuracy as well as to certify that it was a complete representation of the interview (Bryman, 2012). Two questionnaires were returned with corrections that better captured the participants' true perspective of their:

1. Strategies used to make decisions in clinical practice,
2. Relevance of participating in this study.

Therefore, in this study, the participants added "credibility to the qualitative study by having the chance to react to the data" (Creswell and Miller, 2000, p. 127).

Peer debriefing

I maintained ongoing discussions with the supervisory team and my colleagues through the research process. These included consultations about the methodology, the interview schedule, the research intervention, the congruence of emerging findings with the raw data, as well as interpretations of analysed data (Houghton et al, 2013). In addition to providing support and a "sounding board for ideas" (Creswell

and Miller, 2000, p. 129), my assumptions about this study and findings were challenged through this peer briefing initiative.

Researcher's reflexivity

On an ongoing basis, I critically self-reflect on my assumptions, world view, biases, theoretical orientation, and relationship to the study that may affect this research (Creswell and Miller, 2000). I have expressed my personal development from being a learner who initially adopted the surface approach and at best the strategic approach to my current belief of now adopting the deep approach in Chapter 1 (Section 1.9). Additionally, as an educator in the Department of Adult Nursing, I made every effort to ensure that the power differential between the student participant and lecturer researcher was not breached.

4.10.2. External Validity

Rich descriptions in the qualitative dimensions of this research are required to externally validate the findings, for these outcomes to be generalised or applied to other situations (Houghton et al, 2013). In this study, descriptions of the processes involved as well as the outcomes are provided in Chapter 3 (Section 3.9.2) and Chapter 5 (Section 5.6). This is to enable readers to determine how closely their situations match this research and to decide whether the findings may be transferred to other settings involving nursing students.

4.10.3. Reliability

Personal assumptions

My assumptions regarding the ATL theory and involvement with the nursing students in this study are stated above and in Chapter 1 (Sections 1.3 and 1.8).

Theoretical orientation

The conceptual framework for this study was developed from an extensive review of the literature. This information is presented in Chapters 1, 2 and 3.

Audit Trail

All data collection points during the Phase 1 and 2 are described in detail in Chapter 3 (Sections 3.5 and 3.8) and Chapter 4 (Section 4.3.1). The development of themes

and categories are made explicit in Chapter 5 (Section 5.6.1 - 3). This process contributed to authenticating the participants' expressions of their learning approaches and their perspectives of making decisions in the patient care setting.

4.11. Merged data analysis strategy

The data analysis in a mixed methods research requires the data to be individually analysed thus ensuring that the characteristics of both methods are maintained. Numbers are primarily used in quantitative data analysis compared to words for the qualitative analysis (Driscoll et al, 2007). Interpretation or inferences can thereafter follow from the separate analyses (Creswell and Plano Clark, 2011). One option is data transformation (Creswell and Plano Clark, 2011). Qualitative data can be quantitized by enumerating the times a particular code was recorded or the number of participants associated with a particular theme (Driscoll et al. 2007). Correspondingly, quantitative data can be qualitized by describing a participant or group in terms of their quantitative instrument scores (Driscoll et al. 2007). Sandelowski (2000) suggests that qualitized description of a sample commonly occurs however quantizing qualitative data is more controversial as the necessary thick description of qualitative data analysis is difficult to achieve (Driscoll et al. 2007). In maintaining the integrity of the separate analyses within this mixed methods study, the merged data analysis technique of "side-by-side comparison in the discussion" (Wisdom and Creswell, 2013, p. 2) was undertaken (Section 5.6.2).

4.12. Limitations

The generalizability of this study may be limited as this research was based on a specific field of nursing at a single University. To compensate for this limitation, two different campus sites and two different adult nursing courses were included. Although this study focused on adult nursing students and as a result, generalising to other fields of nursing and settings may be challenging, some commonalities between different nursing fields may exist. Thus, other researchers and nursing educators may, when designing curricula, find this research beneficial. It is also acknowledged that Miles and Huberman (1994) cited in Onwuegbusie and Leech,

2007, supports that, "the most useful generalizations from qualitative studies are analytic, not sample to population" (p. 28).

It is considered that a participant's interpretation of a given experience is affected by that individual's experience and ability to recall the situation with accuracy. I also acknowledged that participants may vary in which components of their experience they choose or wish to share with me. Although concerted efforts were made to diminish the power differential by emphasising that participation was voluntary and the assurance of utmost confidentiality, the potential for a power relationship cannot be discounted, between the student participants and myself, who carries dual role of Course Director and researcher.

4.13. Chapter Summary

Aligned with the mixed methodology, this chapter has explained the quantitative and qualitative data that were collected. Data analysis comprised three stages and included descriptive, inferential, correlation analysis using non-parametric statistical methods. Thematic analysis was used to explore the semi-structured interviews. Participation was strictly voluntary with no foreseeable risk involved. Full ethical approval was granted to conduct the research. Anonymity, confidentiality and an element of valuing participation was woven into the research design. An assurance of quality was given for both methods. The issues of validity and reliability were discussed in relation to the sample size. This is relevant to the generalisability of the quantitative results. The quality requirement of the qualitative phase was also discussed in relation to rigour, credibility and confirmability and thus is relevant to the transferability of these results. The method's repeated measures component of using one sample has enabled differences between the Pre and Post-intervention stages to be determined with less risk of sampling error (Scott and Mazhindu, 2014).

This chapter has described the analysis of the quantitative and qualitative data collected from a sample of final year adult nursing students on two pre-registration nursing courses. The next chapter presents the results of the comprehensive analysis that was undertaken on the data.

Chapter 5: Results

5.1. Introduction

This chapter presents the statistical findings of data obtained in this study. SPSS (IBM) V 21.0 was used to examine the data. The section commences with the description of the participants' demographic findings. Data from the Approaches to Study Skills Inventory for Students (ASSIST) (Tait et al, 1998) and Clinical Decision Making Nursing Scale (CDMNS) (Jenkins, 1985) were collected on two occasions, followed by a description of the data collected during the participant interviews. To distinguish between the various data collection points, the results are divided into:

Phase 1: Quantitative findings

1. Descriptive statistics of participants' demography.
2. Pre-intervention: 1st data collection at start of the academic year.
3. Post-intervention: 2nd data collection at end of the academic year.
4. Comparison between the Pre and Post-intervention results.

Phase 2: Qualitative findings

Data was collected at the end of the academic year, with participant interviews scheduled in the weeks following the Post-intervention data collection.

5.2. Phase 1: Quantitative findings

5.2.1. Descriptive findings of demographic characteristics

Descriptive statistics was used to evaluate the sample's demographic data. This included measuring frequencies and percentages of the categorical variables, for example, the participant group's age and gender (Table 11).

Table 11: Age and Gender comparison

Participants Age and Gender Frequencies									
Courses		BSc(Hons)				PgDip		Total	
		Inner London		Suburban					
Count (%)		<i>n</i>	%	<i>N</i>	%	<i>n</i>	%	<i>N</i>	%
		35	100	35	100	8	100	78	100
Age	< 20 years	4	5.7	1	1.4	-	-	5	6.4
	20-30 years	19	27.1	11	15.7	7	87.5	37	46.0
	31-40 years	5	7.1	19	27.1	-	-	24	30.8
	41-50 years	6	8.6	4	5.7	1	12.5	11	14.1
	51-60 years	1	1.4	-	-	-	-	1	1.3
Gender	Male	10	14.2	4	5.7	2	25.0	16	20.5
	Female	25	35.7	31	44.3	6	75.0	62	79.5

Participants age

The entire samples' age ranged from being less than 20 years to 60 years old. 46% of the participants were in the 20-30 year and 30.8% in the 31-40 year age categories. Most of the Inner London participants were in the 20-30 year category (27.1%) as opposed to the Suburban group that consisted of a larger percentage of students in the 31-40 year category. In the less than 20-year age category, the Inner London cohort had a greater number of students (5.7%) in comparison to the Suburban group (1.4%) and all the PgDip students were 20 years old and over. The Inner London group was also the only group with students in the 51-60 (1.4%) year category.

Gender findings

All three participatory groups indicated a propensity for female students. The Suburban cohort had the largest percentage (44.3%) of female students in comparison to the Inner London (35.7%) and PgDip (75%) students (Table 11). The percentage of males in the Inner London group (14.2%) was more than double the percentage (5.7%) in the Suburban cohort. This sample is representative of the pre-registration nursing student cohorts at the University in terms of the age and gender findings.

Table 12: Healthcare experience and academic qualifications frequency

Healthcare experience and academic qualifications frequency									
Course option		BSc (Hons)				PgDip		Total	
		Inner London		Suburban					
Count		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Previous healthcare experience	Yes	17	24.3	16	22.8	5	62.5	38	48.7
	No	18	25.7	19	27.1	3	37.5	40	51.3
Highest academic qualification	GCSE	1	1.4	3	4.3	-	-	4	5.1
	A Levels	8	11.4	5	7.1	-	-	13	16.6
	BTEC	5	7.1	1	1.4	-	-	6	7.7
	HNC	2	2.8	2	2.8	-	-	4	5.1
	Diploma	9	12.8	11	15.7	-	-	20	25.6
	Degree	5	7.1	2	2.8	1	12.5	8	10.3
	Honours Degree	1	1.4	6	8.6	7	87.5	14	17.9
	Masters Degree	-	-	1	2.9	-	-	1	1.3

Findings on previous healthcare experience

Most the BSc (Hons) participants (52.8%) did not have any healthcare experience prior to commencing the adult nursing course in comparison to the PgDip cohort, where 62.5% of the participants had previous experience in healthcare on entry to the programme (Table 12).

Findings on academic qualifications

The sample's highest qualification variable prior to commencing their nursing course revealed a considerable variation. Post GCSE level (A Level, BTEC, HNC and Diploma) qualifications were achieved by 68.5% of the BSc (Hons) participants (Table 12). Higher education qualifications, which included, Degree, Honours Degree and Master's Degree, were achieved by 21.4% of this cohort. Comparison of the participatory groups course enrolment criteria reveals that the BSc (Hons) participants are accepted with compulsory schooling qualifications as opposed to the PgDip participants, where the minimum entry criterion is a UK accredited degree with a 2:2 classification. Therefore, every PgDip participant (100%) attended a validated higher education learning experience and achieved a UK accredited higher education award prior to commencing the adult nursing course.

5.3. Pre-intervention results

This section describes findings from data collected using the ASSIST (Tait et al, 1998) and CDMNS (Jenkins, 1985), as discussed in the methodology (Chapter 3).

5.3.1. Approaches to learning

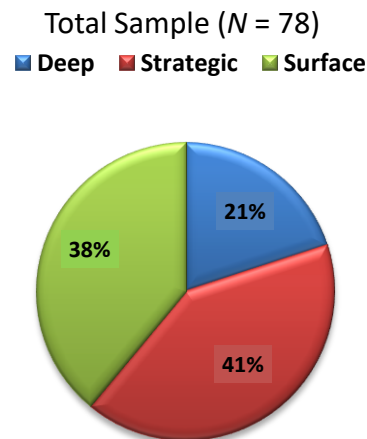
In line with the research methodology (Chapter 3, sections 3.5.1 and 3.9.1) and data analysis (Chapter 4, sections 4.4 and 4.5), the scoring key accompanying the ASSIST questionnaire (Tait et al, 1998) was used to calculate the score for all three ATLs (deep, strategic and surface), for each participant. The largest of the ATL scores indicated a student's propensity towards the associated ATL. Reliability of the ASSIST was ascertained using "the Cronbach's Alpha (α) test as the statistical measure of internal consistency" for each ATL (Pallant, 2013, p. 101). In this study, Cronbach's α score for the deep approach was 0.94, the strategic approach was 0.93 and the surface approach was 0.80. These outputs certify to the internal consistency of the inventory with this sample in this study (Pallant, 2013).

Table 13: Pre-intervention approaches to learning of participant groups

ATL comparison amongst participatory groups								
Subscales			Deep ATL		Strategic ATL		Surface ATL	
Participant groups	<i>n</i>	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
BSc (Hons)	Inner London	35	7	10%	12	17%	16	23%
	Suburban	35	5	7%	18	26%	12	17%
Total of BSc (Hons)		70	12	17%	30	43%	28	40%
PgDip		8	4	50%	2	25%	2	25%
Total participants		78	16	21%	32	41%	30	38%

Following the analysis process of using *Z* standard scores to determine each participant's dominant ATL, detailed in Chapter 4 (Section 4.5), the analysis yielded that at the Pre-intervention data collection (Table 12), the deep approach was preferred by 50% PgDip participants. The Suburban participants (26%) revealed a preference for the strategic approach and the surface approach was the preferred ATL of the majority of Inner London participants (23%).

Figure 4: Pre-intervention approaches to learning



At the Pre-intervention stage, analysis yielded that 38% of the entire sample indicated a preference for the surface approach, in comparison to the 21%, who adopted the deep approach (Figure 4). The strategic approach (41%) was the predominant approach adopted by the adult nursing students.

Pallant's (2012) directive on "analysing categorical (nominal) and ordinal (ranked) scales" (p. 213) such as this study's non-parametric data, the Kruskal–Wallis non-parametric version of the one-way between groups Analysis of Variance (ANOVA) test, was undertaken (See Chapter 4, Sections 4.4-4.6), to investigate the differences in ATLs adopted amongst the three participant groups.

5.3.2. Kruskal-Wallis Test

The Kruskal-Wallis non-parametric test was selected to compare the categorical independent ATL variable in the three participant groups, as this test's stipulated criterion that "different people must be in the different groups" complied with this comparative analysis (Pallant, 2013, p. 243). While this test revealed variances in the ATL scores amongst the all participant groups, it was not be able to identify which component of the ATL subscales contributed to the differences in the preferred ATL (Table 14).

Table 14: Comparison of participant groups' ATL

Kruskal–Wallis Test					
ATL Median Rank					
	ATL	<i>n</i>	Deep Approach	Strategic Approach	Surface Approach
BSc (Hons)	Inner London	35	35.13	34.80	41.53
	Suburban	35	42.54	45.14	38.81
	PgDip	8	45.31	35.38	28.75
Significance difference			0.29	0.13	0.34

The Kruskal-Wallis test (Pallant, 2013) revealed variances in the participants' ATLs however, no statistically significant differences were identified. PgDip participants recorded the highest median rank for the deep approach (*Mdn* = 45.3), BSc (Hons) Suburban participants recorded the highest median rank for the strategic approach (*Mdn* = 45.1) and the highest median rank for the surface approach (*Mdn* = 41.5) was recorded by BSc (Hons) Inner London (Table 14). To identify whether a relationship existed amongst the ATLs for each participatory group, as proposed by research objective 3 (Chapter 1, Section 1.7), further statistical investigation was required.

5.3.3. Friedman Test

To determine whether a relationship or difference existed between the scores of each ATL for each of the participant groups, the non-parametric Friedman Test was then undertaken (Table 15).

Table 15: Comparison of ATL differences amongst participant groups

Friedman Test						
ATL Median Ranks						
	ATL	<i>n</i>	Deep Approach	Strategic Approach	Surface Approach	Statistical significant difference
BSc (Hons)	Inner London	35	2.09	2.80	1.11	0.001
	Suburban	35	1.94	2.97	1.09	0.001
	PgDip	8	2.19	2.69	1.13	0.01

Test results indicated a statistically significant difference in the ATL scores for all participant groups. Median values across the three ATLs (deep, strategic and surface) indicated a decreasing order of the strategic approach, followed by deep approach and lastly surface approach, for all three participant groups - $p < 0.01$. This indicated that with each participant group, the scores of the strategic approach were the highest, followed by the deep approach and finally the scores of the surface approach. Although a statistical significance was detected, the Friedman Test was not able to identify which of the approaches contributed to the significant difference amongst the ATLs. This instigated further analysis.

5.3.4. Wilcoxin Signed Rank Test

The significant difference yielded by the Friedman Test prompted the Wilcoxin Signed Rank test to be undertaken. This test investigated which of the ATLs contributed to the statistical significant difference for each participant group (Table 16).

Table 16: Statistical differences between ATLs for each participant group

Wilcoxin Signed Rank Test				
Statistical significant difference in ATLs				
ATL comparator pairs		Deep / Strategic ATL	Strategic / Surface ATL	Surface / Deep ATL
BSc (Hons)	Inner London	0.001	0.001	0.001
	Suburban	0.001	0.001	0.001
	PgDip	0.128	0.012	0.017

The findings revealed that an equal statistically significant difference was present amongst all three ATL pairs (deep/strategic ATL, strategic/surface ATL, surface/deep ATL) for both BSc (Hons) groups. However, with the PgDip group, the difference lay only within two ATL's clusters (Strategic/Surface ATL and Surface/Deep ATL). This further indicated that the Deep/Strategic ATL cluster, did not contribute to the statistical differences found between the ATLs for the PgDip participants.

5.3.5. Multivariate Test analysis

Thereafter the Multivariate Tests were used to describe the characteristics and shape of the data set. These tests compared participants' responses to the different items (questions) in each ATL subscale, for each of the participant groups (Pallant, 2013). The Wilks Lambda value is an element of the Multivariate Tests which specifically reveals whether a statistical significance ($p < 0.05$), is present within the dataset (Pallant, 2013). The ATLs (deep, strategic and surface) for all of the participant groups were examined using this statistical sequence. The findings indicated that the surface approach findings were significant for all three participant groups (Table 17). The strategic approach findings were significant for the BSc (Hons) participants and with the deep approach, statistical significance was observed only for the BSc (Hons) Suburban participants.

Table 17: Comparison of statistical differences amongst participants' ATLs

Multivariate Tests: statistical significant difference in ATLs							
		Wilks' Lambda score					
	ATL	Deep ATL	Effect size	Strategic ATL	Effect size	Surface ATL	Effect size
BSc	Inner London	0.255	0.117	0.001	0.641	0.001	0.776
	Suburban	0.003	0.354	0.001	0.728	0.001	0.921
	PgDip	0.091	0.698	0.057	0.855	0.02	0.838

In addition to the above results, the Multivariate Tests also generated the Partial Eta Squared / Effect size value. This finding illustrates the size of the statistical effect for each of the significant results (Table 17). Cohen (1988, pp. 284-7), cited in Lindblom-

Ylänne et al (2015) asserts that the magnitude of the statistical effects is measured as follows:

- 0.01 = small,
- 0.06 = moderate,
- 0.14 = large effect.

At this Pre-intervention phase, very large statistically significant effects were yielded, for all participant groups' ATLs, thereby confirming that these outcomes did not occur randomly by chance (Pallant, 2013). Additionally, the surface approach findings yielded the largest effects, for all three participant groups, thus certifying to the rigour of these findings.

The Multivariate Descriptive Statistics test also revealed the specific subscale of the ASSIST scales (Tait et al, 1998) which contributed to the adoption of a particular ATL for each of the groups (Section 3.5.1, Table 5). To illustrate this finding for the strategic approach subscales, the 'Monitoring effectiveness' component yielded the highest confidence score (Table 18). Therefore, in relation to all participants who indicated that the strategic approach was their dominant approach, the 'Monitoring effectiveness' component, was the most likely factor which influenced the adoption of the strategic approach.

Table 18: ATL with subscale medians for all participant groups

Strategic Approach Median totals			
Subscale	Median Totals (Standard Deviation)		
Participant groups	BSc (Hons)		PgDip
	Inner London	Suburban	
1.Organised Studying	14.97 (3.6)	15.91 (2.9)	14.63 (3.4)
2.Time Management	14.29 (4.1)	15.51 (4.0)	14.13 (4.3)
3.Alertness to Assessment	14.91 (3.6)	16.37 (2.5)	13.75 (4.4)
4.Achieving	15.94 (3.1)	16.86 (2.5)	17.25 (2.3)
5.Monitoring effectiveness	16.89 (2.5)	18.66 (2.0)	18.12 (2.0)

Despite this test indicating which subscale component contributed to the adoption of the dominant ATL, it was not able to reveal which subscale component/s influenced the statistically significant difference for each of the ATLs. The Pairwise Comparison

analysis was undertaken to identify how each subscale component interacted with each other for each ATL. This resulted in the identification of the specific ATL subscale which influenced the statistically significant adoption of the particular ATL. To illustrate this finding, with the strategic approach, for the BSc (Hons) Inner London participants, the subscale 'Monitoring effectiveness' achieved the highest median value (Table 18) thus most likely influenced the adoption of this approach. Thereafter, the Pair-wise Comparison demonstrated that the 'Monitoring effectiveness' subscale had a statistically significant association with other subscale elements 1, 2 and 3 within the strategic approach (Table 19).

Table 19: Inter subscale relationships within the Strategic Approach

Pairwise Comparison		
Strategic Approach Subset correlation : BSc (Hons) Inner London		
Strategic subset	Strategic subset comparator	SD
1 Organised Studying	2- Time Management	0.882
	3- Alertness to Assessment	1.000
	4- Achieving	0.667
	5- Monitoring effectiveness	0.001
2 Time Management	1- Organised Studying	0.882
	3- Alertness to Assessment	1.000
	4- Achieving	0.090
	5- Monitoring effectiveness	0.001
3 Alertness to Assessment	1- Organised Studying	1.000
	2- Time Management	1.000
	4- Achieving	1.000
	5- Monitoring effectiveness	0.010
4 Achieving	1- Organised Studying	0.667
	2- Time Management	0.090
	3- Alertness to Assessment	1.000
	5- Monitoring effectiveness	0.593
5 Monitoring effectiveness	1- Organised Studying	0.001
	2- Time Management	0.001
	3- Alertness to Assessment	0.010
	4- Achieving	0.593

Following the sequence of analysis detailed earlier, all subscales of each ATL were correlated for the three participant groups. The specific subscale/s that influenced the adoption of the dominant ATL, together with the statistical significance (value above the subscale), were identified and is represented in Table 20.

Table 20: Subscale influencing adoption of ATL

Statistical significant difference within ATL subscales			
Wilks Lambda and Pairwise Comparison subscale findings			
ATLs	Deep ATL	Strategic ATL	Surface ATL
BSc (Hons)	Inner London	0.255	0.001
	Suburban	No SD	1. 'Monitoring effectiveness'
PgDip	Inner London	0.003	0.001
	Suburban	1. 'Relating ideas'	1. 'Monitoring effectiveness'
PgDip	Inner London	0.091	0.057
	Suburban	No SD	No SD

At the Pre-intervention stage, the Suburban participants who indicated that the deep, strategic and surface was their dominant ATL, were influenced by the 'Relating ideas' subscale ($p = 0.003$). BSc (Hons) participants who adopted the strategic approach as their preferred ATL, were influenced by the 'Monitoring effectiveness' subscale ($p = 0.001$). The subscales, 'Syllabus boundedness' and 'Fear of failure' influenced the BSc (Hons) Inner London ($p = 0.001$) and the PgDip ($p = 0.02$) students' adoption of the surface approach. In comparison, only the 'Fear of failure' subscale influenced the Suburban students' preference for the surface approach ($p = 0.001$) (Table 20).

5.3.6. Approaches to learning and gender association

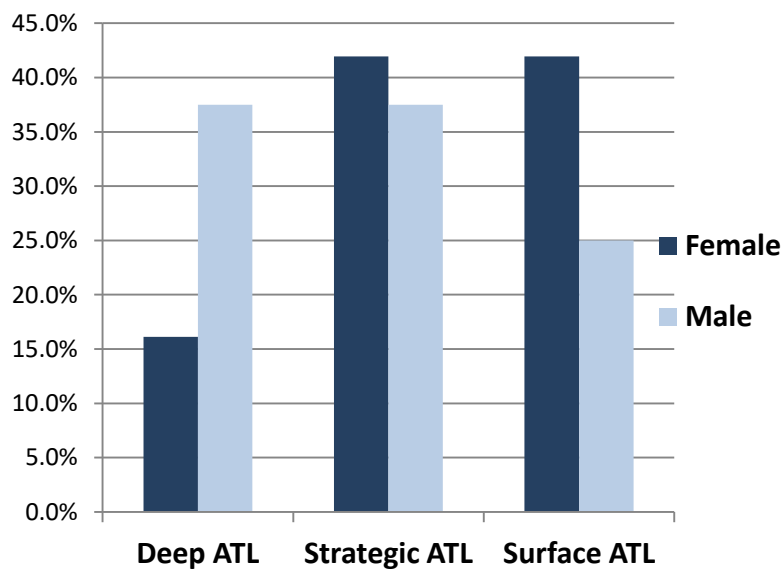
At the Pre-intervention stage, 38% of the male participants adopted the deep approach in comparison to the female participants (16.1%). The strategic and surface approaches were adopted by higher percentages of female participants as compared to the male participants (Table 21).

Table 21: Findings within Gender of Respondent variable

ATL and Gender correlation							
ATLs		Deep ATL		Strategic ATL		Surface ATL	
Count		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Females	(<i>N</i> = 62)	10	16.%	26	42%	26	42%
Males	(<i>N</i> = 16)	6	38%	6	38%	4	25%

To aid clarity, Figure 5 graphically demonstrates the differences in the ATL preferences between the male and female participants in this study. The male participants' adoption of the deep approach exceeded the female participants by 22%. The female participants' preference for the surface approach surpassed the male participants by 17%.

Figure 5: ATL and Gender Correlation



5.3.7. Clinical decision-making findings

The analysis of the CDMNS questionnaire (Jenkins, 1985) commenced with the calculation of the questionnaire's four individual subscales for each participant, within their participant groups:

- Subscale A - Search for Alternatives
- Subscale B - Canvassing of Objectives and Values
- Subscale C - Evaluation of Consequences
- Subscale D - Search for information

The internal validity of CDMNS subscales and questions within the subscale was assessed using the Cronbach's α coefficient test for reliability (Pallant, 2013) which reported a Cronbach's α score of 0.948. In comparison to studies using the CDMNS, Gorelick's (2010) Cronbach's α of 0.68 (p. 72) and Sedgewick et al's (2016) Cronbach's α of 0.741, this output of "above 0.7 certifies to the reliability" of the CDMNS findings in this study (Pallant, 2013, p. 101).

Table 22: Comparison of CDMNS Subscales

Clinical Decision Making Nursing Scale Subscales					
		Median value			
	Subscale	Subscale A	Subscale B	Subscale C	Subscale D
BSc	Inner London	35.40	38.85	38.54	37.60
	Suburban	36.40	40.62	40.48	37.14
	PgDip	38.62	37.75	39.25	39.12
Sample's Median value		36.17	39.53	39.48	37.55

Results reveal that Subscale A – 'Search for Alternatives' yielded the lowest score (36.17) with the BSc (Hons) Inner London students scoring the lowest (*Mdn* = 35.40) for this subscale when compared to the other participant groups (Table 22). Subscale B –'Canvassing of Objectives and Values' scored the highest total (*Mdn* = 39.53) amongst the CDMNS Subscales with the BSc (Hons) Suburban students achieving the highest score (*Mdn* = 40.62) amongst the other participatory groups.

To investigate associations amongst the CDM subscales in relation to participants' decision-making, the scores were treated to further analysis.

5.3.8. Friedman Test

To compare the scores of CDM scores in all three participant groups, the non-parametric version of the repeated measures ANOVA, the Friedman Test, was then undertaken to determine whether a relationship, or differences existed, between the scores of each CDM for each of the participant groups.

Table 23: CDMNS subscale statistical findings

Friedman Test						
Subscale Medians						
CDMNS Subscales		Subscale A	Subscale B	Subscale C	Subscale D	Statistical significant difference
BSc (Hons)	Inner London	1.90	2.90	2.83	2.37	0.01
	Suburban	1.89	3.24	3.00	1.87	0.001
PgDip		2.63	2.25	2.75	2.38	0.847

Test results indicated a statistically significant difference existed within the CDM scores, for the BSc (Hons) participant groups at the Pre-intervention stage (Table 23). The BSc (Hons) Suburban participants achieved the highest subscale score (Evaluation of Consequences) as well as the lowest subscale score (Search of Information). Despite these statistical findings, the Friedman Test was not able to identify which subscale contributed to the significant difference. This prompted further statistical analysis.

5.3.9. Wilcoxin Signed Rank Test

The Wilcoxin Signed Rank test followed to determine which CDM subscale pairs contributed to the statistical significant differences identified in the Friedman Test. The findings revealed that with the BSc (Hons) Inner London participants, three of the six subscale pairs contributed to the statistical significance (Table 24):

1. 'Search for Alternatives' / 'Canvassing of Objectives and Values'
2. 'Evaluation of Consequences' / 'Search for Alternatives' and

3. 'Search for information' / 'Search for Alternatives'

However, with the BSc (Hons) Suburban participants, the statistical significance resulted from four of the six subscale pairs:

1. 'Search for Alternatives' / 'Canvassing of Objectives and Values',
2. 'Search for information' / 'Canvassing of Objectives and Values',
3. 'Evaluation of Consequences' / 'Search for Alternatives'
4. 'Search for information' / 'Evaluation of Consequences'

In comparison, the PgDip's CDMNS results did not reveal any statistically significant findings.

Table 24: CDMNS subscales contributing to statistical significance

Wilcoxin Signed Rank Test							
Statistical Significant Differences within CDMNS subscales							
Subscale comparison pairs		Subscale A/ Subscale B	Subscale C/ Subscale B	Subscale D/ Subscale B	Subscale C/ Subscale A	Subscale D/ Subscale A	Subscale D/ Subscale C
BSc(Hons)	Inner London	0.010	0.680	0.082	0.010	0.010	0.205
	Suburban	0.001	0.715	0.001	0.001	0.828	0.001
PgDip		0.394	0.270	0.261	0.574	0.735	0.892

5.3.10. Correlation between ATL and CDM scores

To answer the research question and the proposed hypotheses, correlation analysis was undertaken to explore whether a relationship existed between the participants' ATL (independent variable) and their CDM (dependent variable) scores (Pallant, 2012). The ATL and CDM scores were rank data, therefore the Spearman's Rank Order Correlation (*rho*) was selected as it is "designed for use with ordinal or rank data" (Pallant, 2013, p. 133) (Table 25).

Table 25: Correlation between ATL and CDM Rank Scores

Spearman's rho correlation		
All participant groups		
Correlation	ATL	0.311**
Coefficient	CDM	1.000
SD (2-tailed)		0.006
<i>N</i>		78

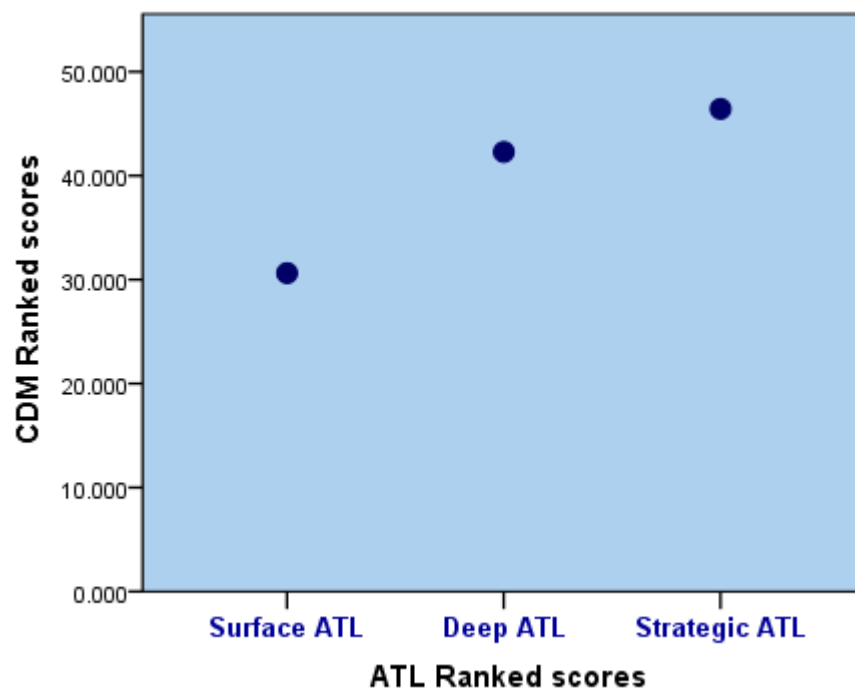
**Correlation is significant at the 0.01 level (2-tailed)

Thus, the relationship between participants' ATL scores (measured by the ASSIST) and CDM scores (measured by the CDMNS) was investigated using the Spearman rho correlation coefficient. Preliminary analysis was performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity existed. The results indicated a strong positive correlation between the two variables, r (strength of the relationship) = 1.000, $N = 78$, $p < 0.006$, with CDM associated to ATLs (Pallant, 2013) (Table 25). Cohen (1988, p. 79) suggests that the strength of the correlation can be determined as follows:

Small	$r = 0.10 - 0.29$	
Medium	$r = 0.30 - 0.49$	
Large	$r = 0.50 - 1.0$	(Pallant, 2013, p.139)

Additionally, Cohen (1988) confirms "that a correlation of 1 indicates a perfect positive correlation" (p. 139). Therefore, these findings support that there is a strong correlation between the participants ATL scores and CDM scores ($r = 1.0$). Moreover, the results illustrate a strong positive relationship between the participants' approach to learning and their clinical decision-making.

Figure 6: Approaches to learning and clinical decision-making correlation



The findings indicate that a statistically significant relationship exists between the participants' CDM and ATL (Figure 6). However, participants with the highest CDM scores indicate that their preferred ATL is the strategic approach. These results further indicate that participants with the lowest CDM scores indicate a preference for the surface approach. Although these findings do not support the study's hypothesis, it does however confirm that with this sample, students who adopt the surface approach have the lowest CDM ability.

5.4. Post-intervention Results

The presentation of the Post-intervention results followed the Pre-intervention sequence (Sections 5.3.1-10) and commenced with the analysis of the participants' ATL measured by the ASSIST (Tait et al, 1998) (Table 26). Correlations between the sample's demographic variables and ATLs are also reported. Thereafter, the participants' CDM was analysed as assessed by the CDMNS (Jenkins, 1985). The correlation between the participants' ATL and CDM is also reported. This section ends with the presentation of comparative results revealed between the Pre and Post-intervention analysis.

5.4.1. Approach to learning findings

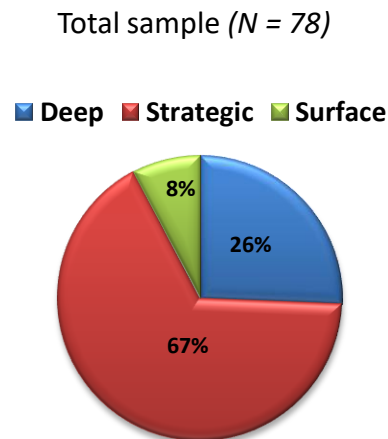
Post-intervention findings illustrate (Table 26, Figure 7) that 26% of the sample preferred the deep approach. The majority of the sample (67%) indicated that the strategic approach was their predominant ATL. The surface approach was preferred by 8% of the participants.

Table 26: Dominant ATL comparison

ATL comparison amongst participatory groups								
ATLs			Deep ATL		Strategic ATL		Surface ATL	
Participant Groups		<i>N</i>	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
BSc (Hons)	Inner London	35	8	11.4%	23	33%	4	5.7%
	Suburban	35	8	11.4%	25	36%	2	2.8%
Total of BSc (Hons)		70	16	22.8%	48	69%	6	8.6%
PgDip		8	4	50%	4	50%	-	-
Total participants		78	20	26%	52	67%	6	8%

Analysis also demonstrated that a smaller proportion of participants from the three participatory groups have indicated that the surface approach was their preferred ATL, in comparison to the larger percentage of participants who adopt the deep and strategic approaches. These results prompted further statistical exploration into the relationship amongst the ATLs for each participatory group.

Figure 7: Post intervention approach to learning



In line with the Pre-intervention analysis sequence, to investigate whether any the differences in the ATL scores of the three participant groups existed at this point, the Kruskal-Wallis test was undertaken (Pallant, 2013). Although the Kruskal-Wallis revealed the differences in the scores of the ATL's amongst the three participant groups, these differences were not statistically significant. However, it is worth noting that if this test yielded a significant difference, it would not be able to identify where or which component contributed to the significance (Pallant, 2013, p. 109).

5.4.2. Kruskal-Wallis Test

The Kruskal-Wallis test compared the ATL (independent variable) of the three participant groups (Table 27) (See Section 5.3.2).

Table 27: Comparison of ATL findings amongst participant groups

Kruskal – Wallis Test				
		Median totals		
	ATLs	Deep Approach	Strategic Approach	Surface Approach
BSc (Hons)	Inner London	35.00	34.63	38.09
	Suburban	42.14	44.06	42.71
	PgDip	47.63	40.88	31.63
Significance difference		0.236	0.216	0.404

Similar to the Pre-intervention result, the Kruskal-Wallis Test did not reveal any statistically significant findings across the three ATLs for all participatory groups.

Congruent to the result at the Pre-intervention stage, the highest score for the deep approach was recorded by the PgDip participants and the highest score for the strategic approach was recorded by the BSc (Hons) Suburban participants. A difference was noted, however, with the surface approach values. Post-intervention, the BSc (Hons) Suburban participants scored the highest value as opposed to the BSc (Hons) Inner London participants at the Pre-intervention stage. The relationship amongst the ATLs for each participatory group was then analysed.

5.4.3. Friedman Test

The Friedman Test was carried out to investigate whether a relationship existed, between the scores of each ATL for each of the participant groups (Table 28) (See discussion - Section 5.3.3).

Table 28: Friedman Test: Comparison of ATLs amongst participant groups

Friedman Test					
ATL Median Ranks					
ATLs		Deep ATL	Strategic ATL	Surface ATL	Statistical significant difference
BSc (Hons)	Inner London	1.93	2.87	1.20	0.001
	Suburban	1.96	2.93	1.11	0.001
	PgDip	2.13	2.88	1.00	0.001

Besides the differences in the numerical values, the results of the Friedman Test followed an identical trend to the Pre-intervention findings. As previously yielded, statistically significant differences were detected in the ATLs for all participant groups at the Post-intervention stage. For all three participant groups, the median values once again indicated a decreasing order of the strategic approach, followed by the deep approach and lastly, the surface approach values ($p < 0.05$) (Table 28). The Friedman Test was however, unable to identify which approach contributed to the significant differences in the ATLs.

5.4.4. Wilcoxin Signed Rank Test

To investigate which ATL contributed to the significant findings detected in the Friedman Test, the results were then subjected to the Wilcoxin Signed Rank test (Table 29) (See discussion - Section 5.3.4).

Table 29: Wilcoxin Signed Rank: comparison of ATL pairs

Wilcoxin Signed Rank Test				
Statistical significant difference in ATLs				
ATL subscale comparisons		Deep ATL/ Strategic ATL	Strategic ATL/ Surface ATL	Surface ATL/ Deep ATL
BSc (Hons)	Inner London	0.001	0.001	0.001
	Suburban	0.001	0.001	0.001
	PgDip	0.250	0.120	0.120

In line with the Pre-intervention results, BSc (Hons) findings revealed that statistically significant differences were present for all three ATL pairs (deep/ strategic approach, strategic/ surface approach, surface/ deep approach) (Table 29). In comparison to Pre-intervention findings, at this stage the PgDip group's results did not detect a statistical difference with any of the ATLs. Thus, suggesting that the probability of the PgDip results for this specific test was due to chance.

5.4.5. Multivariate Tests analysis

The statistical significant findings detected with the Wilcoxin Signed Rank Test (Table 30), required further investigation to determine which approach within the ATL pairs contributed to the statistical significance.

Table 30: Significant differences amongst ATLs

Multivariate Tests : Statistical Significant Differences amongst ATLs							
Wilks' Lambda score							
ATL finding		Deep ATL	Effect size	Strategic ATL	Effect size	Surface ATL	Effect size
BSc (Hons)	Inner London	0.390	0.227	0.001	0.514	0.001	0.551
	Suburban	0.001	0.215	0.001	0.421	0.001	0.611
	PgDip	0.606	0.287	0.535	0.477	0.399	0.419

In contrast to the Pre-intervention findings, the Multivariate Test: Wilkes' Lambda value revealed that findings were only significant for the BSc (Hons) groups and not with the PgDip results (Table 30). This suggests that the probability of the PgDip results for this specific test, was due to chance. The BSc (Hons) Suburban results were statistical significant in all three ATLs as opposed to the BSc (Hons) Inner London results, which did not reveal a significance for the deep approach. Drawing

from Lindblom-Ylänne et al's (2015), discussion of the magnitude of the statistical effects, very large effects were detected with this sample (See Section 5.3.5). The BSc (Hons) Suburban participants' results yielded the largest effect for the surface approach and the BSc (Hons) Inner London participants' results detected the largest effect for the strategic approach.

In line with the Pre-intervention sequence of analysis, the Multivariate Analysis: Descriptive and Pairwise Comparisons were carried out (discussed in Section 5.3.5). These investigations revealed the specific ATL subscale which contributed to the participants' adoption of their preferred ATL at the Post-intervention stage. Table 31 illustrates subscale findings with the statistical significance value above the subscale.

Table 31: ATL subscale influencing adoption of ATL

Statistical significant difference within ATL subscales				
Wilks Lambda and Pairwise Comparison subscale findings				
Participant group	Deep ATL	Strategic ATL	Surface ATL	
BSc (Hons)	Inner London	0.390 No SD	0.001 1. Alertness to assessment 2. Achieving 3. Monitoring Effectiveness	0.001 1. Lack of purpose 2. Unrelated memorising 3. Fear of failure
	Suburban	0.001 1. Seeking meaning 2. Relating ideas	0.001 1. Organised study 2. Time management 3. Alertness to assessment 4. Monitoring Effectiveness	0.001 1. Lack of purpose 2. Fear of failure 3. Unrelated memorising
PgDip	0.606 No SD	0.535 No SD	0.399 No SD	

In comparison to the Pre-intervention stage (Table 20) subscales that influenced the students' preference for a particular approach changed (Table 31). The deep approach was influenced by the 'Seeking meaning' and 'Relating ideas' subscales. The strategic approach was influenced by four subscales as opposed to only one subscale identified at the Pre-intervention stage. At this Post-intervention point, subscales that influenced the adoption of the surface approach increased in number and changes in the influencing subscales were identified. Subscale 'Syllabus

boundness' was replaced by 'Unrelated memorising' and 'Lack of purpose'. Additionally subscale 'Fear of failure' also contributed to the adoption of the Surface Approach.

5.4.6. Approach to Learning and Gender Correlation

The gender of respondent variable and ATL correlation following the research intervention changed in comparison to the Pre-intervention findings (Table 21).

Table 32: Correlation between Gender and Approach to Learning

ATL and Gender correlation							
ATLs		Deep ATL		Strategic ATL		Surface ATL	
Count		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Females	(<i>N</i> = 62)	10	16%	46	74%	6	10%
Males	(<i>N</i> = 16)	8	50%	6	38%	2	13%

At the Post-intervention stage, 12% more male participants adopted the deep approach and 32% more female participants preferred the strategic approach, in comparison to the Pre-intervention stage. A preference for the surface approach was observed by a larger percentage of the male participants at the Post-intervention stage (Table 32, Figure 8). These findings confirm that in this study, the male participants have displayed a stronger preference for the deep and surface approaches. The strategic approach is the female participants' dominant preference (Figure 8).

Figure 8: ATL and Gender Correlation: Post-intervention

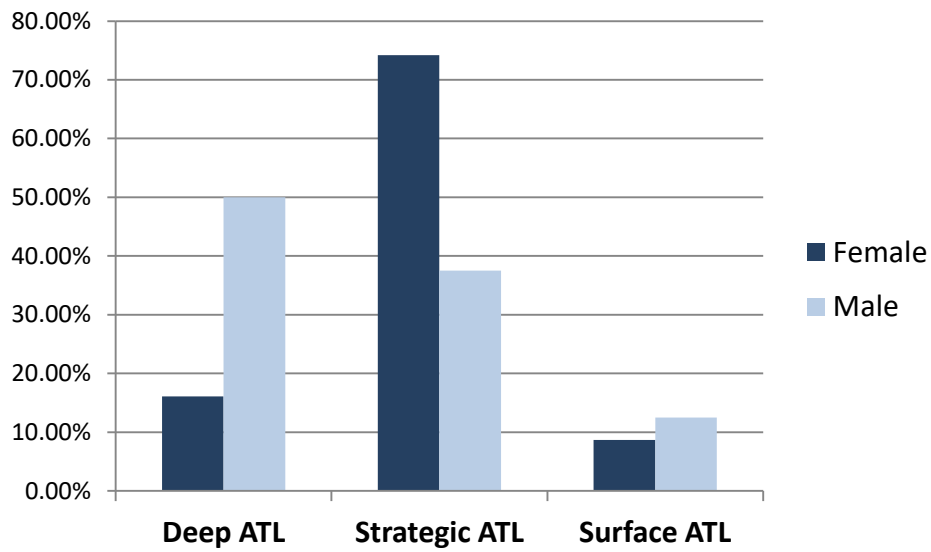


Figure 8 illustrates that the male participants' predisposition for the deep approach exceeded the female participants by 34% and their preference for the surface approach by 3%. The female participants increased their strategic approach dominance by 32% between the Pre and Post-intervention points (Table 21 and Table 32).

5.4.7. Clinical decision-making findings

In line with the analysis sequence at the Pre-intervention stage (Sections 5.3.7 - 10), this section commences with the calculation of the CDMNS' (Jenkins, 1985) four individual subscales for each participant within their participant groups:

- Subscale A - Search for Alternatives
- Subscale B - Canvassing of Objectives and Values
- Subscale C - Evaluation of Consequences
- Subscale D - Search for Information

The sample's median value for each subscale is represented in Table 33.

Table 33: CDMNS Subscale comparison

CDMNS Subscale Frequencies					
Median values					
Subscales		Subscale A	Subscale B	Subscale C	Subscale D
BSc (Hons)	Inner London	37.00	38.14	38.25	37.40
	Suburban	38.85	41.40	41.51	38.45
PgDip		40.25	40.00	39.12	39.50
Sample's median value		38.16	39.79	39.80	38.09

At the Post-intervention stage (Table 33), a comparison of the sample's subscale totals indicates that the Subscale C: 'Evaluation of Consequences' scored the highest value, with the BSc (Hons) Suburban participants achieving the highest value. Subscale D: 'Search for Information', achieved the lowest value when compared to the sample's subscale scores. The lowest individual subscale value - Subscale A: 'Search for Alternatives' was scored by the BSc (Hons) Inner London participants.

To explore how these CDM subscales related to each other in the decision-making process, statistical analysis progressed as follows:

5.4.8. Friedman Test

This test compared the CDM scores of the participant groups, to detect whether a relationship existed between the subscales within each group (Table 34).

Table 34: Friedman Test - CDMNS subscale comparison

Friedman Test						
CDMNS Median Ranks						
Subscales		Subscale A	Subscale B	Subscale C	Subscale D	Statistical significant difference
BSc (Hons)	Inner London	2.23	2.53	2.87	2.37	0.162
	Suburban	2.04	3.03	3.17	1.76	0.001
PgDip		2.88	2.63	2.38	2.13	0.673

In contrast to the Pre-intervention findings (Table 23), only the BSc (Hons) Suburban CDM scores indicated a statistically significant difference (Table 34). Incidentally, the Suburban participants also scored the highest (Canvassing of Objectives and Values) and the lowest (Search for Information) values amongst all the subscales. Although a statistical significant difference was identified it was not clear which of the subscales contributed to this outcome, hence further statistical analysis was undertaken.

5.4.9. Wilcoxin Signed Rank Test

The Wilcoxin Signed Rank test explored which CDM subscale pairs contributed to the overall subscale score, for each participant group.

Table 35: Wilcoxin Signed Rank - Comparison of CDM Subscale pairs

Wilcoxin Signed Rank Test							
Statistical Significant Differences within CDM pairs							
Subscale comparison pairs		Subscale A/ Subscale B	Subscale C/ Subscale B	Subscale D/ Subscale B	Subscale C/ Subscale A	Subscale D/ Subscale A	Subscale D/ Subscale C
BSc(Hons)	Inner London	0.132	0.522	0.368	0.057	0.529	0.212
	Suburban	0.001	0.584	0.001	0.001	0.784	0.001
	PgDip	0.887	0.359	0.778	0.461	0.477	1.000

When aligned to the Pre-intervention results, the statistical significance identified with BSc (Hons) Suburban CDM scores resulted from the same four (4) subscale pairs:

1. 'Search for Alternatives' / 'Canvassing of Objectives and Values',
2. 'Search for Information' / 'Canvassing of Objectives and Values',
3. 'Evaluation of Consequences' / 'Search for Alternatives' and
4. 'Search for information' / 'Evaluation of Consequences'

However, in comparison to the Pre-intervention results (Table 24) the BSc (Hons) Inner London participants' findings CDMNS subscale pairs which contributed to the statistical significance was reduced to only the: 'Evaluation of Consequences' / 'Search for Alternatives' pair.

Like the Pre-intervention outcome, (Table 24) the PgDip's CDMNS findings did not yield any statistically significant results.

5.4.10. Correlation between ATL and CDM scores

In line with the Pre-intervention analysis and to answer the research question and the hypotheses, Spearman's Rank Order Correlation analysis was undertaken to explore these relationships (Table 36).

Table 36: ATL and CDMNS correlation

Spearman's rho correlation		
All participant groups		
	ATL	1.000
Correlation Coefficient	CDM	0.441**
SD (2-tailed)		0.001
N		78

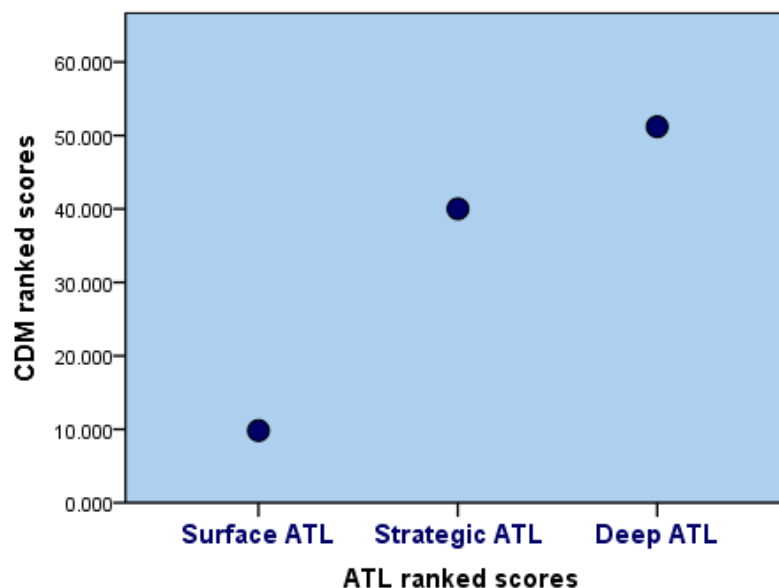
**Correlation is significant at the 0.01 level (2-tailed)

At the Post-intervention stage, analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. The results reveal a strong positive correlation between the variables, r (strength of the relationship) = 1.000, $n = 78$, $p < 0.001$, with CDM associated to ATLs (Pallant, 2013) (Table 36).

5.4.11. ATL and CDM Correlation

In answering, research objective 4 (Chapter 1, Section 1.7) the Spearman's rho correlation was undertaken to investigate whether an association existed between the participants' ATL and CDM findings at the Post-intervention stage.

Figure 9: Approach to Learning and Clinical Decision-making correlation



At the Post-intervention point, the deep approach correlated to the participants CDM (Table 36). This finding is a contrast to the Pre-intervention stage where a

statistically significant association existed between the strategic approach and CDM (Figure 6). At both Pre and Post-intervention stages, a negative correlation existed between the surface approach and the CDM scores (Figure 6 and Figure 9). Thus, the higher the surface approach score was, the lower the presenting CDM value.

In response to the aim of this research and the research objectives (Section 2.21), with this sample, participants whose dominant ATL is the deep approach, have shown to have a stronger CDM ability as opposed to participants who adopt the strategic and surface approaches. Additionally, these findings also confirm that, participants who adopt the surface approach, have a weaker CDM ability, in comparison to participants who adopt the deep and strategic approaches (Figure 9).

5.5. Differences between Pre and Post-Intervention Stages

The differences detected between the Pre and Post-intervention stages for each participatory group are presented, commencing with:

- Differences in ATLs adopted,
- Differences in the subscale/s influencing ATL preference and
- Differences in the influencing CDM subscales.

5.5.1. Differences in ATLs between Pre and Post-intervention

The proportion of the ATLs (deep, strategic and surface) adopted by the three participant groups, fluctuated between the Pre and Post-intervention stages for each of the participant groups (Table 37).

Table 37: ATL Comparison between Pre and Post-intervention

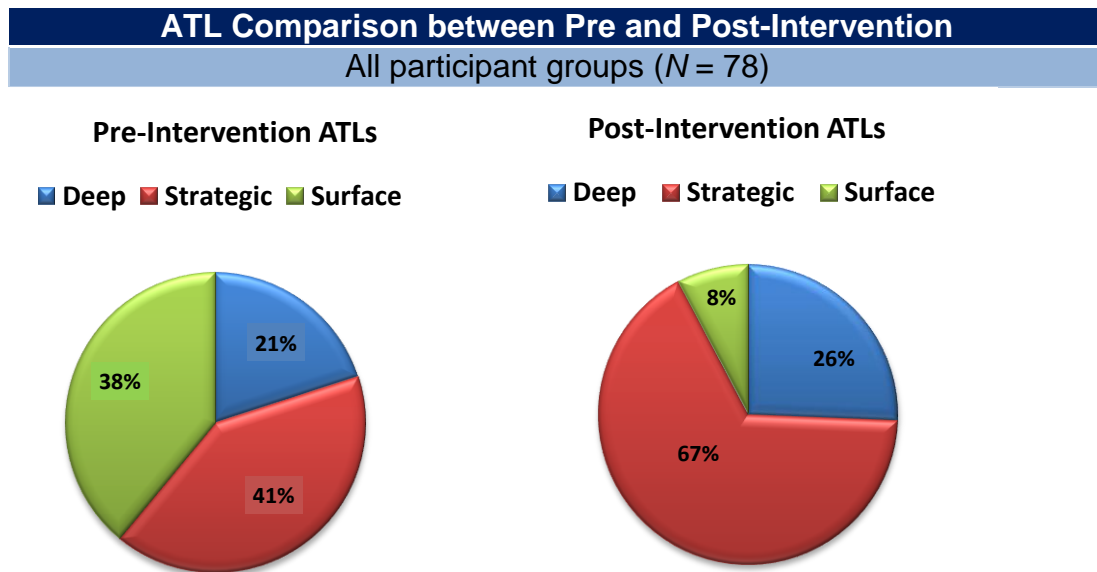
ATL Comparison between Pre and Post-Intervention													
ATLs		Deep ATL				Strategic ATL				Surface ATL			
Data Collection phase		Pre		Post		Pre		Post		Pre		Post	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
BSc (Hons)	Inner London	7	10%	8	11.4%	12	17%	23	33%	16	23%	4	5.7%
	Suburban	5	7%	8	11.4%	18	26%	25	36%	12	17%	2	2.8%
	Total	12	17%	16	22.8%	30	43%	48	69%	28	40%	6	8.6%
	PgDip	4	50%	4	50%	2	25%	4	50%	2	25%	-	-
Total participants		16	21%	20	26%	32	41%	52	67%	30	38%	6	8%

The strategic approach was the dominant approach of the three participant groups at the Pre and Post-intervention stages and increased from 41% at the Pre-intervention stage to 67% at the Post-intervention point. Participants' preference for the deep approach increased for both the BSc (Hons) cohorts following the study's intervention. The adoption of the surface approach decreased with all three participant groups. The BSc (Hons) groups decreased from 40% to 8.6% and none

of the PgDip participants indicated a preference for the surface approach at the Post-intervention stage.

5.5.2. Comparison of ATL preference between Pre and Post-intervention stages

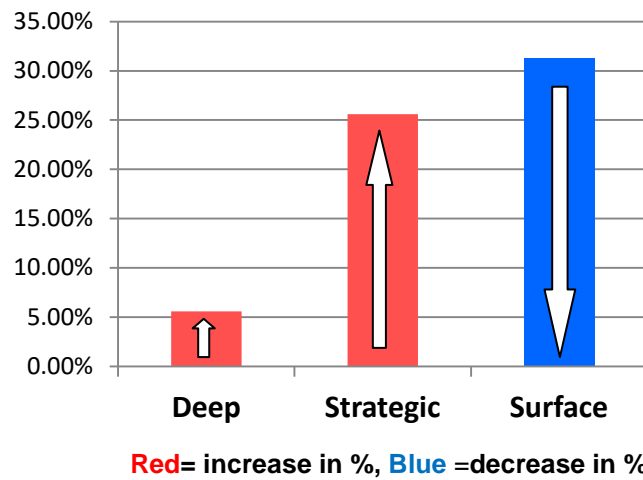
Figure 10: ATL comparison between Pre and Post-intervention stages



The participants' adoption of the deep approach increased at the end of the final academic year in comparison to their preference at the beginning of year (Figure 10). An affinity for the strategic approach increased by 26% between the two data collection stages. All three participant cohorts decreased their preference for the surface approach at the Post-intervention stage. This was evidenced by a decrease of 30% at the end of the academic year.

5.5.3. Percentage changes in ATLs between Pre and Post-intervention

Figure 11: Percentage difference of ATL changes at Post-Intervention



Drawing from Table 37 detailing the comparison between ATLs at Pre and Post-intervention stages and Figure 10, the above Figure 11, illustrates that the adoption of the deep approach increased 5% and the strategic approach increased by 26% at the end of the participants' final year. In comparison, students' preference for the surface approach, decreased by 30%. These findings indicate that numerous participants were receptive to modifying their dominant ATL and thus open to embracing a new learning approach following the research intervention.

5.5.4. Subscales influencing ATL preference at Pre and Post-intervention

Table 38: Comparison of effective ATL subscales between Pre and Post-intervention

Comparison of subscales that affected ATL choice between Pre and Post-Intervention stages			
Wilks Lambda and Pairwise Comparison subscale findings			
ATLs	Deep ATL	Strategic ATL	Surface ATL
BSc (Hons)	Inner London	No change	1. Alertness to assessment* 2. Achieving* 3. Monitoring effectiveness 4. Unrelated memorising
	Suburban	1. Relating ideas 2. Seeking meaning*	1. Monitoring effectiveness 2. Organised study* 3. Time management* 4. Alertness to assessment*
PgDip	No change	No change	1. Syllabus boundedness 2. Fear of failure

* Additional Subscale detected at Post-Intervention analysis

The ATL subscales which influenced the adoption of participants preferred ATL changed between the Pre and Post-intervention stages (see Table 20 and Table 31). At the Post-intervention stage (Table 38), the BSc (Hons) participants' choice of ATL was influenced by an increased number of subscales compared to their Pre-intervention findings. With the BSc (Hons) Suburban participants, the subscale 'Seeking meaning' combined with the 'Relating ideas' subscale which was yielded at the Pre-intervention stage, contributed to the preference for the deep approach at the Post-Intervention. The adoption of the strategic approach was further influenced by subscales, 'Organised study' and 'Time management', in addition to subscale 'Alertness to assessment' which affected both the BSc (Hons) cohorts. In addition to subscales 'Fear of failure' and 'Syllabus boundedness' evidenced at the Pre-intervention stage, subscales 'Unrelated memorising' and 'Lack of purpose'

contributed to the adoption of the surface approach for the BSc (Hons) participants at both the Inner London and Suburban campus sites at the Post-intervention analysis. In contrast to the PgDip cohort's Pre-intervention subscale findings which influenced the use of the surface approach, the Post-intervention findings indicate that these subscales were no longer influential (Tables 20 and 31). As a result, none of the PgDip participants indicated a preference for the surface approach (Tables 26 and 37).

5.5.5. Differences in CDMNS subscales between Pre and Post-intervention

CDMNS subscale median values changed for all participatory groups between the Pre and Post-intervention stages (Table 39). Additionally, subscales which scored the highest and lowest values changed at both data analysis stages. However, the BSc (Hons) Suburban participants scored the highest value on both data analysis points and the lowest subscale was scored by the BSc (Hons) Inner London students on both occasions.

Table 39: CDMNS subscale comparison at Pre and Post-Intervention stages

Comparison in CDMNS findings between Pre and Post-Intervention		
Subscale	Pre-Intervention	Post-Intervention
Sample's highest subscale	Canvassing of Objectives and Values	Evaluation of Consequences
Sample's lowest subscale	Search for Alternatives	Search for Information
Group scoring highest subscale	BSc (Hons) Suburban	BSc (Hons) Suburban
Group scoring lowest subscale	BSc (Hons) Inner London	BSc (Hons) Inner London

5.6. Phase 2: Qualitative Results

Following the Phase 2 qualitative analysis detailed in Chapter 3 (Sections 3.5.1 and 3.8), nine participants from both campus sites as well as from both nursing programmes, were interviewed (Table 40). The interviews took place at neutral venues, such as a meeting room, on the participant's choice of University campus site. On completion of the interview, participants were thanked for their contribution to this study and presented with a Certificate of Research Participation (Appendix 25). Due to unforeseen circumstances beyond their control, two participants (Interviewees: 8 and 9) did not attend their interview appointments (Table 40). Subsequent offers to reschedule for a more convenient time were also declined. Therefore, this section presents the findings from the interviews with seven participants from the BSc (Hons) Inner London, Suburban and the PgDip group participatory groups. In maintaining the assurance of anonymity, participants are identified by their chosen pseudonyms (Farrimond, 2013). Progression from initial to eventual themes is presented in Table 41. Employing the side by side merging of qualitative and quantitative data technique (Wisdom and Creswell, 2013), Table 42 illustrates the initial and eventual themes in association to the ATL and CDM subscales. To augment the quantitative findings, participants' direct quotes are embedded within the discussion in Chapter 6 (Driscoll et al, 2007).

Table 40: Anonymised participant interviewee information

Summary of interviewees					
Participant	Pseudonym	Course	Campus	ATL on commencement	ATL on completion
Participant 1	Cathy	BSc(Hons)	Inner London	Strategic	Deep
Participant 2	Andy	BSc(Hons)	Inner London	Surface	Strategic
Participant 3	Lisa	PgDip	Inner London	Deep	Deep
Participant 4	Bailey	PgDip	Inner London	Strategic	Strategic
Participant 5	Kelly	BSc(Hons)	Suburban	Surface	Strategic
Participant 6	Violet	BSc(Hons)	Suburban	Strategic	Strategic
Participant 7	George	BSc(Hons)	Suburban	Strategic	Deep
Participants 8 and 9	Did not attend the interview and declined offers to reschedule.		Suburban		

As described in Chapter 4 (Section 4.9) after repeated readings and in-depth engagement with the raw interview data, from the original eighty-four ($n = 84$) Level 1 categories, twenty ($n = 20$) emergent themes below, were formed (Graneheim and Lundman, 2004).

5.6.1. Initial themes

- | | |
|-------------------------------------|--------------------------------------|
| 1. Individual learning methods | 11. Documenting findings and actions |
| 2. Learning at university | 12. Prioritising care and actions |
| 3. Individual learning ability | 13. Escalate concerns |
| 4. Previous learning experience | 14. Patient and environmental safety |
| 5. Learning many different diseases | 15. Talking to patients |
| 6. Support from others | 16. Patient monitoring |
| 7. Sharing responsibility | 17. Nursing interventions |
| 8. Risk assessments | 18. Nervous and scared |
| 9. Hospital politics | 19. Need to defend yourself |
| 10. Patient advocacy | 20. Need to gain confidence |

The initial themes were subjected continuously to newly formed categories until saturation was reached and no new themes or subcategories were identified (Braun and Clarke, 2006). This process resulted with the eventual five themes (Table 41).

5.6.2. Eventual Themes

Table 41: Progression from initial themes to eventual themes

Themes redefined		
Initial Themes		Eventual Themes
<ul style="list-style-type: none"> 4. Previous learning experience 6. Support from others 7. Sharing responsibility 8. Risk assessments 9. Hospital politics 10. Patient advocacy 	Role of the placement experience in developing students' CDM ability	Theme 1 Learning from others
<ul style="list-style-type: none"> 1. Individual learning methods 2. Learning at university 3. Individual learning ability 	Learning gained from being involved in the study	Theme 2 Self-agency for learning
<ul style="list-style-type: none"> 1. Individual learning methods 5. Learning many different diseases 12. Prioritising care and actions 11. Documenting findings and actions 13. Escalate concerns 17. Nursing interventions 	Role of the course in preparing students to make clinical decisions	Theme 3 Practice learning
<ul style="list-style-type: none"> 12. Prioritising care and actions 14. Patient and environmental safety 15. Talking to patients 16. Patient monitoring 	Prioritising the patient when making clinical decisions	Theme 4 Agency awareness
<ul style="list-style-type: none"> 4. Previous experience 18. Nervous and scared 19. Need to defend yourself 20. Need to be confident 	Students' perception of their CDM role	Theme 5 Productive uncertainty

5.6.3. Merging of the Qualitative and Quantitative data

In line with the merged mixed methodology, side-by-side data analysis strategy (Section 4.11) the initial and eventual themes were then associated to the ATL and CDMNS subscales, where possible (Table 42).

Table 42: Theme and Subscale Association

Theme and ATL / CDMNS Association		
Themes	Associated subscale	ATL / CDMNS association
Theme 1: Learning from others		
4. Previous learning experience	Relating ideas	ATL
6. Support from others	Search for information	CDMNS
7. Sharing responsibility	Canvassing of objectives and values	CDMNS
8. Risk assessments	Evaluation of consequences	CDMNS
9. Hospital politics	Search for alternatives	CDMNS
10. Patient advocacy	Canvassing of objectives and values	CDMNS
Theme 2: Self agency for learning		
1. Individual learning methods	} Non-specific association to ATL subscales	
2. Learning at university		
3. Individual learning ability		
12. Prioritising care and actions	Evaluation of consequences	CDMNS
Theme 3: Practice learning		
1. Individual learning methods	} Non-specific association to ATL subscales	
2. Learning at university		
5. Many different diseases	Syllabus-boundedness	ATL
12. Prioritising care and actions	Evaluation of consequences	CDMNS
11. Documenting findings and actions	Monitoring effectiveness	ATL
13. Escalate concerns	Evaluation of consequences	CDMNS
17. Nursing interventions	Search for information	CDMNS
Theme 4: Agency awareness		
12. Prioritising care and actions	Use of evidence, Relating ideas	ATL
14. Patient and environmental safety	Use of evidence, Relating ideas, Evaluation of consequences	ATL, CDMNS
15. Talking to patients	Search for alternatives	CDMNS
16. Patient monitoring	Evaluation of consequences	CDMNS
Theme 5: Productive uncertainty		
4. Previous experience	Relating ideas	ATL
18. Nervous and scared	Lack of purpose	ATL
19. Need to defend yourself	Fear of failure	ATL
20. Need to be confident	Search for alternatives, Canvassing of objectives and values	CDMNS

5.7. Chapter Summary

Results presented in Chapter 5 identified and compared the sample's ATLs and CDM at the Pre and Post-intervention stages. Subscales which contributed to these changes were also identified. Correlation analysis of the variables between the Pre and Post-intervention stages, demonstrate that students change their ATL preference, which included re-orienting away from the surface approach and towards the deep approach. Although the majority of the sample adopted the strategic

approach at the Pre and Post-intervention analysis stages, at the Post-intervention point, the findings revealed a strong positive correlation between the deep approach and participants CDM. The surface approach was identified to have the weakest correlation with CDM at both the Pre and Post-intervention stages.

Demographic findings revealed that the PgDip and BSc (Hons) Inner London participants were younger than the BSc (Hons) Suburban students. Although a larger percentage of BSc (Hons) Inner London students adopted the surface approach compared to the other participatory groups at the Post-intervention stage, there was also a greater decrease in the adoption of the surface approach with these participants between the Pre and Post-intervention points. These findings suggest that with this sample, the younger participants indicated a stronger tendency to adopt the surface approach at the Pre-intervention stage however following the research intervention, which focused on enhancing students' engagement with their learning, problem-solving and critical thinking skills, these participants were more receptive to changing their ATL than the older Suburban participants.

Gender associations revealed that male participants increased their adoption of the deep and surface approaches, following the intervention, in comparison to the female participants who demonstrated a stronger preference for the strategic approach at both data collection points. Qualitative findings support that students learn from others (Theme 1) in clinical practice however they expressed strong views of lacking confidence and the difficulties of making decisions in practice (Theme 5). Interview participants also revealed that an awareness of the Approaches to Learning Theory (Theme 2) and participating in the research intervention was a valuable experience that contributed to their development as learners and their decision-making ability in line with their imminent professional roles (Theme 3 and 4). Aligned to Driscoll's et al (2007) side-by-side comparison data merging method, the participants' direct quotes are embedded within the discussion in Chapter 6 as it serves to augment the quantitative findings. The results presented in this chapter will be evaluated against the research hypotheses, aim and objectives (Sections 2.18-20) in Chapter 6.

Chapter 6: Discussion

6.1. Introduction

The novelty of the findings should not be under-estimated: they offer us compelling new evidence for considering the approach to learning as malleable (Deakin Crick and Goldspink, 2014) and not as a fixed trait or predisposition. The findings here clearly show the potential for changing approaches to learning in relation to improving the 'goodness' of clinical decision-making (Dowding and Thompson, 2003) and, therefore, by extension, the transfer of learning from the academic to the practice setting. Transfer itself, however, is for another research project. In terms of the present study, the correlation between approaches to learning and clinical decision-making is the object and the hypothesis that the deep approach to learning correlates positively with quality clinical decision-making is established conclusively. That said, the findings indicate that the largest adoption of approach to learning pre- to post-intervention was oriented towards the strategic approach. Adoption of the strategic approach will be discussed in more detail later in this chapter, but it might be worth prefacing that by saying that the take-up of the strategic approach post-intervention would, on the face of it, seem attributable to design flaws in the intervention with, in hindsight, a little too much emphasis on study skills rather than deep learning. This highlights some of the tensions that face not just the student participants but also the researcher designing the intervention who is both Course Director for the participant cohort and the researcher. The culture and practices of the educational system within which the project took place, outlined in the opening chapter, have a powerful shaping effect on the activities of all those engaged in them (Deakin Crick and Goldspink, 2014), and facets of the strategic approach are deeply embedded in the current practices and values and curriculum trajectories prevailing in nursing studies at university, internalised, perhaps, by teacher and student alike.

Based on the review of the literature, this longitudinal, intervention, mixed methods study is the first to investigate whether a relationship exists between nursing students' Approach to Learning and their clinical decision-making. This chapter is organised to reflect the Research Objectives in Chapter 2 (Section 2.21). Findings

presented in Chapter 5 are integrated into the sub-paragraph discussion of each objective. Participants' authentic, "discrete, topically-bounded qualitative responses are associated with significant statistical findings rather than the entire qualitative dataset" (Driscoll, 2007, p. 25) are embedded within the Chapter's sub-paragraphs. Therefore the interview findings "provides additional qualitative information augmenting the structured quantitative responses" (Driscoll, 2007, p. 25). This interventional study focused on the independent approaches to learning (ATL) variable's association with the dependent clinical decision-making (CDM) variable. Therefore, substantial attention is given to exploring the participants ATL and the cogent subscale elements that influence this disposition. Participants' CDM is discussed in relation to the ATL correlation and inter-group comparisons. In addition to discussing Objective 4: Meta-learning effects of the research intervention independently in Section 6.5, this objective is also interwoven within discussions of Objectives 1-3 (Sections 6.2 - 4).

A core aim of this thesis is not to develop students' CDM as such but targeted to enhance students meta-learning aptitude and attitude when learning, so that this renewed immersion with their learning may improve their decision-making. From the data, several key issues have emerged which will form the crux of the discussion:

- for many students, the qualification to make clinical decisions appears to take precedence over the quality of the clinical decision-making, which means that students' choice of ATL modality tends to be achievement-dependent rather than value-dependent.
- This acts as a constraint on the extent to which students are agentic in determining for themselves how orientation to a particular ATL can impact positively on their learning about learning (meta-learning), rather than them uncritically accepting a learning approach due to external pressures.
- As the correlation of the deep approach to learning and decision-making in the context of nursing practice is not empirically established in the literature, these hold that clinical literacy, the ability to read clinical situations, on which effective CDM is predicated, is multi-dimensional and contingent on the multiple dimensions (represented as the subscales) of the deep approach to learning.

6.2. Objective 1: Approaches to learning of BSc (Hons) and PgDip nursing students

There is a well-established research-base associated with the approach to learning in the evaluation of the learning, teaching and assessment of student nurses and a substantial body of literature which seeks to independently identify the components of decision-making and the cognitive processes involved in making clinical decisions, but relatively little research that exists to provide evidence of the combined quantitative and qualitative relationship in the context of nurse education and nursing students practice.

This research provides the new empirical knowledge which indicates that students who adopt the deep approach appear to be better at making clinical decisions than students who adopt either the strategic or the surface approach. By implementing an educational research intervention, which focused on improving students' critical thinking, problem-solving, learning dispositions and engagement with their studying, this research has demonstrated an increase in the adoption of the deep approach with final year adult nursing students. Moreover, these findings support the underpinning research aim that this re-engagement with seeking to understand when learning, will enhance students' CDM when caring for patients in clinical practice. The alteration in students' dominant ATL may have also resulted from their participation in this research as they were introduced to and made aware of the Approach to Learning Theory, in combination with being enlightened on the merits of engaging with the subject material and the critical thinking and problem-solving strategies executed during the research intervention. Arguably, involvement in this study may have encouraged self-reflection as students pondered over the questions in the ASSIST instrument. Moreover, the combined participation in the research intervention and this study may well have emphasised the importance of embedding knowledge by seeking meaning in the learning content and as a result, enhanced students' academic development and perception of decision-making in clinical practice. These findings are further supported by participants' authentic responses during the semi-structured, qualitative interviews. Responding on the impact of participating this study and the research intervention, Participant Lisa stated that "knowledge gained during the course at university and with this project, is very

important as it's constantly informing actions when nursing patients". Cathy disclosed that since participating and attending the research intervention, her "researching improved ... felt motivated to use other resources and share ideas that I read about". George, who orientated from the strategic to the deep Approach, elaborated that participating has "highlighted my strengths and weaknesses ... I now read notes after lectures and this learning has increased my confidence when I'm in the ward making decisions ... but this should be done at the beginning of the course!". Postareff et al (2015) agree that in order to embrace the active, critical elements that promote the understanding composites of the deep approach, it is necessary for students to devote time and effort as well as use effective strategies when studying. None of the interviewees expressed the view that participation in this study had disadvantaged them or had a negative influence on their learning. Additionally, students' participation in this study and research intervention may have engendered discourse on the nature of this experience with peers. Participant Violet made it clear that the "study intervention helped me prepare assignments ... I understood the topic better, finally understood how to critique research articles ... my academic work improved ... and ended up with higher marks in my Best Practice assignment, so it's been good for me".

The findings also revealed that the proportions of the ATLs adopted by students varied amongst the three participatory groups and fluctuated between the Pre and Post-intervention data collection stages. The BSc (Hons) participants' implementation of the deep approach increased from 17% to 22.8% at the Post-intervention stage. The strategic approach was adopted by most of the students at both the Pre (41%) and Post-intervention (67%) stages. The surface approach also decreased from being the preferred ATL of 40% to 8.6% of the BSc (Hons) students and from 25% to none of the PgDip students indicating a surface approach disposition at the Post-intervention stage (Table 37). These findings are discussed in the subsequent paragraphs.

The creators of the ASSIST however recognise that the tool has been widely used in higher education to identify students who are experiencing difficulties with their methods of learning, as well as for evaluating the effects of teaching innovations. They however advise that all research using inventories needs to be interpreted with

caution and discretion, as “... it is unlikely that any inventory is fully capable of monitoring changes in student learning as a result of teaching innovations” (Tait et al, 1998, p. 263).

6.2.1. Increase in the adoption of the deep approach

Students’ affinity for the Deep Approach increased following the research intervention.

Re-orienting towards the deep approach may be attributed to students acknowledging deficits in their learning methods highlighted through the research intervention, thereby prompting a change in their study patterns, in order that their learning improve. More specifically, questions relating to the statistically significant subscales ‘Seeking meaning’ and ‘Relating ideas’, identified at the Post-intervention analyses, may have provoked this awareness (Table 31, Chapter 5, Section 5.4.5). The modification in their ATL preference may have resulted from the final year participants’ awareness that their 3rd year assessment grades contribute significantly towards their degree classification. Additionally, the increased affinity for the deep approach may have stemmed from participants exploring research on the ATL Theory (Diseth et al, 2010; Baeton et al, 2013; Lindblom-Ylänne et al, 2013), and realising that by altering their previous ATL to the deep approach, their learning ability would improve. This would grant them greater opportunity to embed their knowledge and transmit this learning when called for in clinical practice, as well as being academically successful. Moreover, as developing healthcare professionals, students may have weighed up that by embracing the principles of the deep approach, their judgement and decision-making capacity may improve and enhance their clinical proficiency. The increase in the adoption of the deep approach and the corresponding decrease in the use of the surface approach, suggests a change in students’ personal belief regarding the importance of their learning. Biggs’ (1985) definition of meta-learning as “being aware of and taking control of one’s own learning” (p. 204) strengthens the argument that participation in this study and awareness of the ATL Theory, resulted in students changing their learning behaviours. Chin and Brown’s (2000), qualitative analyses of science students’ ATLs, support that students’ alter their ATL following contextual changes to their

course as well as self-reflection. The significant effect of reflectivity and reflexivity could be aligned to deep approach subscales 'Relating ideas' from past experiences to the current learning situation as well as 'Seeking meaning' in the learning content. Participant Cathy's expression describes her meta-cognitive learning since participating in this study "... on the course teachers say ... it's your responsibility to go off and learn. You don't realise how much work you need to learn or which way is right. Now I go back and read and find out what it is ... I'm working for greater understanding ... might be easier when I come across that condition again". Adding to this claim, Chin and Brown (2000) cited in Lee (2015, p. 238) suggest that the changes to the ATLs resulted from the "degree of meta-cognition and information processing displayed by individual students differed depending on the particular student's beliefs about learning". Born out of this argument, the assumption that students will develop these higher functioning meta-learning skills by simply enrolling onto and attending higher education courses is negated. Additionally, the inference that students' progression through the academic years and being told "to go off and learn" allows for the take up of these skills, appears to also be repudiated. It is integral that curriculum design includes individual modules on meta-learning strategies thereby promoting students' reflexivity on their current learning behaviours as opposed to being embedded within the subject specific module content. Students may not develop the meta-learning capacity without "... the nurturing" from faculty (Morley, 2016, p. 162). Opportunities to enable students to acquire these skills and make them their own needs to be prominent, should nurse education providers want nursing students to actively learn with the aim of making meaning of the subjects so that the enhanced understanding will influence decision-making in nursing practice.

Although the BSc (Hons) Inner London participants' adoption of the deep approach increased between the Pre (10%) and Post-intervention (11.4%) stages (Table 37, Section 5.4.9), the subscales which may have resulted in this change were not statistically significant nor identified by the Wilks Lambda and Pairwise Comparison test (Table 31, Section 5.4.5). However, with the BSc (Hons) Suburban group subscales that contributed to the adoption of the deep approach changed and increased between the two data collection points. At the Pre-intervention stage, the subscale 'Relating ideas' contributed to the adoption of the deep approach. At the Post-intervention stage, subscales, 'Relating ideas' and 'Seeking meaning'

contributed to the increase of 17% to 22.8% in students' preference for the deep approach. Drawing from these findings, initiatives that encourage students to relate and associate the learning content to situations previously experienced or most likely to be encountered, may help students to grasp the relevance of the learning to their practice and enhance their affinity for the deep approach. Moreover, by encouraging students to seek meaning in their learning strengthens links between previously learnt content and supports the establishment of a cognate syntax or order, on the signals that constantly impress themselves on one's mind.

The curriculum is identical for both BSc (Hons) Inner London and Suburban groups therefore the differences in the students' inclination for the deep approach and the influencing subscales between the two cohorts warrants further discussion. The variability in the participants' age between the two campuses may have contributed to this outcome. The BSc (Hons) Suburban group had a larger percentage (27.1%) of students in the 31-40 year age category compared to the 7.1% of Inner London participants. The experiential learning acquired from students' previous healthcare employment (Table 12) may have also contributed to this outcome. However, the results captured at the first data collection indicate that the Suburban group had more students who did not have any previous healthcare experience in comparison to the Inner London participants (Table 12). This may suggest that mature students' life experience possibly allows them to engage more purposefully with the higher education learning opportunities. Consequently, the older students' life experiences may promote associations with previous learning encounters as evidenced in the use of the 'Relating ideas' subscale. The older students may also be more determined to be successful with the higher education learning opportunity and their chosen career as professional nurses. Therefore, despite Moore et al's (2013) argument (Chapter 2, Section 2.9) these non-traditional students appear to have shown a determination in constructing their professional identity. It is considered that these students are motivated to understand the learning content and, in doing so, seek added meaning in their learning. This line of reasoning is further supported by the identification of the 'Seeking meaning' subscale which contributed significantly to the adoption of the deep approach with the BSc (Hons) Suburban group, at the Post-intervention stage (Table 31). The previous contentions support that with this sample, the mature students showed a stronger ability to 'Relate ideas' from their extended life

experiences to their learning. In doing so, they sought to understand and make meaning of the subject thereby demonstrated a determination in expanding their learning potential in this higher education opportunity.

6.2.2. Decrease in the adoption of the surface approach

Following the research intervention, there was a strong reduction in students' disposition for the Surface Approach.

It is widely held that delivering information in a lecture theatre or classroom seldom develops decisional learning, practical judgement skills, attitudes and retrieval (Rennie et al, 2009), but rather encourages learner-dependency and uncritical adherence to algorithmic approaches to learning. The research intervention in this study, whose object was to transform learners from passive to active and participative, showed the inter-relatedness of pedagogic approaches and learning approaches. Students' preference for the surface approach decreased from 38.4% to 8% between the Pre and Post-intervention stages (Table 37). The BSc (Hons) cohort reduced their use of the surface approach by 31.4%. This finding is consistent with participants being receptive to the critical thinking, problem-solving and increasing engagement sessions covered at the research intervention workshop. This alteration may have also resulted from participants' awareness of the Approaches to Learning Theory and acknowledging its impact on clinical judgment and problem-solving in nursing practice as discussed in Section 6.2. The subscales influencing a predilection for the surface approach, varied between the Pre and Post-intervention stages. Subscales 'Lack of purpose' and 'Unrelated memorising' at the Post-intervention stage (Table 31) replaced subscale 'Syllabus boundness' that was evident at the Pre-intervention data analysis (Table 20). Subscale 'Fear of failure', contributed to the adoption of the surface approach at both data collection points (Table 38). It is possible that the research intervention's focus on developing students' criticality aptitude when learning encouraged them to be courageous and experimental thereby allowed them to extend their learning beyond the curriculum's prescribed learning outcomes. Hence being restricted and bound to the curriculum's syllabus was overcome.

The PgDip cohort also reduced their preference for the surface approach between the Pre and Post-intervention points. Prior to the research intervention, 25% of participants displayed a surface approach disposition that was influenced by subscales 'Syllabus boundness' and 'Fear of failure'. However, Post-intervention analysis confirms that none of the participants adopted the surface approach. These findings suggest that by implementing intervention measures that centred on enhancing criticality in their learning and intensifying engagement with the subject, thereby directly addressing the predominant affective dimension of 'Fear of failure' and 'Syllabus boundedness', it is possible to diminish the power of and embolden students to critically explore course content and test the curriculum boundaries. Should students be encouraged and given the licence to critically examine the learning content, perhaps choosing to memorise learning material in an unrelated fashion may be disregarded. This may invariably dissuade students from habituating for the surface approach.

Aligning these results to the subscales which contributed to the adoption of the surface approach at the Pre and Post-intervention points, reveal that the subscale 'Syllabus boundness' was significant at the Pre-intervention point but not evident at the Post-intervention stage (Table 38), suggesting that the research intervention and participation in this study encouraged students to explore their learning content beyond the set learning outcomes of the course. Kelly expressed that "... during the talks you gave about devoting time to our learning, it just clicked ... this is about me and my career". This expression of meta-cognitive awareness possibly provoked students to alter their learning approach thereby reducing their preference for the surface approach. Andy shared that "... you can't remember it all and to swot in a week is not enough ... I don't want to be unsafe with the patient", describes the impact that the research intervention's 'Increasing engagement session' had on students' personal development and moreover was a probable reason for students shift away from the surface approach.

Despite the evident decrease in the adoption of the surface approach at the end of the course by all participatory groups (Tables 26 and 37), 8% of the sample remained fixed in their preference for the surface approach This may be attributed towards the assessment processes and curriculum demands on students which

Biggs (1993) and Lindblom-Ylänne and Lonka (2000) found as influencing factors in students' preferred approach to learning. On reviewing the BSc (Hons) course structure and assessments on the earlier years of the nursing course, extensive weighting is given to anatomy, physiology and pathophysiology modules with a lesser consideration for learning content that calls for critical debate, problem solving and decision-making. The resistance to embrace a new learning approach, may have resulted from students' resorting to rote learning the substantial body of factual knowledge of human biology to pass the module. Hence, the statistically significant strength of the 'Fear of failure' subscale that contributed to the adoption of the Surface Approach (Table 38), is shown to have taken precedence thereby preventing students from exercising the learning derived from the research intervention and participation in this study. Having achieved success with learning in the first two years of the course, these students were apparently unwilling or unable to alter their learning approach or may have lacked the confidence to change their learning behaviours for fear that the change might disrupt their learning and consequently affect their academic success.

6.2.3. Increase in the adoption of the strategic approach

Students' strategic adoption of the strategic approach in this study, demonstrates that the "emphasis has shifted away from achievement motivation and towards how students manage and organise their learning" (Herrmann et al, 2016, npn, p. 2 of 16).

The take-up of the strategic approach to learning was perceived to be primarily a pragmatic response to the to the curriculum constraints put on the individual by what Benner (2004) calls the "rational-technical vision of performance", which calls for, Benner continues, "mastery of a body of knowledge and applying that knowledge in pre-specified ways for pre-specified outcomes" (p. 193). There was an evident increase in the use of the strategic approach from 41% to 67%, by the entire sample, between the Pre and Post-intervention stages. This escalation may have resulted from students' preparing for the end of course assessments, which were scheduled in the same term of the Post-intervention data collection. On review of the BSc (Hons) course plan and assessment schedule, the final course examinations take

place whilst the students are also attending clinical placements. Therefore, the noticeable increase in the adoption of the strategic approach at the Post-intervention stage may be attributed to students undertaking numerous key assessments which included the practice-based final assessment of clinical competences as well as theoretical module assessments during the same time-period. The increase may also be associated with students aiming to meet the professional regulatory body's (NMC, 2007a) stipulation that all adult nursing students need to achieve the 100% pass mark in numeracy examinations in the final year of the course (NMC, 2007a). This requirement is mandatory prior to students being awarded the BSc (Hons) Adult Nursing award and being eligible to enter the NMC Register (NMC, 2008). Competence with numerical calculations encourages a tendency for learners to practise rehearsed formulae and procedures, which is replicated when answering mathematical applications in examinations (Darlington, 2014). Although the repetitive practicing of numerical algorithms and formulae until embedded to memory aligns with the attributes of the surface approach, Darlington (2014) in line with Elia et al's (2009) position, argues that following a step by step guide to solve mathematical questions, requires "creative thinking and the application of a certain heuristic strategy to understand the problem situation and find a way to solve the problem" (p. 215). This claim thereby opposes that the rehearsed numerical application is equivalent to 'Unrelated memorising' which signifies the adoption of the surface approach. Instead, the tendency to selectively learn core components and reproduce this learning when examined, to achieve one's goal, reflects the nature of the learner who is 'Alert to the assessment', and 'Monitoring effectiveness' subscales and thus demonstrating a predisposition for the strategic approach, (Table 38) to ensure success.

This modification in ATL preference may also have resulted from the final year participants' awareness that their 3rd year assessment grades contributed significantly towards their degree classification, thereby resulting in an escalation of assessment pressure. In line with the subscales which contributed significantly to the adoption of the strategic approach, 'Monitoring effectiveness', being 'Alert to assessments', focusing on 'Organised study' and being attentive to 'Time management' and the quest for achieving the best degree classification possible, may have prompted students to embrace these attributes and consequently, may

have resulted in the surge of the adoption of the strategic approach. These assertions are further supported by the statistically significant data of the subscale contribution towards the adoption of the strategic approach (Tables 31 and 38). Theorising the strategic approach as primarily pragmatic, it would make sense to think about the choice of approach in its broader functional context or ecological setting, "... that is, the theories must be derived from the setting to which they are to be applied." (Entwistle, 1997, p. 11). As Ceci and Roazzi (1994) explain, "... (i)n fact, the social ecology in which individuals carry out their lives greatly influences performance by determining the problems that are important to solve and the strategies appropriate to solving them" (pp. 88-89). The widening participation agenda has dramatically changed the demographics of the nursing student population with more mature students enrolling onto nursing courses and bringing these life-skills to the higher education setting (See Section 6.4.3).

Gürten et al (2013) argues that the ATL adopted results from students' perception of the significance of the subject they are learning, their previous learning experiences as well as their preceding dominant learning approach. Therefore, when aligned to the participants' non-traditional attributes and the University's widening participatory recruitment of the nursing students (See Sections 2.10 and 2.21), difficulties which include employment commitments, parenting roles and responsibilities that cause time constraints, may significantly affect the adoption of deep approach (Case and Gunstone, 2003, Entwistle, 2015). These issues may have contributed to the increase in participants' adoption of the strategic approach. However, data on students' marital and family-related status were not captured in this study, but may be considered in future research.

Relating to the above claim, the Pre-intervention correlation of the ATL and gender variable (Table 21, Figure 5), revealed that the female participants demonstrated an equal preference for the strategic (42%) and surface (42%) approach, in comparison to the male participants' equal preference for the deep (38%) and strategic approaches (38%). When correlated to the Post-intervention findings (Table 32, Figure 6) the female participants indicated a distinct preference for the strategic approach (74%) with 16% adopting the deep approach and 10% preferring the surface approach. Male participants' Post-intervention findings revealed an apparent

preference for the deep approach (50%), the strategic approach was adopted by 38% and 13% indicated a preference for the surface approach. These findings reveal that the evident increase in the adoption of the strategic approach resulted from a greater number of female participants changing their preference from the surface to the strategic approach. The demographic questionnaire did not enquire about the participants' family related situations; therefore neither their marital status nor their parental responsibilities can be confirmed. Nonetheless, drawing on the argument in Chapter 2 (Section 2.10) potential spousal and parental responsibilities may have also contributed to the increase in the preference for the strategic approach by the female participants, as too many challenges decreases the adoption of the deep approach (Postareff et al, 2015). This rationale does not discount the effect of the research intervention as 27% of the female participants did alter their ATL away from the surface approach to the strategic approach. This considerable change in ATL preference is possibly attributed to students' participation in the intervention and the study. When aligned to the subscales which significantly contributed to the adoption of the strategic approach (Table 31), it is probable that students with parental and spousal obligations placed greater emphasis on their 'Time management' and possibly 'Organised study' times to fit their learning around their family commitments. In managing their complex family commitment/study balance, these students may have been more 'Alert to the assessment'. Therefore, it is proposed that the learning strategies facilitated through the research intervention had successfully encouraged students to overcome a 'Fear of failure', having a 'Lack of purpose' and being restricted to the curriculum outcomes. Although these students were not able to illustrate a preference for the deep approach, Postareff et al (2015) asserts that when students have busy, overly committed lives, they are unable "to devote enough time and effort to studying" (p. 331). Hence even if these students desired to adopt a deep approach, it would be a prohibitive undertaking.

6.2.4. Subscales that influenced the ATL preference

A comparison of the study's findings between the Pre and Post-intervention points, indicate that statistically significant changes in the participants' dominant ATL correlated with a variety of subscales. Indeed, between the Pre and Post-intervention stages, there was an increase in the number, in addition to different subscales

influencing the changes in comparison to subscales identified earlier at the Pre-intervention stage.

Subscale 'Relating ideas' detected at the Pre-intervention stage, together with subscale 'Seeking meaning' at the Post-intervention point, contributed to the increase in the preference for the deep approach with the BSc (Hons) participants. This may have resulted from participants recognising the imminent reality of their professional nurse role with its accompanying responsibilities, thus inducing students to immerse themselves into 'Seeking meaning' in their learning, to assist with the role transition. Consequently, this may have contributed to the change in the final year nurses approaching their learning in a more meaningful manner.

At the Post-intervention stage, adopting the surface approach was influenced by the subscales 'Unrelated memorising' and 'Lack of purpose' which combined with subscales, 'Fear of failure' and 'Syllabus boundness' that were detected at the Pre-intervention stage. The Post-intervention data was collected close to the final examinations that were scheduled at end of the course. It is considered that the 'Unrelated memorising' may have resulted from the pressure of learning large quantity of course work for several modules, which was assessed at this final assessment point. Nonetheless, it is concerning that students, who were very close to completing their nursing education and achieving their professional status, were unable to overcome personal feelings that may be aligned to the 'Lack of purpose' subscale, when nursing is accepted as being a person-centred, purposeful career choice.

The results revealed that the 25% of PgDip participants who indicated a preference for the surface approach at the Pre-intervention stage had altered this preference at the Post-intervention analysis. The subscales, 'Syllabus boundness' and 'Fear of failure' identified at the Pre-intervention analysis were not significant at the Post-intervention stage. The Post-intervention results further revealed that none of the PgDip participants adopted the surface approach following the research intervention. This evidence suggests that the meta-learning, problem-solving and engagement strategies in scaffolding the processes of knowledge that were delivered in the research intervention contributed to participants' overcoming a fear of failing the

course. Additionally, students could extend their learning beyond the defined curriculum learning outcomes, recognising the limitations of opting for the surface approach and were able to reorient their learning behaviours. Drawing from this outcome, the learning mechanisms covered by the research intervention appear to have supported students overcome their 'Fear of failure' and step beyond the prescribed curriculum parameters thereby endorsing a change to learning methods that promote learning to be more meaningful. Parallel to suggestions in Section 6.2, fostering of the meta-cognitive strategies separate to subject specific modules may deter students from preferring to use learning approaches underpinned by a 'Fear of failure' and instead enhance their affinity for the deep approach.

Subscales that contributed to the adoption of the strategic approach with the BSc (Hons) increased between the Pre and Post-intervention stages. The increase in students' preference for the strategic approach from 41% to 67% at the Post-intervention stage could have resulted from these supplementary subscales (Table 38). Prior to the research intervention, subscale 'Monitoring effectiveness' was a statistically significant contributor to students' adoption of the strategic approach. At the Post-intervention point, subscales 'Alertness to assessment', 'Organised study', 'Achieving' and 'Time management', in addition to subscale 'Monitoring effectiveness' contributed to the increased preference for the strategic approach. These findings suggest that following the research intervention, students made concerted efforts and possibly implemented the strategies discussed during the workshops, to restructure their study time more effectively. This outcome also suggests that students may have become more determined to improve their assessment grades by focusing on the timing and requirements of the assessments. Furthermore, at the start of the final year of the course, all BSc (Hons) students are informed of the assessments weighting that contribute to the calculation of their degree classification. Therefore, in addition to embracing the study skills and enhancing engagement coaching at the research intervention workshops, students' aim of achieving the best degree classification possible may have contributed to the increase in the strategic approach at the Post-intervention stage (Discussed in Section 6.5).

6.3. Objective 2: Clinical decision-making (CDM) findings of BSc (Hons) and PgDip nursing students

The CDM results changed minimally between the Pre and Post-intervention stages for all participant groups. Additionally, the group which scored the highest (BSc (Hons) Suburban) and lowest (BSc (Hons) Inner London) Clinical Decision-Making Nursing Scale (CDMNS) subscale scores at the Pre and Post-intervention stages, remained unchanged (Table 39). These findings possibly suggest that despite participating in a higher academic level of theoretical learning and clinical placement teaching on the final year of the course in addition to participating in this study and completing the CDMNS questionnaires on two occasions, there were negligible changes to students' perception of their CDM ability. This possibly suggests that CDM strategies that students develop earlier on the academic course remain consolidated throughout their undergraduate learning experience. It is also possible that students' CDM ability may be sedimented hence not be very receptive to change as compared to changes detected in their ATL preference between the data collection points.

Subscale findings that contributed to the statistical significance for the BSc (Hons) Inner London participants CDM scores at the Pre-intervention point were not detected at the Post-intervention stage. It is also worth noting that subscales that contributed to the samples' highest and lowest subscale value also fluctuated between the two data collection points. Prior to the research intervention, subscale 'Canvassing for Objectives and Values' had the highest score and following the research intervention, the subscale 'Evaluation of Consequences' displayed the highest score (Table 39). In relation to the description of the subscales (Section 3.5.1), these changes may have resulted from students focusing on the final semester theory modules which concentrate on the leadership and management requirements of the qualified nurse. Thus, the in-depth exploration of the professional role transition elements emphasised in these culminating components of the adult nursing course, facilitated by students 'Seeking to understand' the learning content through the medium of the deep approach, possibly contributed to an upsurge in professional development demonstrated by 'Evaluating (the) Consequences' of their actions. It is considered that at the start of the final year

when the Pre-intervention data-collection took place, a focus on professional values and views on diversity in relation to students' professional development was emphasised in comparison to the Post-intervention data collected at the end of the academic year. It is during this period that all nursing students re-confirm their allegiance to the University's Directional Statement for Professional Conduct for Healthcare students. Therefore, having recently attended taught sessions on the expected norms and behaviours when working with patients and clients may have indirectly influenced participants' perceptions of their CDM.

The change in the dominant CDMNS subscale to 'Evaluation of Consequences' at the Post-Intervention point is possibly due participants' heightened awareness of the outcomes of their actions. Cathy's expression that was mirrored by Andy is clear that students feel that they have to "practice defensively ... need to cover yourself ... as you are scared of making mistakes". In addition to participating in this study, this may have resulted from students realising their imminent course completion and the approaching change in their professional role status. In support of this argument, Cathy contributed that "... reviewing the patient's file and checking the patient's history cannot be taken for granted". Lisa emphasised that "prioritising your actions is key when seeing to the patient". "Remaining impartial by stepping back, in order to take everything into account when making a decision", was crucial to George. Cathy also volunteered that "... managing your time and delegating when problem-solving", is also important. Her professional development is clearly illustrated in her advancing from being delegated to in her student capacity, to delegating to other team members, as the professional nurse. This forthcoming role transition is also accompanied with revised responsibilities and accountability founded on autonomous practice (See Section 1.1-2). Kelly was explicit that this involves being the "... advocate for the patient" as you are responsible for the "patient's care". Bailey emphasised that, "we need to respond immediately ... so we must know what we're doing". At this stage in their professional development, participants' expressions illustrate an agentic awareness that their practice should be patient-focussed. Patient safety was strongly emphasised by several participants (Cathy, Andy, Violet, Bailey, George) as having a fundamental significance on the care patients received with Andy stressing that "... safety first for our patients therefore we need to learn to get better at this!" Violet's view that she was getting "better at making decisions" was

also echoed by George. Thus, recognition that actions arising from their decisions may have an untoward effect on their patients, for which they will be accountable, may have caused students to place greater emphasis with a heightened awareness of the consequences of the decision, when answering the CDMNS questionnaire at the end of the academic year.

6.3.1. Clinical decision-making and approaches to learning correlation

The research findings illustrate a fundamental focus of the impact the deep approach has on clinical decision-making. Not only has this study measured and evaluated the range of CDM perceptions across the sample but it has established beyond reasonable doubt a correlation exists between the deep approach and the acquisition of what Hargreaves and Fullan (2013) term decisional capital. This is the growth of awareness of the consequences of the decision and the evaluation of those consequences that Benner (2001) refers to as the “deep understanding of the total situation” (p. 32). The findings in this research clearly indicate that the growth of decisional capital is open to influence and can be nurtured through the movement between domains in the approaches to learning.

To answer the research question, ‘Do nursing students’ approaches to learning impact on their clinical decision making?’ (Section 2.18), the analytical framework detailed in Chapter 4 (Sections 4.4-5 and 4.7) was followed. This included the calculation of the ATL and CDM scores for each participant group as well as the identification of each individual participant’s approaches to learning and CDM score at the Pre and Post-intervention points. A purposive sample of all participants who indicated a preference for the strategic and surface approaches at the Pre-intervention stage, participated in a study specific educational research intervention. Therefore, in line with the longitudinal methodology (Chapter 2), each participant’s approaches to learning and CDM ability as measured by the Clinical Decision Making Nursing Scale (CDMNS) (Jenkins, 1985) was tracked on entry to and on completion of the final year of the adult nursing course.

In line with the sequence of statistical tests in Chapter 5, Spearman’s Rank Order analysis was performed to determine whether a correlation between the sample’s

approaches to learning and CDM scores was present. The results confirm that statistically significant relationships existed between the sample's approaches to learning and CDM scores at both the Pre and Post-intervention stages. Thereby, in addition to answering both the research question and Hypothesis 1 (Sections 2.17 and 18), this outcome confirms that with this sample, the ATL that a student adopts, impacts on their CDM. Cathy felt that "... all learning to make better decisions, increases confidence ... increases our student voice and helps us be better nurses". Similar comments from Kelly, Violet and George support these findings.

6.3.2. Pre-intervention CDM and ATL Correlation

Analysis of the Pre-Intervention data revealed that participants who adopted the strategic approach, had the best CDM ability (Figure 6). Participants who adopted the surface approach displayed the weakest CDM ability in comparison to students who adopted the other ATLs (Figure 6). This outcome suggests that on entry to the final year, participants whose learning behaviours encompassed managing their time, being alert to the assessment strategy, organising their study time, monitoring how effective their learning and were motivated to pass the module with high marks, were also making better clinical decisions in comparison to other participants in this sample. Therefore, at the start of the research study, students who were goal oriented were the best clinical decision-makers in relation to delivering patient-care.

The significant findings of the surface approach being inversely proportional to students' CDM, runs parallel to Hasnor et al (2013), Reid et al (2007) and Cano's (2005) findings, where the increased use of the surface approach resulted in decreased academic achievement. Thus, the findings in this study endorses previous evidence that in addition to a surface approach dominance resulting in lower academic achievement, CDM proficiency was weaker in comparison to students who adopt alternate ATLs. Ultimately, these findings strengthen this study's overall aim of encouraging students to reorient their ATL away from the surface approach.

6.3.3. Post-intervention CDM and ATL Correlation

The Post-intervention results changed in comparison to the Pre-intervention analyses. Findings revealed that participants' CDM score was directly proportional to the deep approach. Therefore, at the Post-intervention data collection, students who adopted the deep approach displayed a better CDM ability than students who adopted either the strategic or surface approaches. These outcomes suggest that at this stage students who actively sought to understand the course material and related recently learned content to previous knowledge and experiences as well as engaged in critical evaluation of the learning material (Table 1), were more competent clinical decision-makers compared to students who adopted the strategic and surface approach. In line with the relational learning at University in preparing students to make clinical decisions, Participant Lisa who adopted the deep approach at the Pre and Post-intervention stages, was emphatic that "... knowledge gained at University is very important cos [*sic*] for me, it's constantly guiding decisions when taking care of my patients".

The surface approach and CDM correlation remained unchanged from the Pre-intervention analysis. The reoccurrence of this finding at both data collection stages indicates that clinical decisions made by learners whose dominant learning mode is the surface approach are not as robust as learners who strive to understand their learning and adopt the deep approach. This outcome further supports that students whose fundamental aim is to achieve the best grades possible and who are predisposed towards the strategic approach, also tend to make less well-informed or incorrect clinical decisions in comparison to learners who actively engage in the learning dimensions of the deep approach. In spite of Kelly orienting from the surface to the strategic approach at the Post-intervention stage, she held strong views that, "... it's easy to make hasty decisions as we don't have much experience ... we're not always sure it's the right thing to do ... making decisions about patients is hard!". Participants also felt that whilst on placement, "... there's lot to take in and think about" which caused them to be "... unsure of most decisions they make". Students' statements demonstrate feelings of uncertainty regarding the correctness of their decisions. Participants' feelings of this productive uncertainty resonated with Hammond's et al (1967) claim that decisions are made in "conditions of uncertainty"

(p. 41) as discussed in Chapter 2 (Section 2.11). Moreover, when faced with a lack of confidence, students rely on alternative sources for guidance when making decisions as participants expressed that they seek “advice from mentors, after all they know better”. Kelly, who initially adopted the surface approach but progressed to the strategic approach, felt that this “... allows for sharing of responsibility between the student and the mentors, so the responsibility is not all ours right now ... I guess it will be us soon that students will ask”. A similar view was held by Andy. Thus, despite learners who adopted the strategic and surface approaches participating in the research intervention, these learners appear not to have exercised judgement nor recognised the shortcomings or substandard effectiveness of their dominant ATL (Deakin Crick et al, 2015). Consequently, this probable lack of meta-cognitive monitoring may have prevented them from implementing the strategies covered in the research intervention or re-orientating to the deep approach. However, students’ agency in recognising the importance of improving their CDM ability prior to embracing their professional nurse role as expressed by Andy, may have already instigated a renewed engagement with their learning, alternative to their initial ATL, in order to improve their decision-making in practice.

6.4. Objective 3: Demographic, ATL and CDM correlations of BSc (Hons) and PgDip students

On entry to and at the end of the final year, the number of PgDip students who adopted the deep approach exceeded the BSc (Hons) participants by more than 30%. In contrast, the surface approach was preferred by a larger percentage of BSc (Hons) participants, at the Pre-intervention (40%) and Post-intervention (8.6%) data collection points compared to the PgDip students. Additionally, none of the PgDip participants displayed a preference for the surface approach at the Post-intervention stage in comparison to the 8.6% BSc (Hons) participants who were still surface approach dominant. Congruent with Sabzevari et al’s (2013) findings (Section 2.4), the ATL fluctuations identified between participatory groups, may have resulted from all of the PgDip learners having substantial prior undergraduate learning experience in contrast to the BSc (Hons) students, where previous certified higher educational learning is not a course enrolment stipulation.

In relation to the CDMNS findings, the subscale values changed for all participatory groups between the Pre and Post-intervention stages. At the Pre-intervention analysis, subscale 'Canvassing for Objectives and Values' was the highest for both BSc (Hons) cohorts with 'Evaluation of Consequence' being the PgDip participants' highest subscale. Post-intervention 'Evaluation of Consequence' was both BSc (Hons) groups highest subscale (see Section 6.3.1) and the PgDip participants' highest subscale changed to 'Search for Alternatives'. Associating of this outcome with the PgDip cohort's rejection of the surface approach (Table 26) as they possibly aimed to harness the composites of the deep approach (Table 1), may have prompted an increase in the use of Scheffer and Rubenfeld's (Lumney, 2010) criticality focused Information seeking attribute (Section 2.14, Table 4) as this could be equated to the CDMNS subscale 'Search for Alternatives'.

6.4.1. Mature learners versus younger learners

Demographic analysis demonstrated that the sample was heterogeneous in a variety of the characters measured. The Inner London cohort had the larger percentage of learners in the below 20-years (11.4%) category with the majority of participants in the 20-30 years (54.3%) age banding. The oldest participants in the 51-60 year age category (2.9%) were also from the Inner London cohort. In comparison, the Suburban participants had a larger percentage of students in the 31-40 years (54.3%) age category. In contrast, the PgDip participants had 87.5% of participants in the 20-30 years age category. When correlated with students preferred ATL, these findings reveal that the BSc (Hons) Suburban group with more mature students demonstrated an increased affinity for the deep approach at the Post-intervention point in comparison to the Inner London students with a larger percentage of younger learners. Although the sample's affinity for the surface approach decreased with all participant groups at the Post-intervention stage, the Inner London group with the larger percentage of younger learners had more students adopting the surface approach at the 2nd data collection point in comparison to the other participatory groups. These findings when aligned with Sabzevari et al (2013) supports that younger learner have a stronger preference for the surface approach when compared to their older peers. The mature learners' meta-cognitive ability to self-

regulate their preference for the deep approach may have resulted from them using their longer personal life experience, which frames their values and attitudes, being entwined with their present learning encounters (Deakin Crick et al, 2013).

Arguably, younger students may continue to use the learning methods that they previously employed during their compulsory schooling phase. Having progressed successfully into higher education, younger learners may lack the confidence to step beyond the bounds of the learning behaviours and approaches which they are familiar with, in spite of having progressed onto the final year of learning in higher education (See Section 2.8). These findings oppose Chan et al's (2014) argument, as the higher education experience appears not to have engendered the self-empowerment and confidence to adopt an unfamiliar learning approach but rather an adherence to former learning practices (Section 2.8). Instead this outcome aligns with Richardson's (2013) findings that older students have a higher tendency to adopt the deep approach in comparison to younger students (See Section 2.4).

Furthermore, the BSc (Hons) findings differ from the PgDip learners in relation to the age variable, with most of the learners being in the 20-30 year old category. Although there was no change in the adoption of the deep approach, the younger learners' preference for the surface approach changed, with none of the PgDip learners indicating a preference for the surface approach at the Post-intervention stage. These results correspond with Chan et al's (2014) contention of confidence and self-empowerment, as the young PgDip learners' self-belief espoused an alteration in their learning behaviours and them embracing a new learning approach. These findings suggest that being younger did not deter the PgDip learners from altering their surface approach preference. It is therefore considered that, in addition to the insight gained on the Approaches to Learning Theory discussed in Chapter 2, (Section 2.3) by participating in this study and attending the research intervention, the PgDip cohort's previous undergraduate learning exposure in higher education prior to enrolling on the adult nursing course, may have also contributed to the change in their ATL preference.

6.4.2. The Gender Factor

Findings also reveal that the adoption of the surface approach decreased in relation to the gender variable at the Post-intervention stage. Both male and female participants reduced their preference between the two data collection stages with the female participants decreasing their surface approach inclination by 32%, from 42% to 10%. Although the male participants' affinity for the surface approach decreased from 25% to 13%, Post-intervention analysis revealed that a larger percentage of male participants still adopted the surface approach (See Table 32 and Figure 8). Associations between gender and age, in relation to participants' ATL may grant further insights on these findings and will be considered in future post-doctoral studies. (See Section 6.2)

6.4.3. Widening participation

Students' predisposition for the surface approach at the Post-intervention stage could have resulted from the University's widening participatory commitment in conjunction with the barriers to learning that the non-traditional students enrolled on the adult nursing courses experience (Section 2.9). In attempting to pass the course, these students' who may be challenged by cultural and linguistic difficulties (Crawford and Candlin, 2013) coupled with family related commitments (Young, 2016) probably resort to 'Unrelated, routine memorising' when learning. Students may also have a fragmented conception of the academic development expectations in higher education and find it arduous to adopt an alternative learning approach from 'Unrelated memorising' with minimal engagement to striving to 'Seeking meaning' and understand the course content. Participant Kelly's response that the "... course is very intense so we are not always sure how to organise ourselves and manage our study time ..." clarifies the demands of theoretical and practice learning that non-traditional students enrolled on the programme experience.

In relation to widening participation, the RCN (2008) reports that the "average age of a nurse in the UK is now 42 with the age profile growing steadily older over the last 20 years" (p. 8). Participant demographic analysis revealed that 30.8% of participants were in the 31-40 year age group and 14% in the 41-50 age category (Table 11). Therefore, it is probable the older students are not supported financially

from other sources and are dependent on their own income from external employment in order to sustain themselves. The demographic questionnaire did not request details of participants' extra-curricular demands. Being encumbered by such commitments, in addition to the full-time course workload, would prove challenging as students may have neither the time nor opportunity to adopt the deep approach even if they wanted to. Postareff et al's (2015) claim in support of this argument is that "too many challenges contribute to the decrease in students adopting the deep approach during the course" (p. 329). As a result of juggling their preparation for the theoretical assessments, together with undertaking the final placement assessment, compounded with salaried employment, this task complexity may militate against students full immersion in the deep approach (Kyndt et al, 2011). The learning strategies covered by the research intervention may have instead instigated the increase in the adoption of the strategic approach and the reorientation away from the surface approach. However, as Ceci and Roazzi (1994, pp.88-89) (Section 6.2.3) assert, these life complexities obstruct the student from learning with the aim of 'Seeking meaning' and embracing the composites of the deep approach

6.4.4. Inner London and Suburban learner comparison

Also note-worthy are the differences in the learning approaches and CDM of BSc (Hons) students enrolled on the University's Inner London and Suburban campuses. Although an increase in the deep approach was observed with both cohorts, the uptake was fractionally larger with the Suburban participants in comparison to the Inner London students. Regarding the adoption of the surface approach, the decrease between the Pre and Post-intervention points was greater with the Inner London participants (17.3%) as compared to 14.2% with the Suburban group. However, more of the Inner London participants were resistant to re-orienting away from the surface approach (5.7%) at the Post-intervention stage. In addition to the ATL changes, the Suburban cohort yielded the highest CDM values at both the Pre (Table 22) and Post-intervention (Table 33) stages in comparison to the Inner London and PgDip groups. In contrast, the Inner London students produced the lowest CDM values at both the Pre and Post-intervention. Considering both BSc (Hons) participatory groups experience an identical curriculum, these changes could be attributed to the dissimilarity in demography discussed earlier in Section 6.4.

Differences in participants' academic qualifications prior to commencing the nursing course (Table 12) may have also resulted to this outcome. A greater percentage (37%) of the Inner London group had post compulsory school qualifications as opposed to the 31% of Suburban students. In contrast, 13% of the Suburban students compared to the 8.5% Inner London participants commenced the nursing course already in possession of degree qualifications with one participant being qualified to Master's degree level. Notwithstanding the geographical perspective, these findings support that students with increased exposure to learning in HE, indicated a greater tendency to reorienting to the deep approach, in addition to decreasing their use of the surface approach. In line with Keeling and Hersh, (2012 cited in Chan et al, 2014) this outcome supports that the higher education experience allows the criticality components of learning to develop differently in students with previous higher education exposure compared to undergraduate learners who enrol onto higher education courses with only compulsory education. These findings also contradict Haggis (2003)'s claim that encouraging students to embrace the attributes of the deep approach, is not to the students' benefit but rather is more the goal of higher education faculty. Parallel to the argument in Chapter 2 (Section 2.8) participants with previous higher education learning, in addition to participating in this research, were able to extend beyond the metaphorical boundaries of the learning experiences of the compulsory sector better in comparison to learners with only compulsory education.

6.5. Objective 4: Meta-learning effects of the research intervention

“Meta-cognition is higher order thinking of how the processes of cognition work. Meta-learning is thinking about how we ourselves learn, and can learn and develop more effectively” (Jackson, 2004, p. 394).

6.5.1. Meta-learning and meta-cognition

Drawing on Flavell's (1979) definition of meta-cognition as “... higher order thinking to actively control the cognitive processes engaged in thinking and acquiring

knowing (learning)” (p. 906), meta-learning sits within meta-cognition and can be recognised as that component of meta-cognition that centres on the actual process of learning (Jackson, 2004). Therefore, engaging students to evaluate their approach to learning may enhance their awareness of their individual learning behaviours and result in them identifying components that could be improved. The meta-cognitive knowledge will give students insight into the learning methods they use to gain knowledge and acquire skills. Meta-learning-awareness coupled with faculty support and encouragement may enable students to steer towards learning methods that are underpinned by understanding and thereby promote more effective learning. Therefore the meta-learning cognizance may encourage the learner to create strategies about deepening their learning as opposed to learning the subject content by memorising in an unrelated manner (Biggs, 1985).

6.5.2. Students self-regulation of approaches to learning preference

Changes in the three approaches to learning (ATL) between the Pre and Post-intervention stages in this study demonstrated that the participants were amenable to modifying the ATL from their dominant ATL at the beginning of their final year. This finding contradicts Doyle’s (2008) suggestion that students are resistant to changing their ATL as they are fearful and want to avoid taking risks with their learning method. Doyle’s (ibid) argument is further supported by Gijbel et al’s (2008) suggestion, that when the initial ATL is extremely dominant, it may be more difficult to alter the learning approach. Therefore changes in the sample’s preferred ATL (Table 13 and Table 26) suggest that despite having utilised a particular ATL in their preceding learning experiences or possibly, throughout their compulsory and post-16 learning, these participants were still receptive to changing their previously embedded ATL. In addition to this study participation resulting in the majority of the students re-orienting their previously dominant ATL, this research may have also enhanced students’ awareness and agency in taking responsibility for their learning (Moore et al, 2012; Deakin Crick et al, 2015). Building on the definition in Section 2.8 that agency refers to the implicit or explicit sense of initiating and controlling events, students’ ability to modify their ATL at the Post-intervention stage, may be attributed to their “will and capacity to act” so that their learning is influenced (Deakin Crick et al, 2015, p. 137). Therefore, this study may have encouraged students to acknowledge

themselves as agents in their learning. This agentic awareness may have energised students' confidence in managing feelings such as 'Fear of failure' and may have promoted the embracing of the meta-cognitive, self-regulating processes of 'Seeking meaning' in their learning as well as 'Monitoring effectiveness' of the learning strategies they use to accomplish their learning goals. Having been made aware of the consequences of the ATL on learning and being encouraged to implement the research intervention strategies, this study's findings indicate that students actively altered their initial ATL thereby appear to have taken control of their learning outcomes and academic destiny. Thus students' capacity to exercise their agency in modifying their learning behaviours suggests that students can be stimulated to be proactive, self-regulating agents of their learning as opposed to passive recipients in the learning environment. (Deakin Crick et al, 2015).

This research has followed a pragmatic approach whilst at the same time it also takes a somewhat more purist position. Whilst the approach to learning research intervention was tutor-initiated and linked to the practice learning on which CDM is predicated, it was pitched at effecting change from the inside so that ownership of the learning is returned to the learner and their learning approaches rest on their own agency and self-determination and not on external influences. Research into the approaches to learning places learning, and the quality of learning, at the centre of concern and focuses attention on the content of the curriculum and not on the marketability of the qualification. So, when we are talking about higher education learning and about clinical learning, we are talking about the complex interrelationship and exchange mechanisms of one with the other. More especially, this study has explored the investment of one in the other; how, in other words, learning how best to approach learning can pay dividends in learning how to best approach learning for professional decision-making and judgement. Knowledge transfer is, as is well-known, problematic. The 'Success as a Knowledge Economy' (Department of Business, 2016) (See Section 1.2) as a conceptual framework for bridging the gap between the higher education experience and the experience of working in the health care environment appears to come short of the mark. What this study has sought to establish is a navigable passage between theoretical learning during the higher education experience, that is, learning in the abstract, and practice learning, namely learning in the concrete. Thereby engineering a dynamic that

operates on a deeper level of approach than here is the knowledge and here's how to apply it.

Moreover, the study outcomes suggest that resistance can be overcome, if interventions can effect a transition from safe, purely instrumental approaches where the learner relinquishes all control to agentic, decisional, self-regulated approaches through the development of personal meta-learning faculties.

6.6. Chapter summary

This chapter has discussed the findings of the study in the context of existing literature to situate the results within what was previously known as well as the theories which underpinned this research from its inception. The key outcome of the discussion is that students who adopt the deep approach appear to be better at making clinical decisions than students who demonstrated an affinity for either the strategic or surface approach. Students' approach to learning preferences fluctuated between the Pre and Post-intervention. Following the research intervention, both the BSc (Hons) cohorts increased their disposition for the deep approach. However, a greater percentage of Suburban participants comprising more mature students oriented to the deep approach as compared to the younger Inner London cohort. This change may have resulted from students' agentic change in their learning behaviour by aiming to 'Seek meaning' and 'Relate ideas' to previous learning experiences, following their participation in this study and the research intervention.

Students in all participatory groups increased their uptake of the strategic approach following the research intervention. The majority of the female participants indicated a preference for the strategic approach in comparison to the male participants who revealed a stronger disposition for the deep as well as the surface approaches.

An affinity for the surface approach decreased significantly at the Post-intervention point with all participatory groups. Following the research intervention this outcome may have resulted from students overcoming being 'Syllabus bound' and being determined to extend their learning beyond the module and curriculum prescribed learning outcomes. None of the PgDip participants adopted the surface approach at

the Post-intervention analysis. This finding suggests that these students' extended exposure to learning in higher education during their undergraduate studies, coupled with their participation in this study and research intervention, may have heightened their determination in re-orienting away from the surface approach and from being restricted and bound to the learning outcomes of the syllabus.

In the next and concluding chapter, the research question and objectives (Section 2.18 and 21) that led to this investigation are directly answered and recommendations for future practice and research are offered.

Chapter 7: Conclusion

7.1. Concluding synthesis

In a comprehensive review by the Higher Education Academy and Council of Deans of Health published in 2013, when this research project was begun, Professor Brian Webster writes in his foreword: “It is striking that there is relatively little research evidence on practice oriented innovative teaching and learning interventions, nationally or internationally” (Dearnley et al, 2013). This research goes a long way to filling that gap.

The focus of this research rests on students’ approaches to learning (ATL) and the direct relationship between their learning and its transmission when making decisions in the clinical practice context. Whereas research has not yet established that increasing the store of knowledge, as ‘Success as a Knowledge Economy’ (Department for Business, 2016) suggests is necessarily the only, the best, or most effective way of developing undergraduate nurse education and training students’ receptivity to deeper approaches to learning to practice learning, and the development of clinical decision-making (CDM) skills, an educational research intervention aimed at enhancing students’ meta-learning, that is, critiquing their own ways of, dispositions towards, and approaches to learning, has been seen to have significantly impacted on their decision-making and judgement in clinical practice. Coming from this alternative and previously under-researched direction, this study demonstrates that the “goodness of decisions” nurses make (Dowding and Thompson, 2003, p. 56) is influenced by the way they approach their learning.

Correlations between dimensions of students’ demography, particularly their level of educational achievement, gender and prior life-work experience, and how they approach and structure their learning shown in this enquiry are important contributory factors in our understanding of the effect of the increasingly heterogeneous nurse education student intake on the higher education learning culture.

The NMC Horizon Report Higher Education Edition (2017) identifies “deeper learning” as a key challenge “on the five-year horizon for Higher Education worldwide” (pp. 3-8). This research reveals that despite higher education students having progressed onto the final year of their respective courses, many still resort to ‘Unrelated memorising’ to make the grade, without seeking to fully understand the course material. However, the findings here also confirm that students whose learning goals do not include to ‘Seek meaning’ in what they learn are inclined to alter this approach when they are made aware of the value of “deeper learning” for their practice and are taught strategies to assist them deepen their understanding of the subjects they are learning. In contrast to studies evidencing that the approaches to learning that students adopt are fixed traits and resistant to change (Zeegers, 2001; Leitz and Matthews, 2010), the strong effect size of the empirical findings in this longitudinal research therefore endorses the fact that students have the capacity to alter a previously dominant learning approach when stimulated and encouraged to do so. This analysis supports the notion of a relationship between the way students understand and identify themselves as learners, their approach to learning, their personal motivation to reorient to alternative deeper learning methods, and, in turn, their professional learning and clinical judgement and decision-making.

The educational research intervention in this research has shown that by increasing engagement with critical reasoning and problem-solving skills as well as raising students’ awareness of the benefits of making meaning of their learning (Deakin and Goldspink, 2014, p. 21), students are able to develop the concept of criticality (Distler, 2007), often in contrast to previous compulsory sector learning experiences. Self-agency in re-orienting their learning practices and engaging with meta-learning values is a demonstration of students’ development as critical learners who have embraced the core aim of the higher education learning experience. The view that learners in higher education will develop these skills automatically, and through teaching that is focused on the delivery of subject specific content, is, certainly from the evidence of this enquiry, found to be an assumption that needs to be challenged. By intervening to improve students’ engagement with learning approaches that support the development of critical awareness, the present study has observed this to be a significant factor in effecting a change in learners’ academic development and their practice learning in the clinical environment.

Although it has already been said that the present research did not seek to provide empirical evidence of the transformative potential of the work here for nurse educators' pedagogy, there are conclusions to be drawn from these findings that have ramifications for pedagogy in the field. Contingent on the results of the investigation – raising students' awareness of the possibilities for their practice of reappraising their orientation towards learning – is a profound change to my personal epistemology and beliefs about students' own professional learning and development. Just as it empowers students to become reflexive about their approach to learning, evaluate its effect on their personal academic and professional development, and proactively alter former learning practices, so too it empowers the pedagogic practitioner. It is the educator's pedagogic design for learning which is largely responsible for pointing the student nurse in the direction of the deep approach to learning and their taking ownership of their own learning (Deakin Crick and Goldspink, 2014).

The Teaching Excellence Framework, which is central to the reforms of the UK higher education sector already in the pipeline and being introduced fully from 2017, exerts an enormous downward pressure on nurse educators to bring their pedagogic practices in line with the premises and principles underlying Success as a Knowledge Economy (Department of Business, 2016). However, from a preoccupation with the metrics, or measure, of knowledge gains, Fisher (2006) notes, "a paradox has emerged – where the measurement of the teaching of knowledge has led to, and has hidden, a reduction in the experience of learning" (n.pn. para. 1). A conclusion is being made here that a return to a sustained focus on the student learner's experience of learning as exerting an upward pressure on nurse education practitioners' pedagogy and upward again to drive faculty in designing curricula that enhances critical engagement with the course and encourages original thinking.

Certain salient points emerge from this investigation. A significant number of learners who adopted the surface and strategic approach were empowered to respond to, and re-orient towards unfamiliar learning approaches. These students were able to learn in different ways when personal engagement with learning-to-learn strategies

were re-aligned with aiming to understand or the 'Seeking meaning' strand of the deep approach. The implications for pedagogy of intervening in how students engage with their course content indicates that nurse education curriculum designers should consider students' approaches to learning in order that agency, engagement with learning, and a learning-centred, rather than a knowledge-centred education is brought centre-stage.

Given the complexities and challenges of the clinical environment and the degree of competence nursing students are being educated to, and expected to function at, it is imperative that the way in which discipline specific knowledge is interpreted and impacts on nurses' decisions in patient care-related actions receives the serious attention of educational researchers. To support nursing students' transition into effective professional nurse practitioners, nurse education providers should interrogate their own practice and reflect on their role in ensuring that students retain a clear focus on learning approaches where discipline knowledge is coupled, or sychromeshed, so to speak, with understanding. Deeper engagement with the subject, it is suggested, will in turn scaffold the decisions nursing students make when caring for patients. This research reveals that, in this population, the adoption of the deep approach is the most effective learning disposition in relation to decision-making ability. The findings demonstrate that nursing students need to be afforded opportunities to engage with criticality-enhanced learning strategies to develop the professional knowledge competence which supports effective transmission of knowledge when making clinical decisions. This study has also shown that employing the 'Unrelated memorising' learning method without knowing how to critically engage during the acquisition of specialised, discipline specific knowledge is insufficient when called upon to make clinical decisions.

This study's conclusions concurs with, and adds to earlier research (Cappelletti et al, 2014) (See Section 2.15) that nurses' decision-making, clinical judgement and reasoning cannot be taught as a discrete subject or delivered as a delimited body of knowledge. Ways to learn effectively, in order that the learning is enmeshed with understanding, is seen in this research to have impacted positively on nursing students' decision-making. The argument that nursing curricula are already crowded with subject specific content, skills and competence-based content that it is

impossible to include modules aimed at engaging students on deeper learning approaches, does not support the development of a nursing workforce that is competent and confident to make sound clinical judgements and decisions. Evaluating an already congested curriculum against some of the issues that, in the context of the widening participation and the social mobility agenda non-traditional nursing students face, it is easy to see how it might drive students to use learning approaches that rely on unconnected memorising - identified with this sample as correlating with poorer decision-making - rather than understanding.

Nursing curricula that are discipline-bound and narrowly focused on delivering a quantifiable dose of knowledge may not adequately prepare the qualifying student nurse to function effectively in a challenging healthcare environment that is in a constant state of flux and presents unprecedented levels of uncertainty when deciding on patient care. If, as Dowding and Thompson (2003) find, “judgement and decision-making in health care are characterised by uncertainty” (p. 56), then nurse educators must, as this research suggests, concern themselves with more than the “right knowledge” (NMC, 2017), skills, or competencies. It is not the pre-packaged skill, or competence, in itself – this is how you do it – that meets the challenge of uncertainty but the ability to think in certain ways that are characteristic of the deep approach to learning. It is inconceivable that the answer to dealing with uncertainty can be given through a simple knowledge exchange mechanism such as is represented by the surface or strategic approach to learning. It is thus incumbent on nurse educators and curriculum designers to build into the nursing curriculum strategies that induce in student nurses the desire to cultivate the “critical curiosity” (Deakin Crick and Goldspink, 2014, p. 21) that nurtures criticality, discernment and discrimination when approaching and acquiring professional knowledge. Such strategies may encourage and foster conduits between students’ experiences of what they already know and to the knowledge they have yet to learn, so that they actively ‘Seek meaning’ and are discouraged from memorising subject theory in an unrelated fashion. Students may already possess a general awareness of the ‘Seeking meaning’ dimension of the deep approach but may not have rationalised its importance in contributing to their learning; nor could this be realised should it be presumed that the merits of embracing the deep approach are at present integrated into subject or disciplinary learning schemes. Indeed, this research suggests the

opposite might be the case. This emphasises the need for nursing curricula to include modules that focus specifically on developing students' criticality-discerning attributes. These pedagogical modular interventions may further emphasise the self-regulating, metacognitive "learning power" (Deakin Crick and Goldspink, 2014, p. 21) that students hold in wanting to learn-how-to-learn. This may support nursing students in re-orientating their learning dispositions and attitudes thereby re-shaping engagement with their learning. A renewed engagement founded on understanding the learning content may constitute an emancipatory learning power that may enable students to go beyond the confines of the discipline-specific subject learning. It may, in fact, afford nursing students the opportunity to change and develop a learning competence which paves the way for the construction of the knowledge and skills needed for them to make sound clinical decisions in practice and achieve their full potential on graduating into the role of qualified professional nurses.

7.2. Constraints, limitations and scope for further research

This research represents a rigorous and systematic effort to establish an association between two variables, that is, pre-registration student nurses' approaches to learning and their clinical decision-making. On the basis of the findings from the sample in this survey, the project has been successful. I am, however, aware that the sample design has its limitations that affect the conclusions which can be drawn from the research.

The limitations of the methods of data collection and data analysis for this research include:

- The small comparison group (PgDip) used potentially reduces the rigour of the findings.
- The use of the convenience sampling predisposes to greater risk of sampling bias and limits the generalizability of the findings.
- The survey approach and use of inventories limits the range of statements about the phenomenon.
- The restriction of the target population to selected geographical locations and course options leads to a lack of generalizability.

- Despite every effort was made to neutralise the effect of my dual roles of researcher and Course Director, I recognise that the power relations between the student participants and lecturer / researcher to be an unavoidable limitation in this study.

Although detailed attention was given to the recruitment and retention strategy (see Sections 3.6 and 3.8), it is accepted that the sample size was smaller than might be regarded as ideal. As Bryman (2012) wryly observes, in surveys of this sort size matters; however, “(w)hen the sample is relatively homogeneous, such as a population of students or members of an occupation, the amount of variation is less and therefore the sample can be smaller” (p. 200). Some of the constraints that appear to have negatively affected students’ disposition to deep approaches to learning were the same constraints that impacted adversely on response rates, namely, study-time-management pressures, family/work-time pressures, and assessment and qualification timing pressures. The fact that students possibly considered, for example, that attending a data collection session during their final examination period would make unacceptable demands on their time and therefore may have chosen not to participate in the study, in terms of the research design, was outweighed by scheduling the Post-intervention data collection at the optimal time to assess and evaluate the students’ clinical decision making abilities. This was a calculated risk but undoubtedly was a factor in non-participation. Notwithstanding these constraints, the zero attrition in this longitudinal study testifies to the students’ commitment to advance their learning potential and their recognition of its importance to their practice learning and professional development.

With a response rate of over 50%, the sample can confidently be said to be representative of the target population – this University’s adult nursing students in their final pre-registration year – but choosing to use a convenience sampling strategy means that the results cannot legitimately be generalised to other, or all, adult nursing students in other, or all, higher education settings. That is understood. However, in concluding, I want here to recall (Section 4.12) and repeat what Miles and Huberman (1994) argue that, “the most useful generalizations from qualitative studies are analytic, not sample to population” (p. 28). In light of Miles and

Huberman's view and the analytical findings of this study, I consider the findings of this study applicable to the adult nursing sector in a very much more general sense. I feel vindicated in maintaining that the conclusions I reach here on the basis of the quantitative as well as the qualitative analysis "will increase confidence in analytical findings on the grounds of representativeness" (p. 29). With confidence, then, what I hold to be true for this population, I hold true for the wider population of adult nursing students.

7.3. Recommendations and Implications for Practice

The practical consequences of this research, then, lie not only in the new understanding of the adult nursing students' learning and decision-making, but in the potential solutions that can be offered as evidence-based, empirically-justified recommendations for future programmes of change for nurse education, pedagogical practice, and practitioner research in this university and perhaps beyond. I recognise, however, that conclusions drawn here, and such recommendations as might follow, are necessarily qualified in the light of the non-generalizability of the results of this survey to the population of adult nursing students nationally. It is nonetheless justifiable to speak in terms of the recommendations based on the findings of this study as applicable to, if not generalizable to, other courses at other higher education institutions, and as a springboard for further larger scale research using randomised sampling across a wide range of nurse education faculties at a number of different universities (Bryman, 2012).

The recommendations that emerge from the findings of this study are immediately relevant to the "Programmes of change for Education" and the "Education framework: Requirements for Education Providers" that the NMC (2017) have put in place from the 2018/19 academic year onwards. Clearly, the beneficiaries of work like this are the adult nursing students and ultimately the patients committed to their care. Undoubtedly, however, the primary impact will be on the nurse education practitioners whose concern it is to develop students into a professional nursing workforce of deep thinkers, equipped to meet the complex conceptual challenges inhering in the clinical decision-making process. It is, therefore, very relevant to

higher education institutions that deliver pre-registration nurse education programmes, and may be applicable to other pre-registration nursing fields.

To support a shift to the deep approach, it might be suggested that nursing curricula be restructured to compensate for the perception that “limited teaching strategies and the learning milieu may be compounding issues in relation to the students’ lack of confidence with critical thinking when attempting to solve problems or questions” (Noohi, et al, 2007, npn, para. 15). Therefore, teaching strategies that promote learning to be meaningful and collaborative initiatives that stimulate critical thinking to optimise clinical decision-making ability need to be embedded. This mechanism should be coupled with the development of clearer connections between theory and practice in the clinical setting. Educators need to create a learning environment that challenges the learners’ curiosity and instigates an intention to critically ‘Seek meaning’ by relating learning content to personal and previous learning and care-related experiences. Assessments should include elements requiring critical analysis and problem interpretation, to dissuade students’ from ‘Unrelated memorising’ thereby promote critical engagement. From the participant interviews, respondents felt that strategies such as introducing students to the Students’ Approaches to Learning (SAL) Theory would benefit their development as learners and should therefore best be implemented at the start of the course. Institutionally-organised workshops and seminars that inform students on the SAL Theory, including the learning approaches and outcomes, could increase levels of engagement with the subject specific content and materially affect the way they learn in, and from, the practice context. These initiatives and interventions may encourage students to develop a strong personal interest in their courses and thus steer them away from uncritically adopting the surface approach with their learning. This may in turn enable students to alter their learning approach and grant them the best opportunity to improve their professional learning and clinical decision-making ability.

It is recommended that validated nurse education curricula at this institution include a module focusing specifically on critical thinking, problem-solving and study skills on every academic level of the programme. Course induction programmes should include sessions on strategies to improve engagement and the practicalities of managing a full time course load. These additions will enhance students learning-to-

learn capacity, develop their criticality ability and assist students' engagement with their subject specific and practice specific learning.

Nurse education faculty need to be supported in adapting to the changing higher education landscape with widening participation and the recruitment of non-traditional students. These measures need to be encapsulated in the imperatives and priorities of higher education institutions at both strategic and local level. The sector's infrastructure needs to support faculty development with web-based structural designs, considering this has become a prominent mode of engagement with learners in higher education (Section 2.9). It is also fundamental that faculty re-focus from implementing e-learning packages simply to meet the higher education institutions caveats of using the new technology but instead ensure that the design of the web-based learning is guided by pedagogical principles that encourage learners to embrace the fundamentals of the deep approach. In meeting this challenge, nurse education providers would subscribe to a virtual learning environment (VLE) that is genuinely learning-centred and meets the learning needs that probably prevent the non-traditional student from engaging meaningfully with the course.

Student recruitment strategies should include presentations and dialogue about the transition from compulsory sector into higher education. This could be facilitated through a tailored course-specific website being made available to potential candidates. By granting prospective students the opportunity to research the module content and the required academic level of their future courses, may prevent students from enrolling on the programme, unprepared.

7.4. Contribution to knowledge

This study indicates that approaches to learning and its correlation to clinical decision-making does matter and that intervention to dispose students to adopt the deep approach to learning, can positively impact on nursing students' clinical decision-making capability. Not previously empirically established, this finding has important implications for nurse educators and for nursing studies curriculum design. Whilst previous research has treated approaches to learning and clinical decision-making as singular and distinct and the correspondence between them not

considered or tenuous at best, the findings of this study takes us in an altogether different and new direction, a view of the one, approaches to learning, as having a singularly dynamic effect on the other, clinical decision-making. The contribution to knowledge that emerged has specifically answered the research question and accompanying research objectives (Sections 2.17- 2.20).

The novel outcomes of this study reveal that:

- There is an association between the deep approach to learning and students' clinical decision-making.
- An affinity for the deep approach results in a better clinical decision-making ability compared to the adoption of either the strategic or surface approach to learning.
- The adoption of the surface approach results in poorer clinical decision-making ability.
- Nursing students enrolled on the inner city campus have a greater tendency to adopt the surface approach as compared to students attending the outer suburban campus.
- Male students show a greater tendency to adopt the deep approach and female students indicate a strong preference for the strategic approach.
- PgDip adult nursing students indicate a stronger affinity for the deep approach than undergraduate BSc (Hons) adult nursing students. This suggests that the extended higher education experience predisposes students to engage more meaningfully with their learning.
- The new use of two established questionnaires to measure the association between approaches to learning and clinical decision-making in the quantitative phase of the design has added to the knowledge on the

internal consistency reliability (Cronbach's alpha coefficient) of each questionnaire on a sample of final year adult nursing students.

7.5. Research Activity

Findings from the study have already been disseminated in forums of the research community nationally and internationally and subjected to the validation of peers (Whitehead, 2004) through sharing the knowledge in talks and workshops for staff and nursing groups, publication, and oral presentations at conferences.

- Joshua, B. (2017) Reflecting on the learning opportunities of presenting a thesis at conference, *Nurse Researcher*, 24 (4), pp. 27-30.
- Joshua, B. (2016) Final year student nurses clinical decision-making: Does the 'Approach to Learning' make a difference: Phase 1 findings, *The 16th European Doctoral Conference in Nursing Science*: Bern, Switzerland.
- Joshua, B. (2015) Final year student nurses clinical decision-making: 'Approaches' to improve: Pre-Intervention findings: The 3rd NUS-NUH International Nursing Conference and 20th Joint Singapore-Malaysia Nursing Conference: Singapore.
- Joshua, B. (2015) Do students' Approaches to Learning correlate with their clinical decision making?, *London South Bank University Summer School Research Conference*: London.

7.6. Future Research

Students' family backgrounds including any history of higher education experience, their employment situation, socio-economic status, ethnicity and first language were not integral to the main purpose of this study and not included in the demographic data collection instrument. An insight into the impact these variables may have on nursing students' approach to learning and their decision-making in clinical practice,

however, would add another dimension to this study and warrants further consideration.

Extending this research to other fields of nursing at this University and possibly other Universities with a similar student demographic, would serve to make comparisons with nursing students in other nursing domains and geographical locations.

Although the deep approach correlated with students' clinical decision-making, exploration between the approaches to learning, clinical decision-making and students' academic and clinical placement achievement would provide a more in-depth insight into this phenomenon and therefore will be considered for exploration in a post-doctoral study.

7.7. Thesis conclusion

As this research reaches its conclusion, the “health and care landscape is changing” (NMC, 2017, npn, para. 1) and the Nursing and Midwifery Council is taking “a radical review of our education standards” (ibid, para. 2). It would seem opportune that research such as submitted here makes a significant contribution to educators' and education providers' “thinking”, as the NMC put it, “about what the public need from nurses and midwives in 2030 and beyond” (ibid, para. 2). It would be wholly appropriate in respect of this research if such “thinking” were refocused on some precepts that were not driven by politico-economist diktats about the knowledge economy and to think rather in terms of what might add value to nurses' clinical decision-making and hence patient care. Teaching and learning that is connected in a very real sense to an improvement in clinical care may rest on the cultivation of attitudes and affordances, connected in ways not yet fully understood but better understood as a consequence of this research. It is recognised that the delivery of propositional knowledge, though clearly important, is not necessarily as important as facilitating an approach to learning that makes for a deeper understanding of how decisional learning takes place and how it is best operationalised in nursing practice.

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Glossary

Definitions of terms used that are specific to this study

Analysis of Variance: a statistical method for testing for significant differences between groups of data, which may be 'explained' by one or more variables (Coffield et al, 2004)

Bachelor of Sciences (Honours) nursing student: A student enrolled on a programme of study at university that will graduate with a BSc (Hons) degree.

Clinical decision-making (CDM) is a systematic process involving critical thinking and scientific reasoning skills that are utilised in nursing practice where identified problems result in decisions being made and / or actions undertaken (Simpson and Courtney, 2002).

Course content: information from the validated curriculum that students are required to learn. This term may be used interchangeably with learning material, learning content, curriculum content, course theory, course material, course subjects and course material.

Healthcare: a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity (WHO, 2009).

Healthcare-associated harm: harm arising from or associated with plans or actions occurring during the provision of healthcare, rather than an underlying disease or injury (WHO, 2009).

Mature students: students over the age of 21 on entry are classified as mature students (Moore et al, 2013).

Patient safety: the reduction of risk of unnecessary harm associated with healthcare to an acceptable minimum (WHO, 2009).

Patient/s: individual who is a recipient of healthcare either a hospital, community care setting, home-care setting. This term is interchangeable with service-user or healthcare client (WHO, 2009).

Post Graduate Diploma nursing student: A student enrolled on a programme of degree with a minimum of an Honours (2:2) classification.

Registered nurse: nurse who has completed a nursing course; has met the professional and academic requirements as directed by the NMC and is now entered onto the NMC register.

Risk: probability that an incident will occur (WHO, 2009).

Appendices

Schedule of Appendices in methodological order

1. LSBU's Research Committee registration of the study
2. UREC's approval to commence the study
3. Permission to access students: Head of Department: Professor Jester
4. Permission to use ASSIST: (Tait et al, 1998): Dr Velda McCune
5. Permission to use CDMNS (Jenkins, 1985): Ms Ashley Bressingham: Springer Publishing
6. Demographic Questionnaire
7. ASSIST Questionnaire (Tait et al, 1998)
8. CDMNS Questionnaire (Jenkins, 1985)
9. VLE announcement to potential participants
10. Participant's Information Sheet
11. Participant's Consent Form
12. Certificate of Research Participation – Phase 1: Pre-Intervention
13. Letter to Participants: Invitation to attend the research intervention workshop
14. Email to participant: Invitation to attend the research intervention workshop
15. Certificate of Research Participation – research intervention workshop attendance
16. Letter to Participants: Post-Intervention Data Collection
17. Email to participant: Post-Intervention Data Collection
18. Certificate of Research Participation – Phase 1: Post-Intervention
19. Participant's Information Sheet for the Interview stage only
20. Agreement to be contacted for an interview' form
21. Email to participant: Invitation to attend the interview
22. Letter to Participants: Invitation to attend the interview
23. Participant's Consent to participate in an Interview form
24. Interview Schedule
25. Certificate of Research Participation – Phase 2: Qualitative Interviews
26. Statistical test selection map

Appendix 1: LSBU's Research Committee registration of the study

**London South Bank
University**

Central Research Support
Research Degrees Administration
103 Borough Road
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T: 020 7815 6911
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Pro Dean Research, Faculty of
Health & Social Care
Chair of Economic & Social
Research Sub-Committee
T: 020 7815 6742
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5 March 2014

Ms Beverly Joshua
2 Overbury Avenue
Beckenham
Kent
BR3 6PZ

Dear Beverly

Registration of your Research Proposal

The revised application to register your research proposal was reviewed by the ESR sub-committee meeting on 24 February 2014 and was approved. The Committee were impressed at with the development of your proposal from your initial submission and wish you success with the rest of your research.

The next research form you should be working on is the RES 3 1st Progress Report that is due no later than 28 September 2014.

Best wishes



Prof. Nicola Crichton, Chair
Economics and Social Research Sub-Committee

Cc: Dr Nicola Martin; Dr B Goring

Appendix 2: UREC Approval

London South Bank
University

Direct line: 020-7815 6025
E-mail: mitchen5@lsbu.ac.uk
Ref: UREC 1419

Beverly Joshua
21 Overbury Avenue
Beckenham
Kent
BR3 6PZ

Friday 27 June 2014

Dear Beverly,

**RE: Final year nursing students' 'approaches-to-learning' and
clinical decision-making: An intervention study**

Thank you for submitting this proposal and for your response to the reviewers' comments.

I am pleased to inform you that Full Chair's Approval has been given by Chair on behalf of the University Research Ethics Committee.

I wish you every success with your research.

Yours sincerely,



Nicola Mitchell
Secretary, LSBU Research Ethics Committee

cc:

Prof Shushma Patel, Chair, LSBU Research Ethics Committee

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Appendix 3: Permission to access students: Professor R. Jester

From: Jester, Rebecca

Sent: 11 November 2013 16:30

To: Joshua, Beverly

Subject: RE: Request permission to access Adult Nursing students

Dear Beverly, yes more than happy for you to access the students once you have received ethical approval. Have you had any response yet I know its been a long time since you made your application

bw

Professor Rebecca Jester

PhD, BSc (Hons) DPSN, RN, RNT, ONC

Head of Department

Adult Nursing & Midwifery Studies

Faculty of Health and Social Care

London South Bank University

Tel: +44 (0)20 7815 8015

Email: rebecca.jester@lsbu.ac.uk

From: Joshua, Beverly

Sent: 11 November 2013 11:22

To: Jester, Rebecca

Subject: FW: Request permission to access Adult Nursing students

Dear Rebecca

May I please request permission to access the final year Adult Nursing Southwark and Havering based students in a study related to students' Approaches -to-learning and its impact on their clinical decision-making, which is part of my EdD study?

I have submitted an application to register this study with the University's Research Committee in June 2013 but am still awaiting feedback; however your permission is required for the University's Ethics Committee application, which I am currently preparing.

Kind regards

Beverly

Beverly Joshua

Course Director

Department of Adult Nursing

Faculty of Health & Social Care

Appendix 4: Permission to use ASSIST: Dr Velda McCune

From: MCCUNE Velda [mailto:velda.mccune@ed.ac.uk]
Sent: 17 March 2014 09:38
To: Joshua, Beverly
Subject: RE: Permission to use ASSIST

Hi Beverly,

That's fine for you to use ASSIST in the way you mention below.

Best,

Velda

From: Joshua, Beverly <joshuab@lsbu.ac.uk>
Sent: 14 March 2014 18:32
To: MCCUNE Velda
Subject: Permission to use ASSIST

Dear Dr McCune

I am a Doctoral student on the Faculty of Arts and Human Sciences, Department of Education at London South Bank University in London and kindly request your permission to use the Approaches to Study Skills Inventory for Students (ASSIST) (Tait et al, 1998) in a study I wish to undertake on pre-registration nursing students based at this University.

I have been granted permission to access this sample by the Head of the Nursing Department and would therefore appreciate your permission to use this inventory. I give you the assurance that the inventory will be used for non-profit purposes and the source will be cited in the thesis and any papers published thereafter.

I look forward to your response and should you have any queries regarding this study, please let me know.

*Kind regards
Beverly
Beverly Joshua
London South Bank University
103 Borough Road
London
SE1 0AA
joshuab@lsbu.ac.uk*

Appendix 5: Permission to use CDMNS:Springer Publishing

From: Ashley Bressingham [ABressingham@springerpub.com]

Sent: 19 February 2014 18:48

To: Joshua, Beverly

Subject: RE: Permissions Request Received

Hi Beverly,

Okay, thank you for explaining what part of The Clinical Decision Making Nursing Scale you're interested in including in your thesis. We will grant you permission to use this material in your thesis. All we ask is that you include the following credit information with the copy of the scale in your thesis:

Measurement of Nursing Outcomes, 2nd Edition: Volume 1: Measuring Nursing Performance in Practice, Education, and Research

Carolyn Waltz, PhD, RN, FAAN; Louise Jenkins, PhD, RN – Editors

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ISBN: 9780826114174

Please let me know if you have any questions or concerns and I wish you luck with your thesis.

Best regards,

Ashley Bressingham | Sales Assistant

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-----Original Message-----

From: Joshua, Beverly [mailto:joshuab@lsbu.ac.uk]

Sent: Wednesday, February 19, 2014 10:49 AM

To: Ashley Bressingham

Subject: RE: Permissions Request Received

Hi Ashley

Many thanks for this prompt response. In my thesis, I am aiming to use the entire questionnaire i.e. the entire 40 questions from the Clinical Decision Making Nursing Scale [CDMNS] that was developed by Dr Jenkins, as the questionnaire in my survey.

Therefore I am seeking permission to use the CDMNS questionnaire.

I hope this clarifies the request and look forward to hearing from you again

Many thanks.

Kind regards

Beverly

Beverly Joshua

London South Bank University

103 Borough Road

London

SE1 OAA

Email: joshuab@lsbu.ac.uk

Appendix 6: Demographic Questionnaire

The package of questionnaires – Phase 1: Pre-Intervention

Introductory instructions

I would be most grateful if you could please complete this package of questionnaires. The package starts with a few questions to discover some key information about you. The rest of the package is related to the key concepts in the research study, namely your personal pre-training information, information about your learning and finally, your clinical decision-making when nursing patients. I really appreciate if you to answer all questions, but if there is a question that you do not understand or would prefer not to answer, simply leave the question out and move onto the next question. Please do not hesitate to contact me if you have any questions or concerns.

Students, please accept sincere thanks for participating in my research.

Beverly

Beverly Joshua [Researcher]
Faculty of Health & Social Care
London South Bank University
103 Borough Road
London
SE1 0AA
Email: joshuab@lsbu.ac.uk

Direct line: 0207 815 8074

General Information Questionnaire

Where indicated please put an 'x' in the response that applies to you.

ID. No

Name- First Name:	Surname:
LSBU Student Number:	
Correspondence Address	
Post Code:	
Phone- number Home:	Mobile:

LSBU Email address [BLOCK CAPITALS, please]			
External Email address [BLOCK CAPITALS, please]			
Gender: Male <input type="checkbox"/>	Female <input type="checkbox"/>		
Age:			
20 years or less <input type="checkbox"/>	41- 50 years <input type="checkbox"/>		
20 – 30 years <input type="checkbox"/>	51- 60 years <input type="checkbox"/>		
31 - 40 years <input type="checkbox"/>	Older than 60 years <input type="checkbox"/>		
Current cohort:			
Cohort you started the course with:			
Course e.g. BSc [Hons] Nursing <input type="checkbox"/>			
PGD Nursing <input type="checkbox"/>			
Campus e.g. LSBU at Havering <input type="checkbox"/>			
LSBU at Southwark <input type="checkbox"/>			
Where you employed in a health care setting prior to commencing the course?			
No <input type="checkbox"/>			
Yes <input type="checkbox"/>If you answered ‘Yes’ to this question			
What job did you do?			
Please put an X to indicate the length of time that you were employed in a health care setting prior to commencing the course?			
Less than 6 months <input type="checkbox"/>	7-11 months <input type="checkbox"/>	1 year <input type="checkbox"/>	
2-5 years <input type="checkbox"/>	6- 10 years <input type="checkbox"/>	more than 10 years <input type="checkbox"/>	
Please put an X to indicate your highest academic qualification:			
GCSE <input type="checkbox"/>	A Levels <input type="checkbox"/>	HNC <input type="checkbox"/>	BTEC <input type="checkbox"/>
Diploma <input type="checkbox"/>	Degree <input type="checkbox"/>	Honours Degree <input type="checkbox"/>	Master’s Degree <input type="checkbox"/>
Other <input type="checkbox"/>			

Appendix 7: ASSIST Questionnaire (Tait et al, 1998)

A S S I S T

Approaches and Study Skills Inventory for Students
(Tait et al, 1998)

This questionnaire has been designed to allow you to describe, in a systematic way, how you go about learning and studying. Please respond truthfully, so that your answers will accurately describe your actual ways of studying and please work your way through the questionnaire as quickly as possible, giving your immediate response.

Please circle the number that relates most closely to your level of agreement with the statements. It is also important that you answer all questions.

5 = agree, 4 = agree somewhat, 3 = unsure, 2=disagree somewhat, 1= disagree Please <u>try not to use 3</u> unless you really have to.						
1.	I manage to find conditions for studying which allow me to get on with my work easily.	5	4	3	2	1
2.	When working on an assignment, I'm keeping in mind how best to impress the marker	5	4	3	2	1
3.	Often I myself wondering whether the work I am doing here is really worthwhile.	5	4	3	2	1
4.	I usually set out to understand for myself the meaning of what we have to learn.	5	4	3	2	1
5.	I organise my study time carefully to make the best use of it.	5	4	3	2	1
6.	I find I have to concentrate on just memorising a good deal of what I have to learn.	5	4	3	2	1
7.	I go over the work I've done carefully to check the reasoning and that it makes sense.	5	4	3	2	1
8.	Often I feel I'm drowning in the sheer amount of material we have to cope with.	5	4	3	2	1
9.	I look at the evidence carefully and try to reach my own conclusion about what I'm studying.	5	4	3	2	1
10.	It is important to me to feel that I'm doing as well as I really can on the courses here.	5	4	3	2	1
11.	I try to relate ideas I come across to those in other topics or other courses whenever possible.	5	4	3	2	1
12.	I tend to read very little beyond what is actually required to pass.	5	4	3	2	1
5 = agree, 4 = agree somewhat, 3 = unsure, 2=disagree somewhat, 1= disagree						

Please try not to use 3 unless you really have to.						
13.	Regularly I find myself thinking about ideas from lectures when I'm doing other things.	5	4	3	2	1
14.	I think I'm quite systematic and organised when it comes to revising for exams.	5	4	3	2	1
15.	I look carefully at tutor's comments on course work to see how to get higher marks next time.	5	4	3	2	1
16.	There is not much of the work here that I find interesting or relevant.	5	4	3	2	1
17.	When I read an article or book, I try to find out for myself exactly what the author means.	5	4	3	2	1
18.	I'm good at getting down to work whenever I need to.	5	4	3	2	1
19.	Much of what I'm studying makes little sense; it's like unrelated bit and pieces.	5	4	3	2	1
20.	I think about what I want to get out of this course to keep my studying well focussed.	5	4	3	2	1
21.	When I'm working on a new topic, I try to see in my own mind how all the ideas fit together.	5	4	3	2	1
22.	I often worry of whether I will ever be able to cope with the work properly.	5	4	3	2	1
23.	Often I find myself questioning things I hear in lectures or read in books.	5	4	3	2	1
24.	I feel that I am getting on well, and this helps me put more effort into the work.	5	4	3	2	1
25.	I concentrate on learning just those bits of information I have to know to pass.	5	4	3	2	1
26.	I find that studying academic topics can be quite exciting at times.	5	4	3	2	1
27.	I am good at following up some of the reading suggested by lecturers or tutors.	5	4	3	2	1
28.	I keep in mind who is going to mark an assignment and what they're likely to be looking for.	5	4	3	2	1

5 = agree, 4 = agree somewhat, 3 = unsure, 2=disagree somewhat, 1= disagree						
Please <u>try not to use 3</u> unless you really have to.						
29.	When I look back, I sometimes wonder why I ever decided to come here.	5	4	3	2	1
30.	When I am reading, I stop from time to time to reflect on what I am trying to learn from it.	5	4	3	2	1
31.	I work steadily through the term or semester, rather than leave it all until the last minute.	5	4	3	2	1
32.	I am not really sure what's important in lectures, so I try to get down all I can.	5	4	3	2	1
33.	Ideas in course books or articles often set me off on long chains of thought of my own.	5	4	3	2	1
34.	Before starting work on an assignment or exam question, I think first how best to tackle it.	5	4	3	2	1
35.	I often seem to panic if I get behind with my work.	5	4	3	2	1
36.	When I read, I examine the details carefully to see how they fit in with what's being said.	5	4	3	2	1
37.	I put a lot of effort into studying because I am determined to do well.	5	4	3	2	1
38.	I gear my studying closely to just what seems to be required for assignments and exams.	5	4	3	2	1
39.	Some of the ideas I come across on the course, I find really gripping.	5	4	3	2	1
40.	I usually plan out my week's work in advance, either on paper or in my head.	5	4	3	2	1
41.	I keep an eye open for what lecturers seem to think is important and concentrate on that.	5	4	3	2	1
42.	I'm not really interested in this course, but I have to take it for other reasons.	5	4	3	2	1
43.	Before tackling a problem or assignment, I first try to work out what lies behind it.	5	4	3	2	1
44.	I generally make good use of my time during the day.	5	4	3	2	1
45.	I often have trouble in making sense of things I have to remember	5	4	3	2	1

5 = agree, 4 = agree somewhat, 3 = unsure, 2=disagree somewhat, 1= disagree Please <u>try not to use 3</u> unless you really have to.						
46.	I like to play around with ideas of my own even if they don't get me very far.	5	4	3	2	1
47.	When I finish a piece of work, I check it through to see if it really meets the requirements.	5	4	3	2	1
48.	Often I lie awake worrying about work I think I won't be able to do.	5	4	3	2	1
49.	It's important for me to be able to follow the argument, or to see the reason behind things.	5	4	3	2	1
50.	I don't find it at all difficult to motivate myself.	5	4	3	2	1
51.	I like to be told precisely what to do in my essays or other assignments.	5	4	3	2	1
52.	I sometimes get hooked on academic topics and feel I would like to keep on studying them.	5	4	3	2	1

Thank you very much for taking the time to complete this questionnaire, I certainly appreciate it.

Beverly

Beverly Joshua [Researcher

Appendix 8: CDMNS Questionnaire (Jenkins, 1985)

C D M N

Clinical Decision Making in Nursing Scale

(Jenkins, 1985)

Dear Participant

For each statement below think of your behaviour when caring for patients. There are neither right nor wrong responses. None of the statements refer to nursing in critical areas.

Circle the response that is closest to how you would ordinarily respond:

- | | | |
|----------|-----------------|---------------------------------------|
| A | - Always: | What you consistently do every time. |
| F | - Frequently: | What you usually do most of the time. |
| O | - Occasionally: | What you sometimes do on occasion |
| S | - Seldom: | What you rarely do |
| N | - Never: | What you never do |

A = Always , F= Frequency, O=Occasionally, S=Seldom, N=Never						
1.	If the clinical decision is vital and there is time, I conduct a thorough search for alternatives	A	F	O	S	N
2.	When a patient is ill, his/ her cultural values and beliefs are secondary to the implementation of the health care	A	F	O	S	N
3.	The situational factors at the time of making a making a clinical decision, determine the number of options that I explore before making a decision.	A	F	O	S	N
4.	Looking for new information in decision making is more trouble than its worth.	A	F	O	S	N
5.	I search the internet, nursing journals or medical text books to look up things I do not understand.	A	F	O	S	N
6.	A random approach for looking at options before making any clinical decision, works best for me.	A	F	O	S	N
7.	Brainstorming is a method I use when thinking of ideas for options.	A	F	O	S	N
8.	I go out of my way to get as much information as possible to make decision.	A	F	O	S	N
9.	I assist patients/ clients in excising their rights to make decisions about their own care.	A	F	O	S	N
10.	When my values conflict with those of the patients/ client, I am objective enough to handle the decision making required for the situation	A	F	O	S	N
11.	I listen or consider expert advice or judgment, even though it may not be the choice I would make.	A	F	O	S	N
12.	I solve a problem or make a decision without consulting anyone, using information available to me at the time.	A	F	O	S	N
13.	I don't always take time to examine all the possible consequences of a decision I must make.	A	F	O	S	N
14.	I consider the future welfare of the family of the patient/ client when I make a clinical decision which involves the individual.	A	F	O	S	N
15.	I have little time or energy available to search for information.	A	F	O	S	N
16.	I make a mental list of options before making a decision.	A	F	O	S	N
17.	When examining consequences of options I might choose, I generally think through " If I did this, then ..."	A	F	O	S	N

A = Always , F= Frequency, O=Occasionally, S=Seldom, N=Never						
18.	I consider consequence before making a choice.	A	F	O	S	N
19.	Consensus or agreement among my peer group is important to me, making a decision.	A	F	O	S	N
20.	I include patients/ clients as sources of information.	A	F	O	S	N
21.	I consider what my peers will say when I think about possible choices I could make.	A	F	O	S	N
22.	If my mentor or the nurse I am working with recommends an option to a clinical decision making situation, I adopt it rather than searching for other options.	A	F	O	S	N
23.	If a benefit is really great for the patient/ client, I will favour it without looking at all the risks.	A	F	O	S	N
24.	I search for new information randomly.	A	F	O	S	N
25.	My past experiences have little to do with how actively I look at risks and benefits for decisions about clients.	A	F	O	S	N
26.	When examining consequences of options I might choose, I am aware of the positive outcomes of my patient/client.	A	F	O	S	N
27.	I select options that I have used successfully in similar circumstances in the past.	A	F	O	S	N
28.	If the risks are serious enough to cause problems, I reject the option.	A	F	O	S	N
29.	I write out a list of positive and negative consequences when I am evaluating an important clinical decision.	A	F	O	S	N
30.	I do not ask my peers to suggest options for my clinical decisions.	A	F	O	S	N
31.	My professional values are inconsistent with my personal values.	A	F	O	S	N
32.	My finding of alternatives to help with my decision-making, seems to be largely a matter of luck.	A	F	O	S	N
33.	In the clinical setting I keep in mind the course objectives when making clinical decisions.	A	F	O	S	N
34.	The risks of and benefits for the patient/ client, are the furthest thing from my mind when I have to make a decision	A	F	O	S	N

A = Always , F= Frequency, O=Occasionally, S=Seldom, N=Never						
35.	When I have a clinical decision to make, I consider the NMC, the Trust's and the University's policies and procedures .	A	F	O	S	N
36.	I involve others in my decision making only if the situation calls for it.	A	F	O	S	N
37.	In my search for options to make the decision, I include even those that might be thought of as impractical' or not feasible.	A	F	O	S	N
38.	Finding out about the patient/ client's objectives is a regular part of my clinical decision making.	A	F	O	S	N
39.	I examine the risks and benefits only for consequences that have serious implications.	A	F	O	S	N
40.	The patient/client's values have to be consistent with my own in order for me to make a good decision.	A	F	O	S	N

Thank you very much for spending the time to complete this questionnaire, I certainly appreciated it.

Beverly Joshua [Researcher]

Appendix 9: VLE announcement to potential participants

Blackboard/ Moodle announcement to potential Participants

- **Title of message:**

(Name of cohort: *September 2012 BSc [Hons] Adult Nursing Department*) students on both campuses – invitation to participate

- **Message statement:**

Dear students in *September 2012 BSc[Hons] Adult Nursing Department*

I would like to invite you to participate in a research study I am conducting to investigate the clinical decision- making ability of final year nursing students and to explore the possible factors that may affect or influence students' clinical decision-making. To this end, I would like to invite all final year Adult Department students, on both the Southwark and Havering campuses to consider participating in my research.

I have attached an Information Sheet that I would like you to read that informs you of the research and what your involvement in the research will be, should you decide to participate. I have also attached a copy of the Consent form for you to read, but you should not complete this now. I will formally present you with the Consent form when I meet your cohort in a few weeks time.

At the start of the final year I will formally meet with your cohort. At this time, you would have the opportunity to ask me any questions about the research study. You will also be presented with the Consent form to sign, if you want to be part of this research. After a coffee-break, you will complete the first phase of the data-collection, if you have agreed to participate.

Please be assured that your participation in my research study **is entirely optional** and your progression on the course will not be compromised by deciding to or refusing to participate in this research.

Thank you in advance for taking the time to consider participating in my research study and please do not hesitate to contact me if you wish to ask me any questions.

Kind regards

Beverly Joshua [Researcher]
Email: joshuab@lsbu.ac.uk
Direct line: 0207 815 8074

Message attachments:

- Participant Information Sheet
- Participant Consent form

• Duration and location of the message on the Blackboard/ Moodle virtual system

- The message will be uploaded onto the Blackboard/ Moodle portals three weeks prior to the completion of the final module on the 2nd year of the course.
- The message will be posted within the 'Adult Nursing' community site under 'Announcements' unless the Blackboard/ Moodle administrators recommend a different location at the time of uploading is due.

Appendix 10: Participant information Sheet

Participation Information Sheet

Final year nurses' Approach to Learning and clinical decision-making: An intervention study

You are invited to participate in a research study. In order to help you understand what the study is about, you are being given the following information which will provide you with a description of this research study and what your participation, if you consent to participate, will involve. Please take some time to read this Information Sheet and you are welcome to contact the Researcher if you have any questions or concerns. In due course the Researcher will schedule a meeting with your cohort, invite any unanswered questions about the research study and then present you and each member of your cohort with a 'Consent to Participate in the research' form. It is therefore important that you understand all aspects of the study so that you are fully aware of what you have been invited to participate in.

Who is doing this research study?

The Researcher for this research study is Beverly Joshua [Researcher]. This study is being undertaken by the Researcher to fulfil the requirements for a Doctorate of Education (EdD) at London South Bank University. Dr Nicola Martin and Dr Elspeth Hill are supervising the Researcher throughout this study.

What is the purpose of the study?

This study focuses on nurses' clinical decision-making [CDM] as it is an integral component of nursing practice which has to be constantly and effectively demonstrated and student nurses', on completion of their training, have to be competent in their CDM. Therefore the Researcher is particularly interested in the development of student nurses' CDM ability and intends investigating whether students' CDM may be enhanced by exploring the various factors, which include the students' approach-to-learning, personal pre-training demographics as well as the students' progression on clinical placements, as possible factors that may affect or influence students' CDM ability. An additional aim of this study is to determine whether the students' CDM can be enhanced through an intervention specifically designed to improve the students' approach-to-learning.

Why have I been selected?

You have been approached to take part in this study because you have completed the 2nd year course requirements and will be progressing onto the final year of your course. Other Adult Department nursing students who will be progressing onto the final year of their study have also been invited to take part in this research. All Adult Department student nurses who are expected to complete their training by September 2015 are eligible and welcome to participate.

Do I have to take part and am I allowed to withdraw from the research study?

You must not feel obliged to consent to take part in this research. Whether you choose to take part or not will have no impact on your Pre-registration nurse education. Should you consent to take part in this research study, you can stop participating at any time, without the need to explain your decision. If you withdraw from the research study any data you had provided while you were participating will still be used by the Researcher.

What will I have to do if I decide to take part?

Once you feel that you have all the information about the research study and you are happy to sign a ‘Consent to participate in the research’ form, you will be requested to complete a package of questionnaires that should take about 45- 60 minutes in duration. By random selection, some students will be invited to participate in Intervention Workshops prior to their final Consolidation clinical placement. On completion of your final Consolidation clinical placements, participants will be requested to re-answer 2 of the questionnaires previously answered. Thereafter by random selection, some students will be invited to participate in semi- structured interviews with the Researcher which will focus on the participant’s perception of CDM, in addition to responding to questions regarding a set clinical scenario. The interviews are expected to last approximately 20 minutes and will be audio-recorded so that it can be transcribed.

For most of the participants all that is required is for them to complete the questionnaires on 2 occasions over a 12 month period.

What data will be collected from me and when and where will this occur?

The questionnaire consists of questions requiring responses such as; tick an applicable box, circle a number on a scale between 1-5, circle yes or no, indicating your level of disagreement /agreement with written statements. The questions are expected to measure you perception to your CDM, how you approach your learning and your clinical placement results of completed clinical placements undertaken on your nursing course. Additionally, some questions are aimed at gaining a deeper understanding of you, for example, your age and gender, your pre-training healthcare experience and pre-training academic qualifications.

On both occasions, the questionnaires will be answered in a classroom at the LSBU campus that you are currently enrolled at or find convenient to attend. The Intervention Workshops and individual interviews will also be conducted at both the Southwark and Havering Campuses.

The interviews are a separate phase of the research study, which you are free to take part in or decline to participate in. You are free to choose to only complete the questionnaires but may not want to participate in the interviews. This would be completely acceptable within the design of this research study.

What are the benefits of taking part?

By participating, you will increase your understanding of the research process as well deepen your knowledge regarding the various aspects of CDM and the approaches-to-learning. Students’ participating in the Intervention Workshops will be introduced or revisit evidenced-based study skills and learning strategies. Students’ participating in the

interviews may use this opportunity to strengthen their interview skills in preparation for their future job interviews. In addition you will receive a 'Certificate of Research Participation' every time you participate, that is, by completing the questionnaires or attending the interview. You may include this/these certificate/s into your personal professional portfolio as evidence that you have participated in a research study that contributed to knowledge and understanding in the nursing profession and as well as enhancing your understanding of the research process. Additionally, initial results which will give you insight into your clinical decision-making and Approach to Learning will be available on completion of the interviews, in September 2015.

What are the possible risks or disadvantages of taking part?

There are no risks to participating in this research study. All aspects of this research has been approved the LSBU Research Ethics committee. In addition, participation in this research will have no impact on your Pre-registration nurse education. The slight disadvantage is that participation will require a time commitment to complete the questionnaires [approximately 45-60 minutes on both occasions] and potentially attend the Intervention Workshop and interview. Also should a significant practice related issue be revealed during the interview, the Researcher will discuss the issue with you at the end of the interview and together it will be decided whether the Trust and/or NMC policies and procedures, need to be invoked.

Who may I contact if I have any questions or concerns?

Should you have any questions or concerns please feel free to contact the Researcher , Beverly Joshua [Researcher] at London South Bank University on 0207 815 8074 or email: joshuab@lsbu.ac.uk. Should you not be able to contact the Researcher or you would like advice from an alternative source on this research and your participation in it, the Researcher's supervisory team may be contacted.

Dr Nicola Martin
Head of Research and Non-QTS programmes
Faculty of Arts and Human Sciences
London South Bank University
Email: martinn@lsbu.ac.uk
Direct line: 0207815 5779

Dr Elspeth Hill
Doctoral Supervisor
Faculty of Arts and Human Sciences
London South Bank University
Email:
Direct Line:

Will my taking part in this study be kept confidential?

As the entire cohort will be involved in the initial phase of this research and the some in the Intervention Workshop, you will inevitably know and be known by other participants. Individual interviews will be scheduled at specific mutually agreeable times with only you and the Researcher. Beyond this, the Researcher will require you to write your name on the questionnaires, in order to chart your development over the 12 month period however the Researcher will convert your name to a randomised code when presenting the research data. Therefore, please be assured that only the Researcher and the Researcher's supervisory team who are directly involved in this study, will know or have access to your true identity. All data and personal information will be kept secure in a locked filing cabinet or on a password protected computer file in the Researcher's office

and personal laptop for a maximum of 5 years on completion of the study, after which all data will be destroyed.

What will happen to the results of the study?

Anonymised results of the study will be presented in the Researcher's Doctorate thesis and will be used by the Researcher in future publications and presentations.

What can I do if I am unhappy at any point participating in this research?

If you are unhappy participating at any point in this research, you can discuss the situation with the Researcher or contact the Researcher's supervisory team. Alternatively you may decide to complain more formally via the University's Complaints Procedure which is accessible from the University's website: <http://www.lsbu.ac.uk/research>

My sincere thanks to you for taking the time to read this Information Sheet and for considering to participate in this research study.

Beverly Joshua [Researcher]

Appendix 11: Participant's Consent Form

Research title: Final year nursing students' Approach to Learning and clinical decision-making: An intervention study

Please tick the boxes as appropriate

- I have read the 'Information sheet' provided by the Researcher and have kept a copy of the 'Information sheet' should I wish to refer to it in the future.
- I have an understanding of the research, the aims and nature of the research study. I understand that the Researcher will periodically contact me over a 12 month period from when the research commences.
- I understand that my involvement in the research study and my data will be held in a secure location and remain strictly confidential. My data will only be accessed by the Researcher and the supervisory team directly involved with this research study.
- I have been informed about what data I will be asked to provide and for what purpose it will be used. I understand that my data will not be used for any other purpose than what has been told to me.
- I have been given the opportunity to ask the Researcher and the other Researchers cited on the 'Information sheet' any questions I had about this research and my participation in it. Any questions I had have been satisfactorily answered and I no longer have any questions outstanding.
- I hereby freely and knowingly give my consent to participate in this research study.
- I understand that I can withdraw my consent to participate at any point during the research study without the need to explain my decision to the Researcher, though any data that I had provided up to the point of withdrawal will continue to be used by the Researcher.
- I understand that my participation or withdrawal from this research study will have no impact on my Pre-Registration nurse education or my qualified nursing career.

Participant's First Name:Surname:.....

Student number:.....**Cohort:**.....

Participant's Signature:.....**Date:**.....

Researcher's signature:

If you have any concerns about this research or your participation in it, please contact the Researcher, Beverly Joshua [Researcher]

Email: joshuab@lsbu.ac.uk

Direct line: 020 815 8074

London South Bank
University

Certificate of Research Participation

Phase 1: Pre-Intervention

Awarded to

(Name of participant)

.....

This is to certify that the above named
participated on

(Date of attendance)

.....

in the research study entitled:

*Final year nursing students' Approach to Learning' and clinical
decision-making: An intervention study*

(Signature of Researcher)

Researcher
Beverly Joshua [Researcher]

Email: joshuab@lsbu.ac.uk
Direct line: 0207 815 8074

Appendix 13: Letter to Participants: Intervention Workshop

(Participant's address)

(Date of letter)

Re: Research title: Final year nursing students' Approach to Learning and clinical decision-making: An intervention study

Dear *(Participant's name)*

Thank you for your ongoing participation in my research study. It has now been ... months since you completed the first part of this research study. I am pleased to inform you, that you have been randomly selected to participate in the Intervention Workshop, should you wish to continue participating in this research.

You are invited to attend only **one** workshop lasting approximately 3 hours which will be facilitated by me. The dates, times and venues that these workshops are scheduled for, are as follows:

Please email or telephone me by XXX [*3 weeks from the date of letter*], indicating which session you would like to attend.

- | | | | |
|--------------------------|----------------------|-------------|-----------------------------|
| <input type="checkbox"/> | <i>Date</i> [Week.1] | <i>Time</i> | Room xxx – Southwark Campus |
| <input type="checkbox"/> | <i>Date</i> [Week 1] | <i>Time</i> | Room xxx - Havering Campus |
| <input type="checkbox"/> | <i>Date</i> [Week 2] | <i>Time</i> | Room xxx – Southwark Campus |
| <input type="checkbox"/> | <i>Date</i> [Week 2] | <i>Time</i> | Room xxx - Havering Campus |

If you have any questions or concerns regarding your continued participation in this research or participating in the Intervention Workshop, please do not hesitate to contact me.

Thank you again for your ongoing support of my research and I look forward to hearing from you in the near future.

Kind regards,
Beverly

Beverly Joshua [Researcher]
Faculty of Health & Social Care
London South Bank University
Email: joshuab@lsbu.ac.uk
Direct line: 0207 815 8074

Appendix 14: Email to participant: Intervention Workshop

Subject Box: Research title: Final year nursing students' Approach to Learning and clinical decision-making: An intervention study

Dear (*Participant's name*)

Thank you for your ongoing participation in my research study. It has now been ... months since you completed the first part of this research study. You are now invited to attend the Intervention Workshop, should you wish to continue participating in this research.

The dates, times and venues that these workshops are scheduled for, are as follows:

Please email or telephone me by XXX [*3 weeks from the date of letter*], indicating which session you would like to attend.

- | | | | |
|--------------------------|----------------------|-------------|-----------------------------|
| <input type="checkbox"/> | <i>Date</i> [Week.1] | <i>Time</i> | Room xxx – Southwark Campus |
| <input type="checkbox"/> | <i>Date</i> [Week 1] | <i>Time</i> | Room xxx - Havering Campus |
| <input type="checkbox"/> | <i>Date</i> [Week 2] | <i>Time</i> | Room xxx – Southwark Campus |
| <input type="checkbox"/> | <i>Date</i> [Week 2] | <i>Time</i> | Room xxx - Havering Campus |

If you have any questions or concerns regarding your continued participation in this research or participating in the Intervention Workshop, please do not hesitate to contact me.

Thank you again for your ongoing support of my research and I look forward to hearing from you in the near future.

Kind regards,
Beverly

Beverly Joshua [Researcher]
Faculty of Health & Social Care
London South Bank University
103 Borough Road
London
SE1 0AA
Email: joshuab@lsbu.ac.uk
Direct line: 0207 815 8074

Appendix 15: Certificate of Research Participation: Intervention Workshop

London South Bank
University

Certificate of Research Participation

Awarded to

(Name of participant)

.....

This is to certify that the above named
participated in an Intervention Workshop on

(Date of attendance)

.....

in the research study entitled:

*Final year nursing students' Approach to Learning' and clinical
decision-making: An intervention study*

(Signature of Researcher)

Researcher
Beverly Joshua [Researcher]

Email: joshuab@lsbu.ac.uk
Direct line: 0207 815 8074

Appendix 16: Letter to Participants: Post-Intervention Data Collection

(Participant's address)

(Date of letter)

Re: Research title: Final year nursing students' Approach to Learning and clinical decision-making: An intervention study

Dear (Participant's name)

Thank you for your ongoing participation in my research study. As you are now on your Consolidation placement, I am now inviting you to a meeting to complete the package of questionnaires for the 2nd and final time, should you wish to continue participating in this research. I have scheduled meetings on alternative dates, times and venues for you to choose which suits you best.

Please email or telephone me by XXX [*3 weeks from the date of letter*], indicating which session you would like to attend.

- | | | | |
|--------------------------|----------------------|-------------|-----------------------------|
| <input type="checkbox"/> | <i>Date</i> [Week.1] | <i>Time</i> | Room xxx – Southwark Campus |
| <input type="checkbox"/> | <i>Date</i> [Week 1] | <i>Time</i> | Room xxx - Havering Campus |
| <input type="checkbox"/> | <i>Date</i> [Week 2] | <i>Time</i> | Room xxx – Southwark Campus |
| <input type="checkbox"/> | <i>Date</i> [Week 2] | <i>Time</i> | Room xxx - Havering Campus |

Additionally, as part of this research study I would like to interview some participants. To this end I have enclosed a 'Participant's Information Sheet for the Interview stage only' for you to read. If you are prepared to be interviewed by me then please complete the enclosed 'Agreement to be contacted for an interview' form and return it when submitting your questionnaire pack, at our meeting.

Upon receiving your completed form I will contact you regarding an interview. If you have any questions or concerns regarding your participation in this study, attending the meeting to complete the questionnaires or your participation in an interview, please do not hesitate to contact me.

Thank you again for your ongoing support of my research and I look forward to hearing from you in the near future.

Kind regards
Beverly

Beverly Joshua [Researcher]
Faculty of Health & Social Care
London South Bank University
103 Borough Road
London
SE1 0AA

Email: joshuab@lsbu.ac.uk

Direct line: 0207 815 807

Appendix 17: Email to participant: Post-intervention

Subject Box: Research title: Final year nursing students' Approach to Learning and clinical decision-making: An intervention study

Dear (Participant's name)

Thank you for your ongoing participation in my research study. As you are now on your Consolidation placement, I am now inviting you to a meeting to complete the package of questionnaires for the 2nd and final time, should you wish to continue participating in this research. I have scheduled meetings on alternative dates, times and venues for you to choose which suits you best.

Please email or telephone me by XXX [*3 weeks from the date of email*], indicating which session you would like to attend.

- | | | | |
|--------------------------|----------------------|-------------|-----------------------------|
| <input type="checkbox"/> | <i>Date</i> [Week.1] | <i>Time</i> | Room xxx – Southwark Campus |
| <input type="checkbox"/> | <i>Date</i> [Week 1] | <i>Time</i> | Room xxx - Havering Campus |
| <input type="checkbox"/> | <i>Date</i> [Week 2] | <i>Time</i> | Room xxx – Southwark Campus |
| <input type="checkbox"/> | <i>Date</i> [Week 2] | <i>Time</i> | Room xxx - Havering Campus |

Additionally, as part of this research study I would like to interview some participants. To this end I have enclosed a 'Participant's Information Sheet for the Interview stage only' for you to read. If you are prepared to be interviewed by me then please complete the enclosed 'Agreement to be contacted for an interview' form and return it when submitting your questionnaire pack, at our meeting.

Upon receiving your completed form I will contact you regarding an interview. If you have any questions or concerns regarding your participation in this study, attending the meeting to complete the questionnaires or your participation in an interview, please do not hesitate to contact me.

Thank you again for your ongoing support of my research and I look forward to hearing from you in the near future.

Kind regards
Beverly

Beverly Joshua [Researcher]
Faculty of Health & Social Care
London South Bank University
London
Email: joshuab@lsbu.ac.uk

Direct line: 0207 815 8074

**London South Bank
University**

Certificate of Research Participation

Phase 1: Post-Intervention

Awarded to

(Name of participant)

.....

This is to certify that the above named
participated on

(Date of attendance)

.....

in the research study entitled:

*Final year nursing students' Approach to Learning' and clinical
decision-making: An intervention study*

(Signature of Researcher)

Researcher
Beverly Joshua [Researcher]

Email: joshuab@lsbu.ac.uk
Direct line: 0207 815 8074

Appendix 19: Participant's Information Sheet for the Interview stage

Research title: Final year nursing students' Approach to Learning and clinical decision-making: An intervention study

Firstly, the Researcher would like to thank you for your ongoing participation in this study. This Information Sheet concerns only the **Interview stage** of this research. Please take some time to read this Information Sheet and discuss it with others if you wish. You are also welcome to contact the Researcher if you have any questions or concerns. Once you have read this and you are happy to be contacted by the Researcher and be invited for an interview, please complete and return the enclosed 'Agreement to be contacted for an interview' form with your package of questionnaires.

What is the purpose of this study?

The Researcher is particularly interested in the development of student nurses' clinical decision-making [CDM] ability and intends investigating whether students' CDM may be enhanced by exploring the various factors, which include the students' approach-to-learning, personal pre-training demographics as well as the students' progression on clinical placements, as possible factors that may affect or influence students' CDM ability. An additional aim of this study is to determine whether the students' CDM can be enhanced through an intervention specifically designed to improve the students' approach-to-learning.

What are the key aspects of the research design?

There are 2 key aspects to this research's design. The first key aspect is that it is an intervention study. The Researcher wants to determine, using statistics gained from questionnaires, how participants might have developed over their final year of their Pre-registration nursing course. The second key aspect is that this study uses a mixed methods approach. The Researcher not only wants to use statistics gained from questionnaires, but also wants to inquire what are the participants' perceptions of their CDM, by interviewing them.

What will the interview be about?

The interview will consist of a small number of questions related to the aims of the study as well as answering questions about a clinical scenario.

Who will conduct the interview and how long will it last?

The interview will be conducted by the Researcher and it is estimated that each interview will last approximately 45 minutes.

Am I allowed to bring someone to the interview?

To reduce any potential distractions, the Researcher would ideally prefer to interview you alone. However, should you like to bring someone to the interview, this would need to be arranged and agreed by the Researcher prior to the interview. Also, the person accompanying you to the interview can only be an observer and not a contributor.

Where and when will the interview take place?

The Researcher will contact you and together you will decide on a mutually convenient time to conduct the interview. All interviews will be conducted at LSBU at a mutually agreeable campus.

Am I the only person that has been asked to participate in an interview?

No, all participants that have taken part in this research have been asked to consider taking part in an interview.

What do I need to do if I do not want to participate in an interview and what will happen thereafter?

If you decide that you do not want to participate in an interview then you will not be contacted by the Researcher when interview times are being set up. However, all the data you have provided in the package of questionnaires over the last 12 months will continue to be used in the research study. As this is the final package of questionnaires you would be invited to answer on this research, your participation in this research study will now conclude.

What do I need to do if I am willing to participate in an interview and what will happen thereafter?

If you decide that you are willing to take part in an interview with the Researcher then initially you need to complete the enclosed ‘Agreement to be contacted for an Interview’ form and return it with the package of questionnaires that you have received. The Researcher only needs to conduct approximately 15 interviews. Therefore, as the Researcher receives forms from participants indicating a willingness to participate in an interview, the Researcher will contact that participant to set up the interview appointment. When 15 interviews has been completed, the Researcher will who cease interviewing participants however the Researcher will still contact each participant who indicated a willingness to be interviewed, so they are aware of what is happening. Should this is the case for you, then as this was the last package of questionnaires you were due to receive, your participation in this research study will have concluded.

If the Researcher contacts you seeking to set up an interview appointment, then when you attend the interview, the Researcher will give you a ‘Consent to participate in an Interview’ form for you to read and sign. You will then be interviewed by the Researcher. The end of the interview will conclude your participation in this research study.

How will my interview be recorded?

Your interview with the Researcher will be recorded using an audio recording device. The Researcher will also take written notes during the interview. If you feel uncomfortable having your interview audio recorded then you should not return the ‘Agreement to be contacted for an interview’ form as unfortunately all interviews must be audio recorded for consistency and accuracy.

What should I do if I am asked a question that I do not want to answer or am asked a question that I do not understand?

Throughout the interview you must only say what feels right and comfortable for you. There are no right and wrong answers. The Researcher only wants to gain an understanding of your opinions. If you are asked a question that you do not feel happy to answer, then simply indicate this to the Researcher and she will move onto the next question. You will not be asked why you do not want to answer the question. If you are asked a question that you do not understand, indicate this to the Researcher and she will re-phrase or expand upon the question.

What will happen if I become upset during the interview?

It may be the case that in answering an interview question you recall an incident that makes you feel upset during the interview or you may become upset for another reason. If this happens the Researcher will suspend the interview to allow you to have a break and recompose. The Researcher will then ask you if you want to proceed with the interview or terminate it. You will be completely free to choose which ever option suits how you are feeling. If the interview is terminated, then the data you had provided up to that point will be used by the Researcher. The interview will not be rescheduled or completed at another time.

Will my taking part in this interview be kept confidential?

The Researcher will have converted your name to a randomised code when you first completed the package of questionnaires. This code will continue to be used for your interview. Therefore, only the Researcher and the Researcher's supervisory team directly involved with this research study will know or have access to your true identity. All audio recordings, research data and personal information will be kept in a locked filing cabinet in the Researcher's office or on a password protected computer and personal laptop, for a maximum of 5 years after the study is completed, after which it will be destroyed.

What are the possible risks or disadvantages of taking part?

This research study including the interview schedule has been approved by the LSBU Research Ethics committee. There is a slight disadvantage in that participation in the interview requires some of your time and it may cost you money to travel to the LSBU campus of your choice. Also, should a significant issue in practice be revealed during the interview, the Researcher will discuss the issue with you at the end of the interview and together it will be decided whether to invoke Trust and/or NMC policies and procedures.

What are the possible benefits of taking part?

By participating in the interview you will have the opportunity to present your opinions and experiences of CDM as a final year nursing student. This may be a positive experience for you to be able to share your perspective with the Researcher, someone who is interested in what you have to say.

What will happen to the results of the research study?

Anonymised results will be presented in the Researcher's Doctoral thesis and will be used by the Researcher in future presentations and publications.

Whom should I contact for more information?

If you wish to have more information regarding this research study, you have questions or concerns then please do not hesitate to contact the Researcher, Beverly Joshua [Researcher].

Beverly Joshua [Researcher]
Faculty of Health & Social Care
London South Bank University
103 Borough Road
London
SE1 0AA

Email: joshuab@lsbu.ac.uk

Direct line: 0207 815 8074

Should you not be able to contact the Researcher or you would like advice from an alternative source on this research and your participation in it, the Researcher's supervisory team may be contacted.

Dr Nicola Martin
Head of Department
Faculty of Arts and Human Sciences
London South Bank University
Email: martinn@lsbu.ac.uk
Direct line:

Dr Elspeth Hill
Doctoral Supervisor
Faculty of Arts and Human Sciences
London South Bank University
Email:
Direct line:

What can I do if I am unhappy at any point participating in this research?

If you are unhappy participating at any point in this research, you can discuss the situation with the Researcher or contact the Researcher's supervisory team. Alternatively you may decide to complain more formally via the University's Complaints Procedure which is accessible from the University's website: <http://www.lsbu.ac.uk/research>

My sincere thanks to you for taking the time to read this Information Sheet and for considering to participate in this research study

Beverly Joshua [Researcher]

Appendix 20: 'Agreement to be contacted for an interview' form

Please complete this form and return it with your package of questionnaires if you are willing to participate in an interview with the Researcher.

Research title: Final year nursing students' Approach to Learning and clinical decision-making: An intervention study

Please tick the box as appropriate

- I have read the 'Participant's Information Sheet for the Interview stage only' that was enclosed with the package of questionnaires.
- I am willing to be interviewed by the Researcher for the above titled research study.
- I am willing to be contacted by the Researcher to arrange an interview appointment.

The telephone I can be contacted on is.....

- The email address I can be contacted on is.....

Participant's First name: **Surname:**

Participant's Signature: **Date:**

My sincere thanks for indicating your willingness to participate in an interview for this research study. When I receive this form I will contact you regarding the interview.

Beverly Joshua [Researcher]
Faculty of Health & Social Care
London South Bank University
103 Borough Road
London
SE1 0AA

Email: joshuab@lsbu.ac.uk
Direct line: 0207 815 8074

Appendix 21: Email to participant: Invitation to attend an interview

Subject Box: Research title: Final year nursing students' Approach to Learning and clinical decision-making: An intervention study

Dear (*Participant's name*)

Thank you for your ongoing participation in my research study and for submitting the 'Agreement to be contacted for an Interview' form. I am pleased to inform you, that your response was in the first nine received indicating that you wish to continue participating in this research.

Interviews are anticipated to last approximately 30-40 minutes and will be conducted on the LSBU campus of your choice between ...*Date* and ... *Date*. Please email me by ...*Date* so that we may confirm a mutually agreeable date, venue and time.

I have attached the 'Participant's Information Sheet for the Interview stage only' that you were given previously however should you have any questions or concerns regarding your continued participation in this research or participating in the Interview Phase, please do not hesitate to contact me.

Thank you again for your ongoing support of my research and I look forward to hearing from you in the near future.

Kind regards,
Beverly

Beverly Joshua [Researcher]
Faculty of Health & Social Care
London South Bank University
103 Borough Road
London
SE1 0AA

Email: joshuab@lsbu.ac.uk
Direct line: 0207 815 8074

Appendix 22: Letter to Participants: Invitation to attend Interview

(Participant's address)

(Date of letter)

Re: Research title: Final year nursing students' Approach to Learning and clinical decision-making: An intervention study

Dear *(Participant's name)*

Thank you for your ongoing participation in my research study and for submitting the 'Agreement to be contacted for an Interview' form. I am pleased to inform you, that your response was in the first nine received indicating that you wish to continue participating in this research.

Interviews are anticipated to last approximately 30- 40 minutes and will be conducted on the LSBU campus of your choice between ... *Date* and ... *Date*. Please email me by ... *Date* so that we may confirm a mutually agreeable date, venue and time.

I have included the 'Participant's Information Sheet for the Interview stage only' that you were given previously however should you have any questions or concerns regarding your continued participation in this research or participating in the Interview Phase, please do not hesitate to contact me.

If you have any questions or concerns regarding your continued participation in this research or participating in the Intervention Workshop, please do not hesitate to contact me.

Thank you again for your ongoing support of my research and I look forward to hearing from you in the near future.

Kind regards,
Beverly

Beverly Joshua [Researcher]
Faculty of Health & Social Care
London South Bank University
Email: joshuab@lsbu.ac.uk
Direct line: 0207 815 8074

Appendix 23: Participant's Consent to participate in an interview form

Research title: Final year nursing students' Approach to Learning and clinical decision-making: An intervention study

Please tick the box as appropriate

- I have read the 'Information sheet for the interview stage' provided by the Researcher and have kept a copy should I wish to refer to it in the future.
- I have an understanding of the research, the aims and nature of the research study.
- I understand that my interview data as well as the rest of my research data will be held in a secure location and remain strictly confidential. My data will only be accessed by the Researcher and the supervisory team directly involved with this research study.
- I have been informed about what data I will be asked to provide in the interview and for what purpose it will be used. I understand that my data will not be used for any other purpose than what has been told to me.
- I have been given the opportunity to ask the Researcher and the other Researchers cited on the 'Information sheet for the interview stage' any questions. All questions I had have been satisfactorily answered and I no longer have any questions outstanding.
- I hereby freely and knowingly give my consent to participate in this interview.
- I hereby freely and knowingly give my consent for my interview to be audio-recorded and for the Researcher to take written notes during my interview.
- I understand that I can withdraw my consent to participate at any point during the interview without the need to explain my decision to the Researcher, though any data that I had provided up to the point of withdrawal will continue to be used by the Researcher.

Participant's First name: Surname:

Participant's Signature: Date:

Researcher's signature:

If you have any concerns about this research or your participation in it, please contact the Researcher, Beverly Joshua [Researcher]

Email: joshuab@lsbu.ac.uk

Direct line: 020 815 8074

Appendix 24: Interview Schedule

Thank you for coming today and agreeing to participate in this interview. I am going to ask you a number of questions, but if there is a question I ask you that you do not want to answer you are most welcome to respond that you do not wish to answer that question and I will move on to the next question. When answering please feel free to elaborate and provide rationale for your answers.

If you are happy for me to start the interview, I will switch on the recorder.

Interview Questions

1. Can you describe what does the term clinical decision making mean to you?
2. How do you feel about making decisions in the clinical area?
3. When you make a decision in practice, what assists you in making a decision?

Prompt: What helps you decide on the action to take?

4. What was it about this situation that you feel comfortable?
5. How do you feel your learning has developed whilst on this course?
Prompt: is there any difference to how you learnt before starting this course?
6. How has being made aware of the Approaches to Learning Theory impacted on your learning?
7. What do you think may help student nurses improve their clinical decision-making?

This interview is now finished so thank you very much for participating. Is there anything you would like to ask me?

If not, once again, thank you very much for taking part in this study.

London South Bank
University

Certificate of Research Participation

Phase 2: Interviews

Awarded to

(Name of participant)

**This is to certify that the above named
participated on**

(Date of attendance)

in the research study entitled:

*Final year nursing students' Approach to Learning' and clinical
decision-making: An intervention study*

(Signature of Researcher)

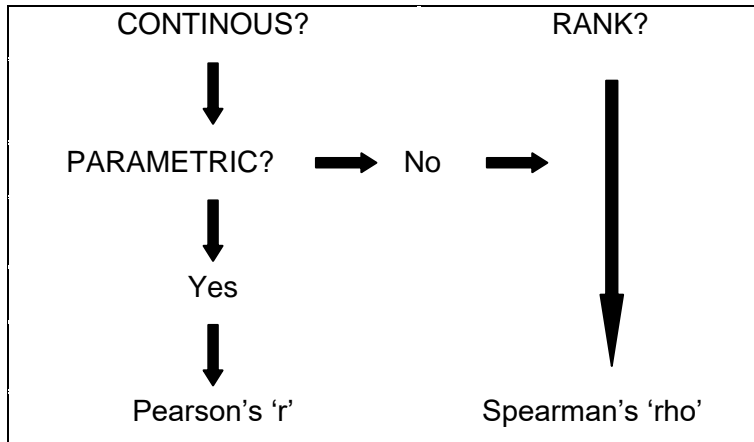
Researcher
Beverly Joshua [Researcher]

Email: joshuab@lsbu.ac.uk
Direct line: 0207 815 8074

Appendix 26: Statistical test selection map

TESTING FOR AN ASSOCIATION BETWEEN SETS OF DATA

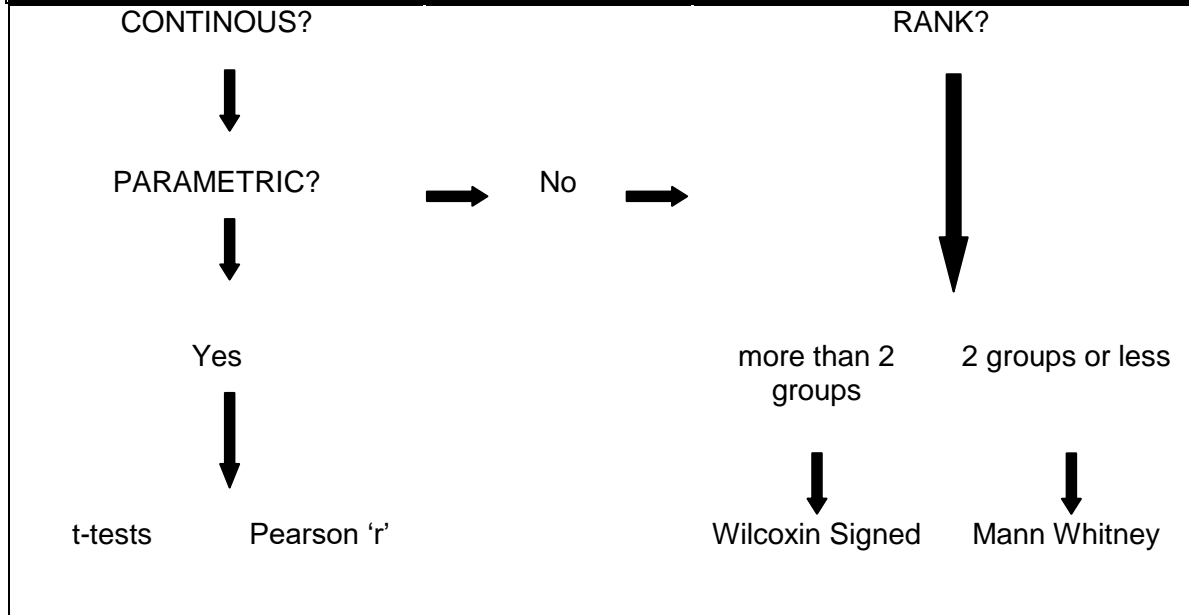
STATISTICAL TEST SELECTION



(Replicated from Corston, 1992, p. 132)

TESTS TO EXPLORE RELATIONSHIPS

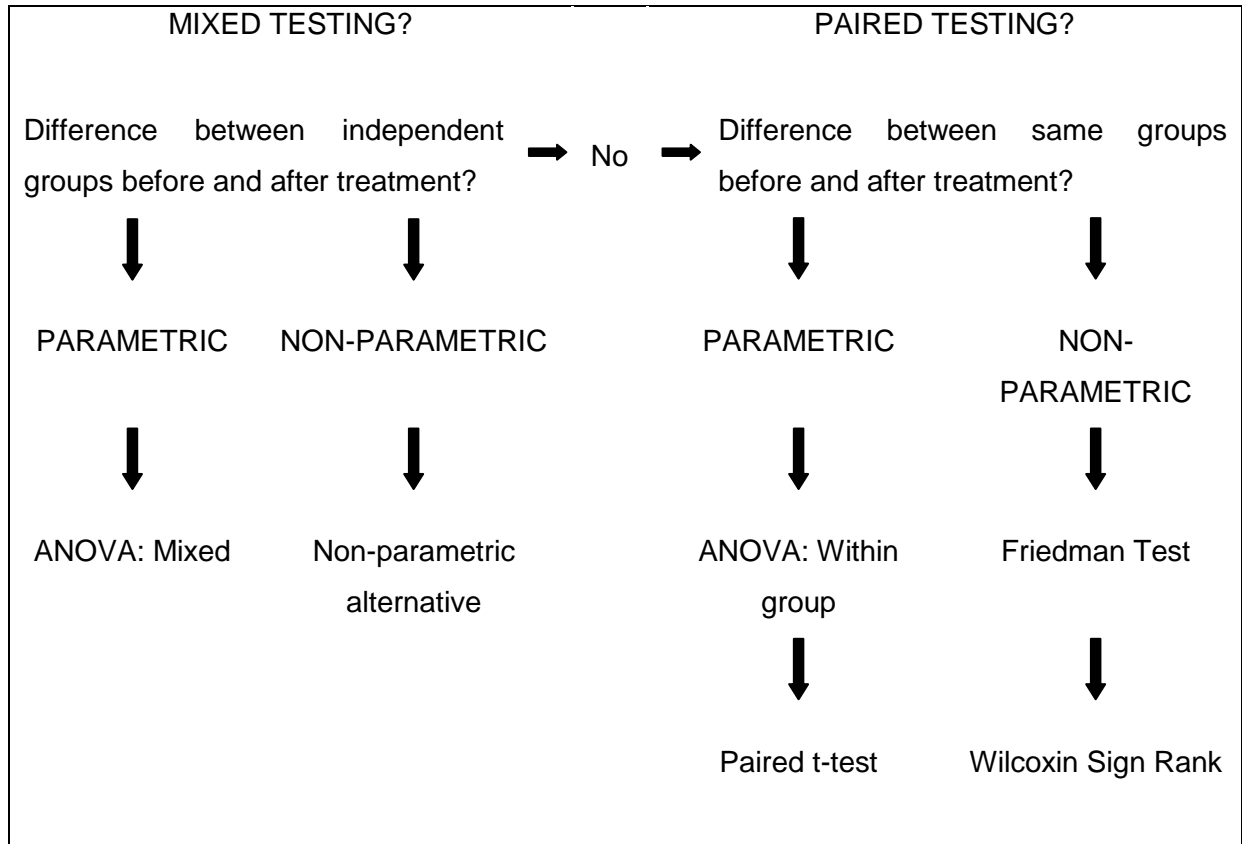
STATISTICAL TEST SELECTION



(Replicated from Corston, 1992, p. 115)

HYPOTHESIS TESTING FLOWCART

STATISTICAL TEST SELECTION



(Replicated from Corston, 1992, p. 119)

